IBM

System i

Database
IBM DB2 Web Query for System i

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> **Note**
>
> Before using this information and the product it supports, read the information in "Notices" on page 527.

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Preface

This documentation describes the IBM DB2 WebQuery for System i end user's environment, which provides easy access to the information that users need to run and create reports.

Documentation Conventions

The following table lists and describes the conventions that apply in this manual.

Convention	Description
THIS TYPEFACE or this typeface	Denotes syntax that you must enter exactly as shown.
this typeface	Represents a placeholder (or variable), a cross-reference, or an important term.
<u>underscore</u>	Indicates a default setting.
this typeface	Highlights a file name or command. It may also indicate a button, menu item, or dialog box option you can click or select.
Key + Key	Indicates keys that you must press simultaneously.
{ }	Indicates two or three choices; type one of them, not the braces.
[ ]	Indicates a group of optional parameters. None is required, but you may select one of them. Type only the parameter in the brackets, not the brackets.
|	Separates mutually exclusive choices in syntax. Type one of them, not the symbol.
...	Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis points (...).
. . .	Indicates that there are (or could be) intervening or additional commands.

Chapter 1. Introducing IBM DB2 Web Query for System i

Provides an overview of IBM® DB2® Web Query for System i® and describes the end-user components and tools you use to run, view, create, and edit reports.

This documentation provides an overview of IBM DB2 Web Query for System i. It also describes the components and tools you use to run, view, create, and edit reports. Use this documentation to learn about the structure and the capabilities of each component and tool.

IBM DB2 Web Query for System i Overview

IBM DB2 Web Query for System i is a complete, Web-ready data access and reporting system, which takes advantage of the low-cost, low-maintenance, and wide distribution capabilities of the World Wide Web and internal corporate Web sites. This system also provides a streamlined reporting environment that virtually eliminates the complexities of today's corporate data.

Reporting Concepts

The reporting environment includes Domains which are the highest level of organization. Domains provide data on a particular topic (such as sales, inventory, or finance). The data is stored in different forms in the following domain tree components: Reports and Other Files. The Other Files folder, available to Administrators and Developers, can contain images (.gif, .jpg), HTML files, and other files that you can use to customize and enhance reports.

Reporting Features

A selection of reporting tools is available for you to create and edit reports, manipulate data in an existing report, and view a report.

Power Painter. Power Painter is a Web layout and report creation tool that enables you to create output and page layout formats. It combines reporting, graphs, and page layout design in a single tool.

Report Assistant. Report Assistant is an HTML-based tool that you use to create tabular reports. From Report Assistant you select the data that constitute your report, create new data from existing data, apply screening conditions to the data, as well as format and style your report.

Graph Assistant. The Graph Assistant is an HTML-based tool that guides you step-by-step through the creation of a graph. The Graph Assistant enables you to create and style your graphs.

Reporting Interface

The reporting interface is ideal for users who quickly need to run reports. Check your installation manual for information about browser compatibility. This interface offers you the ability to access reporting tools such as Power Painter, Report Assistant, and Graph Assistant.

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The reporting interface is an HTML-based front-end that allows you to:
- Run reports.
- Create reports and graphs using Power Painter, Report Assistant, or Graph Assistant.
- Save reports and graphs.
- Share reports with other users.
- Edit reports.

Development Environment

The DB2 Web Query Developer Workbench product is an optional add-on Windows-based development environment for creating applications. Developer Workbench provides intuitive GUI tools that free developers from the hassles of coding, thereby allowing them to concentrate on interface design, business logic, and data manipulation. Using Developer Workbench, developers can build powerful Web page interfaces that allow users to run customized reports.

Chapter 2. Using the Reporting Interface

Describes the reporting interface for IBM DB2 Web Query for System i, which you can use to select a domain, use items (reports, graphs, URLs) in the Domain Tree, search domains, access reporting tools such as Power Painter, Report Assistant, and Graph Assistant, and much more.

When you enter the reporting interface you are automatically connected to IBM DB2 Web Query for System i.

From the reporting interface, you can:
- Select a domain.
- Use the items (reports, graphs, or URLs) in the Domain Tree.
- Access reporting tools such as Power Painter, Report Assistant, and Graph Assistant.

Note:

The browser Back and Forward buttons cannot be used to navigate between pages in the interface, or from an interface page to a page viewed before connecting to the interface.

Opening the Reporting Interface

Before you can access the IBM DB2 Web Query for System i environment, you must log on to the reporting interface.

Log On to the Reporting Interface

1. From the Login page of the reporting interface, click **Login** or enter the following URL in your Web browser.

   `http://hostname:[port]/webquery`

   where:

   hostname:[port]

   > Is the host name and optional port number (specified only if you are not using the default port number) where the application is deployed.

2. Enter a valid i5 user ID and password.
3. Click **Submit**. The reporting interface opens.

Recommended Browser Setup

The following browser setup is recommended for use with the interface:
- Do not cache page content.
- Disable pop-ups for reporting environment.

For information on browser setting options, see the browser Help system.

Reporting Interface Layout

The reporting interface contains the following areas:

- **Domain Tree.** Contains the list of reports that you can access. You can expand the Domain Tree to view the entire name of an item by dragging the control bar that separates the Domain Tree from the content area.
- **Content area.** Contains content when reports are displayed.

In the following image of the interface, the:
- Domain Tree is on the left side of the window.
- Content area is on the right side of the window.
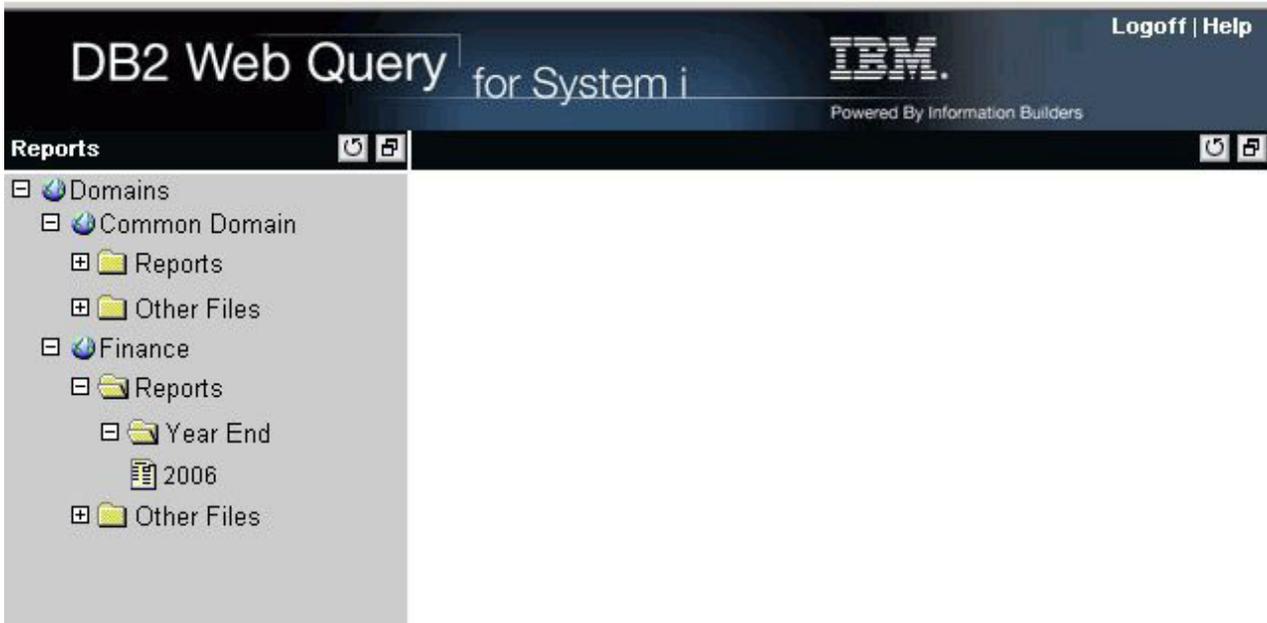
Selecting a Domain

All of the domains that a user is authorized to access are displayed in the Domain Tree. Depending on how your user profile is set up, you may not have access to all domains.

The icon located next to an item in the Domain Tree represents the type of item. In the following table, the first column lists the icon, and the second column describes what the icon represents.

Icon	Identifies...
- Domain Tree	Highest level of the report organization containing folders and reports you can access.
- Reports Folders	Location of created reports.
- Reports	Reports in a folder.
- Internet Links	Web pages and reports run from launch pages.

Using Domain Tree Items

A domain can contain reports, which are located in the Reports folders.

When you select an item from one of the Reports folders, a menu appears; it allows you to select one of the available options. The option(s) for Reports (identified by the Report icon) include Run, Power Painter, Report Assistant, Graph Assistant, Delete, and Properties.

When you use the Delete option to delete a report, the Domain Tree refreshes and collapses. If the report is the only item in the folder, the folder is also deleted when you delete the report. You also have the option of deleting a folder including all of its contents.

Note:
- If you are running very large reports, you may need to increase the virtual memory on your machine. See your System Administrator for details.
- A menu does not appear if you are not an Administrator or a Developer.

Loading Domain Tree Folders

When a user opens one of the default folders in the Domain Tree, a request is sent to retrieve subfolders directly under the top level folder. As each node of the tree is expanded, only that section of the tree is populated. This reduces the time needed to create the tree when a Domain is selected.

When reports from a folder are loaded into the Domain Tree, only a maximum of 25 report items are loaded each time. A link labeled View More is displayed in the tree to enable users to retrieve up to an additional 25 items.

Creating Reports

In addition, you can create new reports from scratch in the Reports folder. You can create your own reports using Report Assistant, Graph Assistant, or Power Painter (if you have the required privilege). Depending on which tool you use to create your report, you can edit your report using the same tool (Power Painter, Report Assistant, or Graph Assistant). You can change the name of your report from the Properties window.

Note: You may not be able to create reports if you do not have the privileges to do so.

Create a Report in the Interface

1. In the Domain Tree, expand the **Reports** folder.
2. Right-click a subfolder and select **Power Painter**, **Report Assistant**, or **Graph Assistant**.
3. Create and save your report. The report is saved in the Reports folder with the name you provide.

Text Editor

Administrators and Developers only can use the text editor to troubleshoot source code for reports in the reporting interface.

The following table describes all of the functions available in the text editor. The first column lists the buttons, and the second column lists the actions they produce.

Button	Action...
Save - Save button	Saves the report. Only appears if the Text Editor is opened from the Reports subfolder.
Save As - Save As button	Saves the report in the Reports folder with a name you specify.
Run - Run button	Runs the current report.
Quit - Quit button	Exits the Editor window. If you made changes to the original report, a window prompts you to save or cancel the changes.
Help - Help button	Opens the online help.
- Cut, Copy and Paste buttons	Cut, copy, or paste, respectively, the highlighted text.
- Delete, Select All, Undo, and Redo buttons	Delete, select all, undo, and redo, respectively.
- Find and Replace button	Find and replace text.
- Go to line button	Enables you to go to a particular line number in the report.
AB - Uppercase button	Converts highlighted text to uppercase.
ab - Lowercase button	Converts highlighted text to lowercase.
- Text color button	Sets the text color in the editor.
- Background color button	Sets the background color of the editor. **Note:** The text color and background colors are for the current session only.
Times New Roman - Font drop-down menu	Enables you to change the font of the editor.
12 - Font size drop-down menu	Enables you to change the font size of the text in the editor.
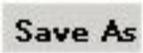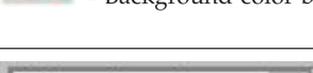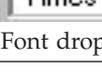
Note:
- If you create a report using the Power Painter, Report Assistant, or Graph Assistant, and then edit for troubleshooting with the text editor, you can only open and edit the report using the text editor.

- If you use a Firefox browser, the editing toolbar, which begins with the cut, copy, paste features listed in the table, does not appear. Use the standard control keys (Ctrl+X, Ctrl+C, Ctrl+V) to cut, copy, and paste.
- When you click the X in the upper right corner of the text editor, the procedure is saved, however the Domain Tree does not refresh. To refresh the Domain Tree contents, click the refresh button (circle with arrow) in the control bar.

Using Banner Hyperlinks

The hyperlinks in the banner provide a way to easily navigate the reporting interface:
- **Logoff.** Allows you to logoff the interface.
- **Help.** Opens a menu where you can select:
    - **Contents and Index**, which opens the online help.
    - **About DB2 Web Query**, which provides release information.

Chapter 3. Using Power Painter

Describes how to use the Power Painter to create reports, graphs, and page layouts.

Power Painter is a Web layout and report creation tool (available with DB2 Web Query), built using AJAX technology, that enables you to create output formats and page layout formats. It combines reporting, graphs, and page layout design in a single tool.

Functionality of Power Painter

You can accomplish the following tasks and functions using the Power Painter tool:

- Create a Compound Report, which is a reporting document with multiple reports and charts.
- Create a Coordinated Compound Report, which is a compound document where the report is collectively sorted and collated by a common sort group.
- Create exact positioning requirements by adjusting the layout properties in the canvas.
- Position components and report elements relative to each other and the page.
- Style reporting elements individually by applying a Style Sheet, theme, or conditional styling rules.
- Access and create Compound Reports using multiple data sources to build reports and perform ad hoc analysis.
- Develop reports using real-time data or sample data and limit the number of records for the entire report, individual reports, or individual graphs.

Selecting and Adding a Data Source

You may use Power Painter to access a Data Source to build reports and perform ad hoc analysis. You can open and work with Master Files by using the Data Sources palette in Power Painter.

Open a Data Source

1. Upon opening the Power Painter tool, you are prompted to select a Data Source. Select a Master File and click **OK**.
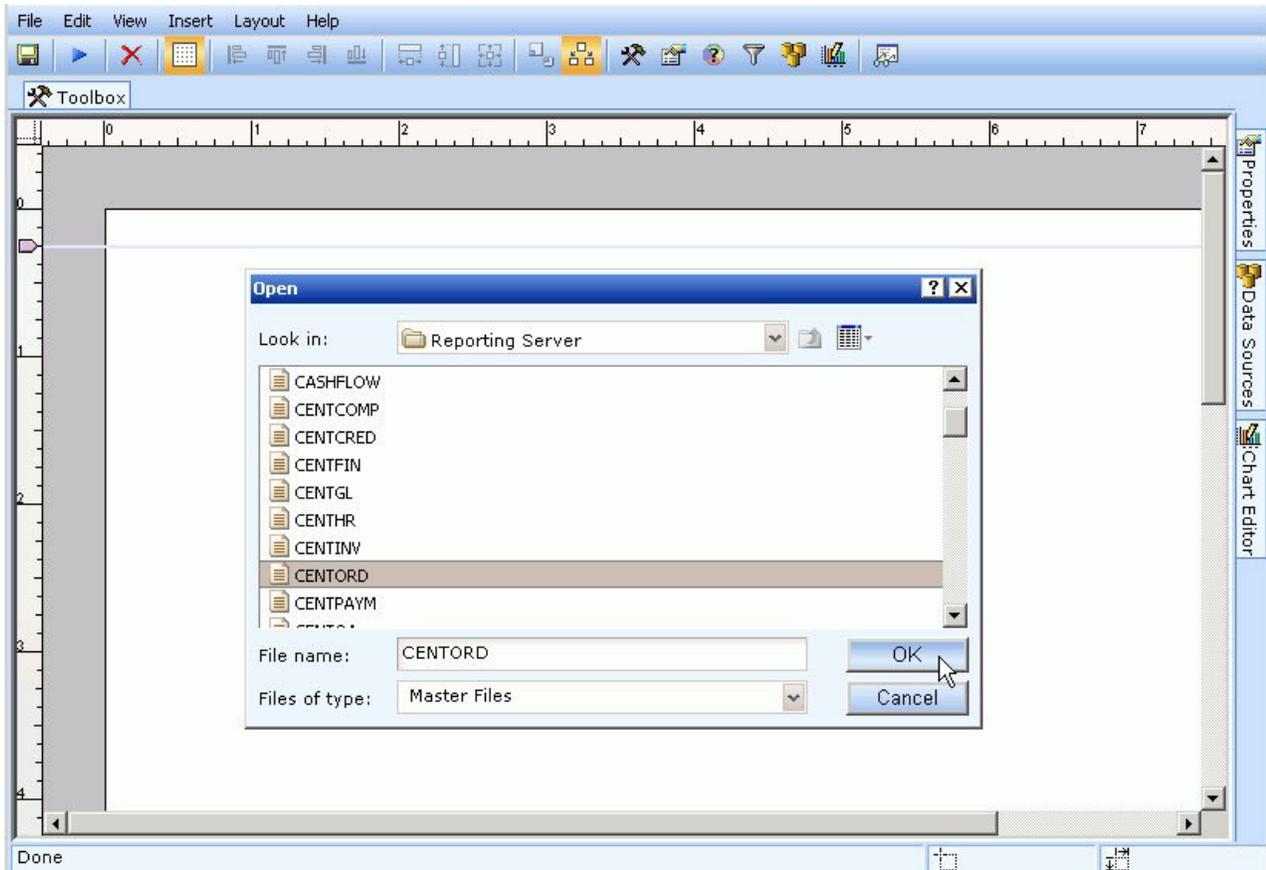
The fields from the Data Source are available in the Data Sources palette.

Note: This step is optional. You may open or close Data Sources in Power Painter at any time.

2. To open a new Data Source, click the **Open a new data source** button from the Data Sources palette toolbar.

   The Open dialog box appears prompting you to select a Data Source.

Close a Data Source

Note: If there is a component on the canvas that is referencing data from an open Data Source, you will not be able to close the Data Source unless you delete the associated component.

To close an open Data Source, click the **Close current data source** button from the Data Sources palette toolbar.

The fields are removed from the Data Source palette.

Using Power Painter Options and Palettes

The following image is an example of the Power Painter tool with multiple components. Several options and palettes enable you to customize the layout for the Power Painter tool.
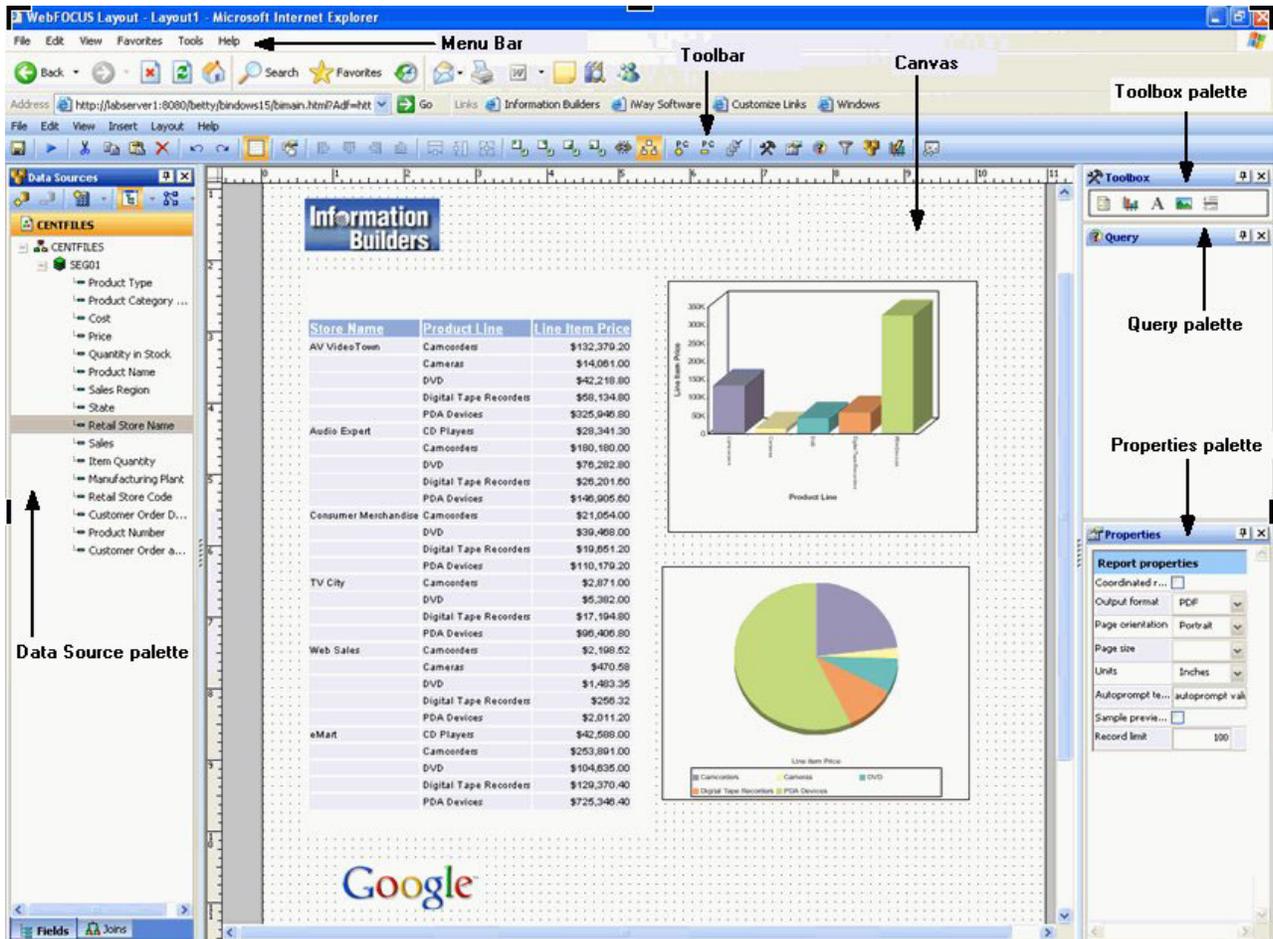
The following options are available in Power Painter:

Menu bar

> Standard browser menu bar options such as File, View, Tools, and so on.

Toolbar

> Power Painter toolbar options such as Layout, Run, View, Alignment, Palettes, and so on.

Canvas

> The canvas where you drop objects and paint the reporting document. The reporting document can be made up of text elements, images, tabular report objects, charts, and lines.

The following palettes are available in Power Painter:

Toolbox palette

Contains the tabular report, chart, text, image, and line objects for painting your document.

Query palette

Enables you to build and customize queries for tabular reports and charts.

Data Sources palette

Contains your Data Source information.

Properties palette

Contains the property settings for the components in the canvas.

Using Palettes in the Canvas

Upon opening the Power Painter tool, the canvas appears with all of the palettes minimized and pinned in the Power Painter margins. You can show, hide, or move these palettes as needed. Power Painter retains these settings.

Power Painter is able to store information so that the options you set in a single session are remembered and applied the next time you use the tool. Examples of the settings that can be saved are how the palettes are displayed, the theme selected, field display options, and so on. The information for these settings is stored under each user's directory in the DB2 Web Query repository.

Note: Reusing stored settings is only available if you access the same DB2 Web Query environment.

Palettes in Power Painter:

- Resizable. You can change the height and width by dragging the sides of the palette.
- Dockable. You can dock the palettes to the sides of the screen (top, bottom, left, right) or float them anywhere in the work area.
- Stackable. If multiple palettes are docked on the same side of the canvas, they become stacked.
- Pinnable. You can minimize the palettes and pin them in the Power Painter margins.

Dock and UnDock a Palette

1. Required: Double-click a palette to dock it on the canvas.

   or

   Drag a palette within 10 pixels of the edge (top, bottom, left, right) of the canvas.

   Note: A palette is docked when both the pin and close button are available from the palette toolbar.

2. To undock a palette (float it), click the palette toolbar, left-click and hold your mouse, and drag the palette to a new location on the canvas.

Stack Palettes

Drag and dock multiple palettes to one side of the canvas to create vertical or stacked palettes. You may adjust the height/width of each palette in the docking area.

Note: Resizing any palette automatically resizes the rest of the palettes so that they can fit into the docking area.

The following image is an example of vertically stacked palettes in the Power Painter tool.
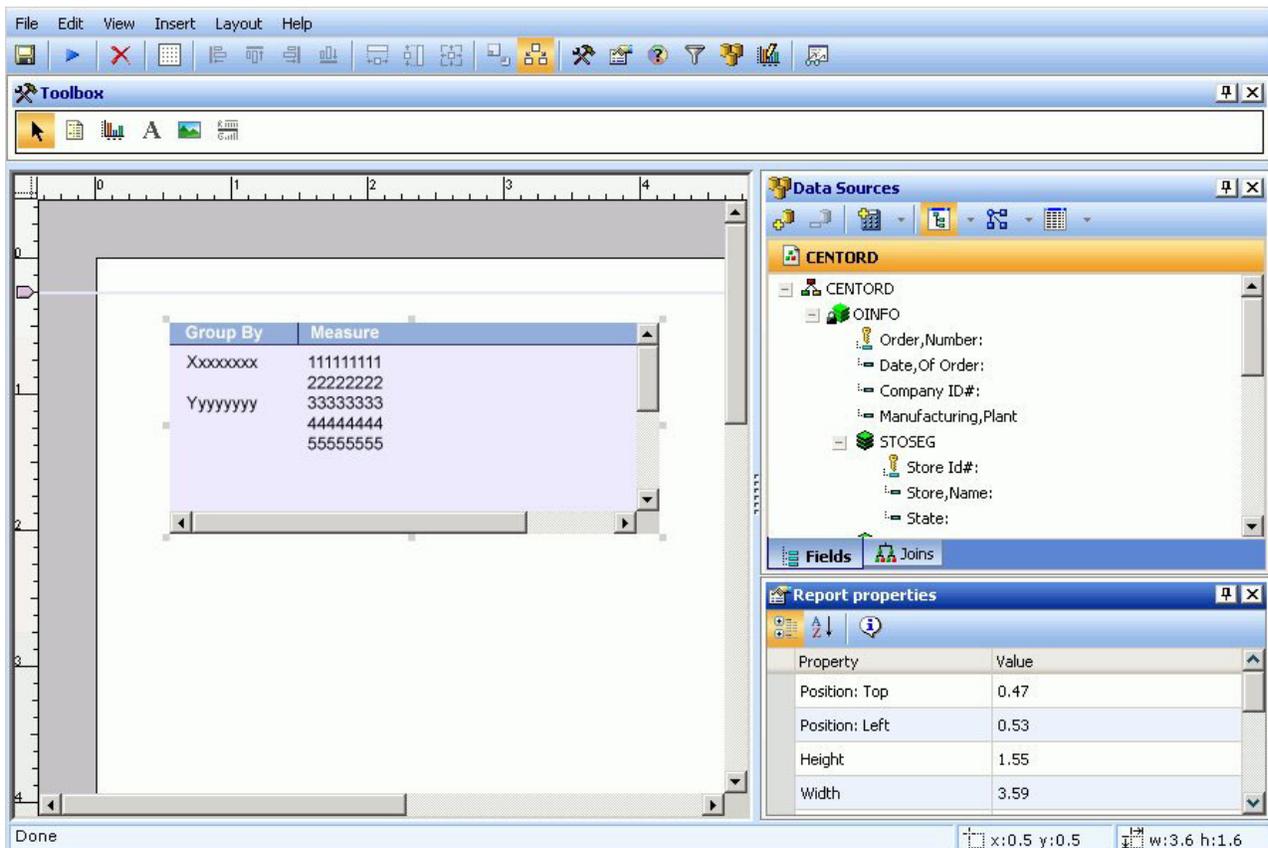
Pin a Palette

1. Required: Click the **pin** button located on the toolbar of an open palette. The palette is pinned and minimized.
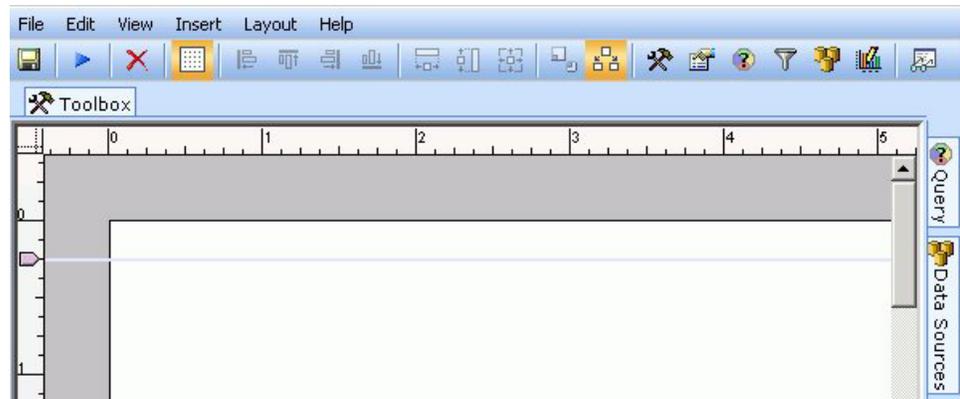
2. You may perform the following actions with pinned palettes:
   - Hover your mouse over the palette to show its contents.
   - Hover your mouse out of the palette to minimize it again.
   - Double-click a palette to dock it on the canvas.

Show a Palette

1. Select **Palettes** from the View menu.

   Palettes that are checked are shown in the canvas.

2. Select an unchecked palette name.

   The palette is shown maximized on the canvas. You may move or resize the palette as needed.

Close a Palette

1. Required: Select **Palettes** from the View menu.
2. Required: Select a checked palette name from the list.

   The palette is closed and removed from the canvas.

Note: You may also close an open palette by clicking the **Close** button from the palette toolbar.

Reset the Power Painter Layout

From the View menu, select **Reset Layout** from the Palettes submenu.
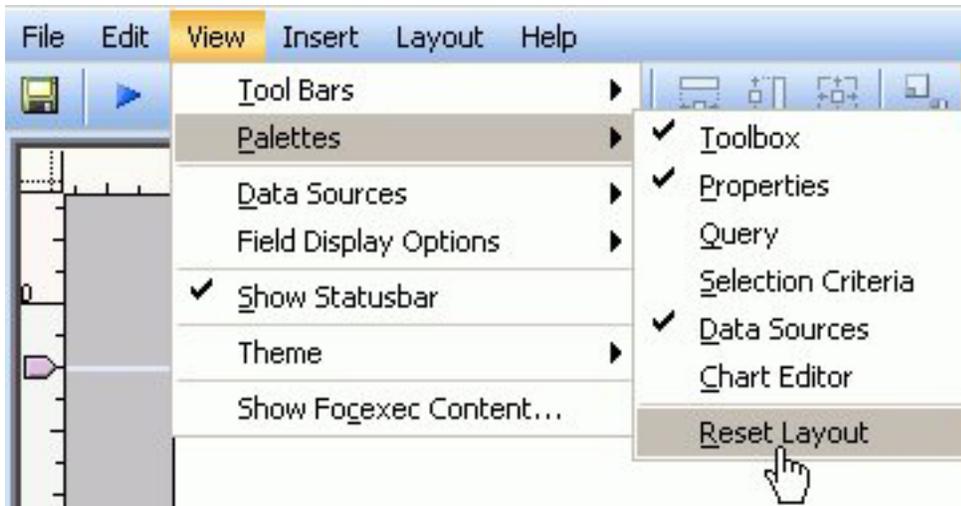
The Power Painter layout resets with the default palettes shown (Toolbox, Properties, Data Sources) in the canvas.

Using Power Painter Components

The available Power Painter components are Report, Graph, Image, Text, and Line. You may select these components from the Toolbox palette or from the Main toolbar. The component objects are associated with corresponding properties that you may set using the properties palette.

The following image is an example of the Toolbox palette in Power Painter.
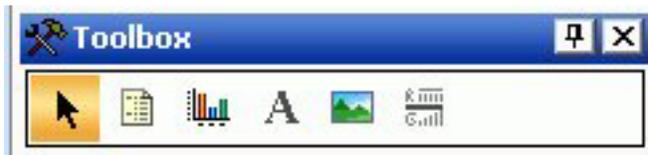
Insert a Report Component in Power Painter

1. Required: Select the **Report** button from the Toolbox palette and drag it onto the canvas.

   or

   Select **Report** from the Insert menu. The component is automatically inserted into the canvas.

   The report appears on the canvas.

2. From the Data Sources palette, select fields and drag them to the report object.

   As fields are dragged over the report, sorting folders are available which enable you to sort the fields as a By, Across, Sum, or Coordinated report field.

   Note: Coordinated fields contain a common sort field for multiple reports and graphs and are burst into separate page layouts. Each value for the coordinated sort field displays on a separate page.
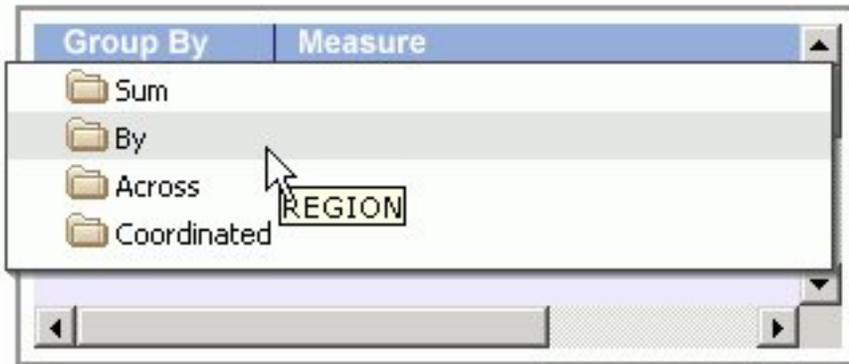
3. Required: To edit or delete these field selections, open the Query palette or the Query Popup.
   - From the View menu, select **Query** from the Palettes submenu.
   - Select a report, right-click and select **Query Popup** from the context menu.
     Double-click the report to bring up the Query Popup.
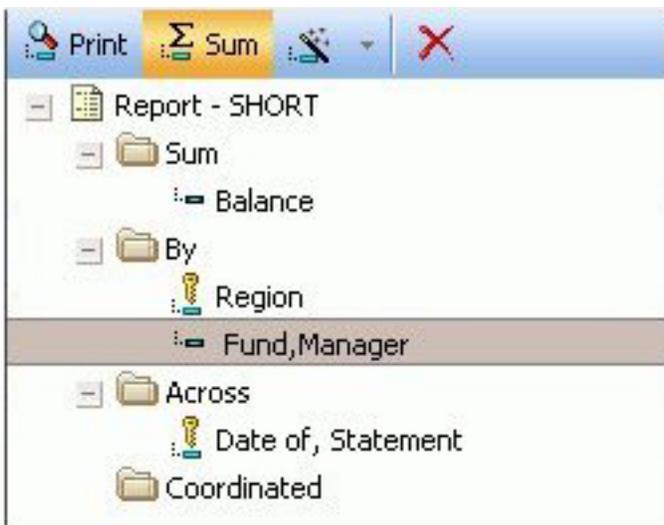
The sort folders appear with the selected fields in the report. You may drag and drop the fields to different sort folders, delete fields, and add and edit compute fields from this dialog box. You may also select Print to display all the values of the selected fields found in the data source and Sum to sum the values of a numeric field.

4. You may select a field from the Query palette to further customize the field properties in the report.
5. You may select the report to view or edit the properties for the report in the Report properties palette.
6. Select **Save** from the File menu to save the report.

Report Properties

When a report object is selected, the following properties are available from the Report properties palette.

Property	Value
Position: Top	0.52
Position: Left	2.17
Height	1.03
Width	0.93
Stylesheet reference	
Font	click here to edit
Column title styling	click here to edit
Column data styling	click here to edit
Heading	click here to edit
Footing	click here to edit
Column totals	No
Row totals	No
Sizing and Overflow	Flowing
Minimize Column Width	Yes
Record Limit	0
Use DB optimization	No
Page numbering	No lead

Position: Top

Indicates the starting position for the top edge of the report. You may type in a different value to change the position or manually drag the report on the canvas.

Position: Left

Indicates the starting position for the left edge of the report. You may type in a different value to change the position or manually drag the report on the canvas.

Height

Indicates the height of the report object. You may type in a different value to change the height or manually drag the report object on the canvas.

Width

Indicates the width of the report object. You may type in a different value to change the width or manually drag the report object on the canvas.

Stylesheet: reference

Click the browse (...) button to select an external stylesheet. The report references the selected stylesheet which controls the global level styling of the report. You can choose from a predefined set of stylesheets, or a stylesheet from the Import directory.

Font

> Shows the default global font for the report.

Column title styling

> Click the browse (...) button to open the font dialog box. Select the font, style, size, text and background color for the column titles in the report.

Column data styling

> Click the browse (...) button to open the font dialog box. Select the font, style, size, text and multiple background colors for the data in the report.

Heading

> Adds a heading to the report. Click the browse (...) button to open the Heading dialog box.
> - You may use the Headings toolbar to customize and modify the font, style, size, text color, background color, and so on.
> - You may use the Data Sources area to add fields from the Master File as your heading.

Footing

> Adds a footing to the report. Click the browse (...) button to open the Footing dialog box.
> - You may use the Footings toolbar to customize and modify the font, style, size, text color, background color, and so on.
> - You may use the Data Sources area to add fields from the Master File as your footing.

Column totals

> Shows columns totals in the report. No is selected by default. To show column totals, use the drop-down list to select Yes.

Row totals

> Shows row totals in the report. No is selected by default. To show row totals, use the drop-down list to select Yes.

Sizing and Overflow

> Determines the vertical sizing of the report by setting fixed or flowing overflow. For more information about sizing and overflow, see Setting Overflow Options in Power Painter.

Minimize Column Width

> Shrinks the column width to fit the widest value in the report. Yes is selected by default. Select No from the drop-down list to expand the all the columns.

Record Limit

> Limits the number of records used to retrieve data at run time.

Use DB optimization

> Enables the database to use its internal optimization techniques which reduce the volume of database-to-server communications and improve response time.

Page numbering

Select Default, On, Off, or No lead from the list box.

Right-click Report Properties

When you right-click a report object, the following options are available from the dialog box that appears:

Query

Opens the query dialog box.

Size to Fit

Resizes the report as fields are added and deleted.

Delete

Deletes the report.

Properties

Displays the Report properties dialog box.

Field Properties

When a report is selected, the following properties are available from the Field properties palette.

Note: The field properties available vary depending on the type of sort field selected.

Field properties: REGION

Property	Value
Visible	Yes
Title	
Sorting	
Page break	No
Subtotal	click here to edit
Underline	No
Include missing instances	No
Drill down	click here to edit
Conditional styling	Click here to add a rule
Subheading	click here to edit
Subfooting	click here to edit
Ranking	No
Ranking limit	0
Ranking title	
Ranking title font	click here to edit
Ranking data font	click here to edit
Title font	click here to edit
Data font	click here to edit

Visible

Controls whether a field appears in the report graph, or is hidden. If Visible is set to No, the column is hidden, but is still used in calculations.

Title

Enables you to enter a title for the field in the report graph.

Sorting

Sorts the column data in ascending or descending order.

Page break

Starts a new page when the value of a selected sort field changes.

Subtotal

Enables you to display subtotals for numeric data whenever the value of the selected sort (By) field changes. By default, numeric field values are summed and displayed as subtotals. Additionally, you can display other summary values by applying prefix operators to numeric fields, including computed fields, by clicking the browse (...) button to open the Sub Total Options dialog box. For more information, see Display Subtotals and Other Summary Values Using Prefix Operators.

Underline

Includes a horizontal line across the width of a report after the value of the selected sort field changes.

Include missing instances

Displays missing instances of data for related fields in the report.

Drill down

Enables you to supply information to another report by using a hyperlink, procedure, or parameter.

Conditional Styling

Enables you to assign a conditional style to a report element. Conditional styling enables you to define conditions that determine when to apply particular fonts, text style, and so on. For more information about conditional styling, see Create Conditional Styling Rules.

Subheading

Adds a subheading to the report at sort breaks. Click the browse (...) button to open the subheading dialog box.

- You may use the subheadings toolbar to customize and modify the font, style, size, text color, background color, and so on.
- You may use the Data Sources area to add fields from the Master File as your subheading.

Subfooting

Adds a subfooting to the report at sort breaks. Click the browse (...) button to open the subfooting dialog box.

- You may use the Footings toolbar to customize and modify the font, style, size, text color, background color, and so on.
- You may use the Data Sources area to add fields from the Master File as your footing.

Ranking

Includes a column with a numeric rank for each row in a vertically sorted report.

Ranking limit

If specified, this value limits the number of ranked values to be retrieved.

Ranking title

Displays a default column title as RANK with the sort field. You may type in a unique title name for the ranked field.

Ranking title font

Click the browse (...) button to open the font dialog box. Select the font, style, and size for the ranking title.

Ranking data font

Click the browse (...) button to open the font dialog box. Select the font, style, and size for the ranking data.

Title font

Click the browse (...) button to open the font dialog box. Select the font, style, size, text and multiple background colors for the column title.

Data font

Click the browse (...) button to open the font dialog box. Select the font, style, size, text and multiple background colors for the data column.

Table of Contents

Enables you to generate a Table of Contents (TOC) page which shows a summary of the document's contents, along with page numbers, and can be printed with the document. The entries in the Table of Contents enable you to easily navigate to a particular section while viewing the document.

Note: The Table of Contents only appears as a field option if you are using a coordinated report.

Insert a Graph Component in Power Painter

1. Select the **Graph** button from the Toolbox palette and drag it onto the canvas.

   or

   Select **Graph** from the Insert menu.

   The New Chart dialog box appears.

Vertical Clustered Bars: Side by side groups of bars. The standard type of two-dimensional bar chart. Any series can optionally be displayed as line or area rather than a bar.

☐ **CrossTab**   < Back   Finish   Cancel
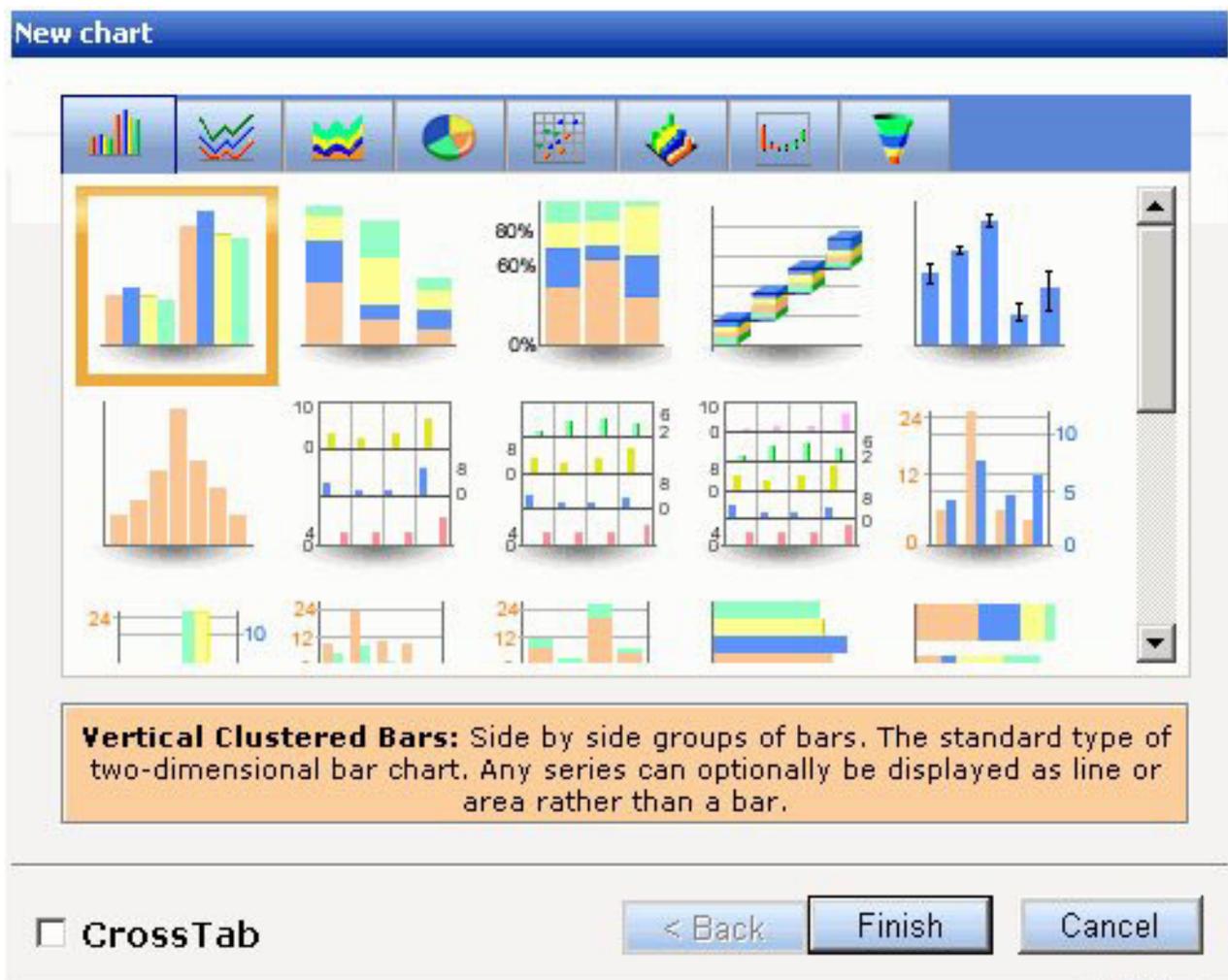
2. Select a chart type and click **Finish**.

   The graph appears on the canvas.

   Tip: To view the New Chart dialog box after the graph has been added to the canvas, select **Show Chart Types** from the right-click context menu of the graph.

3. From the Data Sources palette, select fields and drag them to the graph object.

   As fields are dragged over the graph, sorting folders are available which enable you to sort the fields as a X and Y axis fields.

   Note: Coordinated fields contain a common sort field for multiple reports and graphs and are burst into separate page layouts. Each value for the coordinated sort field displays on a separate page.
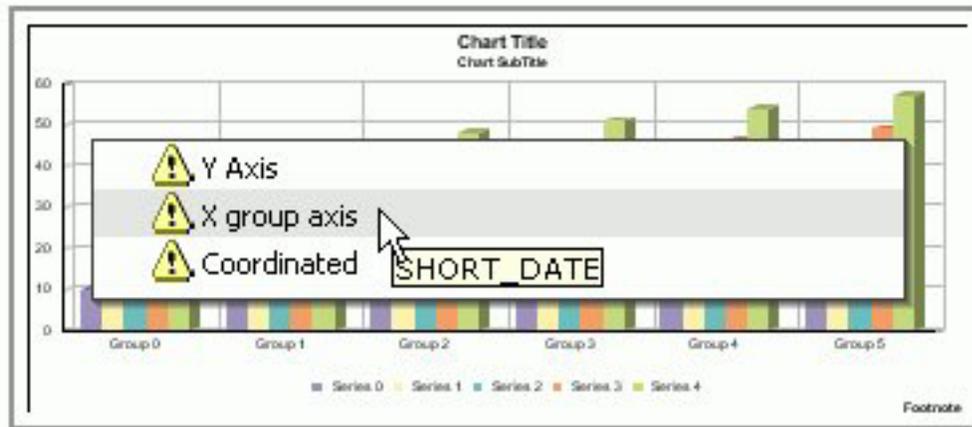
4. To edit or delete these field selections, open the Query palette or the Query Popup.
   - From the View menu, select **Query** from the Palettes submenu.
   - Select a graph, right-click and select **Query Popup** from the context menu.
     or
     Double-click the graph to bring up the Query Popup.
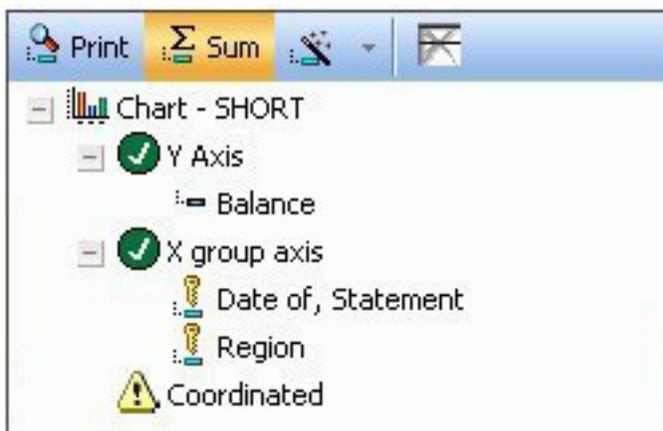
The sort folders appear with the selected fields in the graph. You may drag and drop the fields to different sort folders, delete fields, or add and edit compute fields from this dialog box. You may also select Print to display all the values of the selected fields found in the data source and Sum to sum the values of a numeric field.

5. You may select a field from the Query palette to further customize the field properties in the graph.
6. You may select the graph to view or edit the properties for the graph in the Chart properties palette.
7. From the View menu, select **Chart Editor** from the Palettes submenu to further customize the chart titles, legends, axis, and so on.
8. Select **Save** from the File menu to save the graph.

Chart Properties

For most chart types, when a graph object is selected, the following properties are available from the Chart properties palette. **Note:** Some chart types with unique properties, such as pie and three dimensional charts, have specialized properties not shown below.
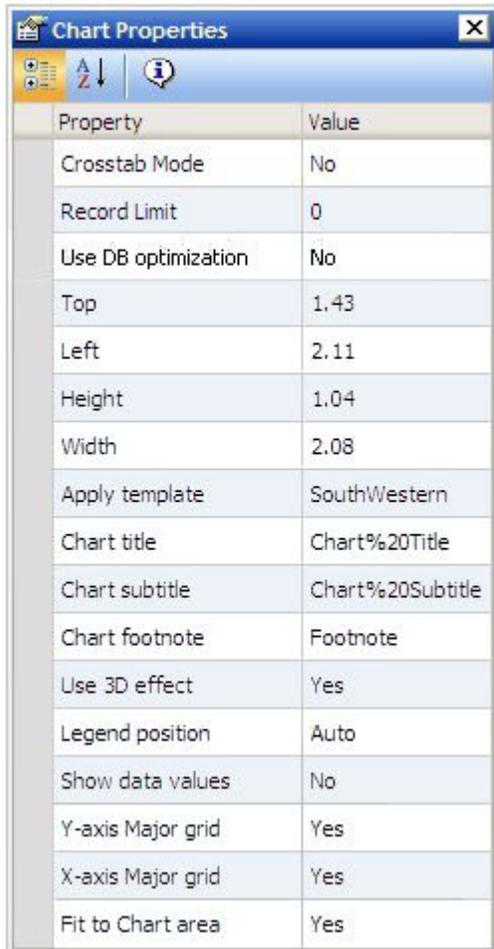
Chart Properties	
Property	Value
Crosstab Mode	No
Record Limit	0
Use DB optimization	No
Top	1.43
Left	2.11
Height	1.04
Width	2.08
Apply template	SouthWestern
Chart title	Chart%20Title
Chart subtitle	Chart%20Subtitle
Chart footnote	Footnote
Use 3D effect	Yes
Legend position	Auto
Show data values	No
Y-axis Major grid	Yes
X-axis Major grid	Yes
Fit to Chart area	Yes

Crosstab Mode

Select from Yes or No. Displays the Series-legend icon and enables secondary X-axis functionality.

Record limit

Type a number to edit the record limit value.

Use DB optimization

Enables the database to use its internal optimization techniques which reduce the volume of database-to-server communications and improve response time.

Top

Indicates the starting position for the top edge of the graph. You may type in a different value to change the position or manually drag the graph on the canvas.

Left

Indicates the starting position for the left edge of the graph. You may type in a different value to change the position or manually drag the graph on the canvas.

Height

Indicates the height of the graph object. You may type in a different value to change the height or manually drag the graph object on the canvas.

Width

Indicates the width of the graph object. You may type in a different value to change the width or manually drag the graph object on the canvas.

Apply template

Select from any of the available templates to apply a predefined color scheme to change the appearance of your chart.

Chart title

Type the desired title text.

Chart subtitle

Type the desired subtitle text.

Chart footnote

Type the desired footnote text.

Use 3D effect

Select from Yes or No to apply or not apply a three dimensional effect on the graph.

Legend position

Select the desired option for positioning the chart's legend.

Show data values

Select from Yes or No to display or not display data values on the graph.

X-axis Major grid

Select from Yes or No to display or not display X-axis major gridlines on the graph.

Y-axis Major grid

Select from Yes or No to display or not display Y-axis major gridlines on the graph.

Fit to Chart area

Select from Yes or No to turn auto placement on or off.

Chart Editor Dialog Box

When the Chart Editor dialog box is open in Power Painter, properties are available for each object in the chart editor. The following image is an example of the Chart Editor and the properties palette in Power Painter.
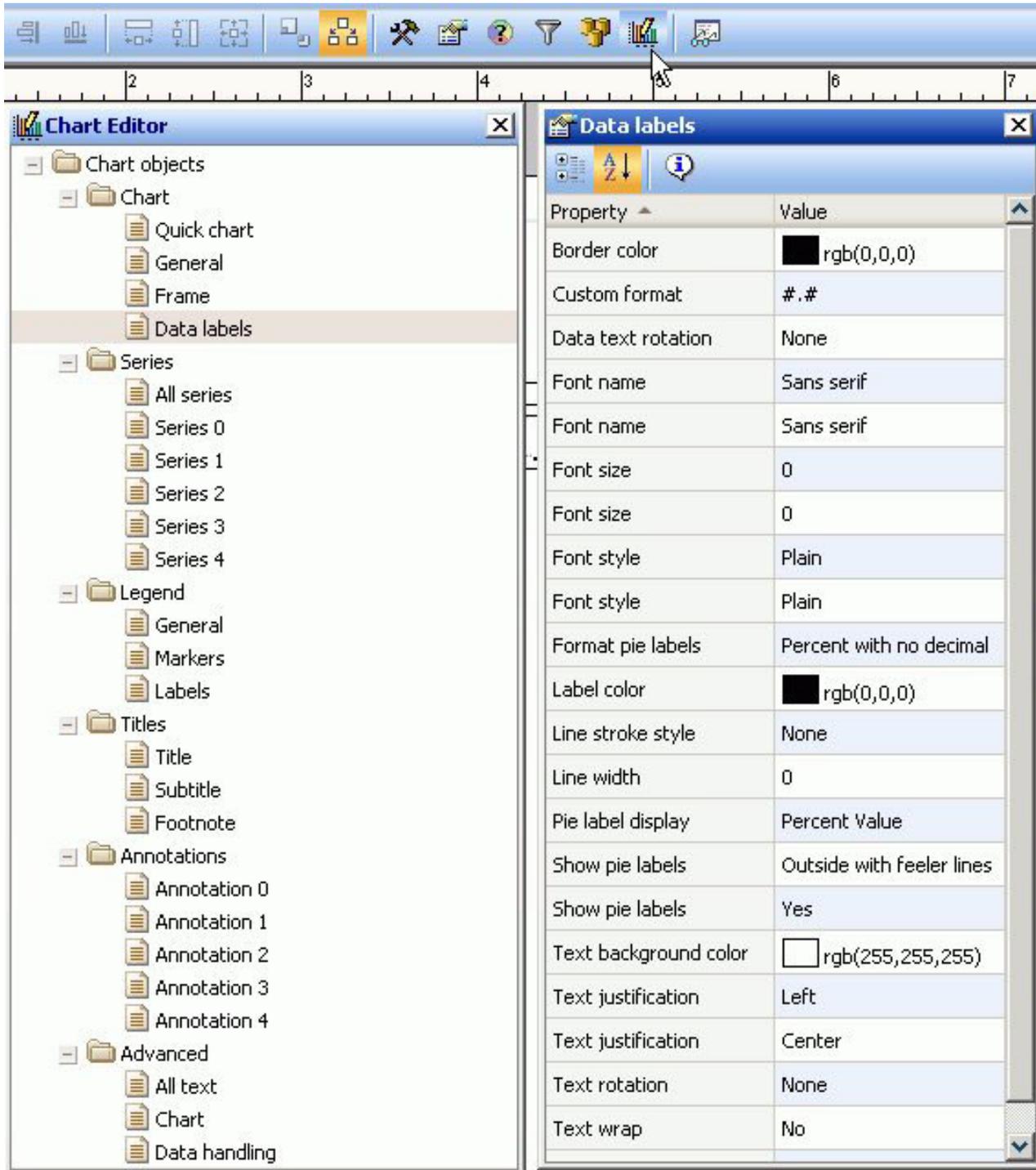
Insert a Text Component in Power Painter

1. Required: Select the **Text** button from the Toolbox palette and drag it onto the canvas.

   or

   Select **Text** from the Insert menu.

   The Text Component dialog box appears on the canvas.
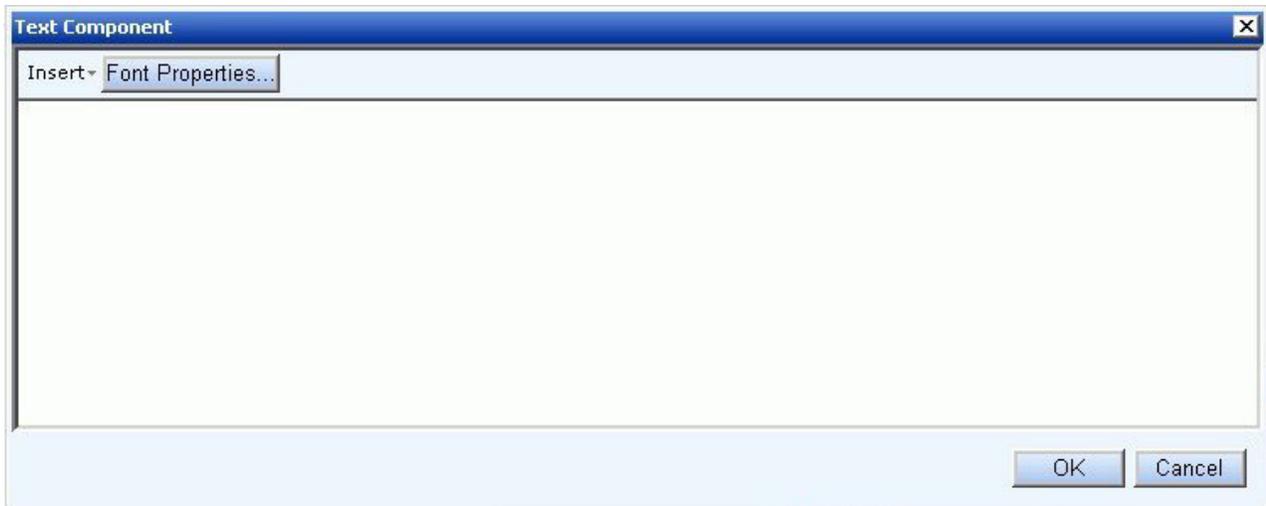
2. Manually type text into the text box area to use the default font.
3. Click the **Font Properties** button to open the Font dialog box.

Font

Font...	Style:	Size
ARIAL	Normal	10

Font	Style	Size
ARIAL	Normal	8
ARIAL UNICODE MS	Bold	9
AVANT GARDE GOTHIC	Italic	10
BATANG	Underline	12
BATANGCHE	Bold and italic	14
BOOKMAN	Bold and und	24
		36

Options

Text Color ■

Sample Text

Sample Text Line 1

[OK]   [Cancel]
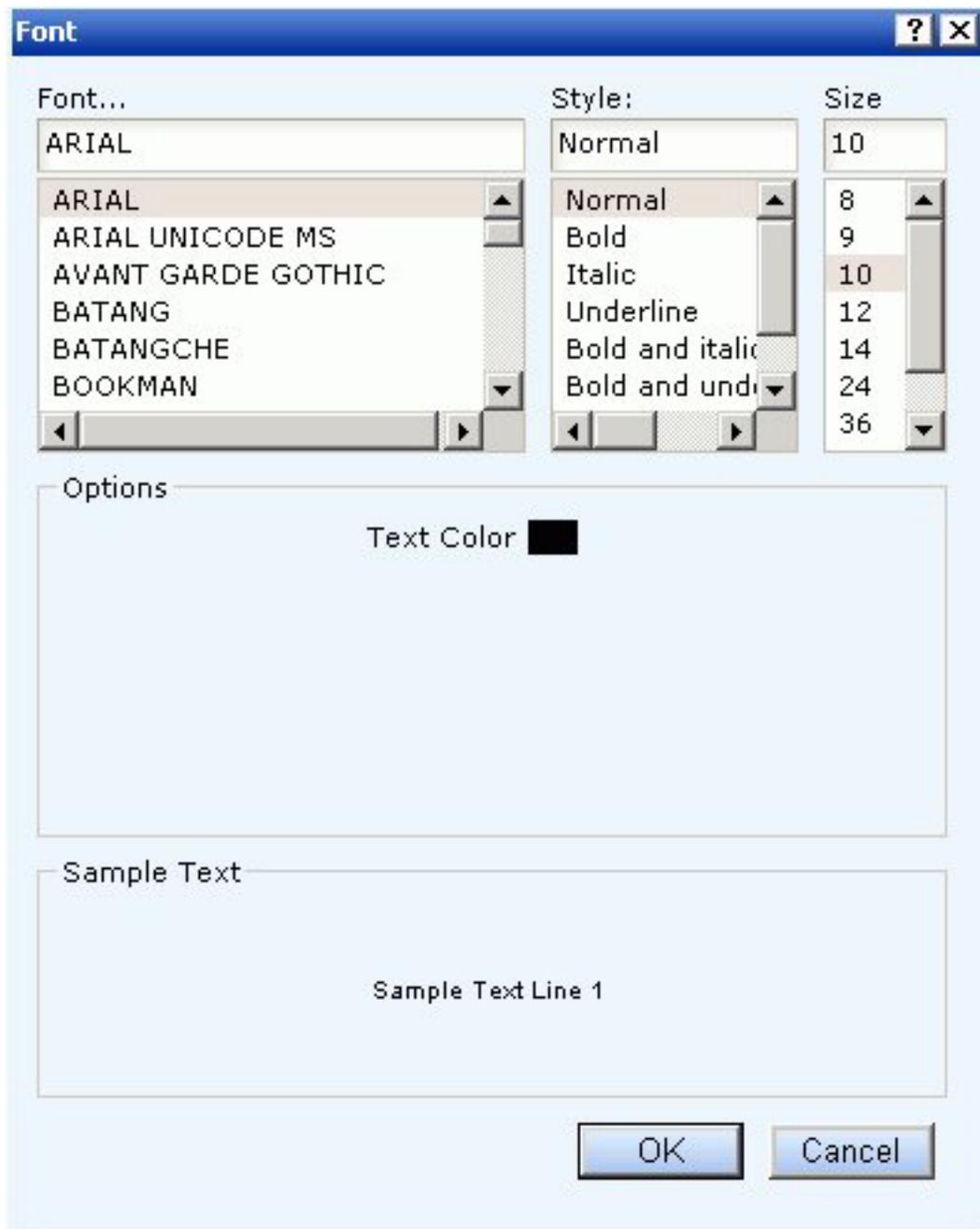
You may customize the font, style, size, and text color of the text.

4. Click **OK** to close the Font dialog box.
5. Required: Click **OK** to close the Text component dialog box.

The text is inserted into the canvas.

6. You may select the text component to view or edit the properties for the text in the Text properties palette.
7. Select **Save** from the File menu to save the text.

Text Properties

When a text object is selected, the following properties are available from the Text properties palette.
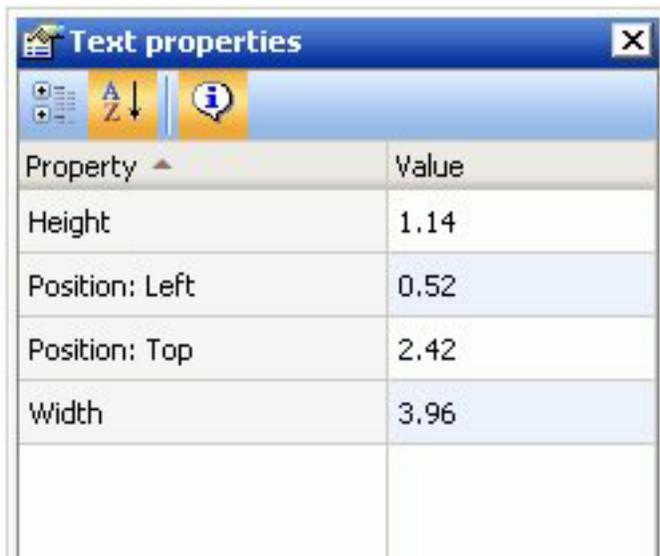
Height

Indicates the height of the text object. You may type in a different value to change the height or manually drag the text object on the canvas.

Position: Left

Indicates the starting position for the left edge of the text.

Position: Top

Indicates the starting position for the top edge of the text.

Width

Indicates the width of the text object. You may type in a different value to change the width or manually drag the text object on the canvas.

Insert an Image Component in Power Painter

1. Select the **Image** button from the Toolbox palette and drag it onto the canvas.

   or

   Select **Image** from the Insert menu.

   The Open dialog box appears on the canvas.
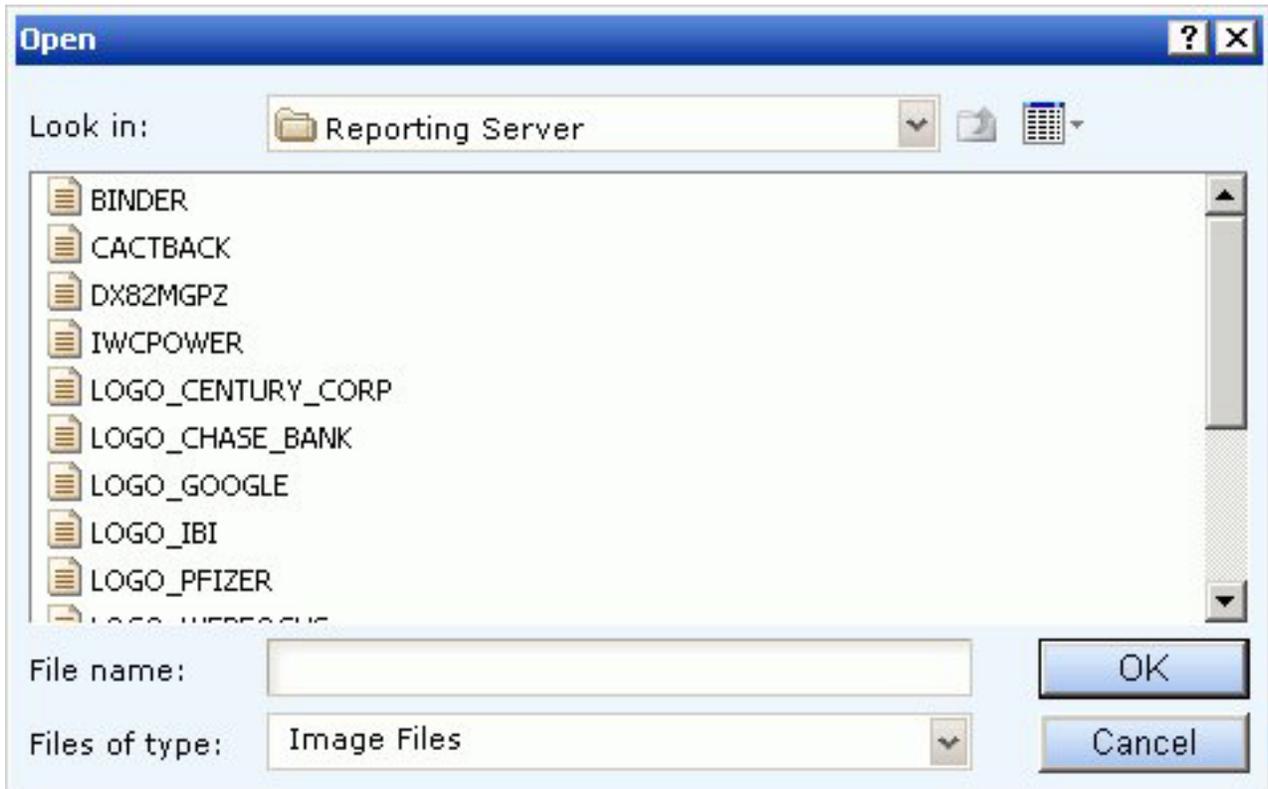
2. Select from the list of image files available.

   Note: The Reporting Server is the default location for all stored images.

   Images need to be copied to the appropriate directories by your administrator.

3. Required: Click **OK** to insert the image. The image is added to the canvas, and the size defaults to the size of the image.

4. You may select the image component to view or edit the properties for the image in the Image properties palette.

5. Select **Save** from the File menu to save the image.

Right-click Image Properties

When you right-click an image, the following options are available from the dialog box that appears:

Reset to original size

> Resets the image to the original size.

Deletes

> Deletes the image.

Properties

> Opens the Image properties dialog box.

Note: Hover over an image to view the file name.

Image Properties

When an image object is selected, the following properties are available from the Image properties palette.
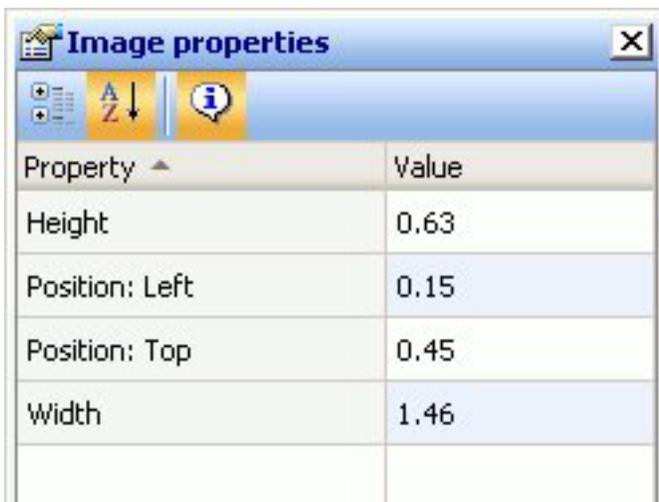
Height

> Indicates the height of the image object. You may type in a different value to change the height or manually drag the image object on the canvas.

Position: Left

> Indicates the starting position for the left edge of the image.

Position: Top

> Indicates the starting position for the top edge of the image.

Width

> Indicates the width of the image object. You may type in a different value to change the width or manually drag the image object on the canvas.

Insert a Line Component in Power Painter

1. Required: Select the **Line** button from the Toolbox palette and drag it onto the canvas.

   or

   Select **Line** from the Insert menu.

The line object is added to the canvas as a positioned horizontal line.

Note: To insert a vertical line, use the properties palette to change the orientation to vertical.

2. You may select the line component to view or edit the properties for the line in the Line properties palette.
3. Select **Save** from the File menu to save the line.

Line Properties

When a line object is selected, the following properties are available from the Line properties palette.

Property ▲	Value
Color	■ rgb(0,0,0)
Height	0.05
Orientation	Horizontal
Position: Left	0.79
Position: Top	3.09
Style	Solid
Weight	Medium
Width	3.49

Color

Sets the color of the line. Click in the color value field to open the color dialog box.

Height

Indicates the height of the line object. You may type in a different value to change the height or manually drag the line object on the canvas.

Orientation

Indicates the horizontal or vertical orientation of the line on the canvas.

Position: Left

Indicates the starting position for the left edge of the line.

Style

Sets the style of the line. Use the drop-down list to select from solid, dotted, dashed, and so on.

Weight

Sets the thickness of the line to light, medium, or heavy.

Width

Indicates the width of the line object. You may type in a different value to change the width or manually drag the line object on the canvas.

Display Subtotals and Other Summary Values Using Prefix Operators

The Subtotal property in the Field Properties palette enables you to display subtotals, and other summary values using prefix operators, for any or all of the numeric fields, including computed fields, in a report query. From the Field Properties dialog, when you click the browse (...) button to the right of the Subtotals property, the Sub Total Options dialog box opens.

1. Select the **Sub Totals** option to replace the default setting of None.

   If you are using computed fields, select the **Recomputed Sub Totals** option instead.

2. Numeric field values are summed and displayed as subtotals in the report by default. To display summary values other than the default subtotals, select prefix operators using the drop-down lists in the Prefix area that are adjacent to each of the selections in the Columns area. Note that the Sum prefix produces the same subtotal results as not selecting a prefix operator.

   All of the available prefix operators are listed and described in the following table.

Prefix	Description	Displayed in Prefix List
SUM.	Compute the sum of values	Sum
ASQ.	Compute the average sum of squares	Average Square
AVE.	Compute the average value	Average
CNT.	Count the items	Count
FST.	Select the first value only	Show first in group
LST.	Select the last value only	Show last in group
MAX.	Select the maximum value only	Maximum
MIN.	Select the minimum value only	Minimum

3. To display all numeric field values as subtotals or other summary values in the report, select the **Apply totals to all columns** check box in the Columns area.

4. Required: To display subtotals or other summary values for a subset of the numeric fields in the report, make sure the **Apply totals to all columns** check box is de-selected, then select check boxes for the individual numeric fields in the Columns area of the Subtotal tab.

   When **Apply totals to all columns** is selected, options for all individual fields in the Columns area are inactive by default.
5. To modify the default subtotal title, which is set to *TOTAL, type the desired text you want to display as the title for all subtotals and any other selected summary values in the Current Subtotal Text field.
6. To hide subtotals for sort fields that have only a single value, select the **Suppress for single lines** check box.

The following image shows the Sub Total Options dialog box.
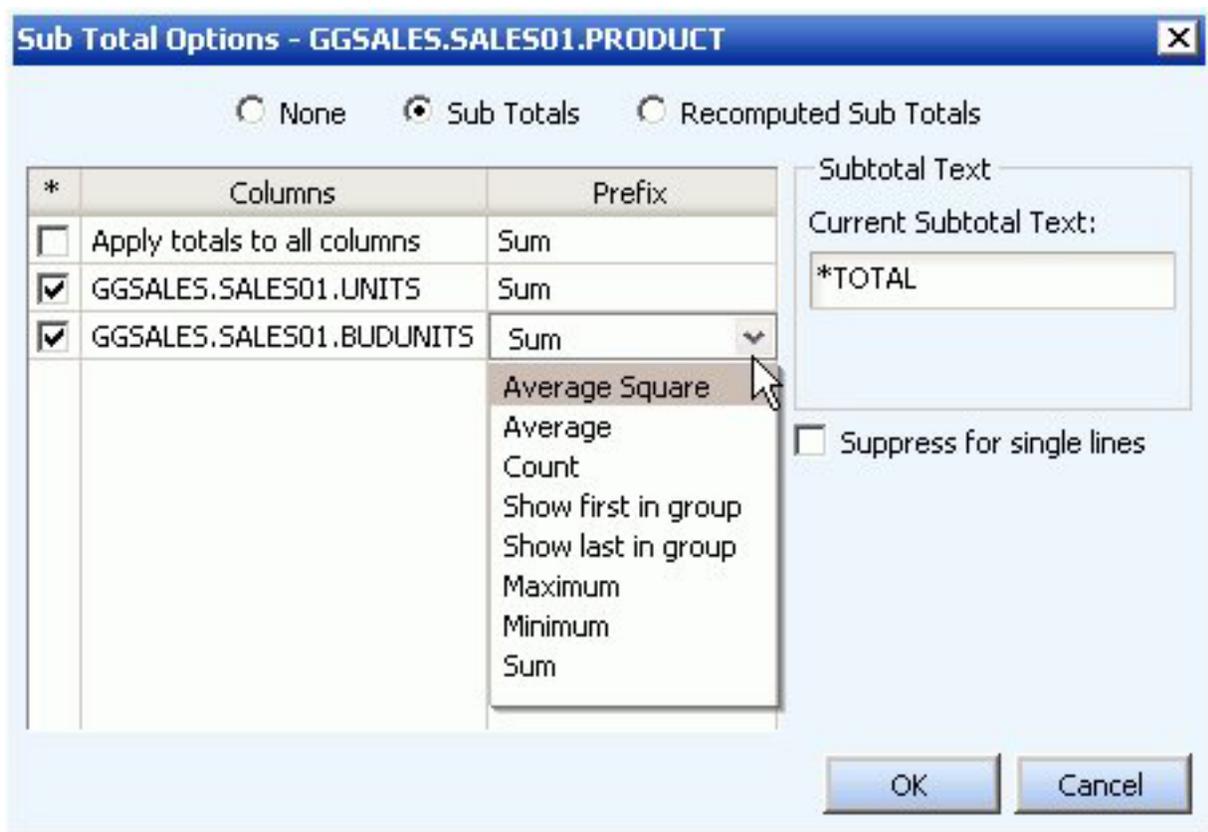
Using Reporting Functions

The following reporting functions are available within the Data Sources palette of the Power Painter tool:

- Create a virtual field (DEFINE) for your report.
- Create a report level calculation (COMPUTE) for your report.
- Add a JOIN relationship by using the Joins tab in the Data Sources palette.
- Create conditional styling rules by using the Create Conditional Style Rule dialog box.
- Create filters (WHERE/WHERE TOTAL statements) using the Selection Criteria palette.

- Use the Auto Prompting Facility to select parameters for your report.

Create a DEFINE Statement

1. Required: Click the **Define** button from the Data Sources palette.
   The Field creator dialog box opens.
2. Required: Type the name of the virtual field in the Field input box.
3. Required: Enter an expression in the expressions box.
4. Required: Click **OK** to close the Define field creator dialog box.
   The DEFINE field is added to the report field list.
5. Drag and drop the DEFINE field into the report.

Create a COMPUTE Statement

1. Click the **Compute** button from the Query palette.
   The Field creator dialog box opens.
2. Type the name of the computes field in the Field input box.
3. Enter an expression in the expressions box.
4. Click **OK** to close the Compute field creator dialog box and apply the COMPUTE statement.
   The COMPUTE field is added to the report.

Create a JOIN Between Data Sources

1. Click the **Joins** tab in the Data Sources palette.

2. Click the **Add Join** button from the Data Sources palette toolbar.
3. Required: Select a target Master File and click **OK**.
   The Create Join dialog box opens.
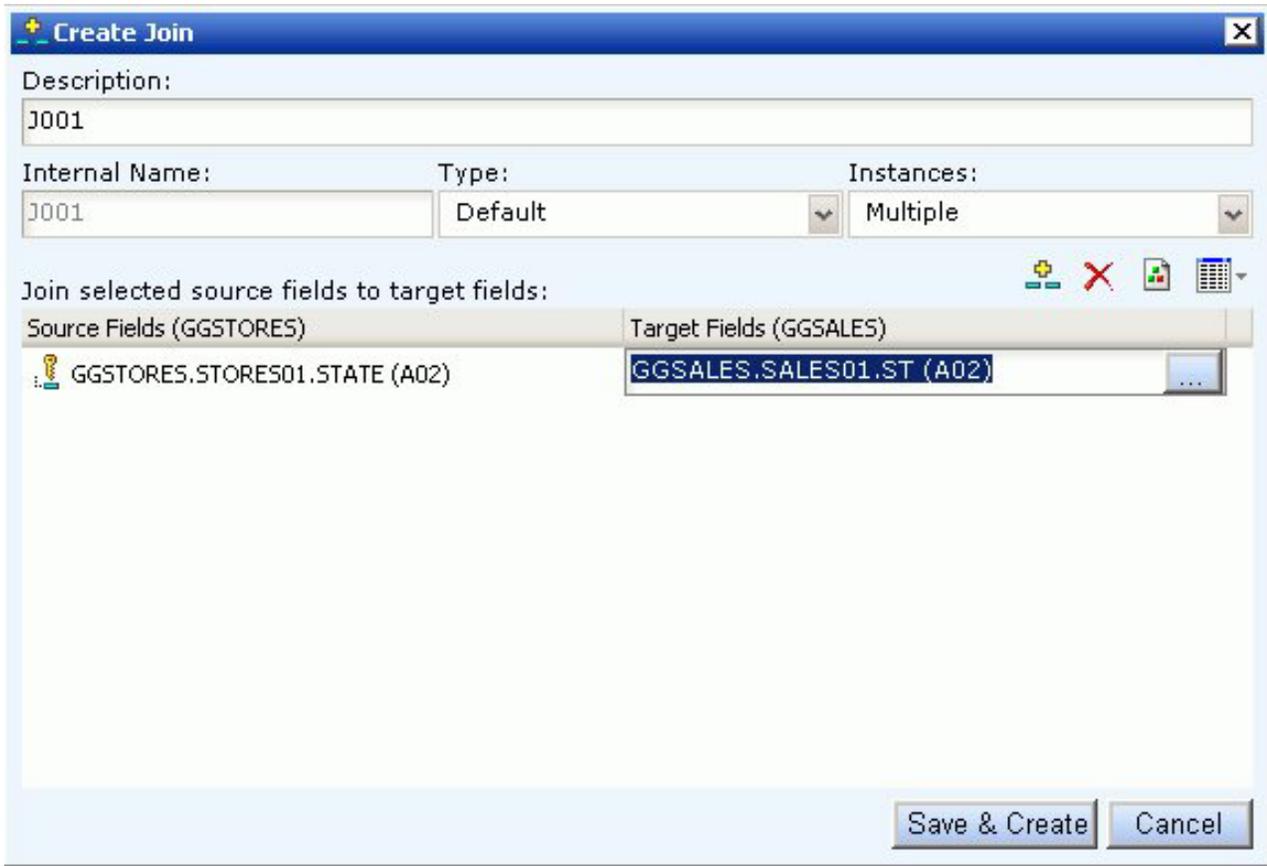
> **Note:** Joins can also be created on defined fields. For more information about defined fields, see Create a DEFINE Statement.

4. Type a name for the Join in the Description field.
5. Select the Type and Instances for the Join or use the default selections.
6. Click the **Select a source field** browse (...) button to select the Join source field.
7. Click the **Select a target field** browse (...) button to select the target fields.

   Note: If no target fields are available, you are notified that there are no fields found.
8. Click **Save & Create** to save the Join relationship.

   The joined field is added to the Joins tab.
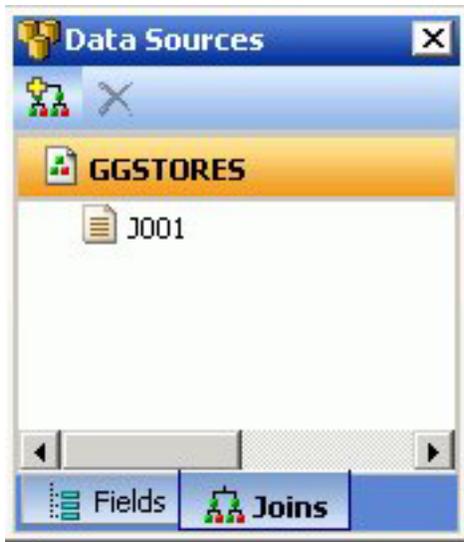
9. Click the **Fields** tab in the Data Source palette to view the joined data.
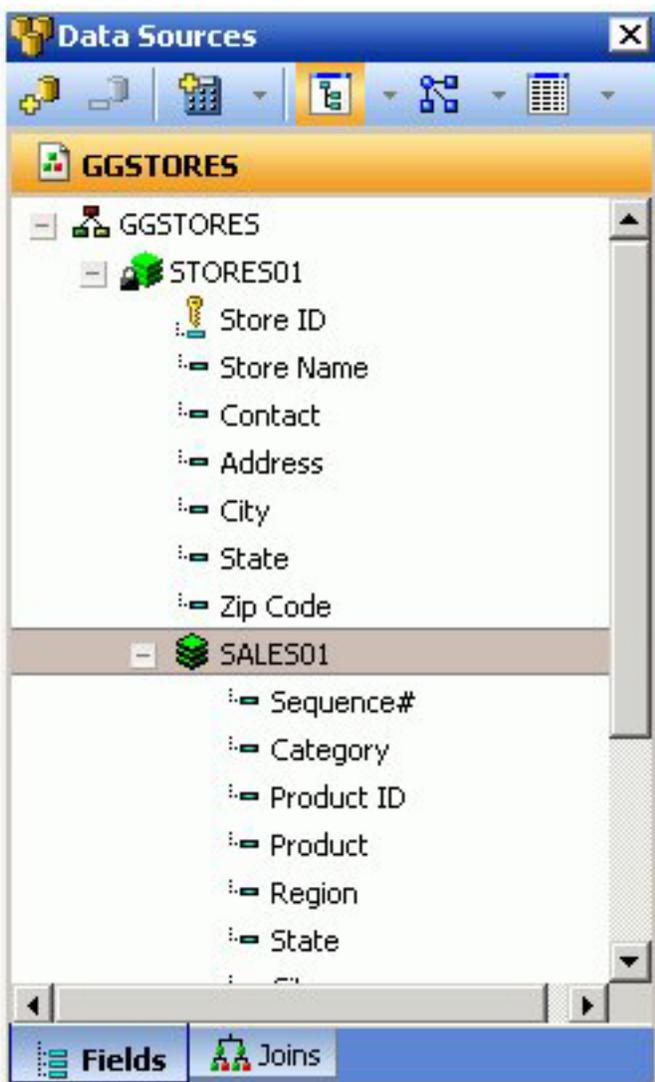
10. Drag and drop joined fields onto the canvas as you would any other field.

Note: To edit a join, double-click the join.

Create Conditional Styling Rules

1. Ensure that the Query palette or popup is open on the canvas:
   - From the View menu, select **Query** from the Palettes submenu.
   - Select a report or graph component, right-click and select **Query Popup** from the context menu.

       or
   - Double-click the report or graph component to bring up the Query Popup.
2. Select the field name in the Query palette.

   When fields are selected, properties for each field are available in the Field properties palette.
3. Click the Field properties palette and scroll down until you see Conditional styling.
4. Click in the Conditional styling value field and select the **New styling rule** button.

Query

Print   Sum   ✕

Report - SHORT
  Sum
    Balance
  By
    Region
    Fund,Manager
  Across

Field properties: Balance (Conditional styling)

Property	Value
Title	
Summary type	No Prefix
Include missing instances	No
Format	
Drill down	
Conditional styling	New styling rule
Title font	
Data font	

conditionalStyling

The Create Conditional Style Rule dialog box opens.

Create Conditional Style Rule: SHORT.SHORT.BALANCE

Existing style conditions: New Condition

Condition name
Condition_1

Field
Balance

Relationship:
EQUAL to

Value:
SHORT.SHORT.BALANCE

25
110
222
237
340
417
483
495
566

Compare type
○ Another field
◉ Values

Set font when condition is met
☑ Default font
Font... | Default Font

Set color when condition is met
☑ Default Color
Standard colors
Gray Scale
Additional
None
Selected Color: | Custom

Done | Cancel

5. Required: Create the style conditions for the field.
    a. Required: Type a name for the condition or accept the default.
    b. Required: Select a relationship for the condition from the Relationship drop-down list.
    c. Specify a value by doing one of the following:
        • Type a literal value in the Value input field.
          or
        • Click **Values** from the Compare type section to display existing data source values.
    d. Click **Done** to save and apply the conditional style rule.
        The condition is added to the Field properties palette and the condition is applied to the data on the Power Painter canvas.

The following image is an example of the Field properties palette with a Low Balance condition rule. The report object shows red text where the conditional styling rule was applied.
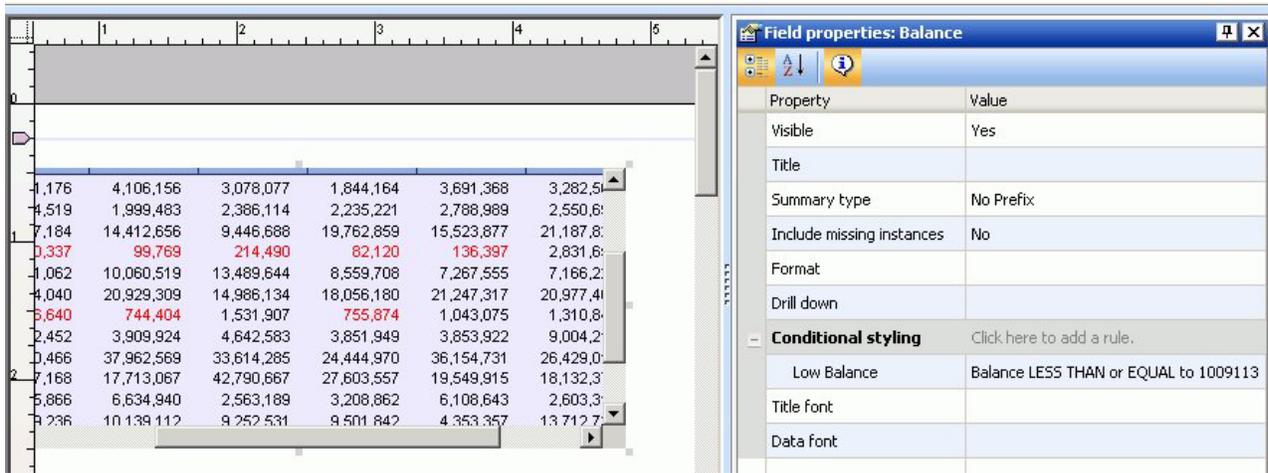
Create a WHERE Statement

1. Required: Select a report or graph object in the Power Painter canvas.
2. Required: From the View menu, select **Selection Criteria** from the Palettes submenu.

   The Selection Criteria palette appears on the bottom of the canvas.
3. Required: Drag a field name from the Data Sources palette to the Selection Criteria palette.

   The WHERE statement is added to the Selection Criteria palette.
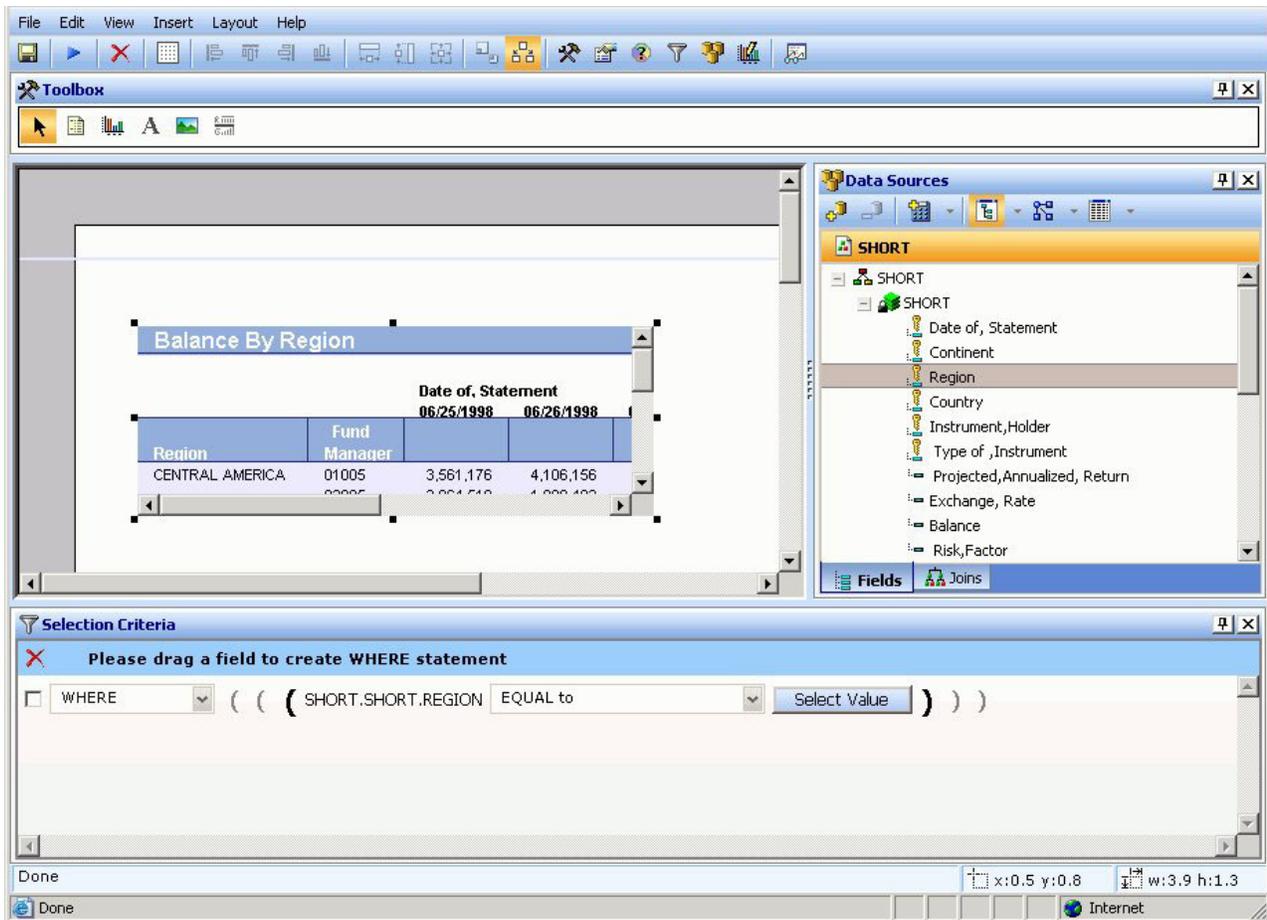
4. Specify the condition by using the drop-down list.
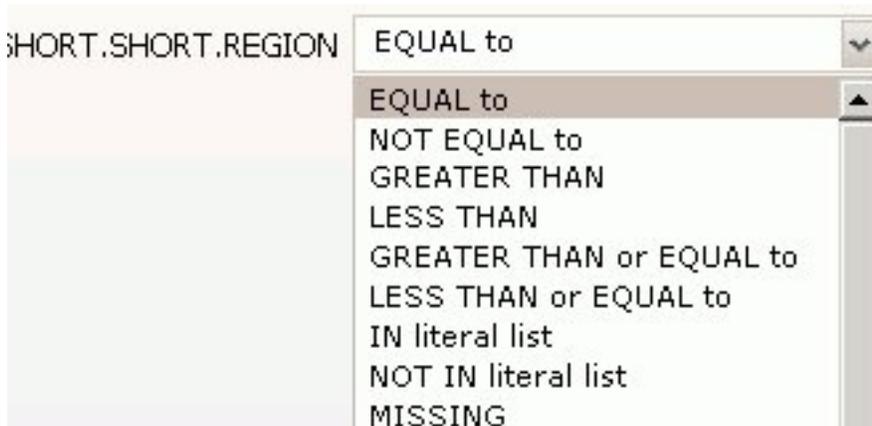
5. Click **Select Value** to open the Select Value dialog box.
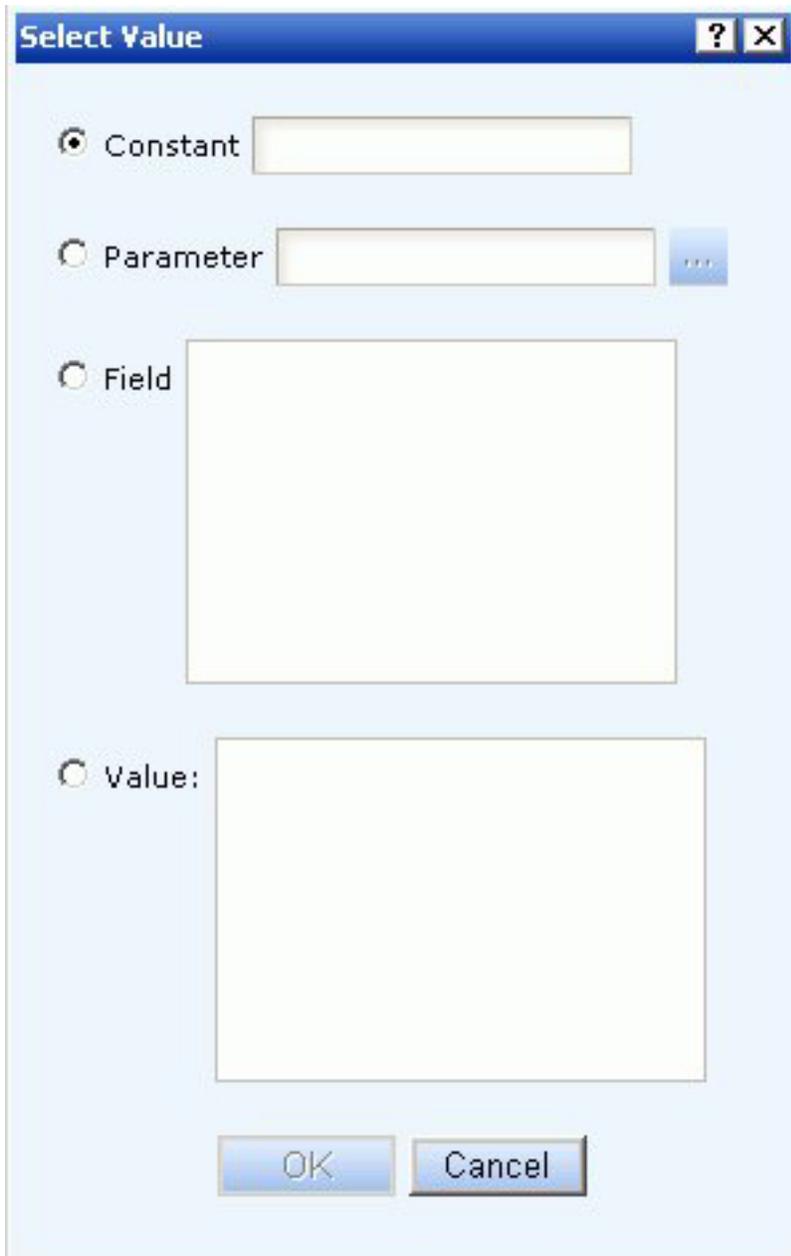
6. Required: Select a **Constant**, **Parameter**, **Field** or **Value** selection button.
   - If creating a constant, manually type in a value for the WHERE statement.
   - If creating a parameter, click the browse (...) button to open the Variable Editor dialog box. For details, see Create Parameters in a Standard Report.
     Select the name, selection, a value options for the WHERE statement.
   - If creating a Field or Value, select a value from the list supplied.

7. Required: Click **OK** to close the Select Value dialog box.

   The value is added to the Selection Criteria palette and the report or graph reflects the WHERE statement as soon as the value is selected.
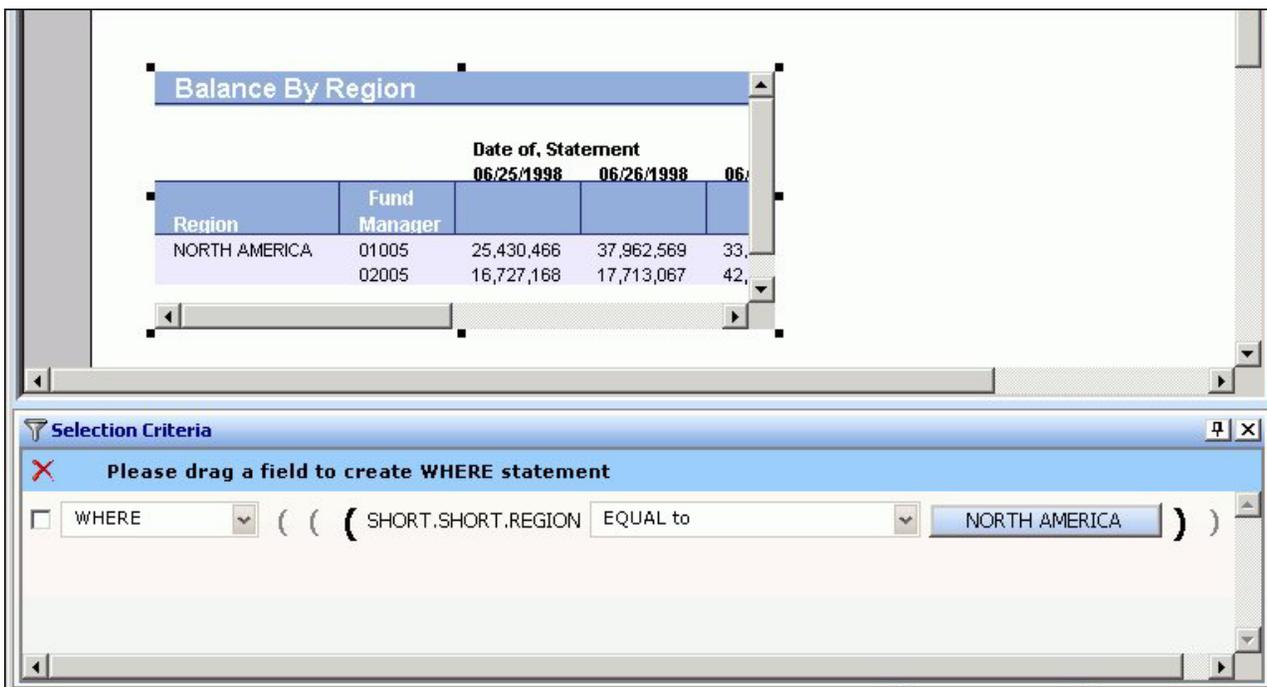
Note: To delete the WHERE statement, select the WHERE statement check box and click the red X on the blue highlighted line in the Selection Criteria palette.

Importing Values From External Files for WHERE Statements

When developing a query, you can use a locally saved, external file as selection criteria to limit query results. This enables you to quickly build a query containing a large number of WHERE statement values without having to manually enter repetitive or readily available data.

Create a Value List From an External File

1. Required: Navigate to the **Selection criteria** area.
2. Required: Begin creating a WHERE statement by selecting a field from the list of available fields.

3. Required: Select a data comparison option that can accept multiple values.
   Valid options include EQUAL to, NOT EQUAL to, IN literal list, NOT IN literal list, EXCLUDES literal list, and INCLUDES literal list.
4. Click **Select values**.
   The Values dialog opens.
5. Click the **import** button as shown in the following image.

A dialog box opens as shown in the following image.

6. Select either the Flat file or Excel Spreadsheet (XLS) File Format option.
7. Click the **Browse** button.
   A standard file selection dialog opens.
8. Select an external file to import from your local machine or network.
   Note: The external file must only contain text with new line delimiters.

9. Click **OK**.

   The values contained in the file are displayed in the Multiple values entered list in the right pane of the dialog.

10. Optionally, you can remove specific values from the Multiple values entered list or move values up or down within the list.

11. Click **OK**.

   You can save the query for future use and reopen the query to append new or remove existing values.

Creating Parameters for Use in the Auto Prompting Facility

When a parameter selection criteria is added in Power Painter, the auto prompting facility appears at run time.

Create Parameters and Run in the Auto Prompting Facility

1. From the Selection Criteria palette, create a WHERE statement.

2. From the Select Value dialog box, select **Parameters** and click the blue browse **(...)** button.

The Variable Editor dialog box opens.

3. In the Variable Editor dialog box, enter appropriate text in the Name and
   Description fields for the parameter.

   These fields may be automatically filled in based on the field you selected to
   create the WHERE statement.

4. Required: Choose from the following Selection options:
   - **Dynamic.** The Data Source and Field are selected by default based on the
     field selected to create the WHERE statement. Dynamic is the default option.
   - **Static.** The Values area at the bottom of the Variable Editor is activated.
     Select the Constant or Value option. For Constant, enter a value or values.

For the Value option, all of the values for the selected field appear in the Value list box. Move the values you want to the Multiple values entered area using the plus and minus buttons.

- **Select multiple values at runtime.** Instead of choosing the Dynamic or Static options, you can select to be prompted for multiple values at runtime.

5. Click **OK** to exit the Variable Editor.

   The parameter is added to the Select Value dialog box.

6. Click **OK** to close the Select Value dialog box.

7. Click **Run** from the File menu in Power Painter.

   The Auto Prompting facility appears.
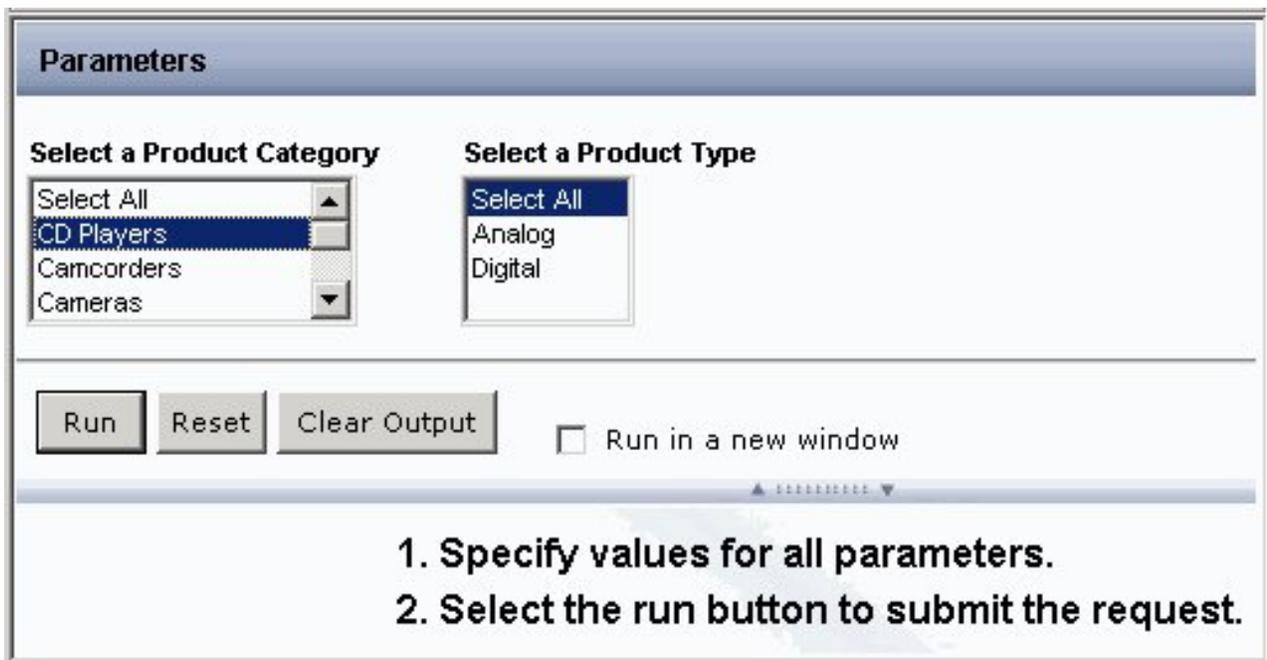
Controlling the Overflow and Relative Positioning of Objects in Power Painter

You may control the overflow and relative (vertical) positioning of reports and graphs in Power Painter so that reports fill the entire page, as well as maintain their relative position in the document.

Overflow is defined as the area of a report that exceeds it defined space in the page layout. For example, a multi-page report and a graph can both be added to a single page layout with the graph positioned beneath the report. The report can flow or fill the page and the graph can be relatively positioned to the report so it is placed at the end of the document following the complete rendering of the report.

The Sizing and Overflow property is available from the Report Properties palette.

Setting Overflow Options in Power Painter

When executing a report, the area that flows outside of the canvas is considered the overflow. The following image is an example of the canvas in Power Painter.
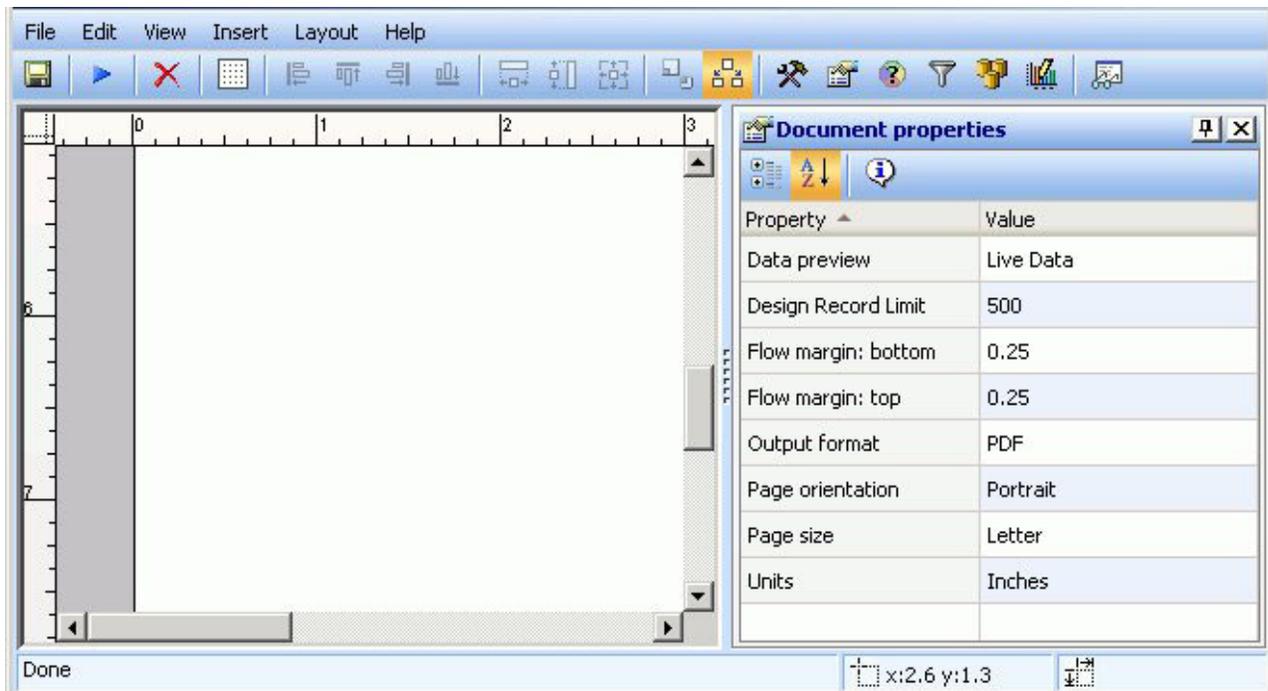
You can set the size and overflow of a report object to control the overflow at run time. Sizing and overflow options are available through the Report Properties palette.

- **Fixed.** When Sizing and Overflow is set to Fixed, the report is confined to the dimensions of the canvas at run time and continues to output on multiple pages within the same fixed dimensions until all of the data is shown.
- **Flowing.** When Sizing and Overflow is set to Flowing, the report fills the page at run time and automatically pushes surrounding objects down the page until the report is finished. This enables other objects such as repeating images and text (headers and footers) to be shown and not overlapped by the flowing report.

Note: These options only apply to report objects. There are no size and overflow properties for graphs, images, text, or lines.

The following image is an example of report with fixed overflow. Note how the report output maintains the size of the report object in the Power Painter canvas, spreading the report across 14 pages.
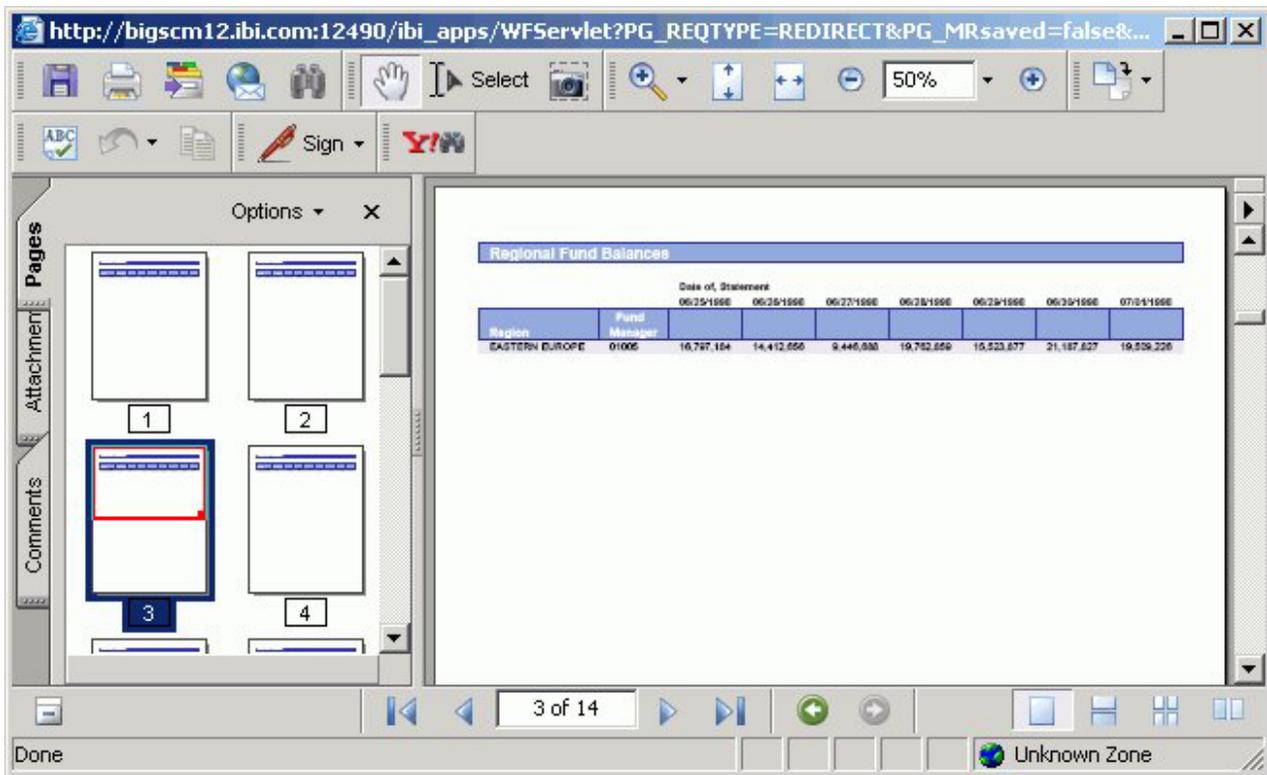
The following image is the same report with flowing overflow. Note how the report expands on the page at run time.
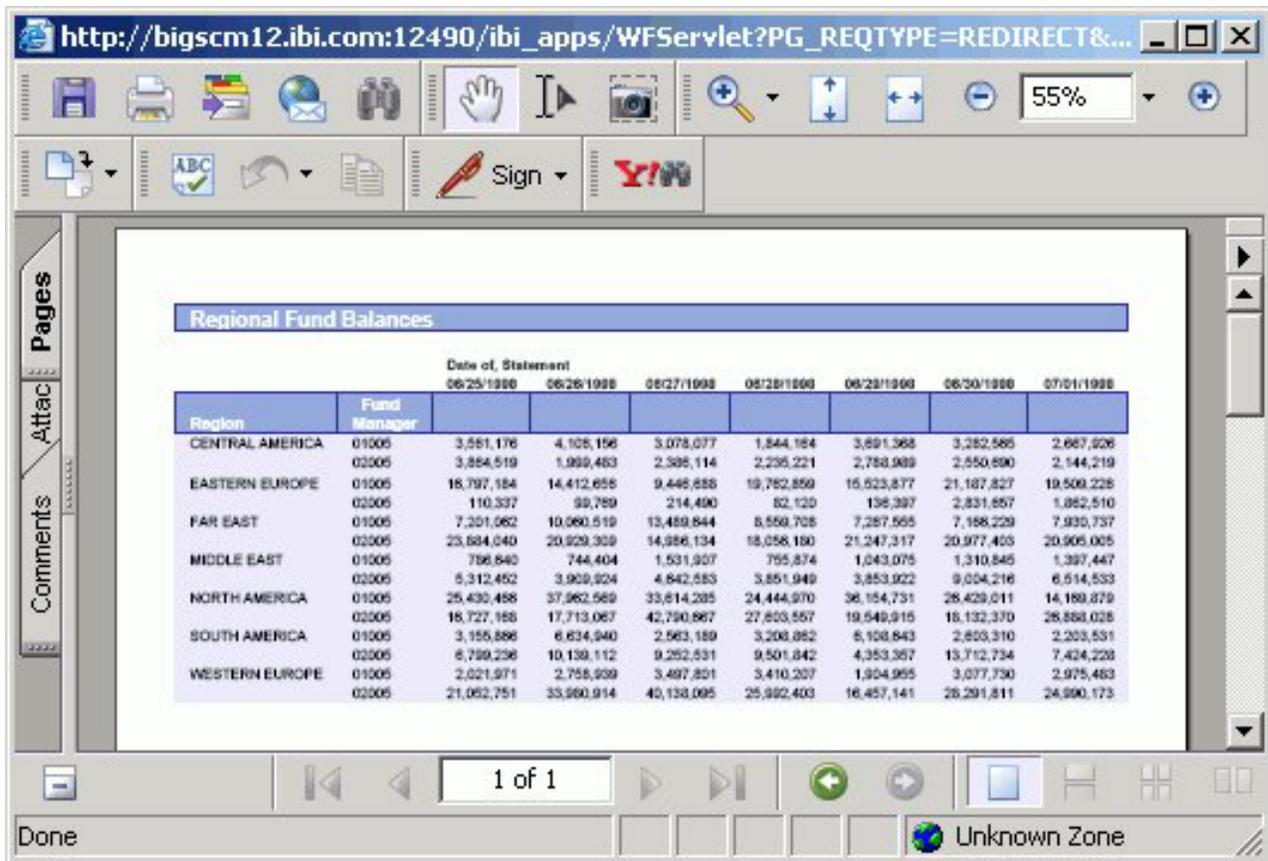
Using Fixed Overflow in Power Painter

Reports using fixed overflow maintain the size and position of the report object from the Power Painter canvas in the report output. You may customize and maintain the fixed position of the report output by adjusting the position and size options from the Properties palette.

Customize the Fixed Position of an Object

1. Required: Select an object from the Power Painter canvas.

   The Properties palette shows the available properties for the selected object.

2. Select **Fixed** from the Sizing and Overflow drop-down list.
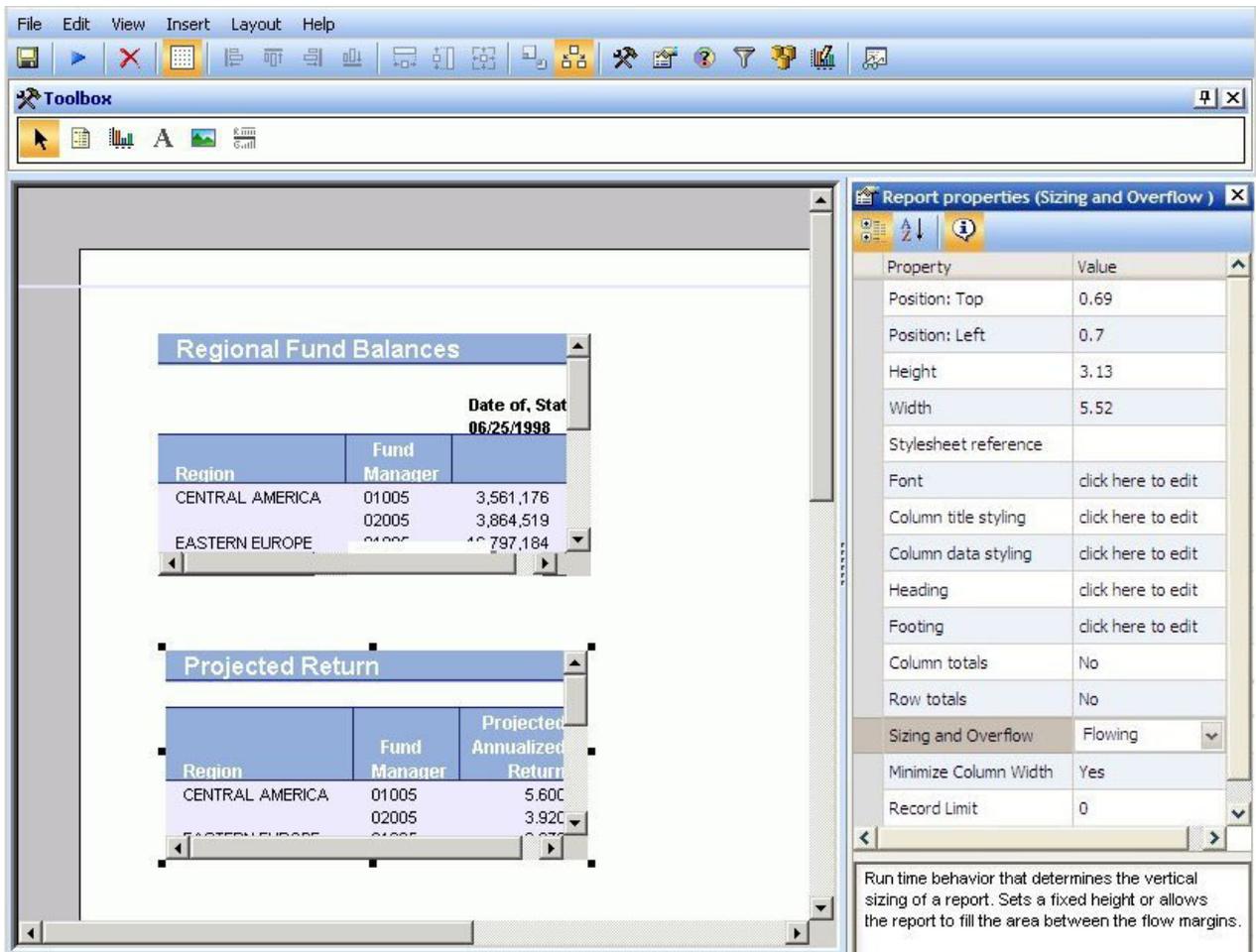
3. Change the Position: Left, Position: Top, Height, and Width options from the Report properties palette to adjust the position of the object at run time.

4. Run the report.

Note: If the document contains multiple fixed reports, the report output maintains the same size and position as the report objects in the Power Painter canvas, as shown in the image below.
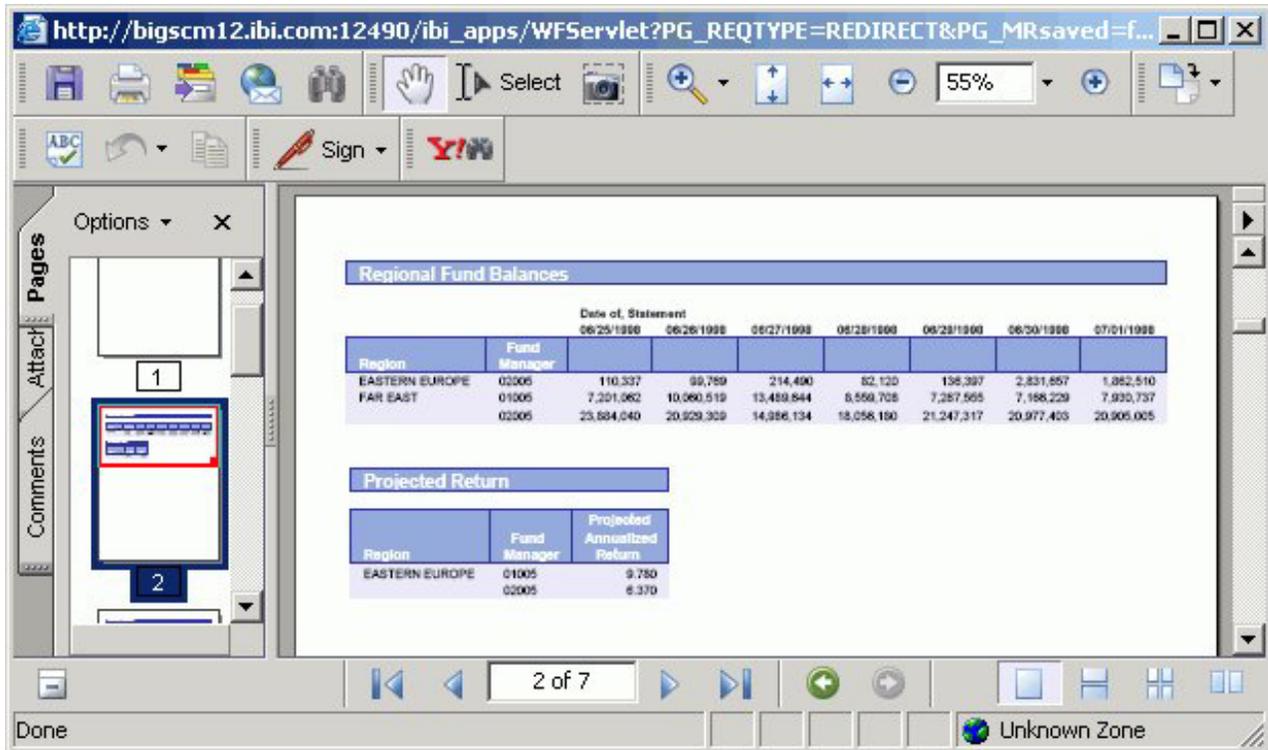
Note: If the document contains a fixed report and a graph, the report is broken up around the graph object. You must set the relationship between the graph and the report. For more information about setting relationships, see Relate Surrounding Objects to a Report.
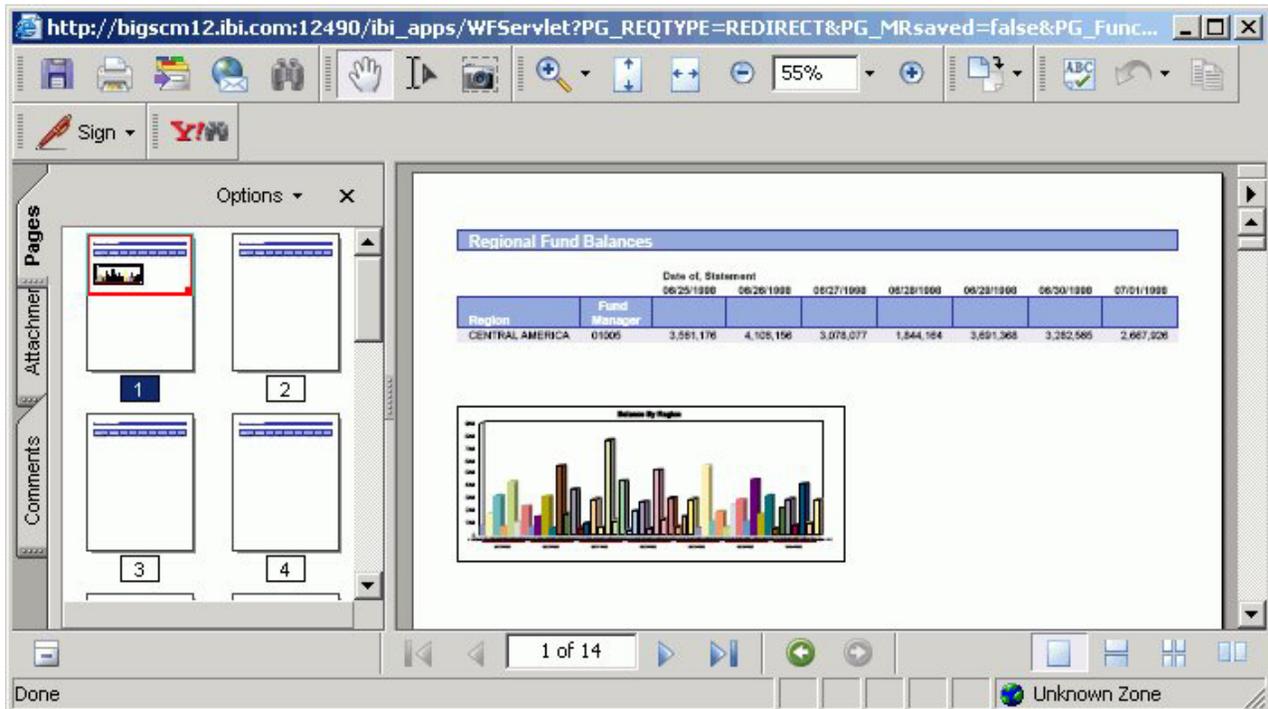
Using Flowing Overflow in Power Painter

Reports using flowing overflow begin the report output at the top of the page and fill the page with the report results. Flow margins are available which enable you to adjust the canvas so that flowing objects fill the page.

Note: Flowing overflow is not available for graphs, images, text, or lines. For example, if a graph is included in the document, the graph overlaps the report at run time. You must set a relationship between the graph and the report so that the graph flows after the report at run time.

Set the Flowing Report Property

1. Required: Select an object from the Power Painter canvas.

   The Properties palette shows the available properties for the selected object.

2. Required: Select **Flowing** from the Sizing and Overflow drop-down list.

   Note: Repeat this step for any surrounding report objects to prevent the overlapping of reports and graphs at run time.

Report properties (Sizing and Overflow) ✕

Property	Value
Position: Top	0.69
Position: Left	0.7
Height	3.13
Width	5.52
Stylesheet reference	
Font	click here to edit
Column title styling	click here to edit
Column data styling	click here to edit
Heading	click here to edit
Footing	click here to edit
Column totals	No
Row totals	No
Sizing and Overflow	Flowing
Minimize Column Width	Yes
Record Limit	0

Run time behavior that determines the vertical sizing of a report. Sets a fixed height or allows the report to fill the area between the flow margins.

Tip: Flow margins are available for the canvas which further enable you to adjust the page so that the report fills each page between the flow margins. For more information about flow margins, see Set Flow Margins for the Power Painter Canvas.

3. Run the document.

Note: If the document contains multiple flowing reports, the reports overlap at run time. You must set the relationship between the reports. For more information about setting relationships, see Relate Surrounding Objects to a Report.
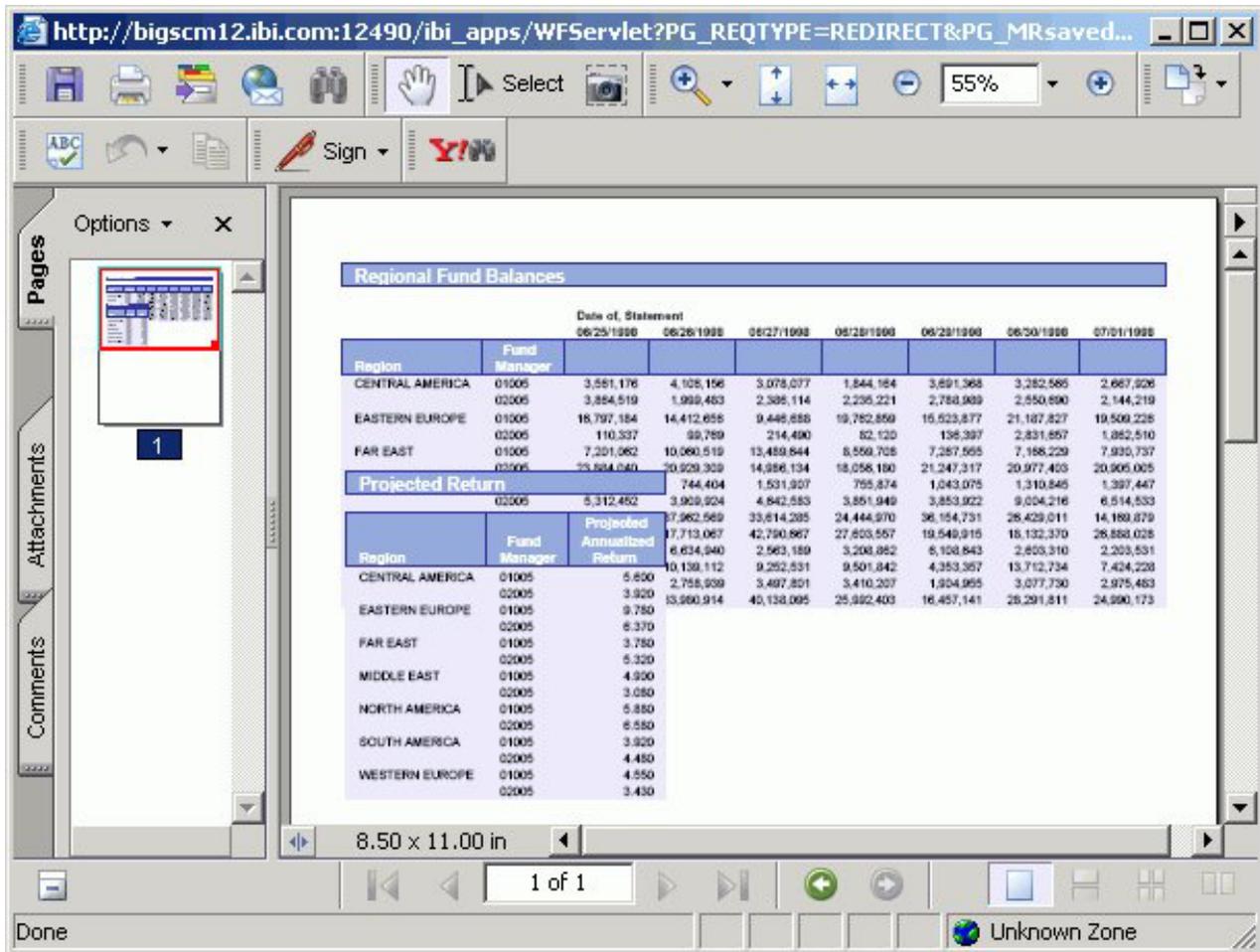
Note: If the document contains a flowing report and a graph, the graph overlaps the report at run time. You must set the relationship between the graph and the report. For more information, see Relate Surrounding Objects to a Report.
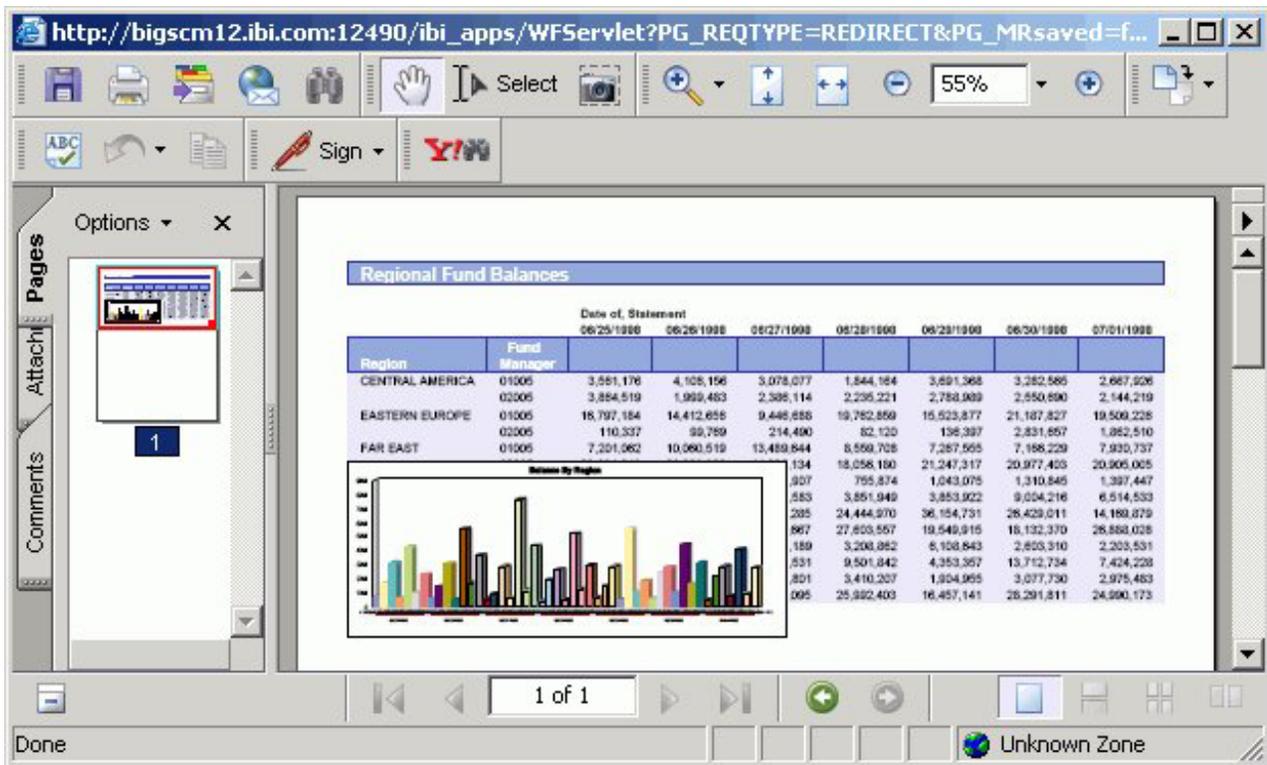
Set Flow Margins for the Power Painter Canvas

Each document in the canvas has flow margins. Flow margins are set through the top and bottom margins. Flowing reports utilize flow margins to ensure that header and footer information is preserved in the output.

1. Select the canvas from Power Painter.
2. From the Document properties palette, manually type in the **Flow margin: bottom** value.

   The flow margin bottom value sets the ending vertical coordinate where a flowing report ends on each page.
3. From the Properties window, manually type in the **Flow margin: top** value.

   The flow margin top value sets the beginning vertical coordinate where a flowing report starts on each new page.

   Note: Flow margins are indicated by blue lines that appear on the top and bottom of the Power Painter canvas.
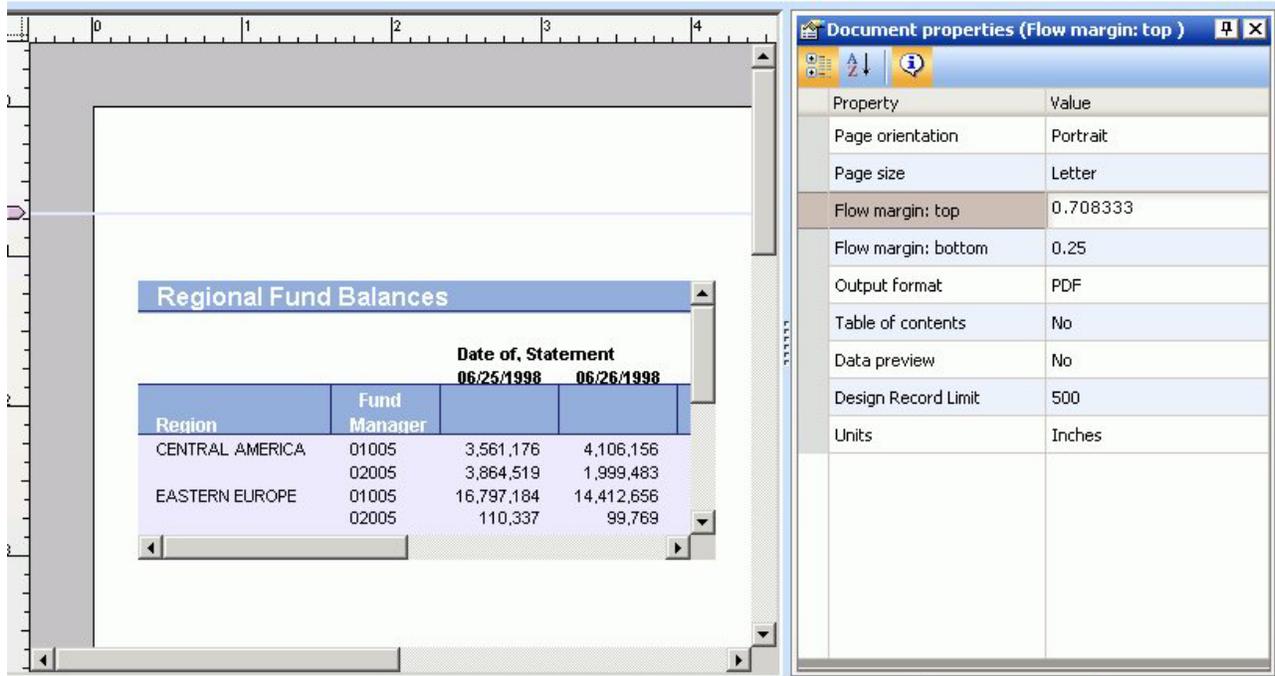
Tip: You may also click and drag the flow margins up and down the Power Painter canvas.

4. Adjust the objects on the canvas between the flow margins and run the report.

   The report fills each page between the flow margins until it reaches the end. For example, in the image below the flow margin was adjusted so that an image could be used as a header.

Information Builders

POWERED BY
Information Builders

Regional Fund Balances

Region	Fund Manager	Date of, Statement 06/25/1998	06/26/1998	06/27/1998	06/28/1998	06/29/1998	06/30/1998	07/01/1998
CENTRAL AMERICA	01005	3,561,176	4,105,156	3,078,077	1,844,164	3,691,368	3,282,565	2,667,926
	02005	3,854,519	1,999,463	2,386,114	2,235,221	2,788,989	2,550,890	2,144,219
EASTERN EUROPE	01005	16,797,184	14,412,658	9,446,658	19,762,859	15,523,877	21,187,827	19,509,228
	02005	110,337	99,769	214,490	82,120	136,397	2,831,857	1,862,510
FAR EAST	01005	7,201,062	10,060,519	13,489,644	8,569,708	7,287,555	7,188,229	7,930,737
	02005	23,884,040	20,929,309	14,986,134	18,058,180	21,247,317	20,977,403	20,905,005
MIDDLE EAST	01005	786,640	744,404	1,531,907	755,874	1,043,075	1,310,845	1,397,447
	02005	5,312,452	3,909,924	4,642,583	3,851,949	3,853,922	9,004,216	6,514,533
NORTH AMERICA	01005	25,430,458	37,962,569	33,614,285	24,444,970	36,154,731	26,429,011	14,169,879
	02005	16,727,168	17,713,067	42,790,687	27,803,557	19,549,915	18,132,370	26,688,028
SOUTH AMERICA	01005	3,155,866	6,634,940	2,583,189	3,208,862	6,108,643	2,603,310	2,203,531
	02005	8,799,238	10,139,112	9,252,531	9,501,842	4,353,357	13,712,734	7,424,228
WESTERN EUROPE	01005	2,021,971	2,758,939	3,497,801	3,410,207	1,904,955	3,077,730	2,975,463
	02005	21,052,751	33,980,914	40,138,095	25,992,403	16,457,141	28,291,811	24,990,173

1 of 1

Done Unknown Zone

Setting a Relative Position Between Objects in Power Painter

You may set a relative (vertical) relationship between objects. Similar to the flowing report option, you can select multiple report and graph objects and set a relationship. The following relationship options are available from the Main toolbar, or from the Layout menu in Power Painter:

- **Relate objects.** Sets the relative relationship or distance between the two objects.
- **Show relationships.** Shows or hides all relationships on the canvas.

Note: There is currently no method of controlling horizontal overflow.

Relate Surrounding Objects to a Report

A surrounding object can only be related to one flowing report. However, a flowing report can have multiple surrounding objects related to itself.

1. Select an object from the Power Painter canvas.
2. Select two reports, or a graph and a report, by using the Shift key to select the surrounding objects.
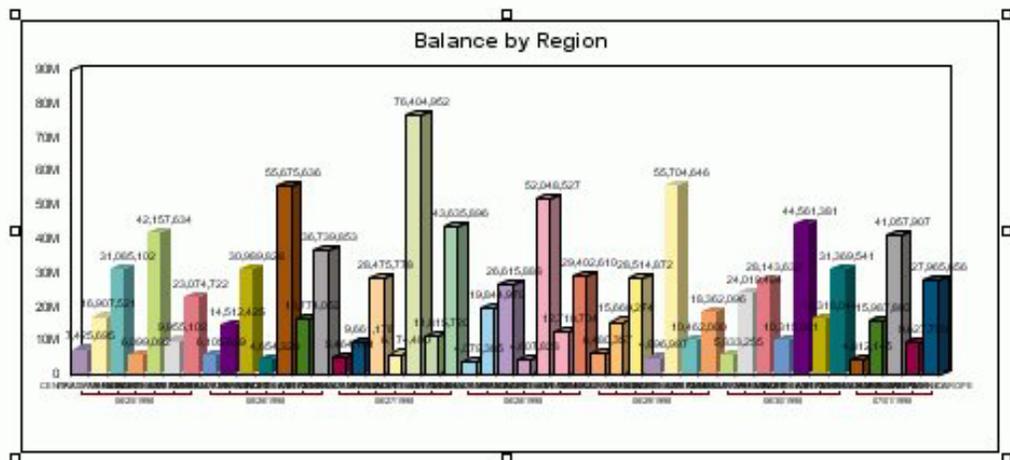
Note: The primary object is indicated by clear boxes around the edges, when selected. The surrounding object is indicated by solid black boxes around the edges, when selected.

3. Set the relationship between the objects by selecting the **Relate objects**

 button from the Main toolbar.

Note: The relationship buttons are only available from the Main toolbar when multiple objects are selected.

An arrow appears on the canvas, indicating that the relationship has been set.

In the following image, the graph is the surrounding object to the report.
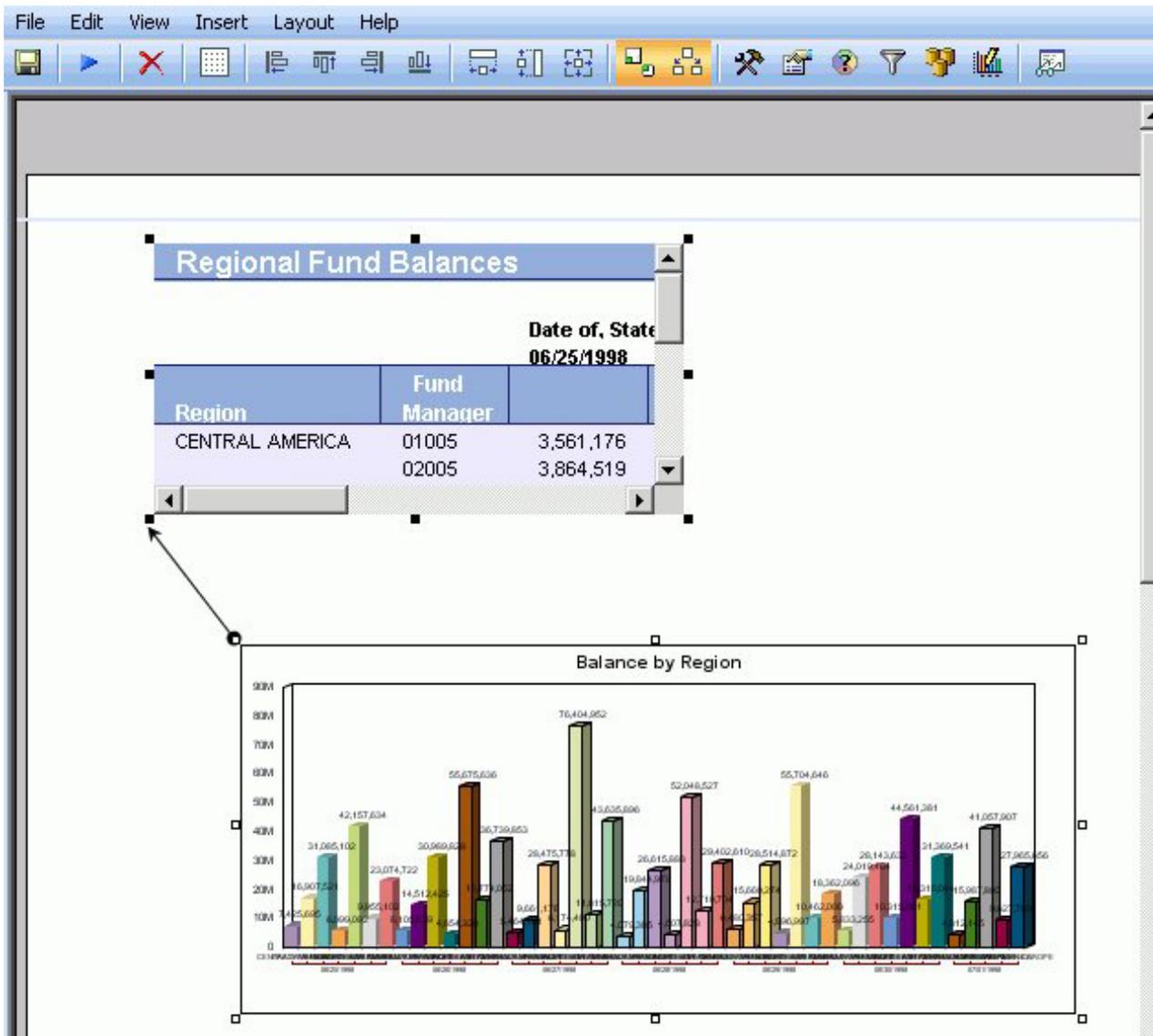
Tip: To break the relationship, click the same surrounding objects using the Shift key and click the **Relate objects** button from the Main toolbar. The arrow is removed and the relationship is broken.

4. Run the report.

Note: If the document contains multiple reports, and the relationships have been set, the first report runs until it is complete, followed by the surrounding reports, at run time.

Regional Fund Balances

Region	Fund Manager	Date of, Statement 06/25/1998	06/26/1998	06/27/1998	06/28/1998	06/29/1998	06/30/1998	07/01/1998
CENTRAL AMERICA	01005	3,561,178	4,106,155	3,078,077	1,844,164	3,691,383	3,282,585	2,887,928
	02005	3,864,519	1,999,483	2,386,114	2,235,221	2,788,969	2,560,690	2,144,219
EASTERN EUROPE	01005	18,797,184	14,412,856	9,446,838	19,762,859	15,523,877	21,187,827	19,509,226
	02005	110,337	99,769	214,490	82,120	138,397	2,831,657	1,882,510
FAR EAST	01005	7,201,082	10,080,519	13,489,644	8,559,708	7,287,555	7,166,229	7,930,737
	02005	23,854,040	20,929,309	14,986,134	18,056,180	21,247,317	20,977,403	20,905,006
MIDDLE EAST	01005	788,540	744,404	1,531,907	756,874	1,043,075	1,310,845	1,397,447
	02005	5,312,452	3,909,924	4,642,583	3,851,949	3,853,922	9,004,218	8,514,533
NORTH AMERICA	01005	25,430,466	37,982,589	33,614,285	24,444,970	38,154,731	28,429,011	14,169,879
	02005	16,727,168	17,713,087	42,790,667	27,803,557	19,549,915	18,132,370	26,888,028
SOUTH AMERICA	01005	3,165,888	8,634,940	2,583,189	3,206,882	6,108,643	2,803,310	2,203,531
	02005	8,799,238	10,139,112	9,252,531	9,501,842	4,353,357	13,712,734	7,424,228
WESTERN EUROPE	01005	2,021,971	2,758,939	3,497,901	3,410,207	1,904,956	3,077,730	2,975,483
	02005	21,052,751	33,980,914	40,138,095	25,992,403	18,457,141	28,291,811	24,990,173

Risk Class By Country

Country	Continent	RISK_CLASS
ARGENTINA	AMERICAS	Medium
BRAZIL	AMERICAS	Medium
CANADA	AMERICAS	Medium
CZECH. REP	EUROPE	High
ENGLAND	EUROPE	Medium
FRANCE	EUROPE	Medium
GUATEMALA	AMERICAS	Medium
HONDURAS	AMERICAS	Medium
HONG KONG	ASIA	Medium
ISRAEL	ASIA	Medium
JAPAN	ASIA	Medium
MEXICO	AMERICAS	Medium
SAUDI ARABIA	ASIA	Medium
SKLARVIA	EUROPE	High
UNITED STATES	AMERICAS	Medium

Projected Return

Region	Fund Manager	Projected Annualized Return
CENTRAL AMERICA	01005	5.800
	02005	3.920
EASTERN EUROPE	01005	9.780
	02005	8.370
FAR EAST	01005	3.780
	02005	5.320
MIDDLE EAST	01005	4.900
	02005	3.080
NORTH AMERICA	01005	5.580
	02005	8.580
SOUTH AMERICA	01005	3.920
	02005	4.480
WESTERN EUROPE	01005	4.550
	02005	3.430

Note: If the document contains a report and a graph, and the relationship has been set, the report runs until complete, followed by the graph, at run time.
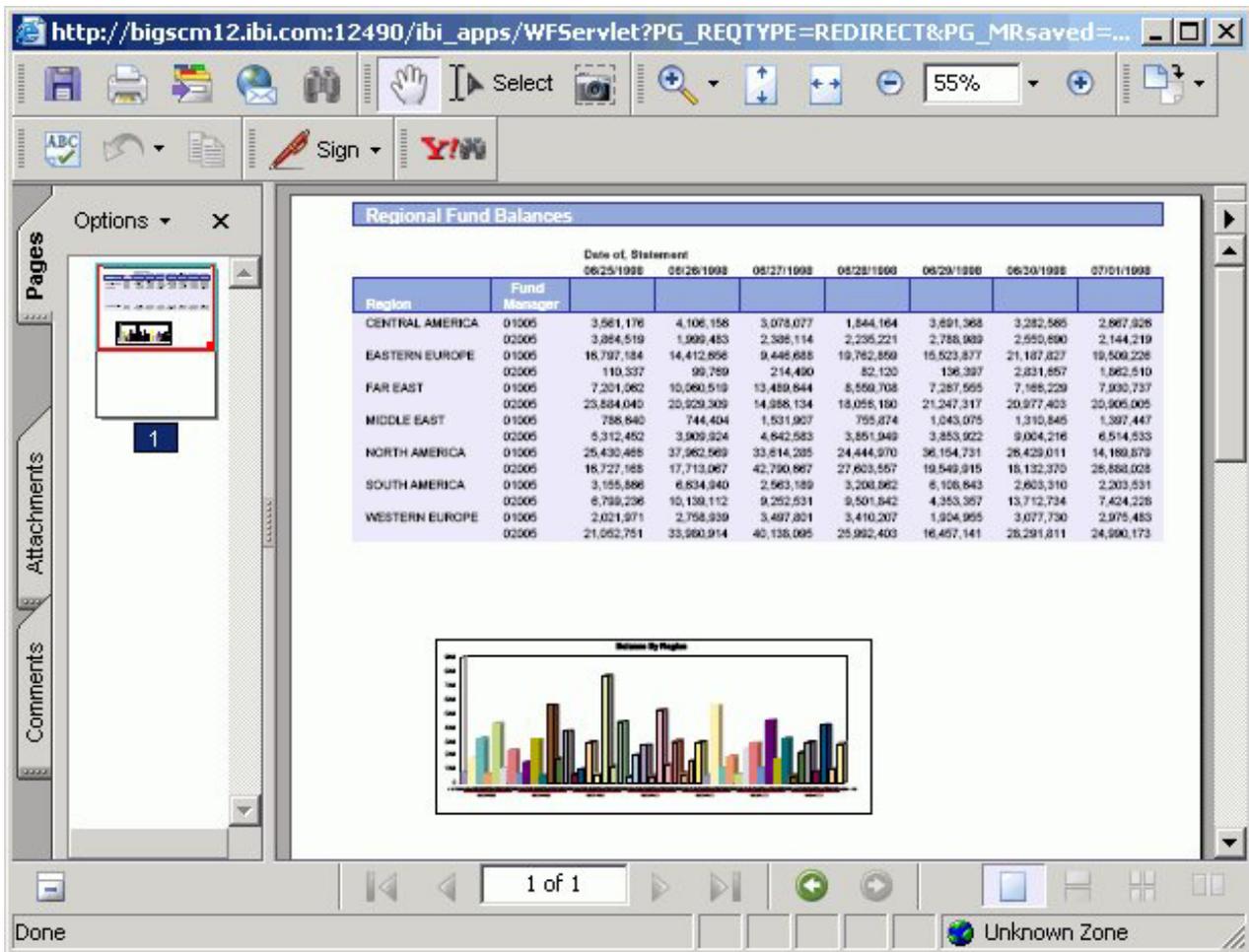
Rules for Setting Relationships Between Objects

The following rules apply when setting relationships between objects:

Setting Relationships

> This sets a relative distance between the flowing report and a surrounding object. The surrounding object is rendered immediately following the end of a flowing report with the related distance between the end of the flowing report and the beginning of the surrounding object.

Fixed objects

> A fixed object cannot be broken across a page break, it needs enough vertical space to fit on the last page of the flowing report.

Flowing object (reports)

> If a surrounding object is another flowing report, then the required space does not need to be set. A flowing report can be broken across pages. The reporting server determines if there is enough room to begin rendering the surrounding flowing report.

Draw object

Relationships do not apply to draw objects such as images, lines, and text. Draw objects can be placed above flowing reports in a page layout, but draw objects placed below a flowing report should be placed outside of the bottom flow margin.

Setting a relationship between a report and a graph

If the overflow property of the report is set to flowing and there is no set relationship between the graph and report, then the report will overlap and display on top of the graph at run time. There is no way for Power Painter to automatically set relationships, so you must set the relationship between the report and the graph.

Note: A surrounding object can only be related to one flowing report; however, a flowing report can have multiple surrounding objects related to itself.

Customizing the Power Painter Environment

After the components are in the canvas, you can customize the layout properties, alignment options, and page to configure the canvas for precise output. You can also adjust the work area and change the theme of the Power Painter environment.

Setting Preferences

When you access the Edit menu and select Preferences, the following dialog box appears where you can set preferences for various defaults.
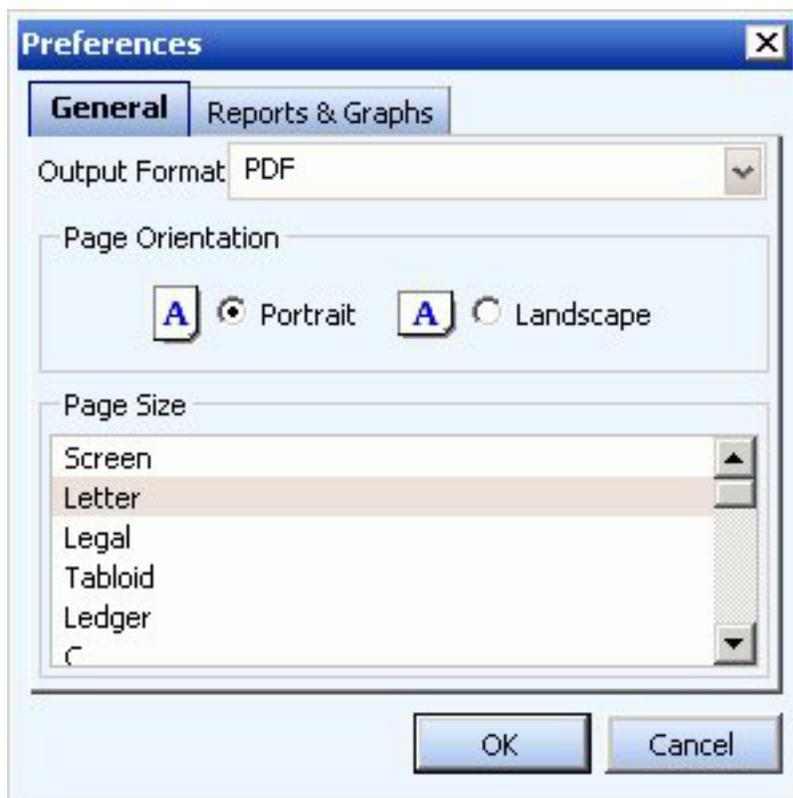
The Preferences dialog contains a General tab and a Reports and Graphs tab. The General tab enables you to select Output Format, Page Orientation, and Page Size options. The Reports and Graphs tab enables you to select a Preview option and

set a Record Limit for both reports and graphs, select a Default Stylesheet for reports, and select a Default Template for graphs.

Note: These settings do not affect the current Power Painter session. The new settings are applied the next time Power Painter is opened.

Setting Field Display Options

When you access the View menu and select Field Display Options, another menu opens providing you with options to display fields as a Name, Alias, Title, or Description. You can also choose the Prefix with option to prefix fields with a filename or segment name.

Adjusting the Layout of Objects in the Canvas

You may use the Main toolbar and the Layout menu to adjust the layout of objects in the Power Painter canvas. The following layout options are available:

* Show grids, rulers, and guides in the canvas to fulfill pixel-perfect positioning requirements.
* Align and size objects in the canvas.

Showing Grids, Rulers, and Guides in the Canvas

* To **show grids** in the canvas, select **Show Grid** from the Layout menu or click the Toggle Grid icon from the Main Toolbar.

  The following image is an example of how the canvas appears with grids showing.
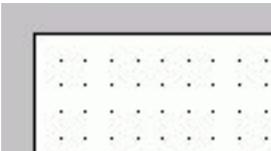
* To **show rulers** in the canvas, select **Show Rulers** from the Layout menu.

  The following image is an example of how the canvas appears with rulers showing.
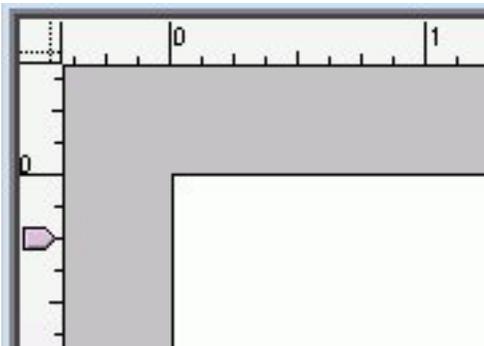
* To **show guides** in the canvas, select **Show Guides** from the Layout menu.

  The following image is an example of how the canvas appears with guides showing.
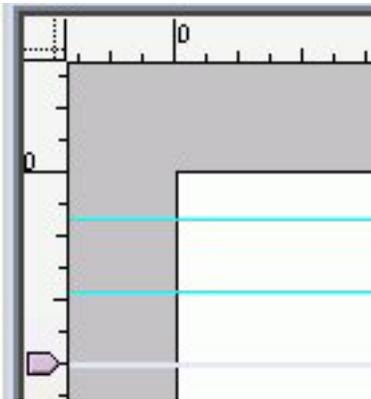
> **Tip:** Use the ruler to click and drag guides onto the canvas. Guides are indicated by the aqua line.

- To **show flow margins** in canvas, select **Show Flow Margins** from the Layout menu.

  The following image is an example of how the canvas appears with flow margins showing. Flow margins are indicated by the light blue line.
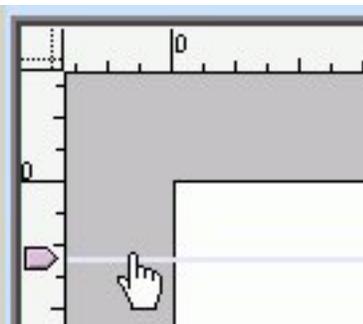
> **Tip:** You may left-click on the horizontal ruler or the vertical ruler and drag the flow margins up and down the canvas.

The following image shows the Layout menu in Power Painter.

Aligning and Sizing Objects in the Canvas

You can align objects relative to one another or to the canvas. Alignment options are available from the Layout menu or from the Main Toolbar.

- Align objects to the page by using the align options from the Main toolbar.
- Align multiple objects to each other using the Align Items option from the Layout menu.
- Size objects to be the same size by using the Size Items option from the Layout menu.
- Use the Relative Positioning options to maintain the relative position of the objects to each other at run time. The Relative Positioning options are Relate Objects, and Show Relationships-available from the Main toolbar or Layout menu.

The following image shows the Main toolbar in Power Painter.

Adjusting the Power Painter Work Area

Click anywhere on the canvas and select the Properties palette to adjust the document properties.
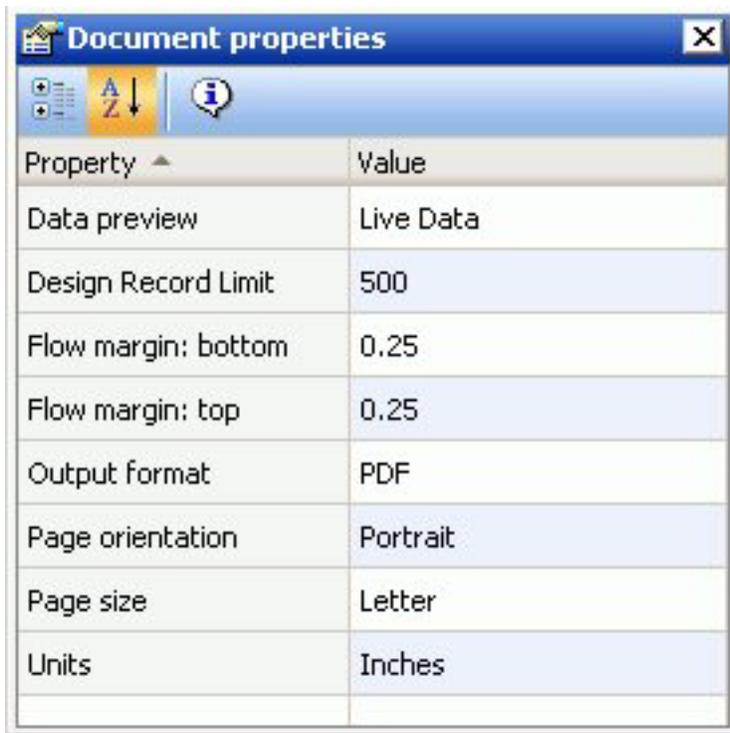
Data preview

Shows live data or sample data for reports and graphs.

Note: By default, sample data is shown in the Power Painter canvas.

Design Record Limit

Sets the number or records to be shown when gathering data for reports and graphs.

Note: The default record limit value for the report is 500.

Flow margin: bottom

Sets the bottom margin for flowing reports.

Flow margin: top

Sets the top margin for flowing reports.

Output format

Enables you to select the output format from the following options: PDF, DHTML, Power Point, Active Report, or Excel.

Page orientation

Sets the page orientation of the document. Select either Portrait or Landscape.

Note: Portrait is the default page orientation.

Page size

Sets the page size of the document. Use the drop-down list to select a page orientation option.

Note: Letter is the default page orientation.

Units

Specifies the unit of measurements for the tool. Select Inches, Centimeters, or Points.

Note: Inches is the default unit of measurement.

Changing the Theme of the Power Painter Environment

Power Painter enables you to customize your environment for seamless integration with your organization's color scheme.

From the View menu, select **Theme** to access the available skins to choose from.
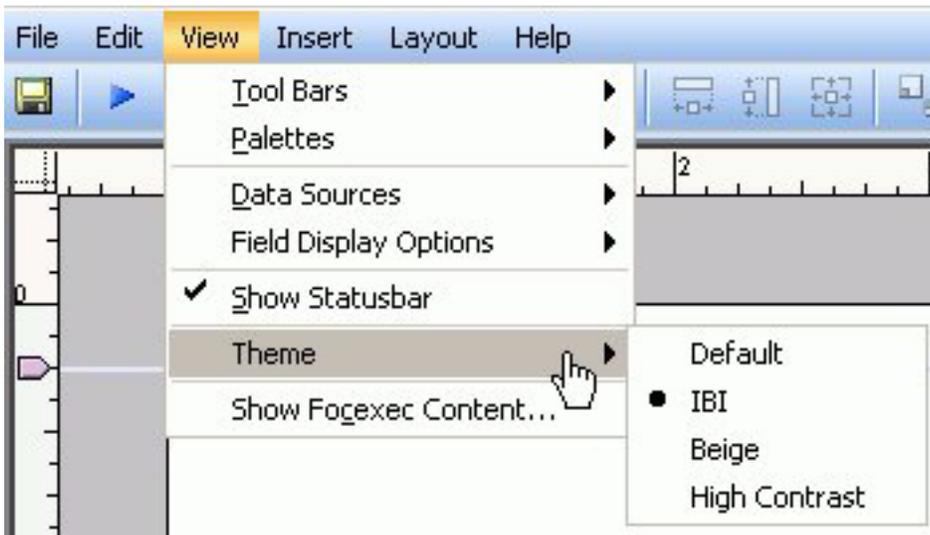
The Power Painter environment changes to the theme of the environment that you have selected.

Accessing Power Painter

You can access Power Painter from a report in the Reports folder.

Users who have the capability to create reports can access Power Painter to create a new report in the Domains tree. From a Reports folder, right-click a folder and select Power Painter from the context menu. Users can then save a report for editing or running at a later time.

To edit a report, click a report and select Power Painter from the pop-up menu that opens. The report you previously saved opens in Power Painter.

Chapter 4. Creating a Report With Report Assistant

Describes how to use the HTML Report Assistant to create tabular reports.

DB2 Web Query Report Assistant is an HTML-based graphical tool that enables you to select a data source, specify any sorting or grouping information, and display the report in your browser or another desktop application. When you use Report Assistant, DB2 Web Query creates a styled report that you can deploy on the Web without the necessity of learning the complexities of any reporting language. You can then take full advantage of the capabilities of the reporting language to efficiently display your company's data.

At the end of the chapter, reference topics provide details for every field in every tab and sub-tab.

Note: If you are using the HTML Report Assistant with a Firefox browser, the display may be slightly different than Internet Explorer. These differences do not effect functionality.

Accessing HTML Report Assistant

HTML Report Assistant is accessible when creating or editing a Report.

Selecting the Master File in Report Assistant

To choose the Master File to work with, select the file and click **OK**. To search for a specific Master File, use the scroll bar.

The following image shows the Browse Data dialog box containing available data descriptions for selection.
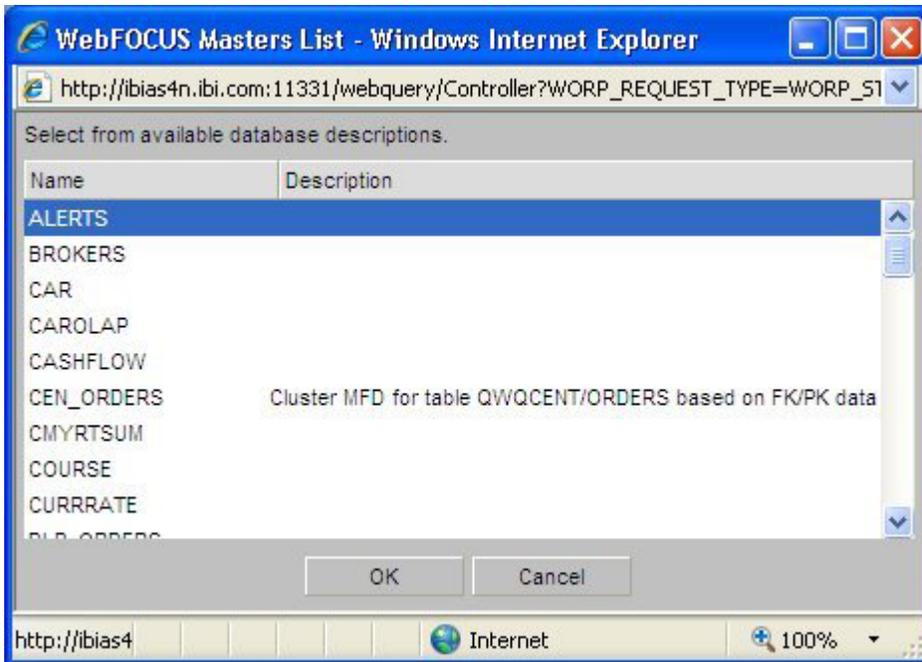
You can also type the first character of the name of the Master File anywhere in the list to jump to the name of that Master File.

Layout of Report Assistant

Report Assistant builds your report as you select graphical options by internally constructing a procedure according to the rules of the reporting language.

The following image shows the Report Assistant which is divided into these sections or tabs:

- Field selection
- Report headings
- Selection criteria
- Join options
- Report options

Each tab contains explanatory text designed to guide you on using the specific features accessed within the tab.
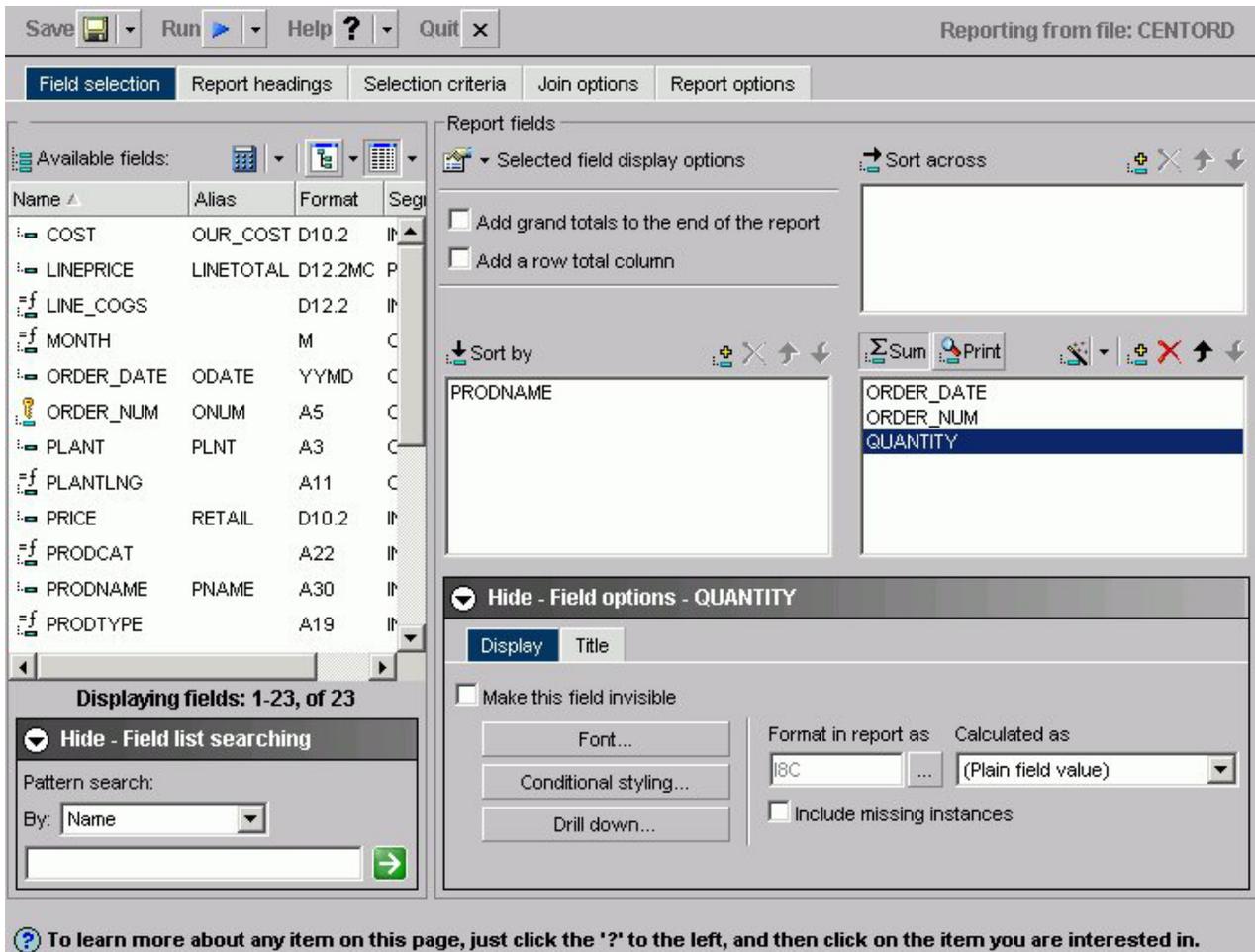
Each tab contains a set of options that enable you to customize both the content and appearance of your report. To toggle between tabs, select each tab at the top of the window. Click About under the Help button to display the version and release number of Report Assistant.

Above the tabs there are buttons for:

Save/Save As

> Click Save to save your report.

> Click Save As to open the Save New Report dialog box.

Run

> Click run to run your report.

Help/About

> Click the icon to access help about the area of the tab in which you are working.

> Click About to open a window describing the version of Report Assistant in which you are working.

Quit

> Click to quit the application.

Building Your Report With Report Assistant

The most basic report you can construct is a tabular report. Other report types build on the basic design of the tabular report. A tabular report is a report whose information is arranged vertically in columns. Internally, DB2 Web Query constructs your report with a series of simple commands that mark the beginning of the request, identify the data source, and mark the end of the request. Other aspects of the request, such as styling information, are not necessary to produce a valid report request.

Use the following basic steps in constructing your report:

- **Design** your presentation. How would you like to organize the information in your report?

  See Selecting Report Fields for more information about establishing basic organizational criteria for your report.

- **Identify** the information you would like to present. Is it a full data set, or do you want to construct a subset of some larger set?

  See Selecting Records for a Report for more information about establishing selection criteria for your data.

- **Style** your presentation. Do you want to apply customized headings or footings to your report to make it more dynamic?

Selecting Report Fields

Begin building your report in the Field selection tab by selecting fields to include. A field is the smallest meaningful element of data in a file. DB2 Web Query lists available fields in several formats:

- As a list of fields shown in the following image.
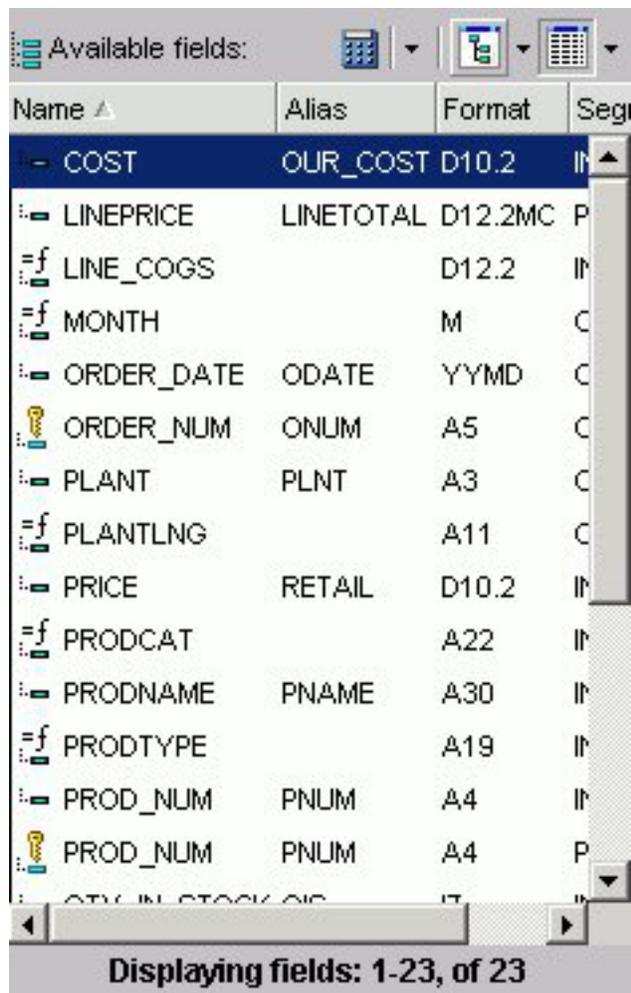
List is the default. To enable List mode, you click the List icon in the Available Fields box. You can view one or more options by clicking the Options arrow and selecting: Name, Alias, Title, Format, Description, Segment, and Filename. In List mode, you can sort any list of variables alphabetically from a to z or from z to a by clicking the attribute, for example, Name or Alias.

Note: If you choose an option, such as alias, it does not appear with a DEFINE, COMPUTE, or drill-down.

- As a tree separated by segments (the Field Tree) when expanded, as shown in the following image.

Available fields:

- CAR
- ORIGIN
  - COUNTRY

Segment:	BODY
Alias:	TYPE
Title:	
Description:	
Format:	A12

- BODYTYPE
- SEATS
- DEALER_COST
- RETAIL_COST
- SALES
- SPECS
- EQUIP
  - STANDARD
- WARANT
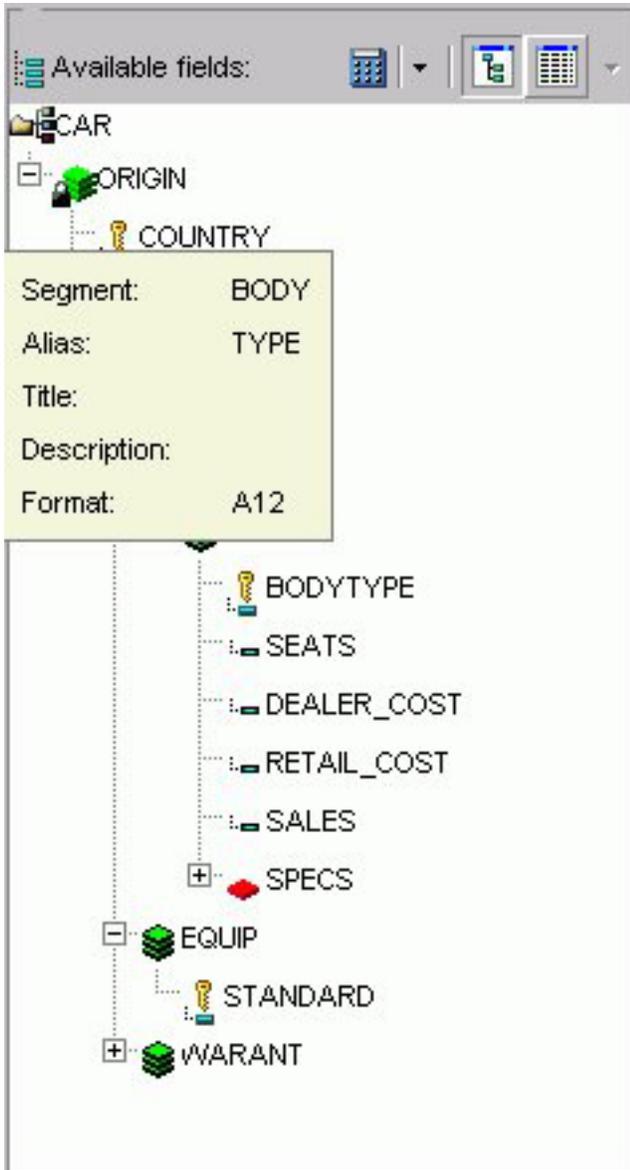
- As a tree separated by Dimensions (the Dimension Tree), as shown in the following image. This is applicable only when the OLAP license option is activated.
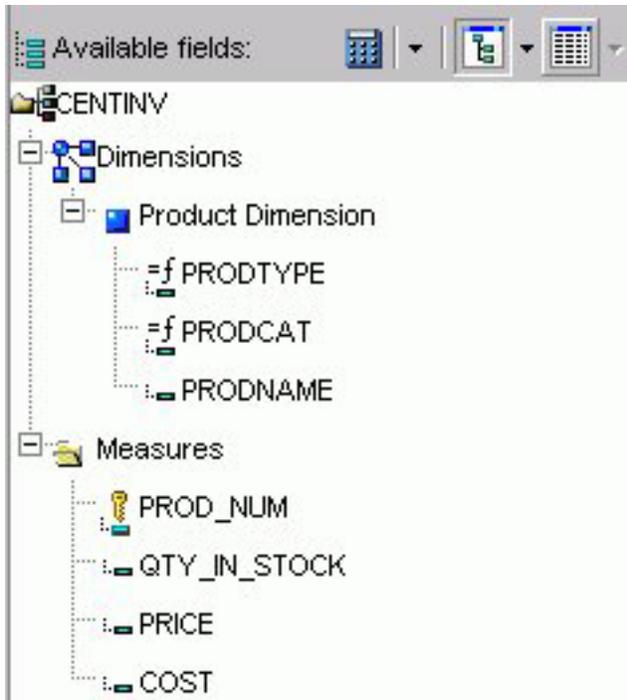
Note: If you are viewing a Fields List in the Dimension Tree mode and you create a recursive join (joining a file to itself), you will not be able to view the Dimensions in the Fields List after the join is created. This is due to duplication of field names in a recursive join. If you delete the join, you will be able to view dimensions again.

To enable Tree mode, you click the Tree icon in the Available Fields box. Click the arrow next to the Tree icon to select the Field Tree or the Dimension Tree. The following options appear in a pop-up as you mouse over each field: Segment, Name, Alias, Title, Description, and Format. You can change the field attributes that appear in the tree by selecting from the list shown when clicking on the tree icon. Select from: Name, Alias, Title or Description.

The Report fields section enables you to use the prefix with the segment name or filename. You can also show the field's alias instead of the name. You can show the field's title or description instead of name or alias, but title and description cannot be prefixed with the segment name or filename. The qualified field identification cannot exceed 66 characters.

Your selections in the Report Fields menu remain in effect for your current browser session and are automatically saved with your request.

Note: Field names that contain a hyphen "-" cannot be used in the HTML Report Assistant.

Notes on the Fields List

- Key fields are represented with a key icon in all field lists (tree and list displays) in the HTML Report and Graph Assistant.

The number of fields that are currently displayed shows at the bottom of the fields list. If a field list contains more than 200 fields, the first 200 fields display initially. Additional fields are retrieved and displayed when you select the next set of fields.

- To select the next set of fields, scroll to the bottom of the field list and select the Next option that appears. The Next option describes which fields will be returned, for example in the following image it shows that the next 201-400 fields of 417 will be retrieved:

- To go back, scroll to the top of the field list and select the previous set of fields. For example, the following image shows the Previous option to select the previous 1-200 of 417 fields:

Fully Qualified Field Names

The HTML Report Assistant always saves a procedure with its fully qualified field name. If you want to view this information, click the Prefix with the segment name and Prefix with the filename options in the Report Fields section of the Field selection tab.

Viewing Fully Qualified Field Names

Prefix with the segment name and Prefix with the filename are checked. Note that the fields under Sort by demonstrate the field, segment, and filenames.

The following image shows the result after selecting both the prefix with segment name and prefix with the filename.
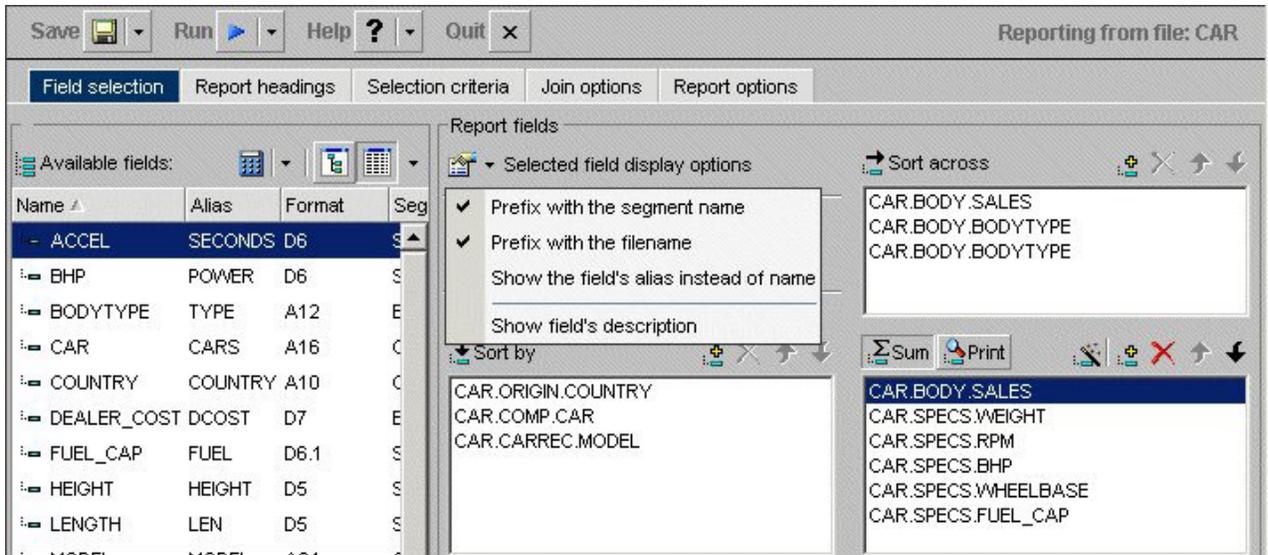
If you open a report procedure in the Editor, the fields appear with their qualifiers prefixed to the field name or alias.

The information for the highlighted field appears. If multiple fields are selected, the information that appears applies to the last field chosen.

Adding Totals and Grand Totals to a Report

You can add grand totals to the end of your report and add a row total column by checking the appropriate boxes under Report fields as shown in the following image.
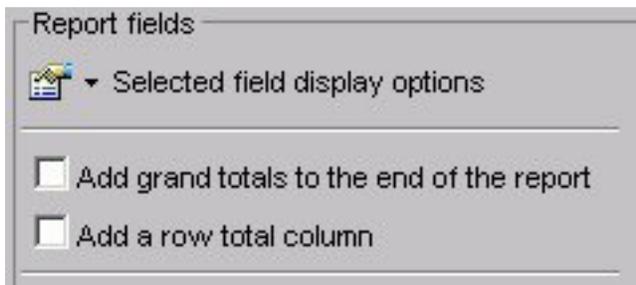
Using the Sort By, Sort Across, and Column Phrases to Organize Data

Select report fields by highlighting the field and clicking the Add icon for the vertical and horizontal Sort fields (Sort by and Sort across) and Sum or Print for the data fields. From either the List or Tree view, you can drag and drop or use Add.

The following image shows a field selected in each of the data field boxes, the COUNTRY field in the Sort across data field box, the CAR in the Sort by data field box, and the SALES field in the Column box.
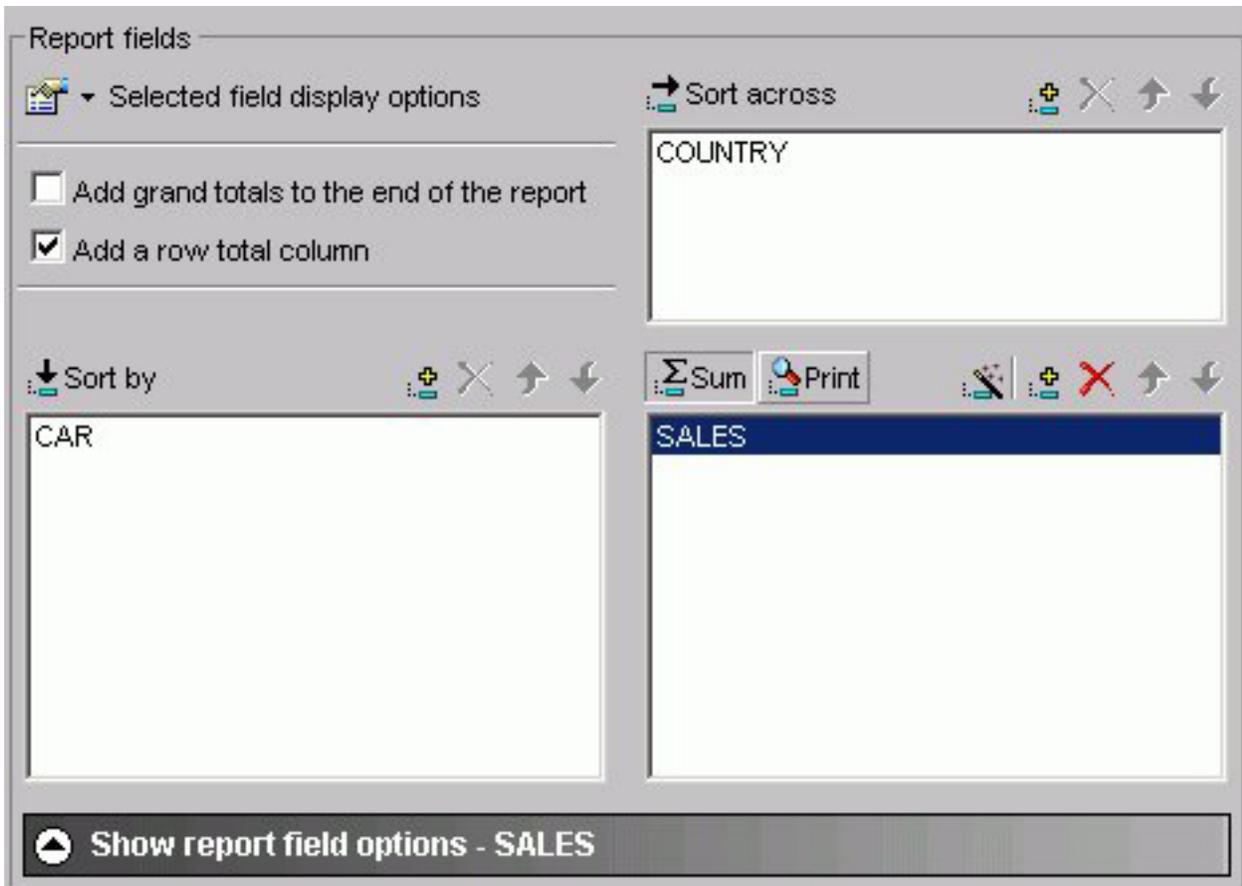
Specifying sort phrases enables you to organize the presentation of information in a desired sequence. Adding fields to the Sort across fields box establishes the field you selected as a column in your report. You can create a matrix report by combining sort and across phrases. You can include a maximum of five ACROSS fields in each report. If you try to enter a sixth ACROSS field, the following message appears:

```
The Maximum number of horizontal dimensions is 5.
```

Adding fields to the Sort by fields box establishes your field as a sort field in your report. Sort fields (also known as BY fields) are rows in your report. Any field can be a sort field and you can include up to 32 sort fields in a report.

The Column data fields box designates the selected field as Sum or Print (Detail). After selecting the field, you must also decide if you want DB2 Web Query to add the values together (Sum) or print the values individually (Print). DB2 Web Query displays the field you select in the last column of your report and performs the requested operation on the data (Sum or Print). The default selection is Sum.

You must select at least one field for the Sort or Column box to create a report.

Add Report Fields in Tree or List View

1. Click the **Tree** or **List** icon.
2. Select the field from the Available fields window and click the **Add** icon to the Sort by, Sort across, or Column fields box to add the chosen field.

   or

Click and hold the left mouse button, and drag the field to the fields box you chose.

or

Use the shortcut keys to quickly go to one of the field boxes.

In the following table the first column (Field Box) describes where you go when using the shortcut keys and the second column (Shortcut Keys) defines the shortcut key combination.

Field Box	Shortcut Keys
Sort across	Alt+A
Sort by	Alt+S
Column	Alt+C

Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

Multi-Select Fields in List View

1. Click the **List** icon.
2. If the fields are:
   - Adjacent to each other, click the first field you want to select and hold down the Shift key while clicking the last field you want to include in the report.
   - Not adjacent to each other, hold down the Ctrl key while clicking the fields you want to include in the report.
3. Click the **Add** icon to the Sort across, Sort by, or Column fields box to add the chosen fields.

Note: Multi-select of fields is only possible when in List mode. You must drag and drop or use the Add icon to add individual fields when in Tree mode.

Select a Report Type

To select a report type, click one of the following buttons in the Column box:
- **Sum.** A summary report shows the summarized values of the selected data source fields.
- **Print.** A detailed report shows all selected records from a data source.

Delete Report Fields

1. Select the field in the Sort Across, Sort by, or Column fields box.

   or

   Use the shortcut keys to quickly go to one of the field boxes. In the following table the first column (Field Box) describes where you go when using the shortcut keys and the second column (Shortcut Keys) defines the shortcut key combination.

Field Box	Shortcut Keys
Sort across	Alt+A
Sort by	Alt+S
Column	Alt+C

   Use the arrow keys to move to the field you wish to delete.
2. Click the **Delete** button or press the Delete key.

Searching Field Lists

You can search the field list on the Field selection tab, Report Headings tab, Selection criteria tab, and Join options tab (for the host Master File) in the HTML Report Assistant and HTML Graph Assistant. You can search by the following Master File attributes: Name, Alias, Title, Format, Description, Segment, and Filename.

When you apply a search to a field list, your search results appear in all other areas of the tool, until you reset the field list. Your search results are saved when you exit the tool, so when you open the procedure again, you only see the results of your search in the field list.

Note:

- The field list that appears for conditional styling is already restricted to the fields selected for the report and is not further restricted by the search string.
- Search options are available when viewing fields in List mode. It is not available when viewing fields in Tree mode.

Search a Field List

1. In the Field selection tab, Headings tab, or Selection criteria tab in the HTML Report Assistant or HTML Graph Assistant, click **Show - Field list searching**.

   If you are searching for a field name from the Join options tab, click the **Field list searching** ![icon] icon.

   The Field list searching dialog box opens.

   The following image shows the Field list searching dialog box. It contains a drop-down list for what pattern you want to search by, a text box, and a submit button.

2. Select the Master File attribute for which you want to search. The following table lists the pattern attributes and a description of each.

Attribute	Description	DSPFFD Equivalent
Filename	Name of the data source.	File
Name	Name of the field.	Field
Alias	Alias for the field.	Alternative Name
Title	Display title for the field, as defined in the Master File.	Column Heading
Format	Field format, for example A4.	Data Type
Description	Field description, as defined in the Master File.	N/A
Segment	A segment of fields in the Master File.	N/A

3. Type your search string. You can use an asterisk (*) as a wildcard. For example, type c* to find all fields that begin with the letter "c". The character string is not case sensitive.

4. Click the right arrow ![right arrow icon] and results appear in the field list.

Reset the Field List After a Search

1. In the Field selection tab, Headings tab, or Selection criteria tab in the HTML Report Assistant or HTML Graph Assistant, click **Show - Field list searching**.

   If you are searching for a field name from the Join options tab, click the **Field list searching** ![icon] icon.

   The Field list searching dialog box opens.

2. Enter a blank value (space bar) or an asterisk (*) and click the arrow ![arrow icon].

   The field list is reset to the default display, which is to show all fields.

Creating Temporary Fields

A temporary field is a field whose value is not stored in the data source, but can be calculated from the data that is there, or assigned an absolute value. When you create a temporary field, you determine its value by writing an expression. You can combine fields, constants, and operators in an expression to produce a single value. For example, if your data contains salary and deduction amounts, you can calculate the ratio of deductions to salaries using the following expression: deduction / salary.

You can specify the expression yourself, or you can use one of the many supplied functions that perform specific calculations or manipulations. In addition, you can use expressions and functions as building blocks for more complex expressions, as well as use one temporary field to evaluate another.

There are two types of temporary fields—a virtual field and a calculated value—which differ in how they are evaluated:

- A virtual field (Define) is evaluated as each record that meets the selection criteria is retrieved from the data source. The result of the expression is treated as though it were a real field stored in the data source.

  Virtual fields (Defines) are not applicable to queries that originated in IBM Query/400. They can be used only with new queries created in the Web Query product.

- A calculated value (Compute) is evaluated after all the data that meets the selection criteria is retrieved, sorted, and summed. Therefore, the calculation is performed using the aggregated values of the fields.

You can create temporary fields from the Field selection tab.

Create a Temporary Field

1. On the Field selection tab, click the:

   - **New define field** ![icon] icon (located above the fields list) OR the

   - **New computed field** ![icon] icon (located with the Sum/Print fields).

The Field Creator dialog box opens.

2. Enter the name for the field in the Field box. Field names for temporary fields cannot exceed 66 characters.
3. Enter the format for the field in the Format box. Click the **Format** button for assistance in selecting a format. See Change Format Dialog Box.
4. Click in the expression box to enter an expression.

   If you are familiar with coding Compute and Define expressions, you can type the expression in the text box. Otherwise, you can use the key pad to assist you in creating the expression. To use the key pad:

   a. Click the **Tree** or **List** button to open the fields list or click the **Functions** button to open the DB2 Web Query functions list. If you hover your cursor over a function, a brief description appears.
   b. Double-click a field or function to add it to the expression box.
   c. If you select a field, complete the expression using the key pad and additional fields, as necessary. See Field Selection Tab: Field Creator Dialog Box for details on key pad operations.

5. Click **OK**. New calculated values (Compute) are added to your report's column (Sum/Print) list. New virtual (Define) fields are added to the fields list, where you can select them as if they were real fields.

Note: When you create a defined field in Report Assistant, if you want that field value to be blank, the blank must be contained in quotation marks.

Edit a Temporary Field

1. Select the temporary field.
2. Click the down arrow next to the Define icon and select **Edit define field**.
   or
   On the Column box, click the **Edit computed field** menu item.
   The Field Creator dialog box opens.
3. Make your desired edits and click **OK**.

Delete a Temporary Field

Select a column field in the Column box and click the **Delete** icon (or press the **Delete** key).

or

Perform the following steps:
1. Select a virtual field in the Available fields box.
2. Click the down arrow next to the Define icon.
3. Click **Delete define field**.

Examples of Creating A Virtual Field and Creating a Calculated Value

The following are examples of creating a virtual field and creating a calculated value.

Creating a Virtual (Defined) Field Using a Function

The following image shows the Define field creator dialog box with a defined field that uses a function (ARGLEN). This field uses the EMPLOYEE sample data source.
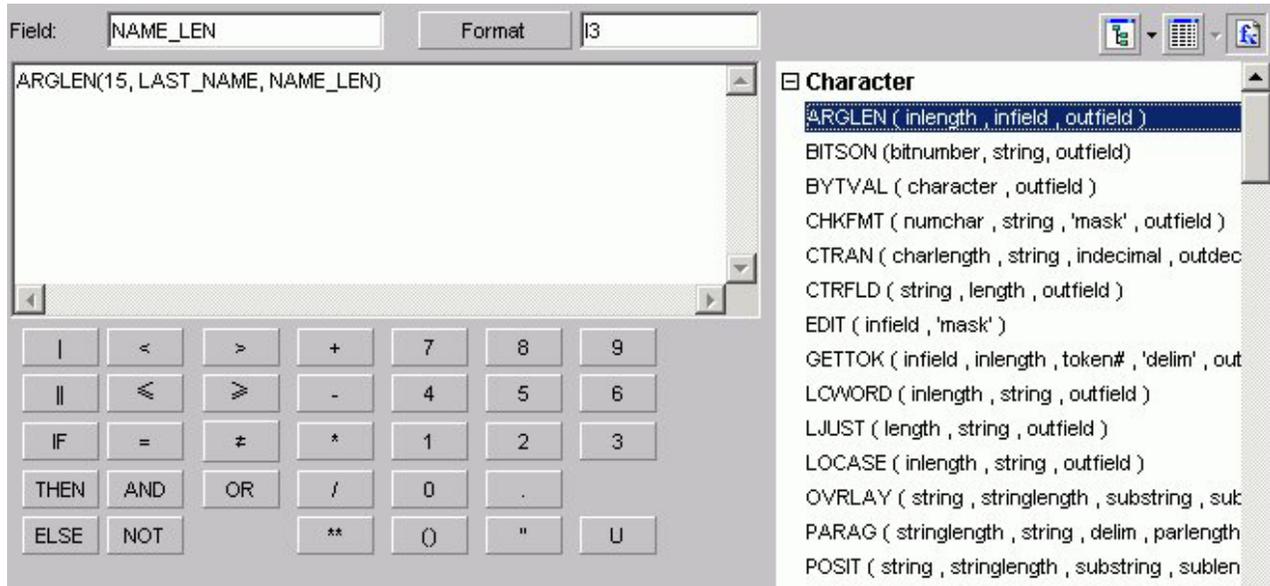
Creating a Calculated (Computed) Value

The following image shows a computed field created using the SALES sample data source. The expression creates the computed field REVENUE based on the product of the existing fields UNIT_SOLD and RETAIL_PRICE.
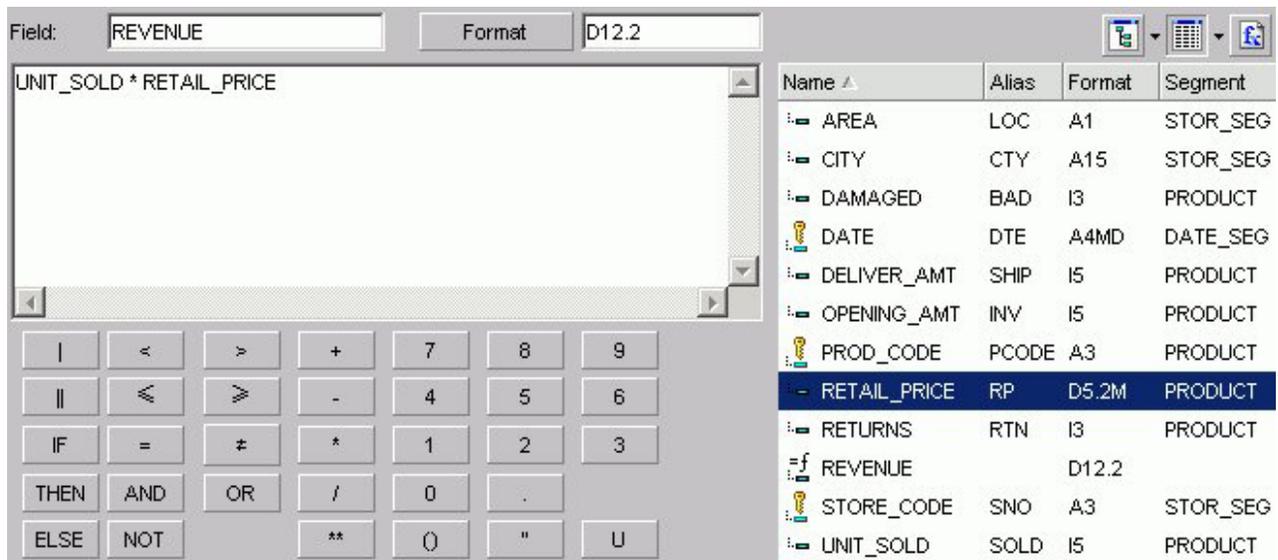
Changing a Field Format

The following image shows the Change Format Dialog box, which you use to assign a format to a virtual or column field. Refer to the following procedures for the step-by-step instructions.
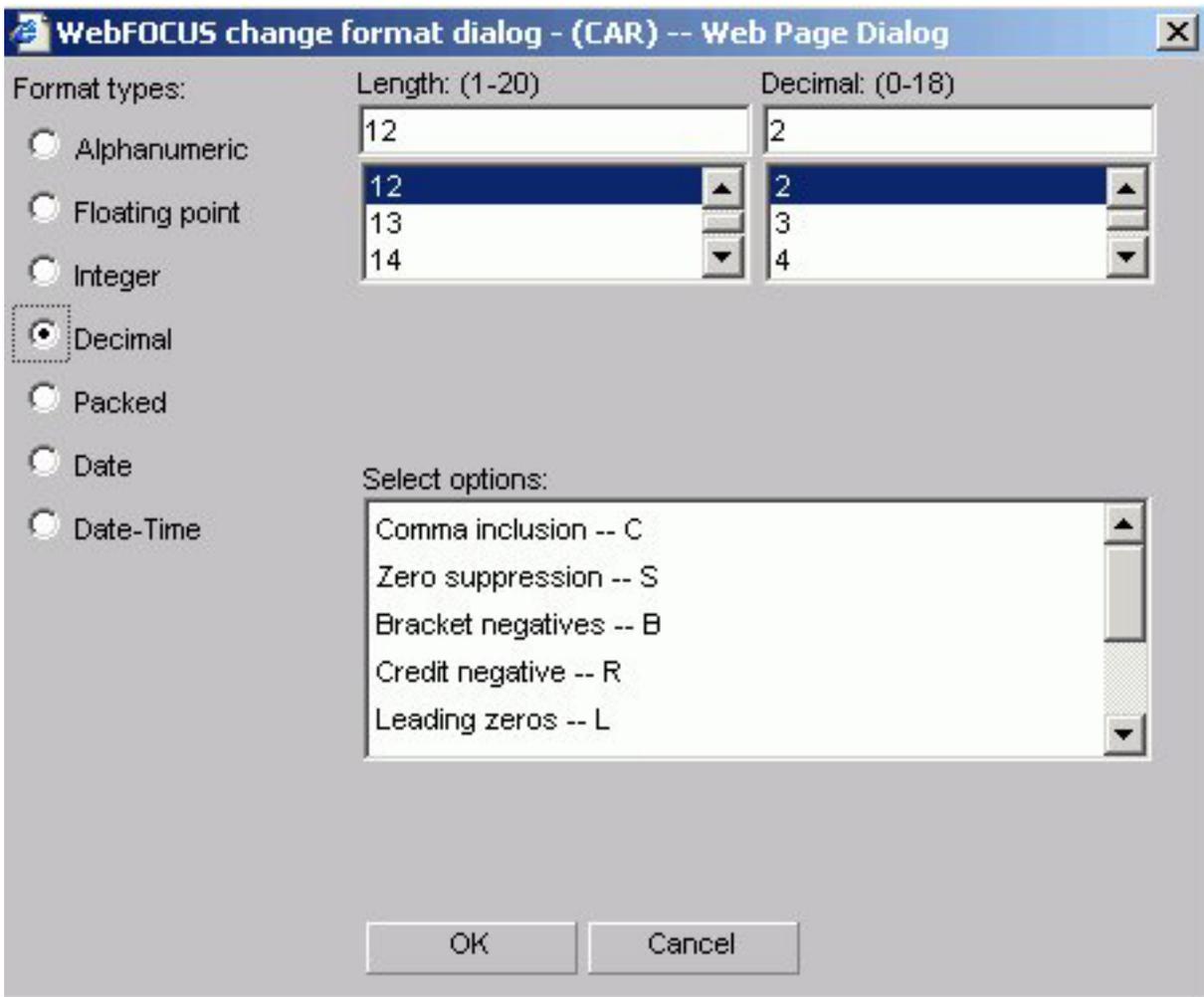
Assign an Alphanumeric Format

1. Required: Select the virtual or column field.
2. Required: Click the down arrow next to the Define icon and select **Edit define field**.

   or

   Click the **New computed field** icon.

   The Field Creator dialog box opens.
3. Click **Format**. The Change Format dialog box opens.
4. Select the **Alphanumeric** option button in the Format Types option button group.
5. To assign a different length, specify a number between 1 and 256 in the Length spin box.

6. Click **OK** twice to close the Change Format dialog box and return to the Field selection window. The new format appears in the Format column in the Available fields list.

Assign a Numeric Format

1. Select the virtual or column field.
2. Click the down arrow next to the Define icon and select **Edit define field**.

   or

   Click the **New computed field** icon.

   The Field Creator dialog box opens.
3. Click **Format**. The Change Format dialog box opens.
4. Select one of the following option buttons in the Format Types option button group:
   - **Floating Point** (default length 7.2)
   - **Integer** (default length 5)
   - **Decimal** (default length 12.2)
   - **Packed** (default length 12.2)

   If the selected field matches the selected format type, its current length appears in the Length spin box. Otherwise, the default length appears in the Length spin box. The Decimal spin box shows the number of decimal places for Floating Point, Decimal, and Packed.
5. To assign a different length, specify numbers in the Length spin box for format types as follows: 1- 9 for Floating Point, 1- 11 for Integer, 1- 20 for Decimal, and 1- 33 for Packed.
6. To assign a different number of decimal places for Floating Point, Decimal, or Packed, specify the number in the Decimal spin box.
7. Click **OK** twice to close the Change Format dialog box and return to the Field selection window. The new format appears in the Format column in the Available fields list.

Assign a Date Format

1. Select the virtual or column field.
2. Click the down arrow next to the Define icon and select **Edit define field**.

   or

   Click the **New computed field** icon.

   The Field Creator dialog box opens.
3. Click **Format**. The Change Format dialog box opens.
4. Select the **Date** option button in the Format Types option button group. The default date display format is MDY.
5. To assign a different date display format, click the down arrow to the right of the Date Format list box.
6. Choose a date format.
7. Click **OK** twice to close the Change Format dialog box and return to the Field selection window. The new format appears in the Format column in the Available fields list.

Add a Percent Sign to a Numeric Field

You can add a percent sign to the end of a numeric value (Decimal, Integer, Floating Point format types). This numeric display option includes a percent sign along with the numeric data, but does not calculate the percent.

1. Select the virtual or column field.
2. Click the down arrow next to the Define icon and select **Edit define field**.

   or

   Click the **New computed field** icon.

   The Field Creator dialog box opens.
3. Click **Format**. The Change Format dialog box opens.
4. Click the down arrow in the Select options list box to choose **Percent sign - %**.
5. Click **OK** twice to close the Change Format dialog box and return to the Field selection window. The new format appears in the Format column in the Available fields list.

Using the Percent Sign Edit Option

The following table consists of a Format column for each numeric format, a Data column for its actual data value, and a Display column for how it appears.

Format	Data	Display
I2%	21	21%
D7%	97	97%
F3.2%	48	48.00%

Using Calculated Values From the Master File

In the HTML Report and Graph Assistants, calculated values (COMPUTEs) that exist in the Master File appear in the fields list with all other temporary virtual fields and calculated values. The following image shows the fields list in the HTML Report Assistant with a calculated value from the Master File (PROFIT).
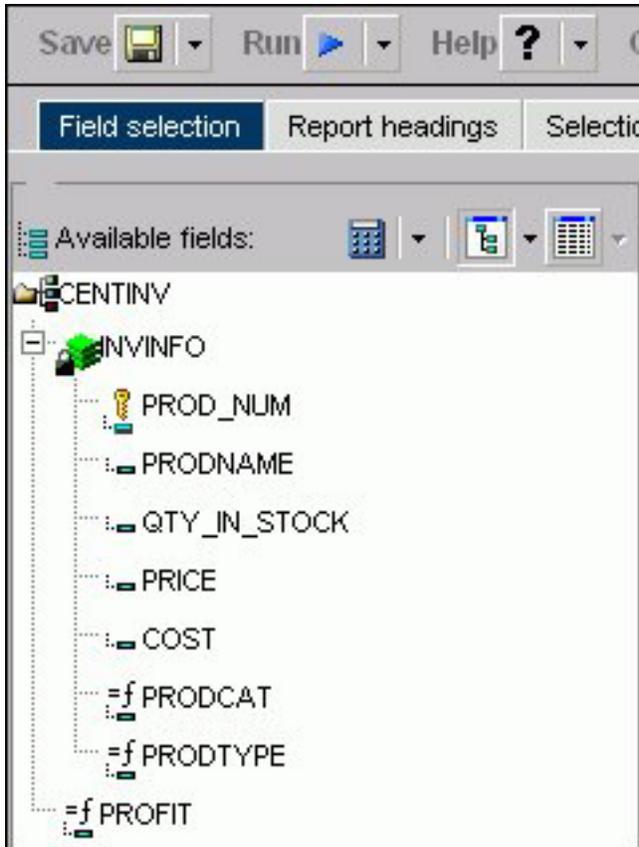
Calculated values from the Master File are available in all fields lists in the HTML Report and Graph Assistant except for the fields lists that appear for Define fields and Joins.

Support for Calculated Values From the Master File

You can use a calculated value from the Master File:

* As a Sum/Print field.
* As a Sort by field. You can also use a temporary calculated value as a Sort by field.

  Note: The By sort is automatically converted to a Total field since calculated values are calculated after data has been sorted and aggregated, but before the report is displayed. Since sorting (BY) has already been done, the phrase BY TOTAL is used to indicate that this sort is performed after any BY sorting. This applies to calculated values from the Master File and temporary calculated values.

* For conditional styling.
* In a temporary calculated value.
* In a page heading or page footing (Report headings tab).
* In selection criteria statements. You can also use a temporary calculated value in selection criteria.

  Note: When you use calculated values for selection criteria, the Where is automatically converted to Where Total. This occurs because the Where Total is added after the data is retrieved and sorted, but before the report is finalized. This applies to selection criteria created with calculated values from the Master File and temporary calculated values.

Calculated fields from the Master File are not supported:

- As Across sort fields.
- As the X-axis in a graph. This means that you won't be able to add a calculated value to the **Field value plotted on X axis** or **Create a separate graph for each value of this field** fields on the Field selection tab of the HTML Graph Assistant.
- In a Join statement or Defined field.
- With prefix operators, for example MAX.

Calculated Value Dependencies

These dependencies apply to calculated values from the Master File and to temporary calculated values.

When you include a calculated value in selection criteria or in a page heading/footing, the field must exist in the report as either a By sort field or a Sum/Print field. If you create a selection criteria statement with a calculated value or add a calculated value to a page heading/footing and the field does not already exist in the report, then it is automatically added to the Sum/Print display field list. The **Make this field invisible** option is automatically selected in the Field options dialog box so that the calculated value does not appear in the output. When this occurs, a message appears stating:

"The field has been added to the list of fields in the report."

Note: You do not see this message for temporary calculated values (those that do not come from the Master File) that are added to a page heading/footing since these already appear in the Report headings fields list.

You can change the attributes of the calculated value from the Field options dialog box on the Field selection tab. If you attempt to delete the calculated value from the Sum/Print display list and the same field exists in either selection criteria or in a page heading/footing, you receive a one of the following messages:

> ⚠ This field is linked to the Page heading or Page footing. Remove the field from the Heading or Footing before removing it from the Selected fields.

or

> ⚠ This field is linked to the Selection Criteria. Remove the field from the Selection criteria before removing it from the Selected fields.

You must remove the field from the page heading/footing or selection criteria before you can remove it from the Sum/Print display list.

Defining Field Characteristics

To choose field options, select the field in the Sort across, Sort by, or Column (Sum/Print) box in the Field selection tab. Click **Show field options** to style each field in your report.

The following table lists and and describes the available Field options in the Display, Sorting, Ranking, Subhead, and Subfoot tabs that appear for each selected field type. The ability to create a title in the Title tab is available for all field types. If a Field option tab is not available for a selected field type, "n/a" appears in the table.

Field Type	Display	Sorting	Ranking	Subhead & Subfoot
Sort across	Make this field invisible check box Font button that opens styles dialog Drill down button that opens Drill down dialog	Ascending/ Descending options Total check box	n/a	n/a
Sort by	Make this field invisible check box Font button that opens styles dialog Conditional styling button that opens conditional styling dialog Drill down button that opens Drill down dialog Include missing instances check box	Ascending/ Descending options Total check box Create a page break check box (activates the 'And reset page number to 1' check box) Separate with underline check box Subtotal numeric sum/print fields check box (activates the Subtotal tab, and the 'And higher level sort fields' and 'Recalculate computed fields with subtotals' check boxes	Add Ranking column check box (activates the 'Limit the number of ranked values to' check box, and the Font button that opens styles dialog)	Select Font type, size, and style. Select text alignment. Set text and background colors.

Field Type	Display	Sorting	Ranking	Subhead & Subfoot
Column (Sum/ Print)	Make this field invisible check box Font button that opens styles dialog Conditional styling button that opens conditional styling dialog Drill down button that opens Drill down dialog Format in report as button opens change format dialog 'Calculated as' drop-down list adds prefix to column Include missing instances check box	n/a	n/a	n/a

You can use this table to determine which of the following options are available for a selected field in the Field selection tab:

- Suppress the display of a field (make a field invisible).
- Apply font options with the styles dialog box.
- Apply conditional styling with the conditional styling dialog box.
- Create drill down parameters with the Drill down dialog box.
- Select format options in the report with the change format dialog box.
- Specify how the field will be calculated by choosing an option from a drop-down list box.
- Include references to missing instances in reports.
- Specify field display titles, subheads, subfoots, and subtotals.
- Specify ascending or descending field sorting.
- Include the Sort by options for page breaks.
- Include the Sort by options for subtotals, sub-totals, and recalculated subtotals.

Note:

- **Subtotal numeric sum/print fields** is not checked by default. If checked, numeric values are summed and a subtotal is displayed when the selected Sort by field value changes.
- If you select **And higher level sort fields**, SUB-TOTAL syntax is used to display subtotals for numeric values when the selected Sort by field value changes and when any higher-level Sort by field value changes.
- If you are using computed fields, select **Recalculate computed fields using subtotal values**.

Change the Field's Display Title

1. Select the field whose title you want to change.
2. If hidden, click **Show report field options** for the selected field.

3. Click the **Title** tab.
4. Enter the title you want to display in the report output.

    Note: When using HTML output, leading spaces in the field title do not display.

Suppress the Display of a Field

The Field selections tab enables you to conceal the data of a selected field in a report. To suppress the display of a field:

1. If hidden, click **Show report field options** for the selected field.
2. Check the **Make this field invisible** check box.

Include References to Missing Instances in Reports: The ALL. Prefix

In a report, you can include parent segment instances that lack descendants by attaching the ALL. prefix to one or more column fields, as follows:

1. If hidden, click **Show report field options** for the selected field.
2. Check the **Include missing instances** check box.

Note:
- The ALL. prefix and an additional prefix operator from the Column Options drop-down list may be applied to the same field.
- The ALL. prefix can be applied to multiple fields.
- The ALL. prefix can be applied to both column fields and sort fields.

Arrange Fields in Ascending or Descending Order

To list sort field data in the report from greatest to smallest (descending) or from smallest to greatest (ascending):

1. If hidden, click **Show report field options** for the selected field.
2. Select the **Sorting** tab.
3. Select the **Ascending** or **Descending** option button.
4. Click **Save**.

If you have multiple sort fields, you can specify a different order for each one.

Include Page Breaks

To start a new report page when the value of a selected sort field changes:

1. If hidden, click **Show report field options** for the selected field.
2. Select the **Sorting** tab.
3. Check the Create a **page break** check box.
4. Click **Save**.

Include Subtotals

To display a subtotal for numeric data when a selected sort field changes:

1. If hidden, click **Show report field options** for the selected field.

2. Select the **Sorting** tab.
3. Check the **Subtotal numeric sum/print fields** check box.

   Subtotals are activated for this report and the Subtotal tab appears to the right of the Subfoot tab. Note that the default *TOTAL title is displayed next to each subtotal value. For more information, see Include Display Titles for Subtotals.

   Additionally, the following options are activated:
   - And subtotal all higher level sort fields. Displays subtotals for numeric values when the Sort by field value changes and when any higher-level Sort by field value changes.
   - Recalculate computed fields with subtotal values.
4. Required: Optionally, select the **Subtotal** tab to:
   - Modify the default subtotal title text in the Current Subtotal Text field.
   - Suppress subtotals for sort fields that have only a single value.
   - Apply subtotals to a subset of the numeric fields in a report.
   - Apply prefix operators, which enables you to display the sum, average, average square, count, first in group, last in group, minimum, or maximum value for any or all of the numeric fields, including Computes, in a report.

   For more information, see Displaying Subtotals and Other Summary Values Using Prefix Operators.
5. Click **Save**.

Include Display Titles for Subtotals

When including subtotals, you can also specify display titles for them. These titles appear next to each subtotal in the report. The default subtotal display title is *TOTAL. To edit the default display title:

1. If hidden, click **Show report field options** for the selected field.
2. Click the **Sorting** tab.
3. Check the **Subtotal numeric sum/print fields** check box. The Subtotal tab appears to the right of the Subfoot tab.
4. Click the **Subtotal** tab.
5. Type the desired display title in the Current Subtotal Text field in the Subtotal tab.
6. Click **Save**.

Note: If the Subtotal numeric sum/print fields check box is not selected, subtotals are not displayed in the report.

Include Subheads/Subfoots for Sort Fields

The Fields Options tab enables you to include subheads (which appear above) and subfoots (which appear below) for each of the sort field's records in the report.

1. If hidden, click **Show report field options** for the selected field.
2. Click the **Subhead** or **Subfoot** tab.
3. Click in the text box or press **Alt+T** to enter a subhead or subfoot title.
4. Style the subhead/subfoot using the formatting toolbar.
5. Click **Save**.

Editing a Field Format

Use the report field options section on the Field selection tab to change the field format for the Column field. The following image shows the Field selection tab with a field selected and the Field Options pane open.
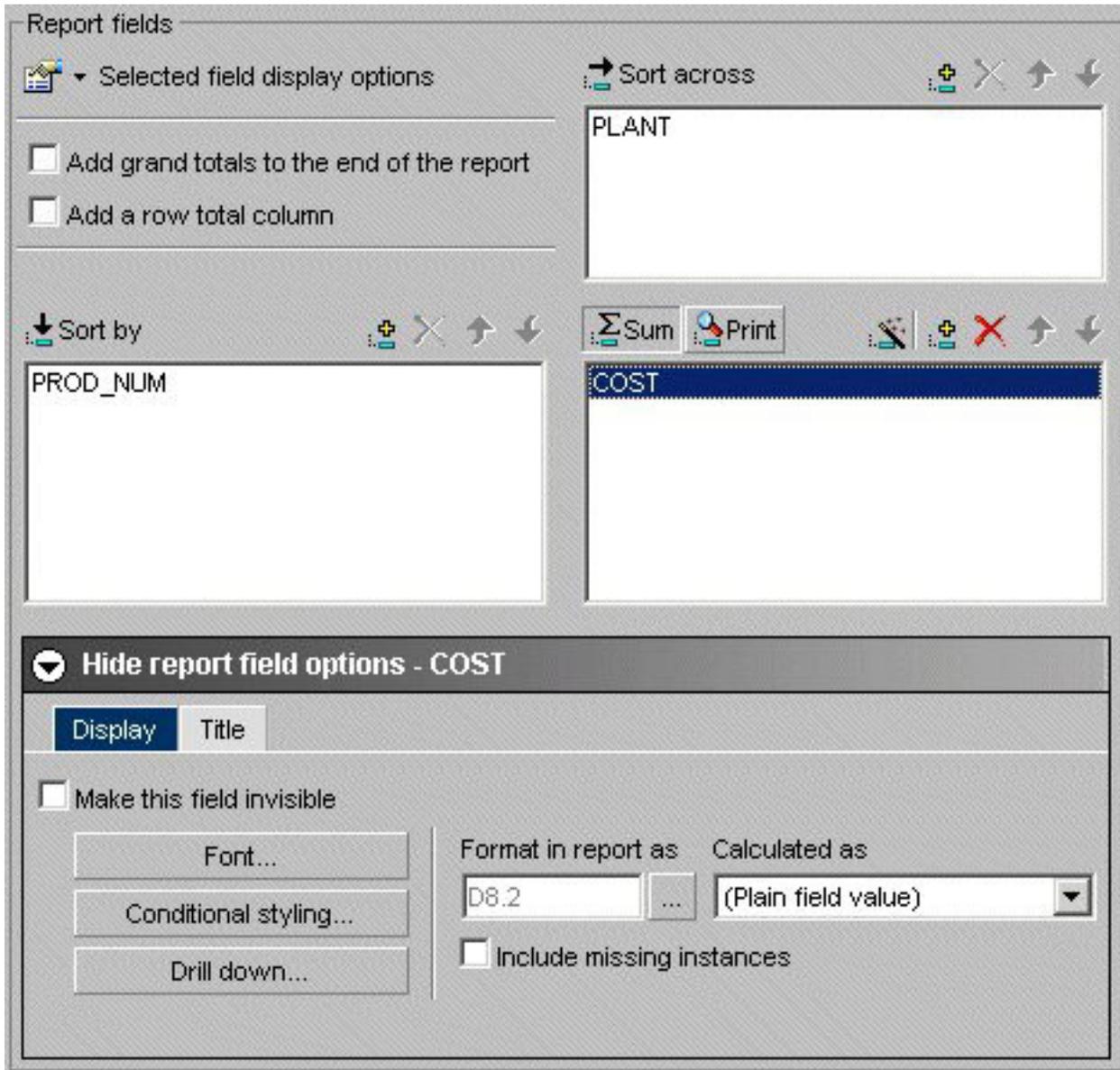
Change Field Format for a Column Field

1. Required: If hidden, click **Show report field options**.
2. Required: Select a field in the Column box.
3. Required: Click the **...** button to open the Change Format dialog box.
4. Select the option for the field and click **OK**.

Styling Fields

Use the styling options on the Field selection tab to style report fields.

Style Sort by, Sort Across, or Column Fields

1. If hidden, click **Show report field options**.
2. Select a field and click the **Display** tab in the report field options section.

   The following image shows the Display tab of the Field Options pane.
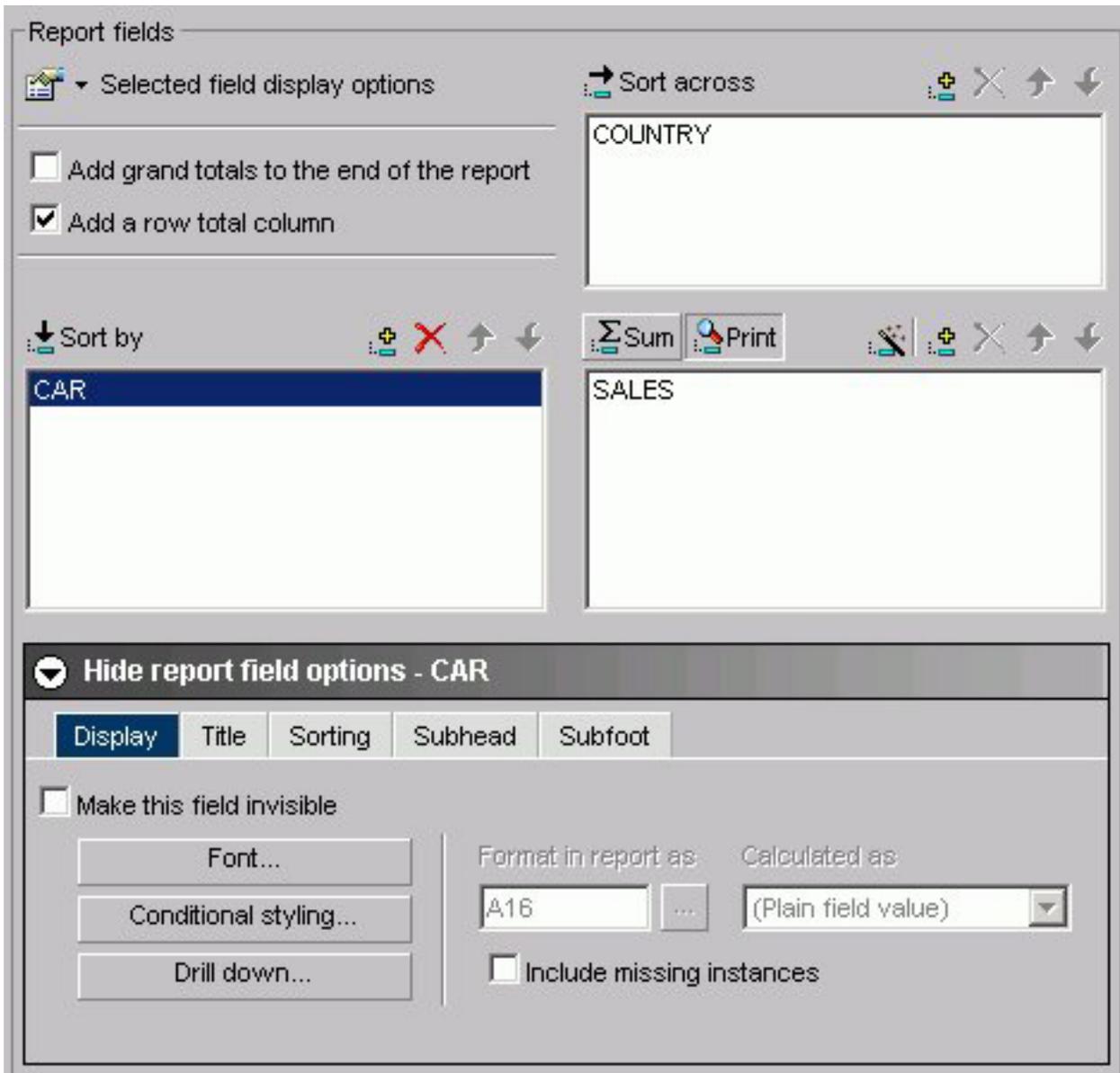
3. Click the **Font** button.
4. Select the desired styling options from the Font, Style, and Size boxes.
5. In the Set Styles for box, select the **Title & Data**, **Title Only**, or the **Data Only** option button, depending on the report element you wish to style.

   Note: If you select a font property (font, style, size, text color, background color, or justification) and select the **Title & Data** option button, the changes will be reflected in both the Title Style and Data Style boxes.

   However, if you then select a different parameter for a given property using the **Title Only** option button, the Title Style will change while the Data Style will not reflect this change. To change the Data Style, you must click the **Data Only**

option button and then make your change. Likewise, if you select the **Data Only** option button and make a change, this change will not be reflected in the Title Style. You must click the **Title Only** option button to make your change.

6. Choose a text color from the list box.

7. Choose a background color from the list box.

8. Choose a justification (left, center, or right) from the list box.

9. Click **OK**.

Note: Clicking Reset returns the styling options to the following default settings:

- Font: Times New Roman
- Style: Normal
- Size: 13
- Text Color: Black
- Background Color: Transparent
- Justification: Left

Drilling Down to New Procedures

When you click Drill Down in the report fields options section on the Field selection tab, the No action option button is the default. When you select Execute Procedure, a list of procedures contained within the Reports subfolder displays. You can also select procedures from different domains.

For more information, see Drill Down Dialog Box.

End User Drill-down Capability

Along with Administrators and Developers, end users can drill down to other reports from within the currently displayed report.

Styling Specified Field Values

Use the Conditional Styling dialog box to style records based on specified field values. Conditional styling, also referred to as stoplighting, enables you to define conditions that determine when to apply particular fonts, point size, text style, foreground and background color, and drill down procedures to your report's data when the report is run.

You can style specified values for one or several column and sort fields. However, you cannot style values for sort across fields.

Style Records Based on Specified Field Values

1. In the HTML Report or Graph Assistant, if hidden, click **Graph Field Options**.

2. Click the **Display** tab in the report field options section.

3. Click the **Conditional styling** button.

   The Conditional Styling dialog box opens.

4. Click the **Add** button and create a new condition.

   The following image shows the edit condition dialog box that opens where you begin to set the conditional styling.
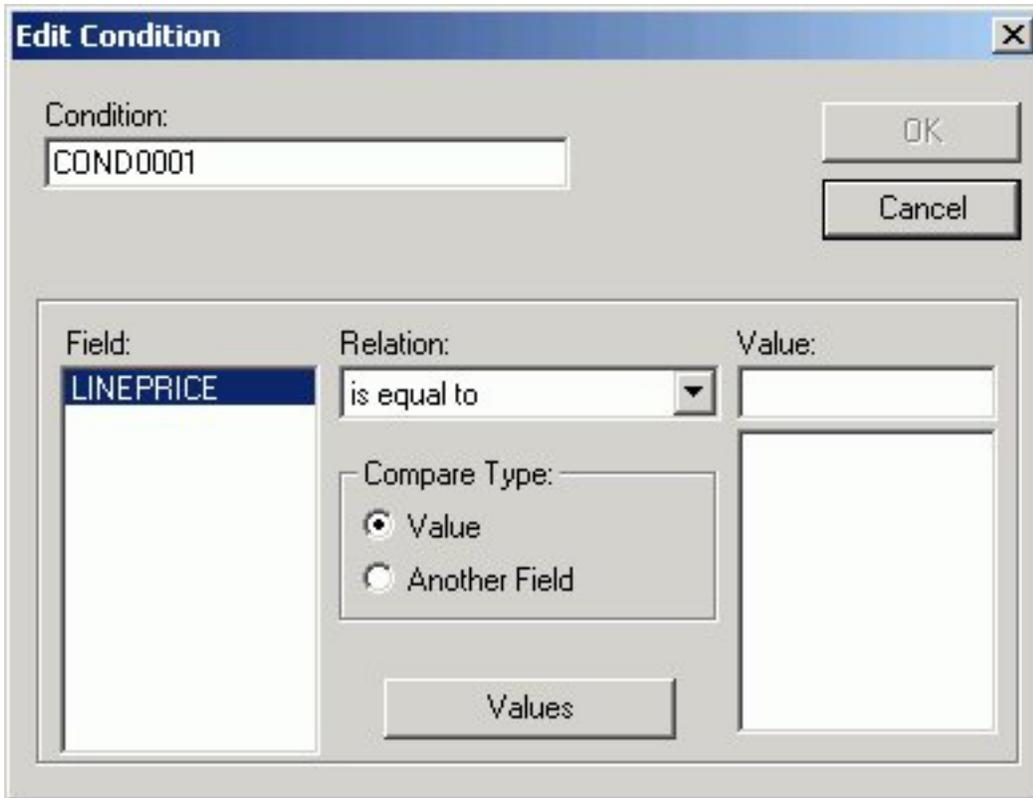
5. Provide a meaningful and unique file name in the Condition input box.
6. Select a field name from the Field list box and a relation from the Relations list box.
7. To specify a value that completes the relation, first select one of the following in the Compare Type option button group:
   - **Value**, to compare the selected report field to a data source value or literal value.
   - **Another Field**, to compare the selected report field to the value of another field. The list of report fields appears in the possible values area. Select one of the report fields to compare to.
8. If you select Value under Compare Type, perform one of the following to complete the relation:
   - Click **Values** to display existing data source values in the Value list box, and select a value.
   - Type a literal value in the Value input box.
9. Click **OK**.

   You return to the Conditional Styling dialog box.

Creating Parameters

Parameters enable you to specify criteria and conditions for drill-down reports. By defining parameters, you can control the amount and type of information to retrieve when you click a hotspot.

Create a Parameter in the Main and Drill Down Procedures

1. Select the **Selection criteria** tab.

2. Create an expression (WHERE statement) that defines a parameter. For more information, see Creating a Where or Where Total Statement.
3. If hidden, click the **Show report field options** section.
4. Select the field that you want to drill down on, for example, **Product**.
5. Click **Drill Down**. The DB2 Web Query Drill Down Dialog opens.
6. Click **Execute Procedure (FOCEXEC)** or **Execute URL**.

   The following image shows the Execute Procedure option button selected and the location and procedure name of the drill-down report (app/css.fex) in the Execute procedure field.
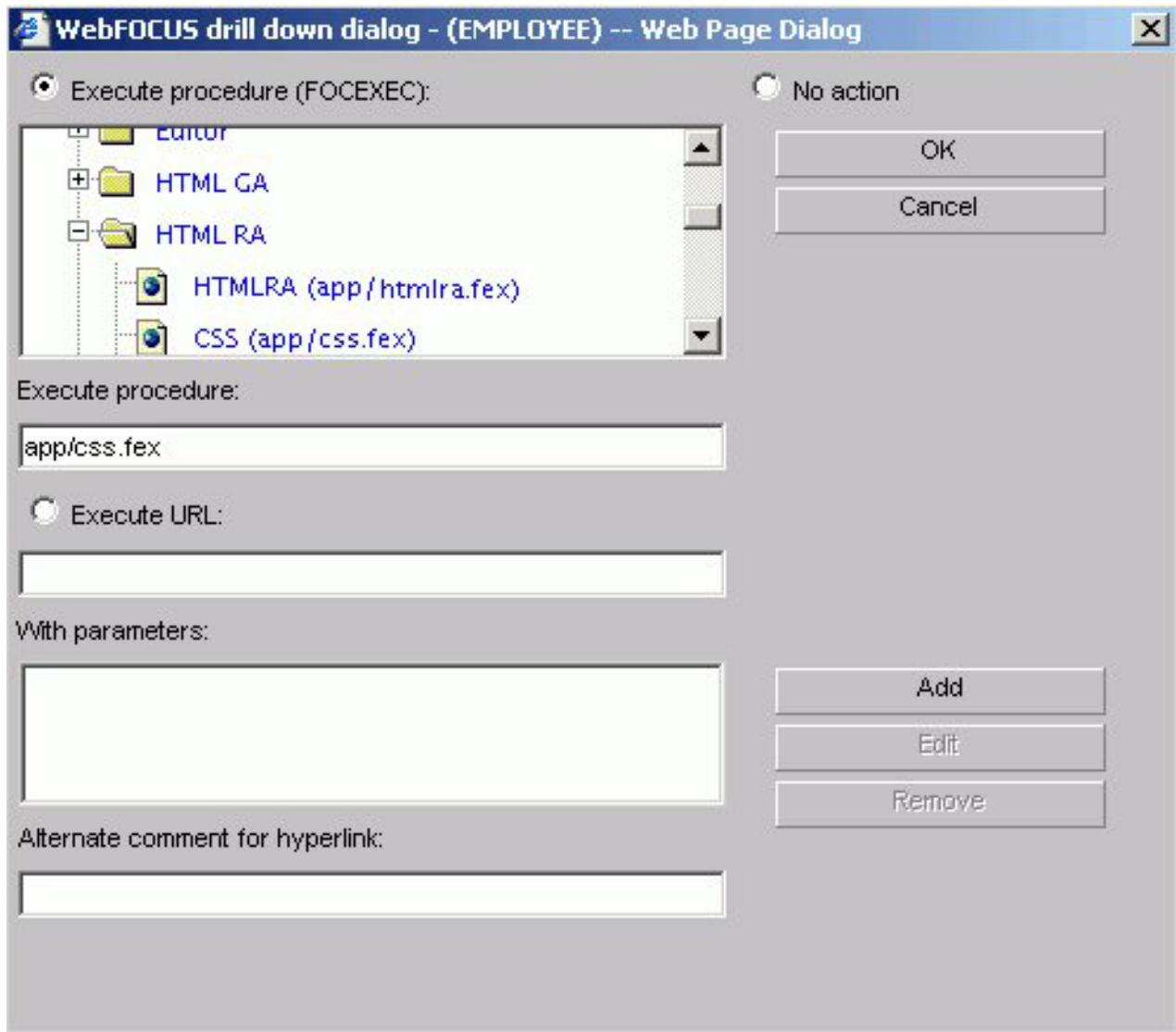
7. Click **Add**. The Drill Down Parameter Dialog box opens where you create the drill down parameter.

   The following image shows the Drill Down Parameter dialog box, which contains a text box where you enter the name of the parameter, and option buttons to select the parameter as a field or a constant value.
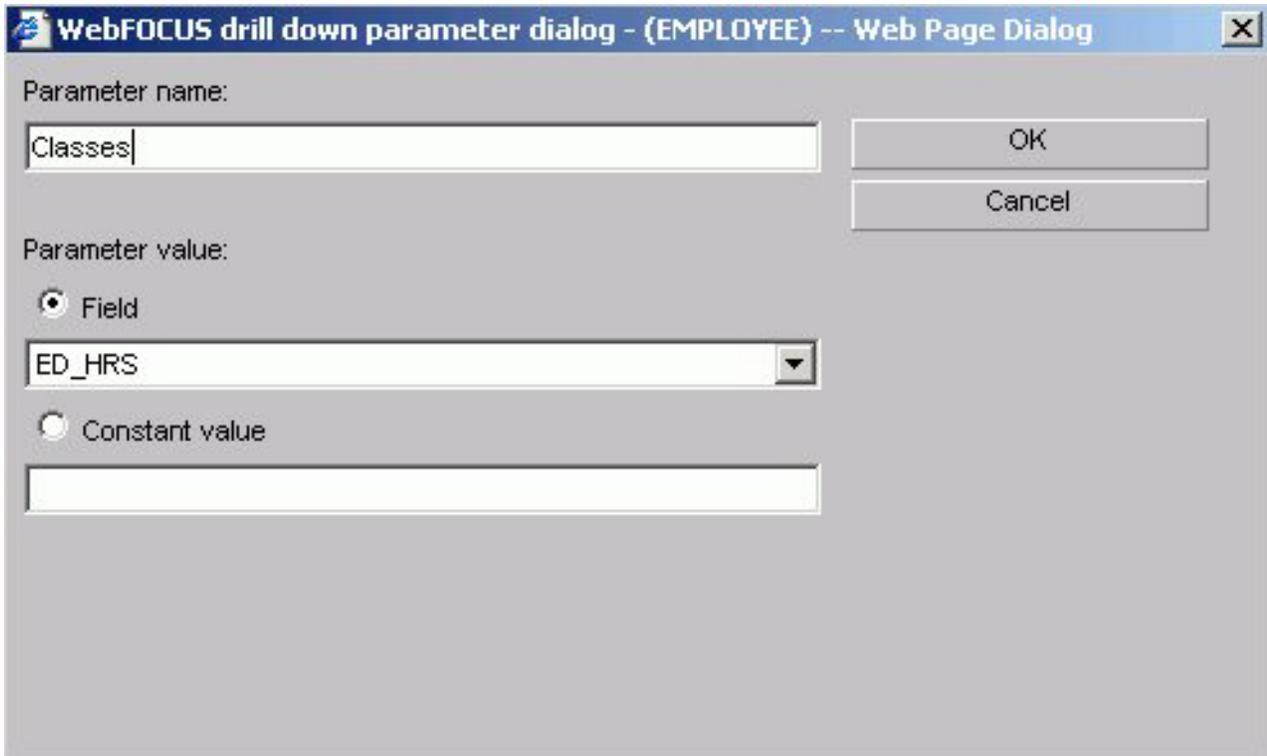
8. Enter the name of the parameter you created in the drill down procedure in the Parameter Name text box, for example, **Classes**.

   Note: When passing parameters to a drill-down procedure, you must use local amper variables (&variables). Global amper variables (&&variables) cannot be used as drill-down parameters. Also, when entering your parameter name it is not necessary to type an ampersand (&) before the parameter name. This will create a global amper variable that cannot be used as a drill-down parameter.

9. When you pass the parameter to the drill down procedure, you must set a value for it in the Drill Down Parameter dialog box. If you select:

   - **Field.** The parameter will be set to the corresponding value of the object the user drills down on in the specified field.
   - **Constant value.** The parameter is set to the specified value.

   Note: If the drill-down report contains a -DEFAULTS statement that sets a default value to the same amper variable passed from the main report, the amper variable value passed down overwrites the -DEFAULTS statement in the target procedure.

10. Once a value has been supplied, click **OK** to return to the Drill Down Dialog box.

    The parameter is added to the With Parameters list box as shown in the following image.
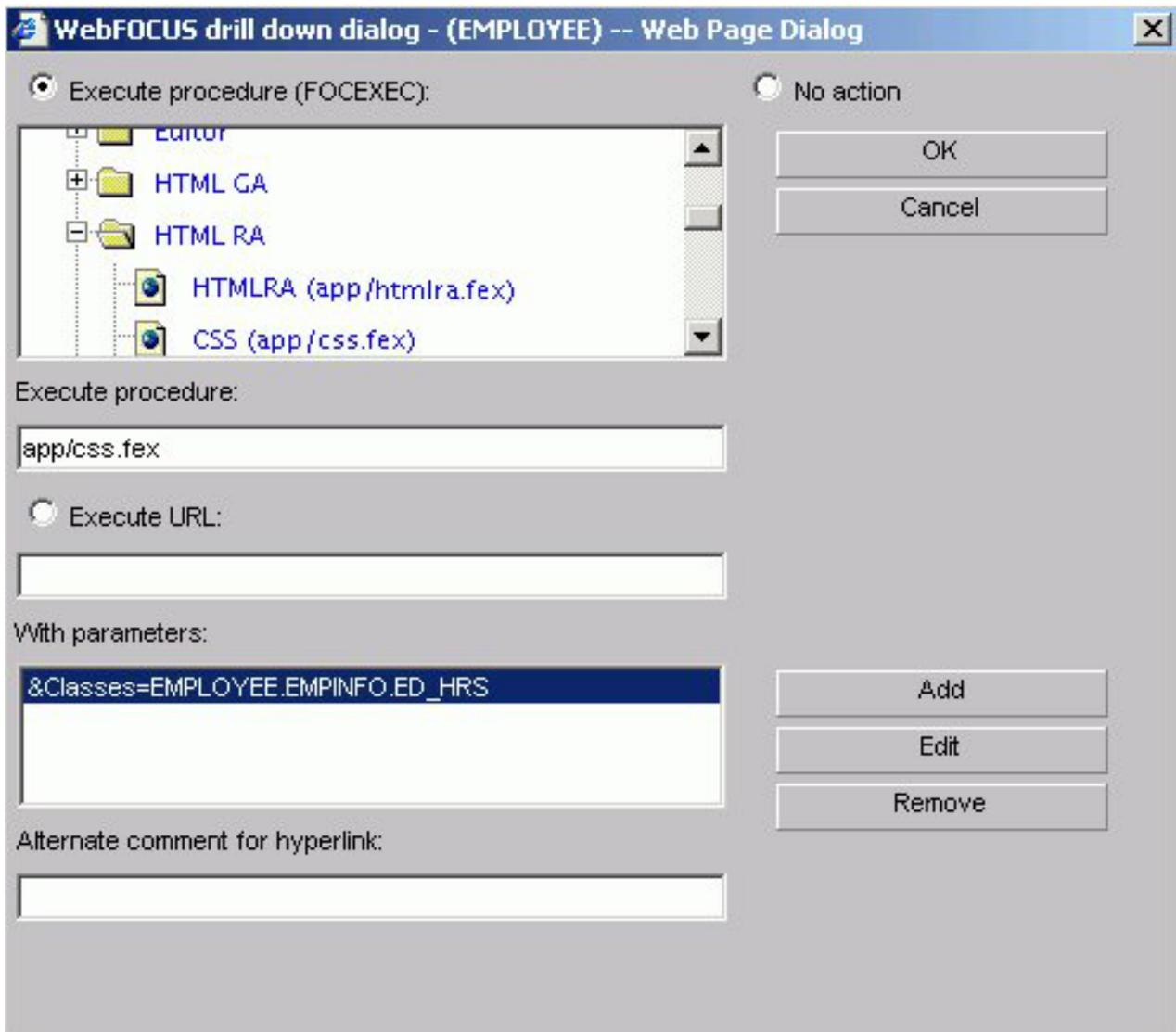
Aggregating and Sorting Fields

You can apply aggregation and sorting simultaneously to numeric columns in your report in one pass of the data using the Total sort option. The Total option is available for Sort by and Sort across fields. For the Total sort option to work correctly, you must have an aggregating display field, such as Sum, in the report. A non-aggregating display field, such as Print, simply retrieves the data without aggregating it.

Note: When you add a computed field to the Sort by field, it is automatically given the Total property.

The following image shows the PRICE field with the Total option selected in the Field options.
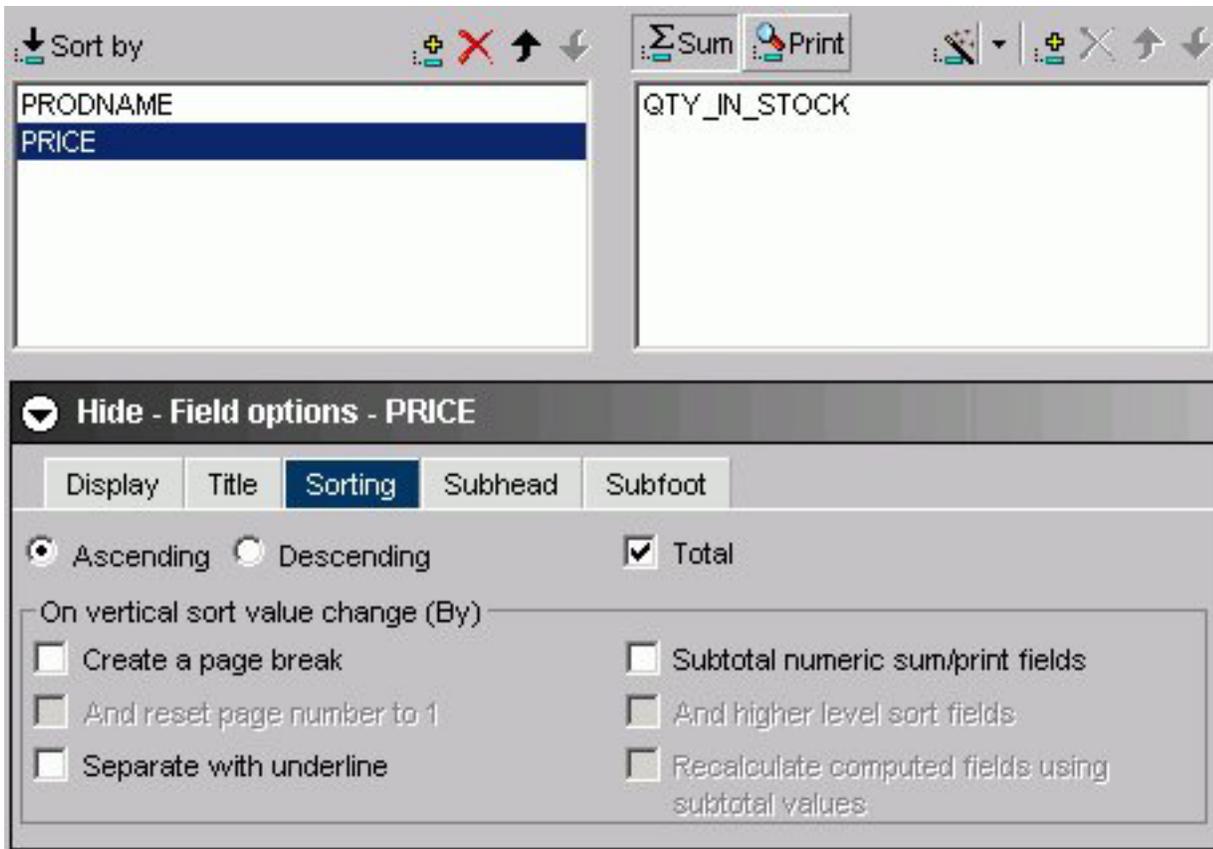
Displaying Subtotals and Other Summary Values Using Prefix Operators

The Subtotal tab enables you to display subtotals, and other summary values using prefix operators, for any or all of the numeric fields, including computed fields, for a selected Sort by field in a report query. You can choose to display subtotals for all numeric fields whenever a selected Sort by field value changes, or you can select to display subtotal and other summary values for a subset of the numeric fields.

In the Subtotal tab, as shown in the following image, you can customize the title text used to display subtotals and other summary values, and suppress subtotals for sort fields that have only a single value, in addition to working with prefix operators.

Display Subtotals and Other Summary Values Using Prefix Operators

To access the Subtotal tab to apply subtotals, prefix operators, and modify other subtotal text and settings, perform the following steps:

1. If hidden, click **Show report field options** for the selected field.
2. Select the **Sorting** tab.
3. Select the **Subtotal numeric sum/print fields** check box. The Subtotal tab appears to the right of the Subfoot tab.
4. Select the **Subtotal** tab.
5. Numeric field values are summed and displayed as subtotals in the report by default. To display summary values other than the default subtotals, select prefix operators using the drop-down lists in the Prefix area that are adjacent to each of the selections in the Columns area. Note that the Sum prefix produces the same subtotal results as not selecting a prefix operator.

   All of the available prefix operators are listed and described in the following table:

Prefix	Description	Displayed in Prefix List
SUM.	Compute the sum of values	Sum
ASQ.	Compute the average sum of squares	Average Square
AVE.	Compute the average value	Average
CNT.	Count the items	Count
FST.	Select the first value only	Show first in group
LST.	Select the last value only	Show last in group
MAX.	Select the maximum value only	Maximum
MIN.	Select the minimum value only	Minimum

6. To display all numeric field values as subtotals or other summary values in the report, select the **Apply totals to all columns** check box in the Columns area.

7. To display subtotals or other summary values for a subset of the numeric fields in the report, make sure the **Apply totals to all columns** check box is de-selected, then select check boxes for the individual numeric fields in the Columns area of the Subtotal tab.

   When **Apply totals to all columns** is selected, options for all individual fields in the Columns area are inactive by default.

8. To modify the default subtotal title, which is set to *TOTAL, type the desired text you want to display as the title for all subtotals and any other selected summary values in the Current Subtotal Text field.

9. To hide subtotals for sort fields that have only a single value, select the **Suppress for single lines** check box.

10. Click **Save** to save your settings and selections in the report query in which you are working.

Applying Predefined and Cascading StyleSheets

You can select a predefined StyleSheet from Report Assistant, instead of applying custom styling. A predefined StyleSheet is a StyleSheet that a DB2 Web Query Administrator places in a domain using Developer Workbench. Any user who then accesses Report Assistant from the domain can apply the predefined StyleSheet to their report.

When a new procedure is created, Report Assistant sets a default StyleSheet. You can apply a different StyleSheet to a report using the StyleSheet drop-down menus in the Global report styling area of the Report options tab.

The following image shows the report styling options in the Report options tab.

The Global report styling section includes the Apply an existing DB2 Web Query Style Sheet and Apply an existing Cascading Style Sheet list boxes. To apply a StyleSheet to a report, select a StyleSheet from the appropriate list box. The list box for DB2 Web Query StyleSheets includes all StyleSheet files stored in the domain.

When a predefined StyleSheet is applied to a report, Report Assistant disables all customizable styling options and does not apply any previous styling selections for the entire report. These settings are not lost. If you decide not to apply a predefined StyleSheet, Report Assistant restores the report's original styling settings and enables you to further customize a report's styling.

Note: When applying a StyleSheet, if you select the Format HTML Output check box, use only the Full or Paged setting. The Fixed setting is not supported with StyleSheets.

Customizing Headings and Footings

Use the Report headings tab to specify the content, style, and placement of headings and footings in your report. Headings and footings can be customized only if a StyleSheet has not been applied. Since Report Assistant applies a StyleSheet by default, you must set the StyleSheet in the Report Options tab to None.

The following image shows the Report headings tab opened with a formatting tool bar, the Page heading and the Page footing text boxes.
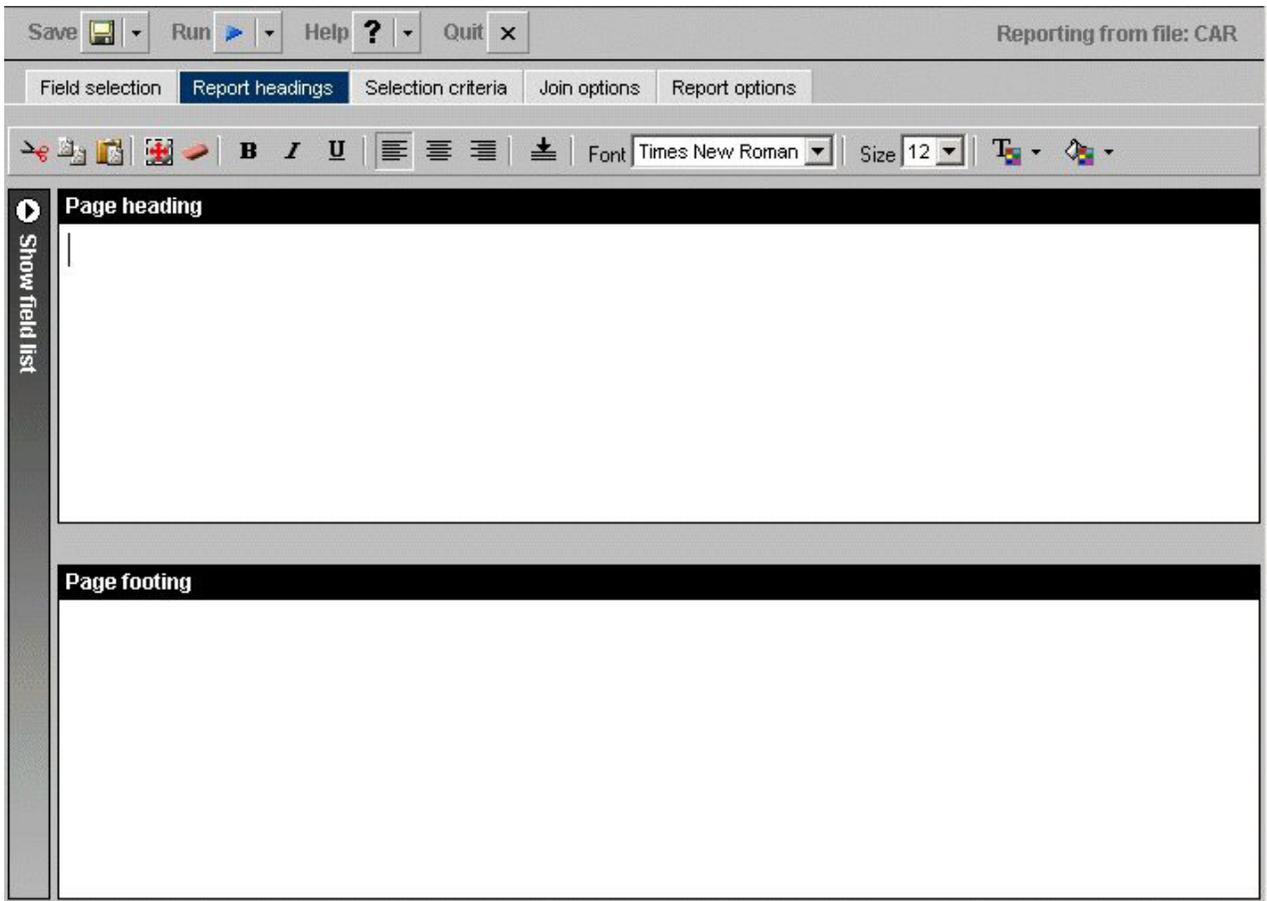
Note: Dragging and dropping items, including images, is not supported in the Report Assistant.

Add and Align a Heading in a Report

1. In the Report headings tab, click in the text box or press **Alt+H** to enter a page heading title.
2. Click the **Center** icon to center the heading in the report. The heading is left-aligned by default.

Add and Align a Footing in a Report

1. In the Report headings tab, click in the text box or press **Alt+F** to enter a page footing title.
2. Click the **Center** icon to center the footing on the report. The footing is left-aligned by default.
3. Click the **Bottom** icon to place the footing at the bottom of the report.

Include a Field in a Heading or Footing

You can include a specified field in a heading or footing. When you run the report, the data value for the field will be included in the heading or footing.

1. Click the **Show fields list** icon to the left of the Report headings box to display the Available fields window.

2. Select a field from the Available fields window and drag the field to the Page heading or Page footing box.

   or

   Click and hold the left mouse button, and drag the field to the fields box you chose.

   or

   Use the shortcut keys to quickly go to one of the field boxes.

   In the following table, the first column (Field Box) describes where you go when you use the shortcut key combination described in the second column (Shortcut Keys).

Field Box	Shortcut Keys
Page Heading	Alt+H
Page Footing	Alt+F

Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field in the page heading or footing text box.

Note:

- You can add more than one field name to either the Page heading or Page footing box by selecting one field at a time.
- The report's heading or footing will contain the first value retrieved for the field in the heading or footing.

Style a Heading or Footing

To style a heading or footing:

1. Select the field you want to style in the Page heading or the Page footing text box in the Report headings tab.
2. Click the **Cut**, **Copy**, **Paste**, **Select all**, and **Remove formatting** icons to format the text of your choice.
3. Click the appropriate icons to bold, italicize, or underline your text.
4. Click the icons for left, center, or right alignment to specify justification.
5. Click the **Bottom** icon to move your text to the bottom of the report.
6. Click the Font list box or press **Alt+N** to specify your selections.

   Note: When selecting a font, be sure to click in the text box before you select the font name, otherwise the font may return to the original font selection.
7. Click the Font Size list box or press **Alt+S** to specify your selections.
8. Click the **Text Color** icon or press **Alt+C** and **Enter** to open the Color palette window. Choose a color from the color list.
9. Click the **Background Color** icon or press **Alt+B** and **Enter** to open the Color palette window. Choose a color from the color list.
10. Click **Save** or **Save As** to save your settings.

Note: The default styling settings are as follows:

- Font: Times New Roman
- Size: 13 (If you change the font size of your heading, which is a FOCUS title, the code may not properly reflect the font size you specified when you open the procedure in a text editor. This does not affect functionality. You can edit the procedure manually to correct the size.)

- Style: Normal
- Text Color: Black
- Background Color: Transparent
- Justify: Left

Selecting Records for a Report

When generating a report and specifying which fields to display, you may not want to show every instance of a field. By including selection criteria, you can display only those field values that meet your needs. In effect, you can select a subset of the data, which you can easily redefine each time you issue the report request.

When developing a report request, you can define criteria to select records based on:
- The values of an individual field (using a Where statement).
- The aggregate value of a field, for example, the sum or average of a field's values (using a WHERE TOTAL statement).

The Selection criteria tab enables you to create Where or Where Total statements for record selection.

Creating a Where or Where Total Statement

Where and Where Total statements enable you to display only those records that pass your selection criteria. These statements select the data source records to be included in a report. The data is evaluated according to the selection criteria before it is retrieved from the data source. Use the Selection criteria tab to create a new Where or Where Total statement.

Note: In the Report Assistant, when you create a Where statement in the Selection criteria tab for a range of dates using FROM - TO, you will not be alerted if the TO field is chronologically before the FROM field. For example, if you enter something like "from 12/31/05 to 1/1/05", there will be no records in the resulting report.

Select Records Based on Values, Parameters, Fields, or a Constant

1. In the Report Assistant, click the **Selection criteria** tab.
2. Select a field from the Available fields window and drag the field to the **Screening conditions** pane.

   or

   Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

   The field name and Equal to and Select values appear in the Screening conditions pane.
3. Select **WHERE** or **WHERE TOTAL**.
4. Select an operator from the drop-down list (for example, **Equal to**) in the right pane.
5. Click **Select values** to complete the expression.
6. Select one of the following compare type option buttons:
   - **Constant.** Enter a value that will serve as a constant (a value that will not change). For example, enter vehicle.

After you click **OK**, the constant, vehicle, appears in the WHERE statement which reads BODYTYPE Equal to vehicle.
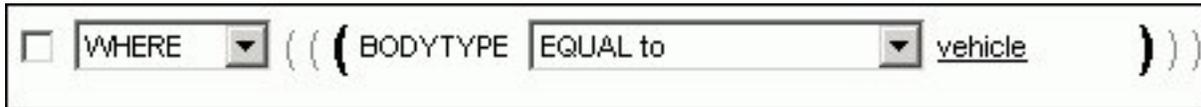
- **Parameters.** Enter the name of the variable. For example, moped as shown in the following image with the Parameter option button selected and the variable name entered as moped.

You can set parameter properties, for details see Setting Parameter Properties.

After you click **OK**, the parameter, &moped, appears in the WHERE statement which reads BODYTYPE Equal to &moped.

```
☐ WHERE  ▼ ( ( ( BODYTYPE | EQUAL to          ▼ | &moped        ) ) )
```

> **Note:** The ampersand is automatically added by DB2 Web Query.

- **Fields.** Select a field from the list.

  After you click **OK**, the field BHP appears in the Where statement which reads CAR.COMP.CAR Equal to CAR.SPECS.BHP.

```
☐ WHERE  ▼ ( ( ( CAR.COMP.CAR | EQUAL to      ▼ | CAR.SPECS.BHP
```

- **Values.** Select a value for the field you initially chose (in this case, car).

  After you click **OK**, the value, Audi, appears in the Where statement which reads CAR.COMP.CAR Equal to AUDI.

```
☐ WHERE  ▼ ( ( ( CAR.COMP.CAR | EQUAL to      ▼ | AUDI          ) ) )
```

Create a Where Statement Using Date and Time Values

In the Report Assistant,

1. Click the **Selection criteria** tab.
2. Select a field from the Available fields window and drag the field to the **Screening conditions** pane.

   or

   Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.
3. Click **Equal to** in the right pane to display a list of operators. Click the operator of your choice.
4. Click **Select values** to complete the expression.
5. Click **Field** to access date and time values for that field. For example, EYEAR.
6. Click **Values** and click the value of your choice. For example, 1989/01/18.

   After you click **OK**, the value, 1989/01/18, appears in the WHERE statement which reads START_DATE Equal to 19890118.

```
☐ WHERE  ▼ ( ( ( START_DATE | EQUAL to        ▼ | 19890118      ) ) )
```

Importing Values From External Files for WHERE Statements

When developing a query, you can use a locally saved, external file as selection criteria to limit query results. This enables you to quickly build a query containing a large number of WHERE statement values without having to manually enter repetitive or readily available data.

Create a Value List From an External File

1. Required: Navigate to the **Selection criteria** area.
2. Required: Begin creating a WHERE statement by selecting a field from the list of available fields.
3. Required: Select a data comparison option that can accept multiple values.

    Valid options include EQUAL to, NOT EQUAL to, IN literal list, NOT IN literal list, EXCLUDES literal list, and INCLUDES literal list.
4. Click **Select values**.

    The Values dialog opens.
5. Click the **import** button as shown in the following image.

A dialog box opens as shown in the following image.

6. Select either the Flat file or Excel Spreadsheet (XLS) File Format option.
7. Click the **Browse** button.

A standard file selection dialog opens.

8. Select an external file to import from your local machine or network.

   Note: The external file must only contain text with new line delimiters.

9. Click **OK**.

   The values contained in the file are displayed in the Multiple values entered list in the right pane of the dialog.

10. Optionally, you can remove specific values from the Multiple values entered list or move values up or down within the list.

11. Click **OK**.

    You can save the query for future use and reopen the query to append new or remove existing values.

Setting Parameter Properties

When you create parameters for Selection Criteria (WHERE statements) you can set the properties for the parameter. For example, you can create a dynamic or static list of values to choose from at run time.

Set Parameter Properties

1. In the Report Assistant, click the **Selection criteria** tab.

2. Create a WHERE or WHERE TOTAL expression.

3. Select an operator. Some operators are not supported with the Variable Editor, see Supported Operators for the Variable Editor for details.

4. Click **Select values**.

5. Select the **Parameter** option button.

6. Click the **Auto Prompt** button.

   The Parameter Properties dialog box opens.

7. Choose the Selection type, **Dynamic** or **Static**.

   The Dynamic option is selected by default.

   The Name and Description fields are automatically populated based on the field you are screening on, but you can edit the populated values.

   Note: The Description field cannot contain a period (.) because a period is the delimiter to specify the beginning and end of the description value.

8. Set the parameter values. For the:
   - Dynamic selection type, the Data Source and Field are selected by default based on the field you are screening on. You may change these as necessary.
   - Static selection type, select the **Constant** or **Show field values** option button. For constant, enter a value or values. For Show field values, all of the values for the selected field appear in the list box. Move the values you want in the selection list to the Prompt values list.

9. Click **OK** to exit the Parameter Properties dialog box.

Supported Operators for the Variable Editor

Operator	Enabled for the Variable editor?
Equal to	Yes
Not equal to	Yes
Equal to multiple	No
Not equal to multiple	No
Greater than	Yes

Operator	Enabled for the Variable editor?
Less than	Yes
Greater than or equal to	Yes
Less than or equal to	Yes
In literal list	No
Not in literal list	No
Missing	No
Not missing	No
From - to	No
Not-from - to	No
Includes literal list	No
Excludes literal list	No
Contains characters	Yes
Omits characters	Yes
Like character mask	Yes
Not like character mask	Yes

Combining Expressions

Use the right pane of the Selection criteria tab to use or delete existing Where statements and to combine expressions.

Combine Expressions

1. Create an expression.
2. When you create additional expressions, they are combined with the default operator AND as shown in the following image with two statements, the first a WHERE and the second an AND statement.

3. Toggle between AND, OR, WHERE, and WHERE TOTAL by clicking the AND to make your choice.

Delete an Active Expression

1. Select the check box next to the expression you want to delete. Click the **Delete** icon above the box.
2. You are prompted to delete the expression. Click **OK** to delete.

Grouping Expressions Together With Parentheses

You can use parentheses to group expressions together to optimize the Where statement.

Group Where Statements Together Using Parentheses

Click the grayed out parentheses to activate the parentheses and group expressions together.

Limiting Data With Filters

Filters enable you to quickly select predefined criteria that limit data included in a report. Filters are selection criteria (Where statements) that an Administrator creates for you to apply as needed, without having to create your own selection criteria.

DB2 Web Query displays filters in filter groups. Each filter group can contain multiple filters. Selecting a single filter within one group creates a report with simple filtering criteria. By selecting multiple filters within a group or combining filters from different groups, you can create complex filtering expressions.

The following image shows a few sample filters as they appear in the Selection criteria tab of the HTML Report Assistant. They are listed by Group and Name.

Simple Filtering Criteria

Simple filtering criteria consists of one or more filters from the same filter group. If you select only one filter, the data must match that filter to be included in the report. If you select multiple filters from the same filter group, the data must match only one filter to be included in the report. This type of criteria is an OR criterion.

Complex Filtering Criteria

Complex filtering criteria consists of one or more filters from multiple filter groups. Data must match one filter from each filter group to be included in the report. This type of criteria is an AND criterion.

Selecting Records With LIKE and NOT LIKE Operators

Alphanumeric fields include the following operators:

- **LIKE the character mask.** This means that the value for the field you selected will be included in the report. All other values for that field will not be included in the report. For example, if you select the Plant field and specify Boston with LIKE the character mask, only values for Boston will appear in the report. Values for plants in all other locations will not be included.

- **NOT LIKE the character mask.** This means that all values except the one you specify for the field you selected will be included in the report. For example, if you specify Boston with the NOT LIKE character mask, data for Dallas, Los Angeles, New Orleans, Seattle, and St. Louis will display and no data will display for Boston.

These operators generate the appropriate LIKE and NOT LIKE expressions using the character mask available in the expressions list when creating a WHERE statement.

Working With Joins

A join is a temporary connection between two or more data sources that share at least one common field. Once you join two data sources, each time DB2 Web Query retrieves a record from the first data source (host file), it also retrieves the matching records from the second data source (target file).

You use the Join tool to link data sources in both Report Assistant and Graph Assistant. The Join tool provides a graphical method for creating and manipulating joins. You can also create define-based joins and multi-field joins.

When you access the Join tool, the window displays a field list for the host data source (which you specified when you created the report), and a field list for any target data source you add to the window.

Important:
- Only Administrators and Developers have access to the Join options tab.

Create a Join

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.

   The following image shows the Join settings window where you select fields from the Host field and the Target field lists to create a join.

3. Select the fields you want to join from the Host field list and the Target field list and add them to their respective Selected Fields boxes.

or

Press **Alt+M** to go to the Host field list.

or

Press **Alt+T** to go to the Target field list.

Then, tab to the field and press **Enter** to add the chosen field to the corresponding Selected Fields box.

Note: Fields must have the same format and be indexed fields in order to use them to create joins.

4. Select your join properties:

- **Unspecified.** Indicates neither an inner nor left outer join.
- **Inner Join.** A join that results when a report includes host rows that have corresponding cross-referenced rows.
- **Left Outer Join.** Extends the results of an Inner Join and retrieves records from both host and cross-referenced tables, including all records from the left table (host) and any records from the right table (cross-referenced) where the condition values match. If there are no matching values in the cross-referenced table, the join still retrieves records from the host table.
- **Multiple Instance (formerly Non Unique).** A one-to-many join structure that matches one value in the host data source to multiple values in the cross-referenced field. Joining employee ID in a company's employee data source to employee ID in a data source that lists all the training classes offered by that company would result in a listing of all courses taken by each

employee, or a joining of the one instance of each ID in the host file to the multiple instances of that ID in the cross-referenced file. The default join type is inner.

- **Single Instance (formerly Unique).** A one-to-one join structure that matches one value in the host data source to one value in the cross-referenced data source. Joining an employee ID in an employee data source to an employee ID in a salary data source is an example of a unique join.

5. To see the join syntax, click **View**.
6. Click **OK**.
7. In the Description box, give the join a meaningful and unique name.
8. Click **Save & Create**.

   The new join appears in the Joins list.

Create a Define-based Join

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.
3. Click the down arrow of the Define icon and then click **New define field**.

   The following image shows the list of Define field options.

The following image shows the Define field creator dialog box where you create the Define expression.

4. Create the defined field. The new define field appears in the Available fields

   list. The field is prefixed with the define symbol.

5. Add the defined field and the target field to their respective Selected Fields boxes.

   Note: Fields must have the same format and be indexed fields in order to use them to create joins.

6. If you want to see the syntax, click **View** to display the define-based join syntax.

7. Give the join a meaningful and unique name in the Description box.

8. Click **Save & Create**. The new join appears in the Joins list.

Create Multi-field Joins

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.

3. Enter multiple fields in the Host field list box and one field in the Target field list box.

4. If you want to see the syntax, click **View** to display the multi-field join syntax.

5. In the Description box, give the join a meaningful and unique name.

6. Click **Save & Create**.

   The new join appears in the Joins list.

Delete a Join

1. Select a join from the Select an existing join list box.

2. Click **Delete**.

Edit a Join

1. Select a join from the Select an existing join list box.
2. Make your desired changes.
3. Click **Save & Create**.

Applying Other Report Options

The Report options tab enables you to select from a variety of options for the output of your report.

The features of the Report options tab are shown in the following image.

The following is a list of the Report options tab features:

- Save a report to an output format that supports styling options.
- Save a report to an output format that supports CSS.
- Specify the page-numbering format.
- Set record/read limits.
- Use database optimization.
- Enter a report title.
- Enter summary text.
- Style the entire report.
- Style a PDF or PS report.

- Justify an entire report.
- Enable On-demand Paging and grid lines.
- Display pop-up field descriptions for column titles.
- Optimize output with internal Cascading Style Sheets (CSS).
- Run long queries with the Paged option.
- Create a DB2 file as report output.
- Use accessibility features.
- Enable OLAP features.
- Enable the Automatic Drill Down features.
- Direct output to a printer.

Save a Report to an Output Format That Supports Styling Options

1. From the Report options tab, select the **Show styled formats** option from the drop-down list.
2. The **Generate report as** list box offers a choice of file types for the report output. Select one of the following formats from this list:
   - **HTML.** Creates the report in HTML, sending the output to the Web browser, with or without grid lines.
   - **AHTML (Active Report).** Creates an HTML report that is designed for offline analysis. Users can interact with the data, using analysis options similar to those found in an Excel workbook, without any connection to a server. See Creating an HTML Active Report.
   - **PDF.** Captures the entire report and creates a Portable Document Format (.PDF) file, which can be opened in the Adobe® Acrobat Reader (Adobe's PDF viewer).
   - **EXL97.** Generates a report in Excel97 format.
   - **EXL2K.** Generates fully styled reports in the Excel 2000 HTML format. Excel 2000 provides full support for HTML files with embedded XML.
   - **EXL2KFORMULA.** Excel with Formula.
   - **PS.** Creates the report as a postscript file.

Save a Report to an Output Format That Supports CSS

1. From the Report options tab, select the **Show unstyled formats** option from the drop-down list.
2. The Generate report as list box offers a choice of file types for the report output. Select one of the following formats:
   - **EXCEL.** Excel 95.
   - **DOC.** Plain text with page breaks.
   - **WP.** Plain text without page breaks.
   - **WK1.** Import to Lotus® 1-2-3®. See Notes on Using LOTUS Format..
   - **DIF.** Import to Spreadsheet.
   - **LOTUS.** Import to Lotus 1-2-3. See Notes on Using LOTUS Format.
   - **TABT.** Tab delimited.
   - **XML.** eXtensible Markup Language.

Specify Page Numbering Format

The Page Numbering list box offers several options for page numbering. Select one of the following from the list box:

- **Default.** Numbers each page of the report in the format PAGE 1, PAGE 2, and so on. The default value is ON.
- **ON.** Numbers each page of the report in the format PAGE 1, PAGE 2, and so on.
- **OFF.** Suppresses the display of page numbers.
- **NOLEAD.** Suppresses the two leading blank lines included on each page by default.

Set a Record Limit or Read Limit

To limit the number of records retrieved when reporting from a non-FOCUS data source, enter a number greater than zero in the Read Limit box. A read limit specification is ignored when reporting from a FOCUS data source.

To limit the number of records retrieved when reporting from a FOCUS data source, enter a number greater than zero in the Record Limit box.

These options are for development only.

Note:

- A warning is issued to indicate to the user that the report they are viewing is only a subset of the actual data. This occurs when either Record limits or Read limits are checked in the Properties tab, under Warning message displayed in Heading.
- The **This report is only a subset of the data** edit box is checked by default. You can deselect the check box for this message or design a new message. Either message will appear in the heading of the report.

Set Optimization When Running Requests

You can optimize report requests which will reduce the volume of database-to-server communication and improve response time. It also enables the database to exploit its own internal optimization techniques. This function creates SQL statements that take advantage of join, sort, and aggregation capabilities.

Select the **Use Database Optimization** check box to enable this function.

Include a Report Title

You can specify a report title in the Report Title field that will appear in the title bar of your report. This option is not available for reports generated in PDF or PS format or for reports that utilize on-demand paging.

Include Summary Text for a Report

You can specify summary text for your report in the Summary Text for Report field. This will place a description of the output into a SUMMARY object inside the output HTML TABLE. The length limit of this summary is 500 characters. If you try to set the SUMMARY to more than 500 characters, you receive the following message:

```
Limit on length of summary is 500 characters.
```

Note: You can only specify summary text when the Use Accessibility features (Section 508) option is checked.

Style the Entire Report

To style the entire report:

1. Click **Font** in the Global report styling section on the Report options tab.

   The Styles dialog box opens where you can select report style options.
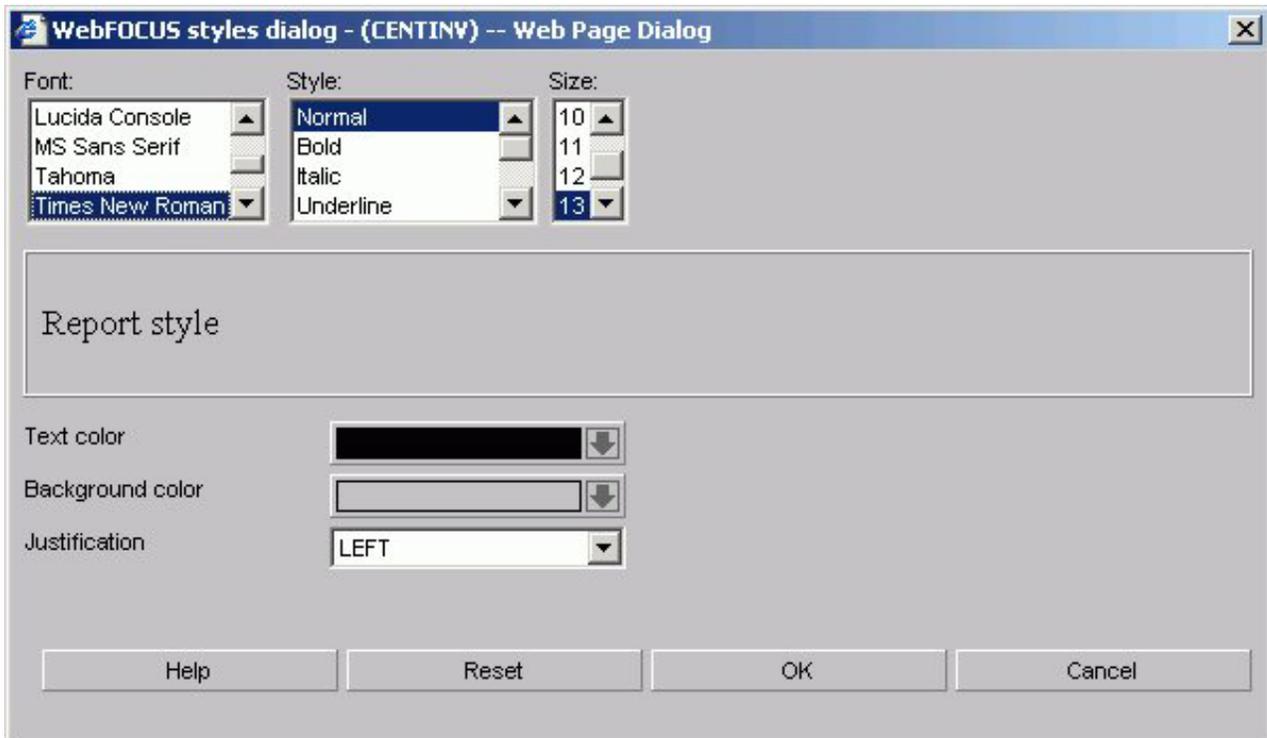
2. Select styling options from the Font, Style, and Size boxes.
3. Select a text color from the Text Color list box.
4. Select a background color from the Background Color list box.
5. Select a justification from the Justification list box.
6. Click **OK**.
7. To specify an existing DB2 Web Query Style Sheet or Cascading Style Sheet, make your choice from the relevant list box.

Note: Clicking Reset returns the styling options to the following default settings:

- Font: Times New Roman
- Style: Normal
- Size: 13
- Text Color: Black
- Background Color: Transparent
- Justification: Left

Style a PDF or PostScript Report

When you select PDF or PostScript® (PS) as the display format for a report, DB2 Web Query offers several additional styling features.

1. Select **PDF** or **PS** from the Generate report as list box.
2. Click **Font**. The Styles dialog box opens.
3. Select a font.
4. Click the Page Orientation list box to select either **Portrait** or **Landscape**.

   Note: This option is only available when you select PDF as the report format.
5. Click the Page size list box to select the page size for the report.

   Note: This option is only available when you select PDF or PS as the report format.
6. Click **OK**.

Justify an Entire Report

The following procedure describes how to justify an entire report. This affects headers, footers, fields, and field headings.

1. Click **Font**. The Styles dialog box opens.
2. In the Justification list box, select **Left**, **Right**, or **Center**.
3. Click **OK**.

Enable On-Demand Paging and Grid Lines

1. Select **HTML - Web browser** or **HTML - Web browser (with grid)** in the Generate report as list box.

   Note: The latter option provides grid lines that separate cells of data in your report.

   You can only use On-demand Paging for reports that use the HTML format.
2. Click the **On-demand Paging** check box.
3. Save and run the report.

   DB2 Web Query displays the first page of the report in the DB2 Web Query Viewer.

Optimize Output With Cascading Style Sheets

When you check Optimize output with Cascading Style Sheets in the Report options tab of Report Assistant, your report will reflect the styling options you select, and generate Internal Cascading Style Sheet code in the HEAD tag of HTML reports. This feature is available only if you select HTML in the Generate report as drop-down list.

Run Long Queries With the Paged Option

To display the first few pages of results prior to the completion of a long-running query, use the Paged option for HTML output. From the Report options tab, select the Format HTML Output check box, then select Paged from the drop-down list.
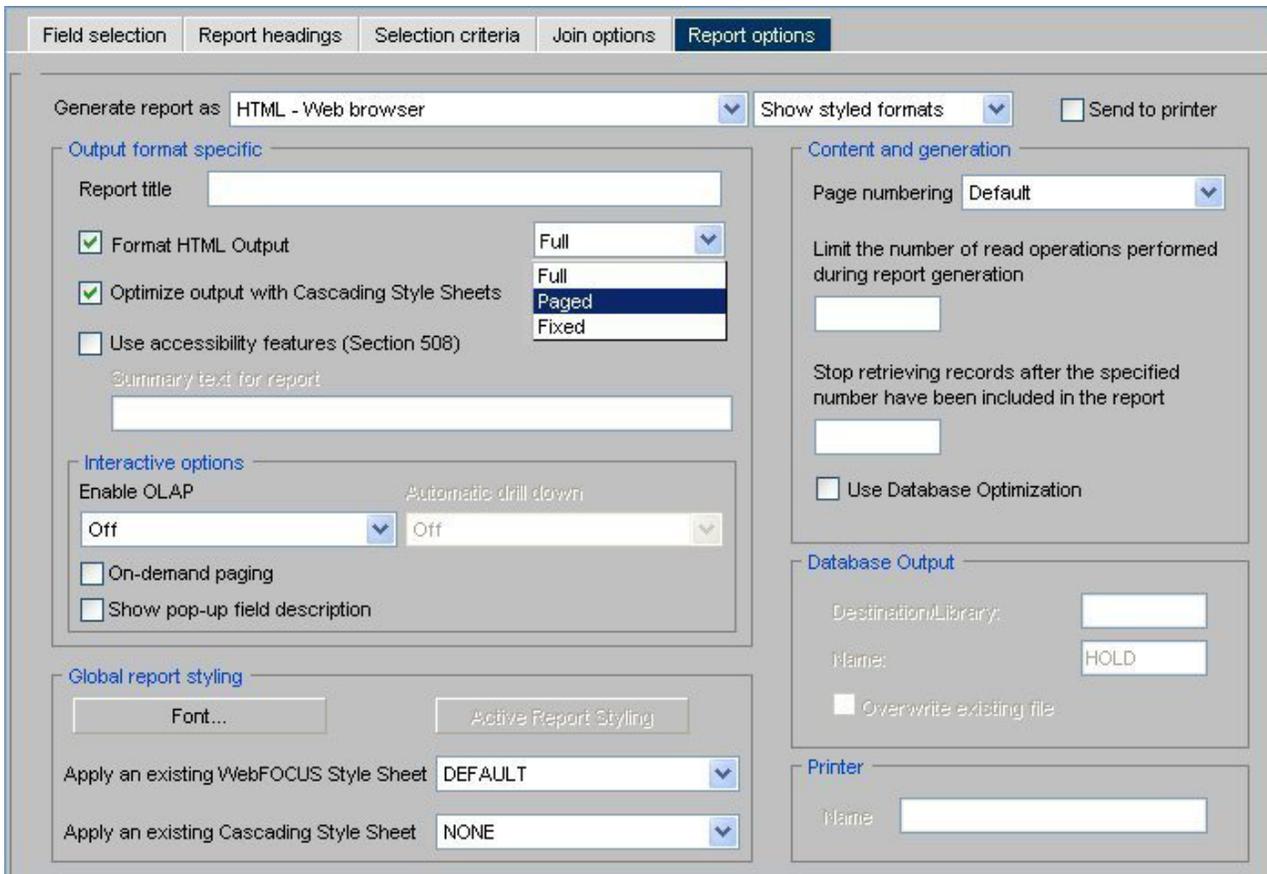
Note: Output for summary reports will be finalized when the query is complete.

Create a DB2 File as Report Output

To create a DB2 file as report output, complete the following steps.

1. From the Report options tab, select the Show database formats option from the format drop-down list.

2. Accept the default value in the Generate report as list box, which is DB2- DB2 database table.

3. In the Database Output section, supply values for the following options:
   - Destination Library - name of the library destination for the DB2 report file.
   - Name - name of the DB2 file.

4. If you need to overwrite an existing file, select the Overwrite existing file check box.

   Note: When specifying to overwrite an existing database file, the file will not be overwritten if the user does not have specific write authority to the file. A message will be displayed which says that the file already exists, even though overwrite was specified.

   The following image illustrates the options for the DB2 database format.

| Field selection | Report headings | Selection criteria | Join options | Report options |

Generate report as [DB2 - DB2 database table ▼] [Show database formats ▼]   ☐ Send to printer

Output format specific

Report title [   ]

☐ Format HTML Output   [Full   ▼]

☑ Optimize output with Cascading Style Sheets

☐ Use accessibility features (Section 508)

   Summary text for report

   [   ]

Interactive options

Enable OLAP   Automatic drill down

[Off   ▼]   [Off   ▼]

☐ On-demand paging

☐ Show pop-up field description

Global report styling

[Font...]   [Active Report Styling]

Apply an existing WebFOCUS Style Sheet [NONE ▼]

Apply an existing Cascading Style Sheet [NONE ▼]

Content and generation

Page numbering [Default   ▼]

Limit the number of read operations performed during report generation

[   ]

Stop retrieving records after the specified number have been included in the report

[   ]

☐ Use Database Optimization

Database Output

Destination/Library: [LIBRARY]

Name: [FILENAME]

☐ Overwrite existing file

Printer

Name [   ]

Use the Accessibility Feature

If you check this box, the output will be 508 compliant. See Include Summary Text for a Report.

Setting OLAP Reporting Options

OLAP options are available in the Interactive options section of the Report options tab in Report Assistant only when the OLAP license option is activated. The relevant options—**Enable OLAP** and **Automatic Drill Down**—are located here.

Enable OLAP Options

The Enable OLAP options in the Report Assistant control how users can interact with an OLAP report and access OLAP tools.

Administrators and Developers who are creating reports can OLAP-enable them and control the following OLAP interfaces and drill down options.

- **OFF.** OLAP is off when off is selected, OLAP options are not available for the report.
- **Columns only.** Turns off the OLAP Control Panel and the OLAP Selections pane, but enables OLAP functionality from the report itself. You can access options on right-click menus, drag and drop columns within the report, and use up and down arrows to sort columns from high to low or vice versa. This is the default.

- **Columns with panel.** Provides access to the OLAP Selections pane from a square button to the left of the column titles.
- **Show filters on top.** Opens the OLAP Selections pane above the report. The Measures, Graph, and Dimension controls, as well as the band containing the OLAP, Run, and Reset buttons appear above the report output. You can open the Control Panel by clicking the OLAP button on the Selection pane.
- **Show filters on bottom.** Opens the OLAP Selections pane below the report. The Measures, Graph, and Dimension controls, as well as the band containing the OLAP, Run, and Reset buttons appear below the report output. You can open the Control Panel by clicking the OLAP button on the Selection pane.
- **Show Panel in Report.** Opens the OLAP report with the OLAP Selections pane hidden. You can perform a variety of analytic tasks from the report itself. Selection Criteria is shown next to the OLAP button.
- **Show Tabbed.** For OLAP reports that have multiple dimensions, this option groups the dimension elements under a tab labeled with the dimension name.

Automatic Drill Down Options

These options enable you to sort instantly from high to low or low to high for selected report columns:
- **Off.** Disables automatic drill downs.
- **Dimensions only.** Enables automatic drill downs on dimensions in reports and graphs.
- **Measures and Dimensions.** Enables automatic drill downs on dimensions in both reports and graphs and on measures in reports.

Direct Output to a Printer

To create a direct output to a printer, complete the following steps.

1. From the Report Options tab, select the **Send to printer** check box.

   As shown in the following image, the Printer name field becomes enabled when the check box is selected.

| Field selection | Report headings | Selection criteria | Join options | Report options |

Generate report as HTML - Web browser ▼   Show styled formats ▼   ☐ Send to printer

Output format specific

Report title [   ]

☐ Format HTML Output   Full ▼

☑ Optimize output with Cascading Style Sheets

☐ Use accessibility features (Section 508)

  Summary text for report

  [   ]

Interactive options

Enable OLAP   Automatic drill down

Off ▼   Off ▼

☐ On-demand paging

☐ Show pop-up field description

Global report styling

Font...   Active Report Styling

Apply an existing WebFOCUS Style Sheet [DEFAULT ▼]

Apply an existing Cascading Style Sheet [NONE ▼]

Content and generation

Page numbering [Default ▼]

Limit the number of read operations performed during report generation

[   ]

Stop retrieving records after the specified number have been included in the report

[   ]

☐ Use Database Optimization

Database Output

Destination/Library: [   ]

Name: [HOLD]

☐ Overwrite existing file

Printer

Name [   ]

2. Type the name of the printer you wish to print to in the Name field.

   For example, CAN28B1 is the network printer typed in the Name field, as shown in the following image.

| Field selection | Report headings | Selection criteria | Join options | Report options |

Generate report as HTML - Web browser ▼ Show styled formats ▼ ☑ Send to printer

Output format specific

Report title [   ]

☐ Format HTML Output   Full ▼

☑ Optimize output with Cascading Style Sheets

☐ Use accessibility features (Section 508)

Summary text for report
[   ]

Interactive options

Enable OLAP   Automatic drill down

Off ▼   Off ▼

☐ On-demand paging

☐ Show pop-up field description

Global report styling

Font...   Active Report Styling

Apply an existing WebFOCUS Style Sheet DEFAULT ▼

Apply an existing Cascading Style Sheet NONE ▼

Content and generation

Page numbering Default ▼

Limit the number of read operations performed
during report generation
[   ]

Stop retrieving records after the specified
number have been included in the report
[   ]

☐ Use Database Optimization

Database Output

Destination/Library: [   ]

Name: [HOLD]

☐ Overwrite existing file

Printer

Name [CAN28B1|]

Displaying Pop-up Field Descriptions for Column Titles

You can have pop-up field descriptions display in an HTML report when the mouse pointer is positioned over column titles. Field description text displays in a pop-up box near the column title using the default font for the report. Pop-up text appears for report column titles including titles created with ACROSS phrases and stacked column titles created with OVER phrases.

The pop-up text displayed for a column title is defined by the Description attribute in the Master File for the corresponding field. If a column title has no Description entry in the Master File, then no pop-up box is generated when your mouse is positioned over the title.

This feature is not supported in the HTML Graph Assistant.

Display Pop-up Field Descriptions in an HTML Report

1. Open the HTML Report Assistant.
2. In the HTML Report Assistant window, select the **Report options** tab.
3. In the Interactive Options area, select the **Show pop-up field description** check box.
4. Click **Save** to save this option in your report.

Creating an HTML Active Report

Note: Active Report functionality is available only when the Active Reports license option is activated.

An HTML Active Report is a report that is designed for offline analysis.

When using an HTML Active report you can:

- Interact with the data, using analysis options similar to those found in an Excel workbook, without any connection to a server.
- Work offline without any additional plug-ins or programs. HTML Active Reports are self-contained reports, meaning they contain all of the data and JavaScript™ within the HTML output file. Packaging the data and the interactive functions in the HTML file also makes the output highly compressible for e-mail and transparent to security systems.
- Save the report on a local machine with the packaged interactivity. Since no connection to a server is required to view the data or use the analysis options, you can save and use the report anywhere.

The following image shows a simple HTML Active Report. The record status and page navigation bar appears at the top of the report.

Create an HTML Active Report With HTML Report Assistant

1. In the HTML Report Assistant, click the **Report options** tab.
2. Ensure that the **Show styled formats** option is selected from the drop-down list.

3. From the Generate report as drop-down list, select **AHTML - Active Report**.
4. Click the **Active Report Styling** button.
5. Select options for the Active Report.

Formatting an HTML Active Report

You can apply the following custom formatting to an HTML Active Report:

- **Report view.** You can set the report view as a standard table or as an expandable report. An expandable report is a collapsed report that can be fully expanded for sorting and other purposes.
- **User type.** You can set the user type, which determines the level of functionality and interactivity available in the report output. Each user type can be customized.
- **Pagination.** You can set the justification for the information that appears in the record status and page navigation bar and set the number of records that appear per page. Pagination options are not available for expandable report views.
- **Calculations.** You can set certain calculations for fields in the report. You set calculation results to show in a row that appears either above or below the report.
- **Color.** You can set the color for data visualization graphs, the text and background for the record status and page navigation bar, selected rows, the value and background for calculations, and the text, background, and border for the menu.
- **Freeze columns.** Enables you to freeze the report at a particular point so that columns to the left of the freeze point remain in view while the user scrolls through the other report columns.

Active Report Styling Dialog Box
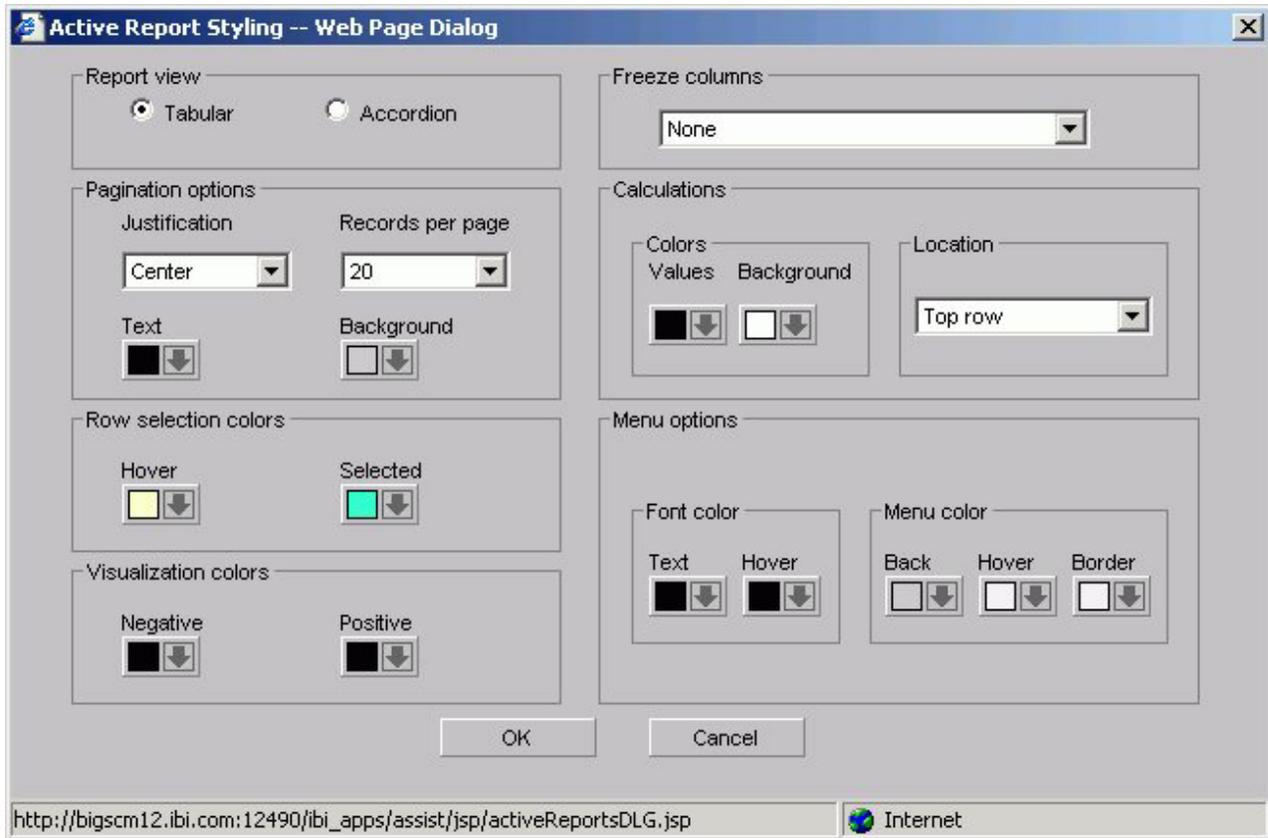
The Active Report styling options are:

Report view

Sets the report view as a standard table (Tabular) or as an accordion report. Users can fully expand accordion reports for sorting and other purposes.

Pagination options

Following are the pagination options for HTML Active Reports. Pagination options are not available for Accordion report views.

Justification

Justifies the text that appears in the record status and page navigation bar. Options are Left, Center, and Right. Left is the default.

Records per page

Sets the number of records that appear per page. Options are: Default, 10, 20, 30, 40, 50, Show All. The default is 57 lines per page.

Text

Sets the color for the text in the record status and page navigation bar. The default is black.

Background

Sets the background color for the record status and page navigation bar. The default color is silver.

Row selection colors

> An HTML Active Report offers visual assistance for viewing data in the report. For example, when a user hovers over a row of data the row is highlighted with a background color and when they click a row of data it is also highlighted with a background color. You can set the colors for these options, Hover and Selected. The default color for Hover is RGB(255 252 204), which is a shade of yellow, and the default color for Selected is RGB(51 255 204), which is a mix of green and blue.

Visualization colors

> Users can apply data visualization to numeric fields in an HTML Active Report. Here you can designate the colors of the bars. You can set different colors for positive and negative values. The default color for positive and negative values is black.

Freeze columns

> Enables you to freeze the report at a particular point so that columns to the left of the freeze point remain in view while the user scrolls through the other report columns. Options include:
> - None turns off the freeze option. This is the default.
> - The fields in the request. If the report can be viewed fully viewed in the browser window, then freeze is not applied.

Calculations

> Set options for calculations:
>
> **Colors**
>
> > Specifies the colors for the values in a calculation:
> >
> > **Values sets the font color of the calculation results.** This color defaults to black.
> >
> > **Background sets the background color of the calculation results.** This color defaults white.
>
> **Location**
>
> > Sets the location of the calculations. Options are Top row or Bottom row. Top row is the default.

Menu options

> Set options for the menu.
>
> **Font color**
>
> > Enables you to set the colors for the menu text:
>
> **Text sets the color of the text**
>
> > The default is black.
>
> **Hover sets the color of the text when the mouse hovers over it**
>
> > The default color is black (text hover does not show).

Menu color

> Set the colors for the menu:
>
> **Background sets the background color of the menu.** The default color is silver.

Hover sets the background hover color of an individual item on the menu. For example, if the background color of the menu is black, the hover color can be set to white to visually show which option on the menu the mouse is currently hovering over. The default color is white.

Border sets the color of the menu border. The default color is white.

Running a Report

You may periodically run a report as you create it as well as when you have finished creating it.

Run a Report

1. Click the **Run** icon in the Report Assistant.

   If you click Run, the report appears in a separate browser session.

2. To return to the Report Assistant, close the browser window displaying the report.

Note: You can continue to make changes to your existing report procedure or create another report by clicking **Save As**.

Saving a Report

When you click the Save or Save As buttons you save your report (procedure). If you make changes in your report without subsequently saving them and then click Quit, you are prompted with the following options:

- **Yes.** Click to save your changes and exit the report.
- **No.** Click to discard your changes and exit the report.
- **Cancel.** Click to return to your report to continue working or use Save or Save As to save your changes and then click Quit to exit your report.

Editing a Report

When you create a report using Report Assistant and you add a new comment as the first line of the report code, the report no longer opens in Report Assistant. Instead, the report opens in the Editor.

When there is an error in a procedure that HTML Report Assistant cannot identify, the code in the procedure appears in a window. At the top of the window, a message appears that describes what line of code the error is occurring on. You must reopen the procedure in the editor and correct the error before the procedure can be reopened in HTML Report Assistant.

HTML Report Assistant Tab References

The topics in this section provide reference information for all of the fields in the various tabs in the HTML Report Assistant.

Field Selection Tab

The Field selection tab is used to select fields for a report.

Field Selection Tab: Available Fields Window

The following image shows the Available fields window on the Field selection tab. The fields are sorted by the Name column with corresponding columns containing their Alias, Format, and Segment information.

Available Fields Window

> Displays a list of field names from the selected data source.

Define icon

> Click the Define (calculator) icon to select: New define field, Edit define field, or Delete define field. If you select the New define field or Edit define field, the Define field creator dialog box opens where you can create or edit a defined field.
>
> **Note:** The New define field is not for use with queries originated in IBM Query/400.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click on the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a list box: name, alias, title, format, description, segment, and file name. You can also choose to sort by file order.

Field Selection Tab: Report Fields Window

The following image shows the Report fields section on the Field selection tab. You can view the selected fields with the following options:
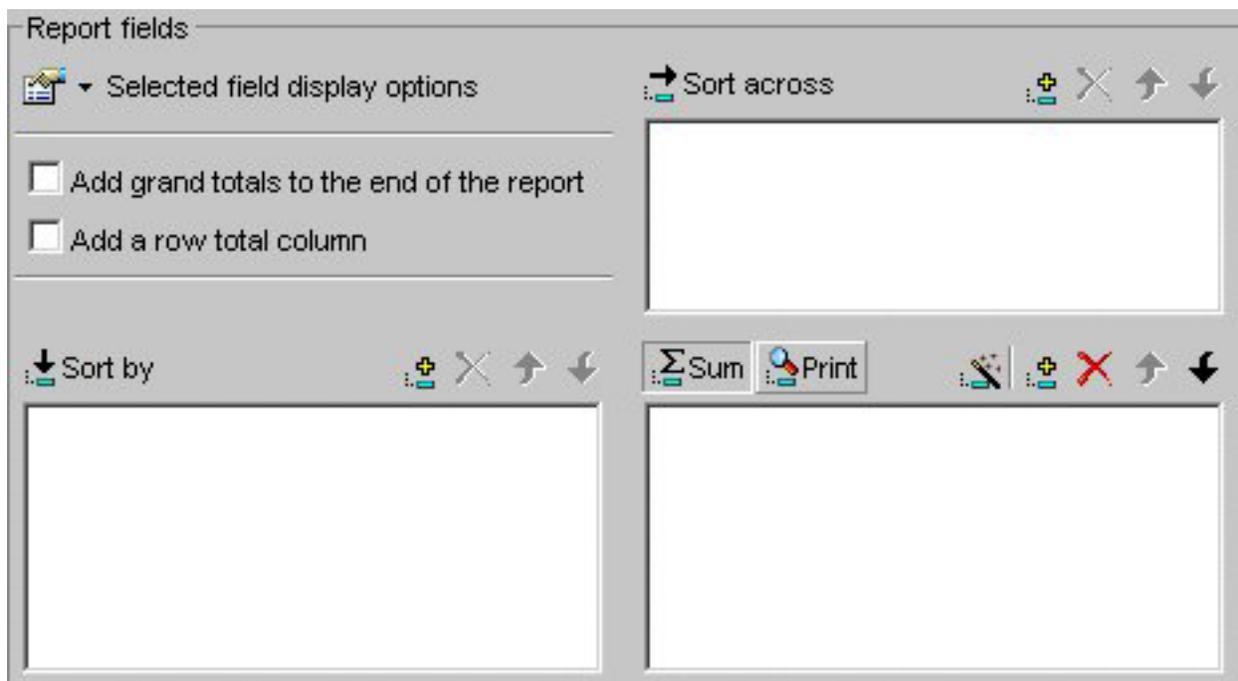
Selected field display options

Lists the following field display options:

Prefix with the Segment Name

Prefixes the field name with the segment name.

Prefix with the Filename

Prefixes the field name with the name of the data source.

Show the field's alias instead of name

Uses the alias defined in the Master File as the field name.

Show field's title

Uses the title in the Master File instead of the field name.

Show field's description

Uses the description in the Master File instead of the field name.

Add grand totals to the end of the report

>   Displays the total for each column.

Add a row total column

>   Displays the total for each row.

Sort By

>   Lists the vertical field that you have selected from the Available Fields window.

>   **Add icon**
>
>   >   Adds a field to the Sort By window.
>
>   **Remove icon**
>
>   >   Removes a field from the Sort By window.
>
>   **Move Up or Move Down icons**
>
>   >   Moves the position of the field within the report.

Sort Across

>   Lists the horizontal field you have selected from the Fields window.

>   **Add icon**
>
>   >   Adds a field to the Sort Across window.
>
>   **Remove icon**
>
>   >   Removes a field from the Sort Across window.
>
>   **Move Up or Move Down icons**
>
>   >   Moves the position of the field within the report.

Sum

>   Indicates a report that aggregates data by the horizontal field.

Print

>   Prints each value on a record-by-record basis.

>   **New Computed Field icon**
>
>   >   Opens the Computed Field Creator dialog box where you can define the parameters for a new computed field. For more information on the Field Creator dialog box, see Field Selection Tab: Field Creator Dialog Box.
>
>   **Add icon**
>
>   >   Adds a field to the report fields.
>
>   **Remove icon**
>
>   >   Removes a field from the report fields.
>
>   **Move Up or Move Down icons**
>
>   >   Moves the position of the field within the report.

Field Selection Tab: Field List Searching

The following image shows the Field List Searching options that you can use to search for a field in the Fields List. For more details, see Searching Field Lists.

Pattern Search

Select the Master File attribute for which you want to search. The following table lists the pattern attributes and a description of each.

Attribute	Description
Name	Name of the field.
Alias	Alias for the field.
Title	Display title for the field, as defined in the Master File.
Format	Field format, for example A4.
Description	Field description, as defined in the Master File.
Segment	A segment of fields in the Master File.
Filename	Name of the data source.

Text Box

Type your search string. You can use an asterisk (*) as a wildcard. For example, type c* to find all fields that begin with the letter "c". The character string is not case sensitive.

Field Selection Tab: Show Report Field Options for Sort By

The following image shows the Show report field options where you choose various styles and functions for a selected field.

The Display subtab for a Sort by field has these options:

Make this field invisible

Check to hide the display of a Sort By field.

Font button

Opens the font styling dialog box. See Font Dialog Box.

Conditional Styling button

Opens the conditional styling dialog box where you use to add conditional styling in a report.

Drill Down button

Opens the drill-down dialog box. See Drill Down Dialog Box.

Format in report as

Is grayed out and unavailable.

Calculated as

Is grayed out and unavailable.

Include missing instances

Inserts '.' when no field value exists.

The Title subtab for a Sort by field has this option:

Title

Is the name of the field in the Sort By list box.

The Sorting subtab shown in the following image for a Sort by field has these options:
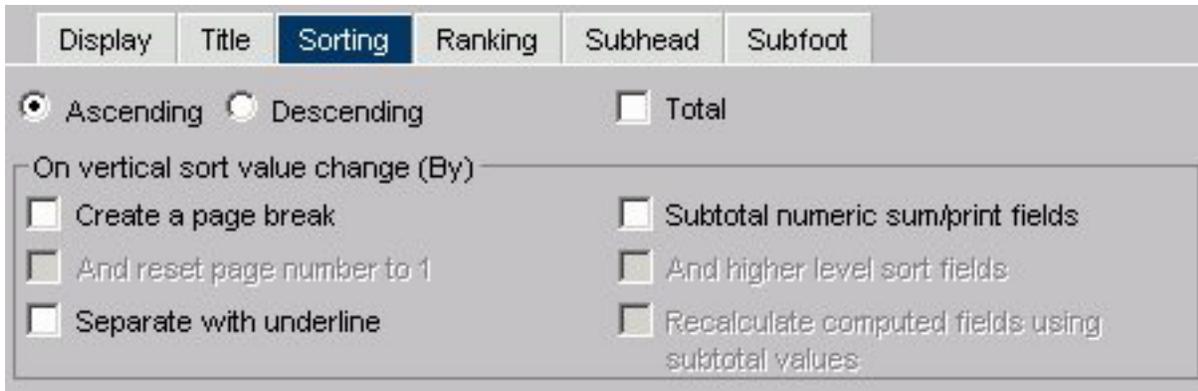
Ascending

Click to arrange fields in ascending order.

Descending

Click to arrange fields in descending order.

Total

Applies aggregation and sorting simultaneously to numeric columns in your report in one pass of the data. See Aggregating and Sorting Fields.

On vertical sort value change (By)

Select:
- Create a page break (on value change).
- Separate (from next) with underline.
- Subtotal numeric sum/print fields.

Note:
- When the "Create a page break" check box is selected, the "And reset page number to 1" check box is activated.
- When the Subtotal numeric sum/print fields check box is selected, the Subtotal tab appears and two more check boxes are activated; And higher level sort fields and Recalculate computed fields using subtotal values. For more information about subtotals, see Include Subtotals.

The Ranking subtab, shown in the following image for a Sort by field has these options:
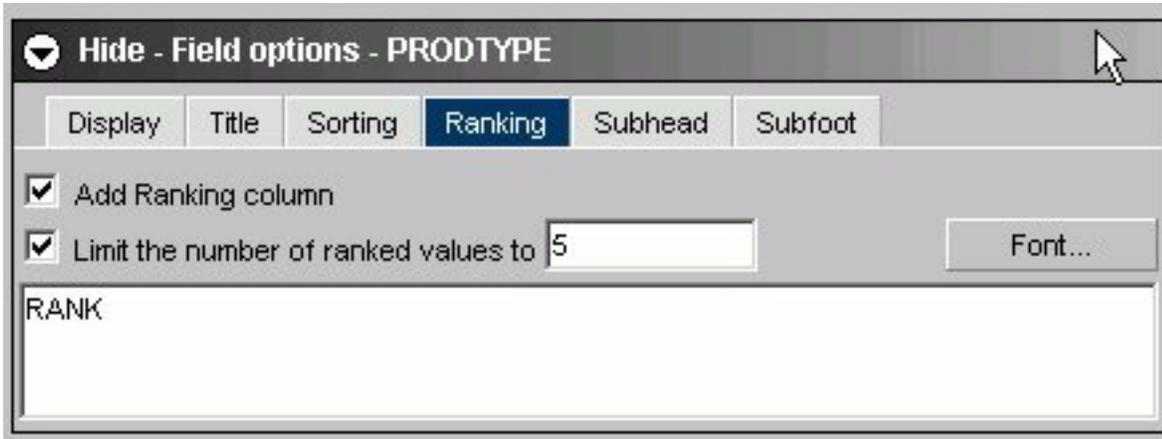
Add Ranking column

This check box is unselected by default and enables a user to add a Ranking column.

Limit the number of ranked values to

This check box is grayed out by default and activated only if the Add Ranking column check box is selected. It enables a user to enter an integer value to select the number of ranked values to display in the report (5 is the default value).

Text Box

The title of the ranking column can be changed from the default of RANK.

Font button

Opens the font styling dialog box. See Font Dialog Box.

The Subhead/Subfoot subtab, shown in the following image for a Sort by field has these options:
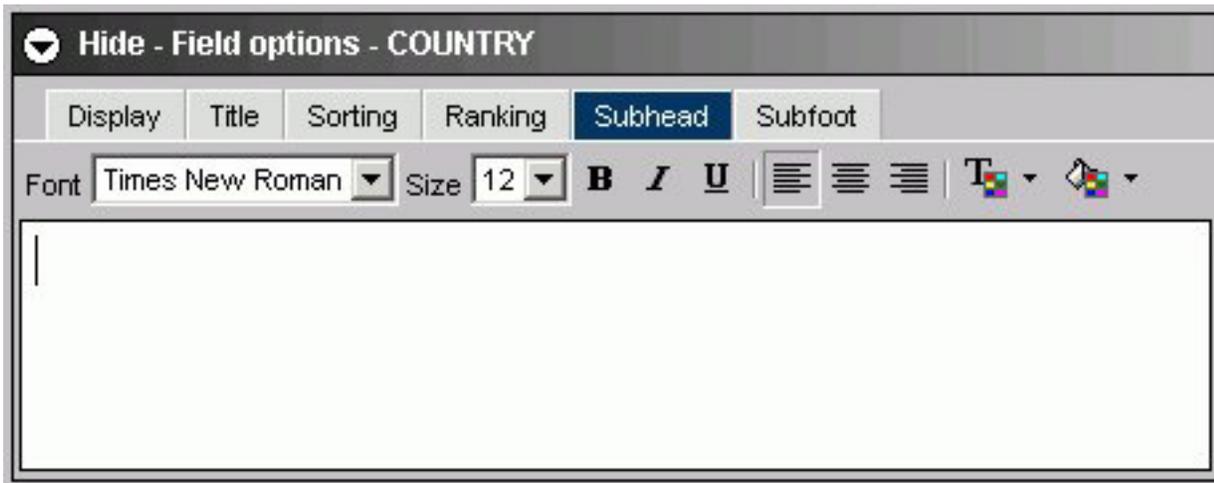
Formatting toolbar

Specify the font, font size, font style, text alignment, text color, and background color of the subhead or subfoot.

Text box

Enter a subhead/subfoot in the text box.

The Subtotal subtab for a Sort by field has:

Text box

Enter text to display for the subtotal.

Note: This sub tab appears when you select the Subtotal numeric sum/print fields option on the Sorting sub tab.

Field Selection Tab: Show Report Field Options for Sort Across

The following image shows the Show report field options where you choose various styles and functions for a selected field.

The Display subtab for a Sort across field has these options:

Make this field invisible

Check to hide the display of a Sort Across field.

Font button

Opens the font styling dialog box. See Font Dialog Box.

Conditional Styling button

Is grayed out and unavailable.

Drill Down button

Opens the drill-down dialog box. See Drill Down Dialog Box.

Format in report as

Is grayed out and unavailable.

Calculated as

Is grayed out and unavailable.

Include missing instances

Is grayed out and unavailable.

The Title subtab for a Sort across field has this option:

Title

Is the name of the field in the Sort Across list box.

The Sorting subtab for a Sort across field has these options:

Ascending

Click to arrange fields in ascending order.

Descending

Click to arrange fields in descending order.

Note: Other options are grayed out and unavailable.

Field Selection Tab: Show Report Field Options for Column

The following image shows the Show report field options where you choose various styles and functions for a selected field.
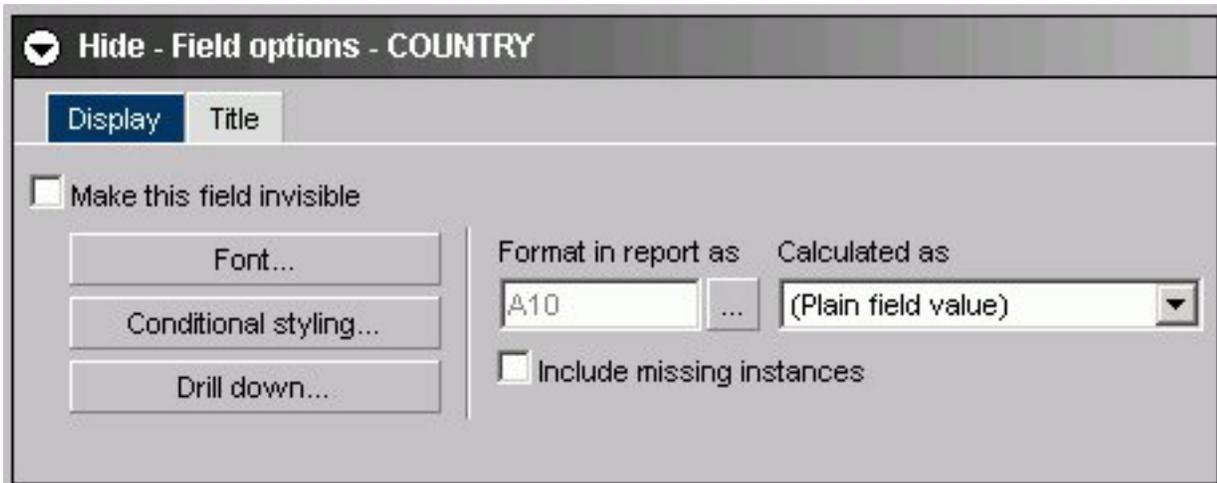
The Display subtab for a Column field has these options:

Make this field invisible

Check to temporarily hide the display of a Column field.

Font button

Opens the font styling dialog box. See Font Dialog Box.

Conditional Styling button

Opens the conditional styling dialog box where you use to add conditional styling in a report.

Drill Down button

Opens the drill-down dialog box. See Drill Down Dialog Box.

Format in report as

Click ... to open the change format dialog where you can edit the field format. See Change Format Dialog Box.

Calculated as

Make a selection from the drop-down list.

Include missing instances

Inserts '.' when no field value exists.

The Title subtab for a Column field has this option:

Title

Is the name of the field in the Columns list box.

Drill Down Dialog Box

The following image shows the drill down dialog box, where you can add drill down capability to a report.

Execute procedure (FOCEXEC)

Lists the domains and procedures that are available as drill-down reports. Click the procedure you want to execute.

No action

Is the default.

Execute procedure

The procedure you selected appears in this text box.

Execute URL

Enter the URL of a Web page that will open when a user drills down.

With parameters

Once a parameter is created using the Add button, it is automatically added to this area.

Alternate comment for hyperlink

You can place comments here.

Add button

> Opens the drill-down parameter dialog shown in the following image.
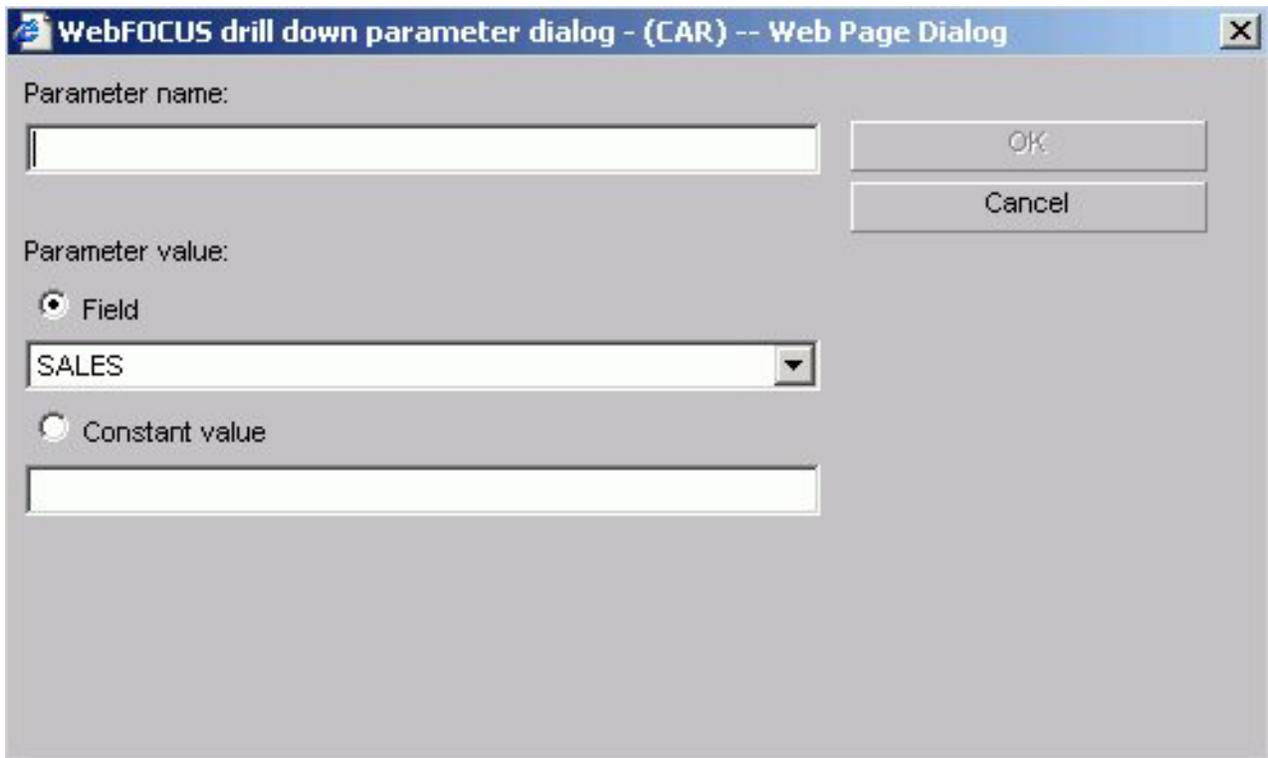
Parameter name

> Enter the parameter name you created in the drill down procedure.

Parameter value: Field

> Select the field the user can drill down.

Parameter value: Constant value

> The parameter is set to the specified value.

OK button

> Returns to the drill down dialog. The parameter is added to the With parameters list box.

Font Dialog Box

The following images shows the font dialog box.
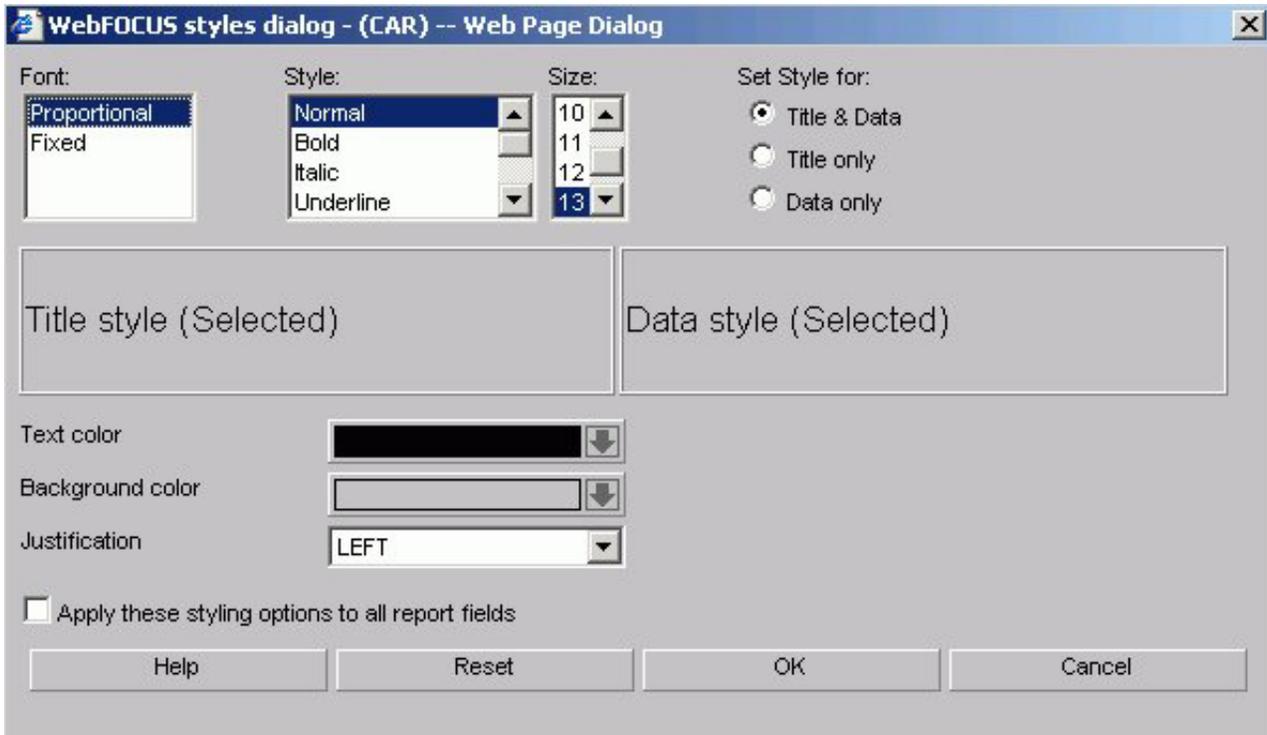
Font

> Select from the list box.

Style

> Select from normal or bold, italic, underline, and various combinations.

Size

> Select a font size from the list box.

Set Style for Title & Data, Title only, or Data only option buttons

> Set the style for Title & Data, Title only, or Data only.

Text color

> Select a color from the color palette.

Background color

> Select a color from the color palette.

Justification

> Select left, right, or center from the list box.

Apply these styling conditions to all report fields check box

> Apply these styling conditions to all report fields.

Field Selection Tab: Field Creator Dialog Box

Use the Field Creator Dialog Box to create or edit temporary fields, as shown in the following image.
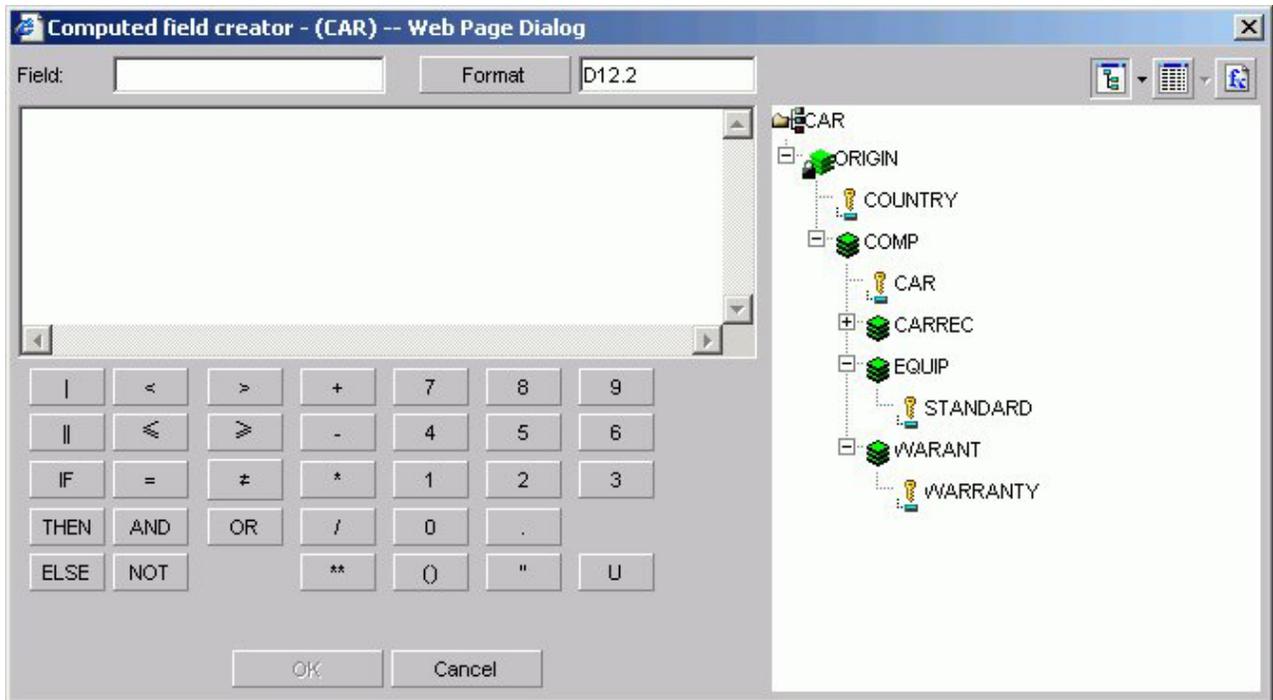
Field

> Enter a name for the temporary field. Note that field names cannot exceed 66 characters.

Format button

> Displays the Change Format dialog box where you can modify the data formats. See Change Format Dialog Box.

Tree or List mode buttons

> Opens the field list in either tree or list mode.

Functions button

> Displays a list of predefined functions.

Fields window

> Double-click a field or function to include it in an expression.

Concatenation operators

> Concatenates two or more alphanumeric constants and/or fields into a single character string. The concatenation operator has two forms: | (weak concatenation, which preserves trailing blanks) and || (strong concatenation, which moves trailing blanks to the end of a concatenated string).

IF... THEN... ELSE... operators

> Creates a conditional expression. A conditional expression assigns a value based on the result of a logical expression. The assigned value can be numeric or alphanumeric. IF, THEN, ELSE logic expressions take this form:
>
> **IF** expression1 **THEN** expression2 **ELSE** expression3

ELSE is an optional operator. All alphanumeric values in conditional expressions must be enclosed in single quotation marks. For example, IF COUNTRY EQ 'ENGLAND'.

Logical operators

Used to create relational and Boolean expressions. A relational expression returns a value based on a comparison of two individual values (either field values or constants) and a Boolean expression returns a value based on the outcome of two or more relational expressions.

Logical operators are:

- adds the less than (LT) operator to the expression. This operator returns

a value if the value on the left is less than the value on the right.

- adds the greater than (GT) operator to the expression. This operator

returns a value if the value on the left is greater than the value on the right.

- adds the less than or equal to (LE) operator to the expression. This

operator returns a value if the value on the left is less than or equal to the value on the right.

- adds the greater than or equal to (GE) operator to the expression. This

operator returns a value if the value on the left is greater than or equal to the value on the right.

- adds the equal (EQ) operator to the expression. This operator returns a

value if the value on the left is equal to the value on the right.

- add the not equal to (NE) operator to the expression. This operator

returns a value if the value on the left is not equal to the value on the right.
- AND returns a value if both operands are true.
- OR returns a value if either operand is true.
- NOT returns a value if the operand is false.

Arithmetic operators

Click any of the arithmetic operators to use them in your expression: +
(addition), - (subtraction), * (multiplication), / (division), **
(exponentiation).

Two operators cannot appear consecutively. The following expression is
invalid:

a* -1

To make it valid, you must add parentheses:

a* (-1)

Parentheses

Adds parentheses to the expression box. Parentheses affect the order in
which the specified operations are performed. For information on when to
use parentheses, see Order of Evaluation for Expressions.

Quotation Marks

Adds quotation marks to the expression box. Use single quotation marks to
enclose alphanumeric and date literals.

U option

Converts entries in the expression box to uppercase. Click the U key in the
calculator. Note that field names are case-sensitive.

Order of Evaluation for Expressions

DB2 Web Query performs numeric operations in the following order:

1. Parentheses.
2. Exponentiation.
3. Division and multiplication.
4. Addition and subtraction.

When operators are at the same level, they are evaluated from left to right. Because
expressions in parentheses are evaluated before any other expression, you can use
parentheses to change this predefined order. For example, the following
expressions yield different results because of parentheses:

```
COMPUTE PROFIT/D12.2 = RETAIL_PRICE - UNIT_COST * UNIT_SOLD ;
COMPUTE PROFIT/D12.2 = (RETAIL_PRICE - UNIT_COST) * UNIT_SOLD ;
```

In the first expression, UNIT_SOLD is first multiplied by UNIT_COST, and the
result is subtracted from RETAIL_PRICE. In the second expression, UNIT_COST is
first subtracted from RETAIL_PRICE, and that result is multiplied by
UNIT_SOLD.gives an incorrect result because UNIT_SOLD is first multiplied by
UNIT_COST, and then the result is subtracted from RETAIL_PRICE.

Change Format Dialog Box

The following image shows the Change Format dialog box.
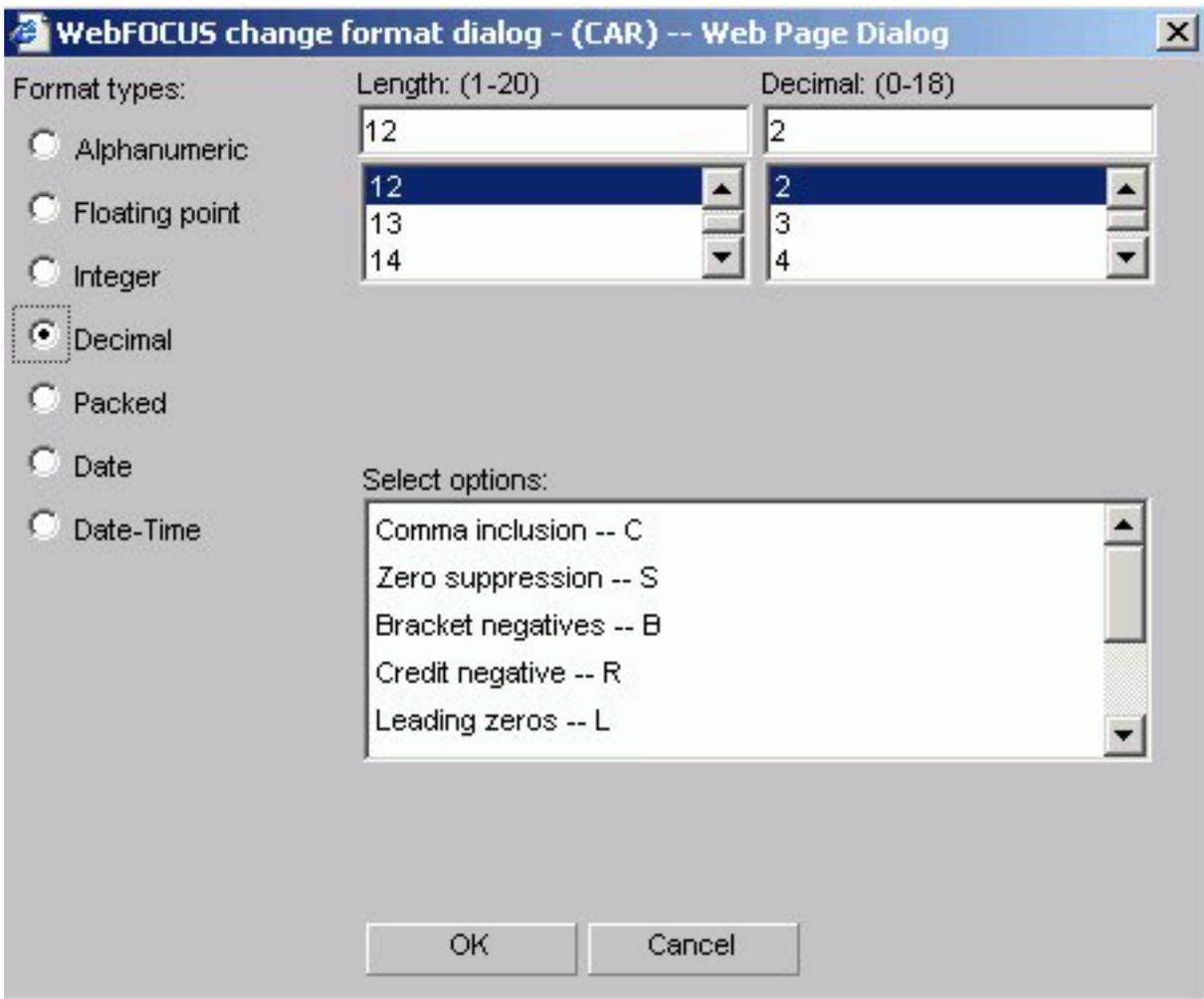
Format types

Choose:
- Alphanumeric
- Floating point
- Integer
- Decimal
- Packed
- Date
- Date-Time

Length

Choose an available number based on the format type you chose.

Select options

Choose options based on the format type you chose.

Report Headings Tab

The Report headings tab is used to select and style headings and footings for a report.

Report Headings Tab

The following image shows the Report headings tab where you enter and style a page title heading and/or footing. You can also include a field value from the Available fields list in the page heading and/or footing.
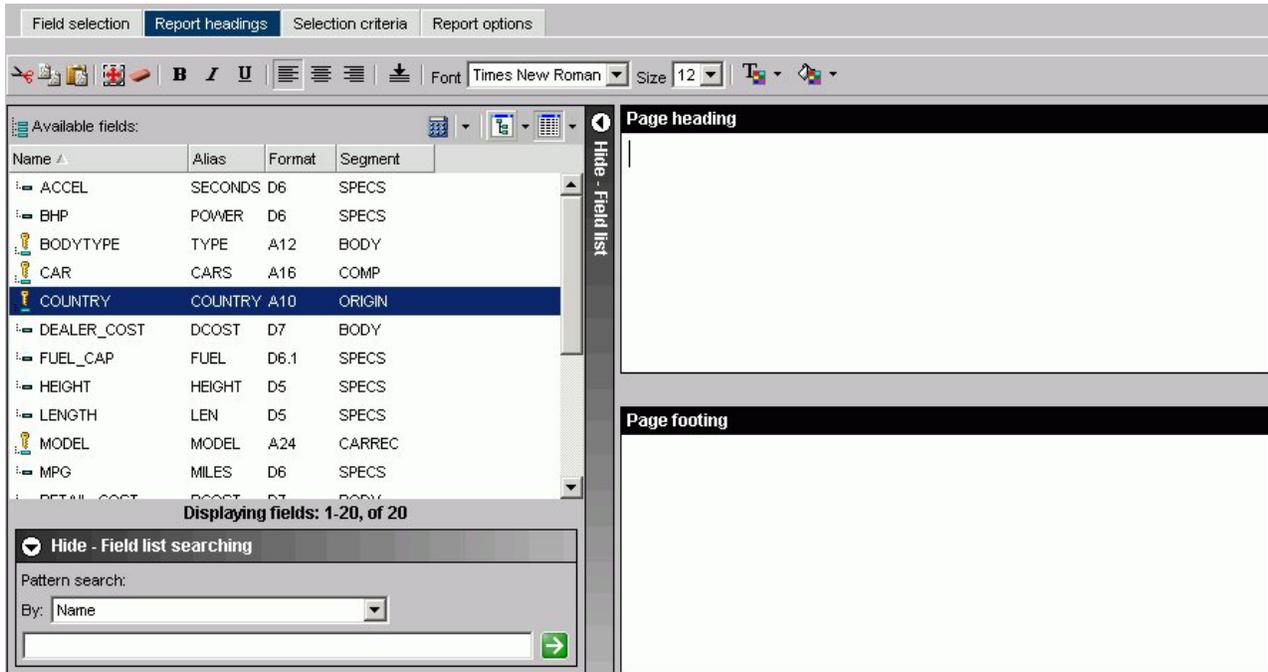
Formatting tool bar

- Cut, copy, paste.
- Select all.
- Remove formatting.

Note: The above icons are not available for Firefox users. You must use the standard key combinations Ctrl+C, Ctrl+V, Ctrl+X, and so on.

- Font styles. Select from bold, italic, and underline.
- Alignment. Select left, center, right, or bottom alignment.
- Font. Select a different font from the list box.
- Font size. Select a font size from the list box.
- Text color. Select the text color from the color menu.
- Background color. Select the background color from the color menu.

Show/Hide Fields list

Show or hide the Available Fields window.

Available fields window

Insert a field in your heading or footing from the fields list.

Define icon

Click the Define (calculator) icon to select: New define field, Edit define field, or Delete define field. If you select the New define field or Edit define field, the Define field creator dialog box opens where you can create or edit a defined field.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click on the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a drop-down list: name, alias, title, format, description, segment, and file name. You can also choose to sort by file order.

Page Heading

Enter the text for the heading in the Page Heading box.

Page Footing

Enter the text for the footing in the Page Footing box.

Selection Criteria Tab

The Selection criteria tab is used to create WHERE and WHERE TOTAL statements for a report.

Selection Criteria Tab: Screening Conditions

The following image shows the Screening conditions section on the Selection criteria tab where you create a WHERE statement by dragging and dropping a field from the Available Fields window.
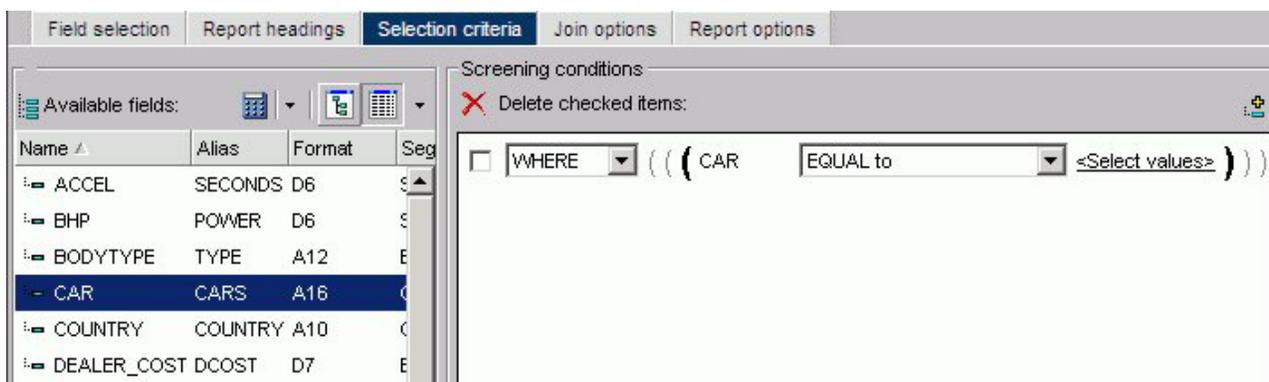
WHERE/WHERE TOTAL

Use WHERE to select records based on the values of an individual field.

Use WHERE TOTAL to select records based on the aggregate value of a field, for example, the sum or average of a field's values.

Fieldname

Is the field you initially chose.

Operator Expression

Select an operator from the list box, for example, equal to.

Select Values

Click to open the Values dialog box (shown in the following image) with the Parameter option button selected and a list of values for the CAR field.
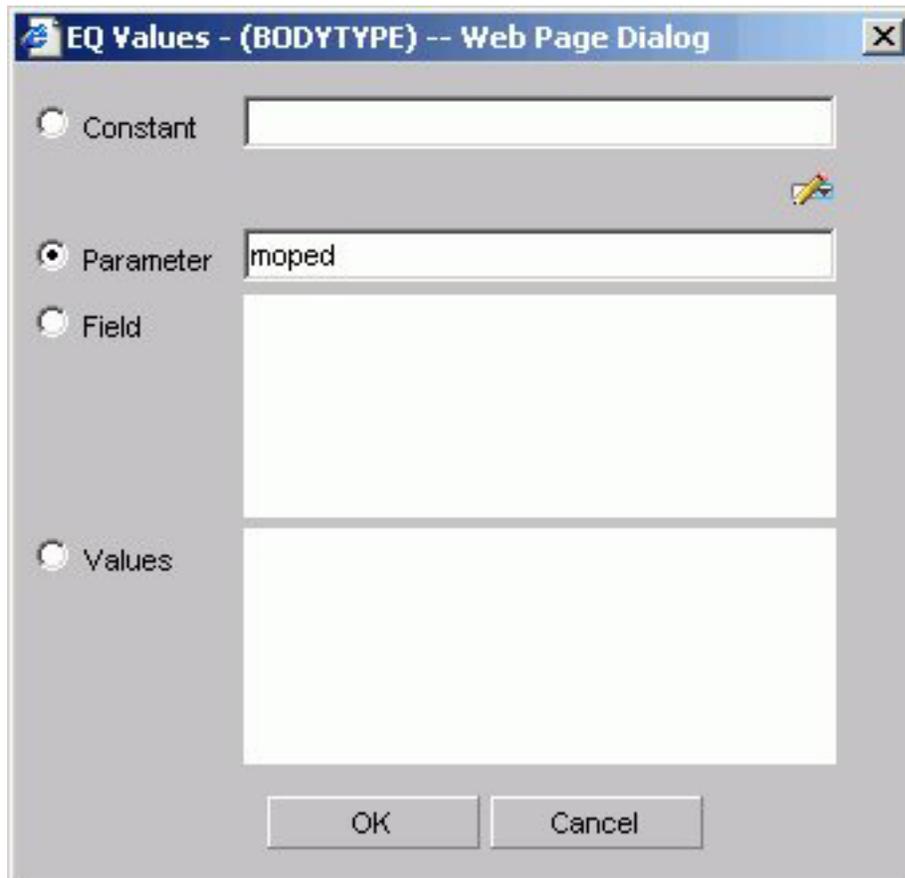
Constant

Enter a constant.

Auto Prompt button

Opens the Parameter Properties dialog box. See Parameter Properties Dialog Box (Dynamic Parameters) and Parameter Properties Dialog Box (Static Parameters).

Parameter

Enter the name of the parameter.

Field

Select a field from the Field list box.

Values

Select a field from the Values list box.

Parameter Properties Dialog Box (Dynamic Parameters)

Name

> Name is the parameter name. This field is automatically filled in with information from the selected field. You can change the name if necessary.

Description

> Text that appears in the Auto prompt page as a prompt for the selection list. This field is automatically filled in with information from the selected field. You can change the description if necessary.

Selection

> Select the type of parameter:
> - **Dynamic** retrieves values from the specified data source when the request is run. This is the default selection.
> - **Static** contains a list of values you supply. These values do not change unless you change them.

Select multiple values at runtime

> Selecting this check box enables you to provide more than one value to the report from the auto prompt page. In addition, the user is able to select all values from the values list.

Data Source

> Select a data source that contains the values for the parameter. The data source must be on your APP PATH.

Field

> Select the field from the data source whose values will populate the selection list.

Parameter Properties Dialog Box (Static Parameters)

Name

> Is the parameter name. This field is automatically filled in with information from the selected field. You can change the name if necessary.

Description

> Text that appears in the Auto prompt page as a prompt for the selection list. This field is automatically filled in with information from the selected field. You can change the description if necessary.

Selection

> Select the type of parameter:
> - **Dynamic** retrieves values from the specified data source when the request is run. This is the default selection.
> - **Static** contains a list of values you supply. These values do not change unless you change them.

Select multiple values at runtime

Selecting this check box enables you to provide more than one value to the report from the auto prompt page. In addition, the user is able to select all values from the values list.

Constant

Enter a value or values.

Show field values

Shows the values in the selected field. Move the values you want in the selection list to the Prompt values list.

Prompt values

Prompt Values are the values that appear in the selection list. You can use the available buttons to add, remove, and change the order of the Prompt values.

Join Options Tab

The Join options tab is used to create joins for a report.

Join Options Tab: Add or New

The following image shows the Join options tab where you create joins for a report.
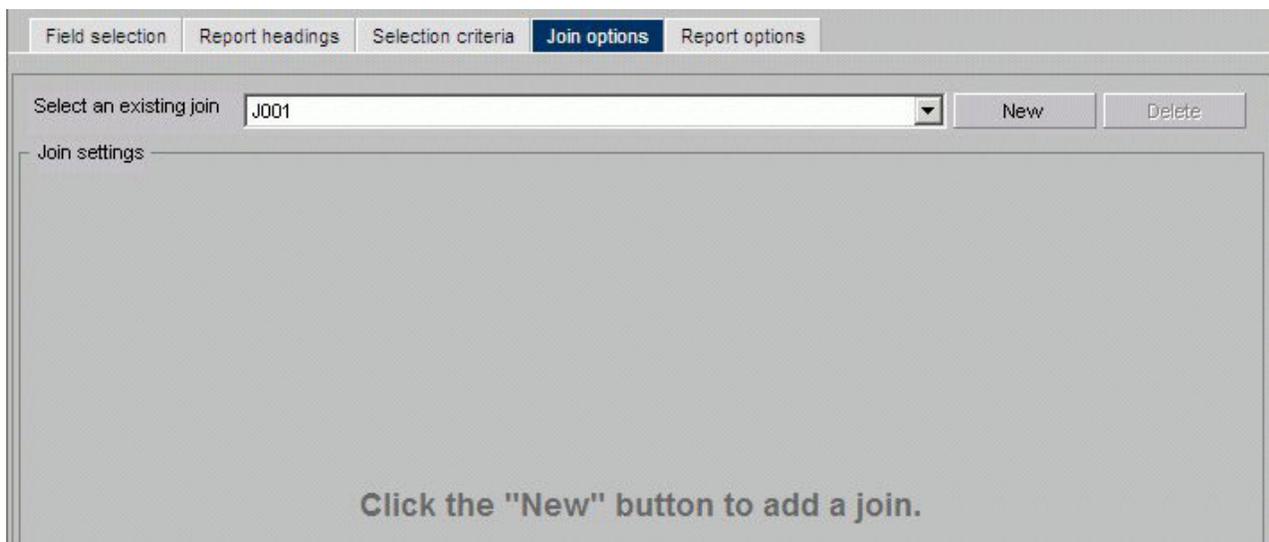
Select an existing join

Use the list box to select the join with which you want to work.

New

Opens the Masters List dialog box where you select the target data source.

Delete

Click to delete the join.

OK button

Click to select a Master File.

Cancel button

Click to return to the Add/New Join window.

When you select a target data source you have multiple join related settings and options, as shown in the following image.

The Join Settings section provides the following fields and buttons for creating joins:

Description

Enter a description for your join.

Internal name

DB2 Web Query assigns an alphanumeric name for the join, for example J001.

Save & Create

Once you have selected your host and target fields, click Save & Create to create the join.

View

Click to view the syntax of your join, which displays the code sent to the DB2 Web Query Reporting Server to validate the join, but may not be the same code required to run the report. This is the case for a DEFINE based

JOIN where only the JOIN statement is displayed for validation, but both the JOIN and DEFINE statements are needed when the report is run.

The Join Type drop-down list provides the following join type options:

Inner Join

A join that results when a report omits host rows that lack corresponding cross-referenced rows.

Unspecified

Indicates neither an inner nor left outer join.

Left Outer Join

Extends the results of an Inner Join and retrieves records from both host and cross-referenced tables, including all records from the left table (host) and any records from the right table (cross-referenced) where the condition values match. If there are no matching values in the cross-referenced table, the join still retrieves records from the host table.

The Instances drop-down list provides the following join instance options:

Multiple Instance (formerly Non Unique)

A one-to-many join structure that matches one value in the host data source to multiple values in the cross-referenced field. Joining employee ID in a company's employee data source to employee ID in a data source that lists all the training classes offered by that company would result in a listing of all courses taken by each employee, or a joining of the one instance of each ID in the host file to the multiple instances of that ID in the cross-referenced file.

Single Instance (formerly Unique)

A one-to-one join structure that matches one value in the host data source to one value in the cross-referenced data source. Joining an employee ID in an employee data source to an employee ID in a salary data source is an example of a unique join.

The Host Field List contains:

Search (binoculars) icon

Opens the Field List Searching dialog box. See Searching Field Lists for details.

Define icon

Click the Define icon to select: New define field, Edit define field, or Delete define field. If you select the New define field or Edit define field, the Define field creator dialog box opens where you can create or edit a defined field.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a list box: name, alias, title, format, description, segment, and file name. You can also choose to sort by file order.

Available fields

Lists of fields from the host data source for creating a join.

The Target Field List contains:

Select a target button

Click to select a target Master File.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a list box: name, alias, title, format, description, segment, and file name. You can also choose to sort by file order.

Fields

Lists of fields from the target data source for creating a join.

For both the Host and Target field lists, each has its own Selected Fields window that has:

Selected Fields window

Shows the fields selected from the data source for a join.

Add icon

Adds a field.

Remove icon

Removes a field.

Move Up or Move Down icons

Moves the position of the field within the join.

Report Options Tab

The Report options tab is used to select options for a report.

Report Options Dialog Box

The following image shows the Report options tab where you select output formats for a report.

Generate report as list box (when Show styled formats is selected)

When the Show styled formats option is selected from the drop-down list, choose from the following formats:

- HTML - Web browser
- HTML - Web browser (with grid)
- AHTML - Active Report
- PDF-Portable Document Format
- EXL97- Excel 97
- EXL2K- Excel 2000
- EXL2KFORMULA- Excel 2000 with formula
- PS-Postscript

Generate report as list box (when Show unstyled formats is selected)

When the Show unstyled formats option is selected from the drop-down list, choose from the following formats:

- EXCEL 95 - Excel 95
- DOC - Plain text with page breaks
- WP - Plain text without page breaks
- WK1 - Import to Lotus 1-2-3. See Notes on Using LOTUS Format.
- DIF - Import to spreadsheet
- LOTUS - Import to Lotus 1-2-3. See Notes on Using LOTUS Format.
- TABT - Tab-delimited

- XML - eXtensible Markup Language

Generate report as list box (when Show database formats is selected)

When the Show database formats option is selected from the drop-down list, choose from the following formats:
- DB2 - DB2 database table

When the Show database option is selected, the Database Output section becomes active.

Show formats drop-down list

The drop-down list for selecting formats has these options:
- Show styled formats. Displays output formats that support styling options.
- Show unstyled formats. Displays output formats that do not support styling options.
- Show database formats. Displays database formats. When selected, Database Output section becomes active.

For styled formats, the Output format specific section has these options:

Report title

Enter the report title in the text box.

Format HTML Output

Full - Retains standard HTML formatting. This is the default.

Paged - Specifies that each page of a report is returned to the browser as a separate HTML table.

Fixed - Turns off HTML formatting and allows the report designer to determine where items in the report are placed.

Optimize output with Cascading Style Sheets

Check to optimize output with Cascading Style Sheets.

Use accessibility features (Section 508)

Check to use accessibility features (Section 508).

Summary text for report

Add summary text in the text box. See Include Summary Text for a Report.

In the Interactive options subsection:

Enable OLAP

Choose:
- OFF
- Columns only
- Columns with panel
- Show filters on top
- Show filters on bottom
- Show panel in report
- Show Tabbed

Automatic drill down

> Choose:
> - Off
> - Dimensions only
> - Dimensions and Measures

On-demand paging

> Check to initiate on-demand paging.

Show pop-up field description

> Check to display pop-up field descriptions for column titles. See
> Displaying Pop-up Field Descriptions for Column Titles.

The Global report styling section has these options:

Font button

> Opens the font styling dialog box.
>
> **Font**
>
> > Select from the list box.
>
> **Style**
>
> > Select from normal or bold, italic, underline, and various
> > combinations.
>
> **Size**
>
> > Select a font size from the list box.
>
> **Text color**
>
> > Select a color from the color palette.
>
> **Background color**
>
> > Select a color from the color palette.
>
> **Justification**
>
> > Select left, right, or center from the list box.

Active Report Styling

> Opens the Active Report Styling dialog box. This button is only active
> when you select the AHTML - Active Report output format. See Creating
> an HTML Active Report.

Apply an existing Style Sheet

> Select None or a Style Sheet from the list box.

Apply an existing Cascading Style Sheet

> Select None or a Style Sheet from the list box.

The **Send to printer** check box allows you to send your output directly to a
designated printer.

The Content and generation section has these options:

Page numbering

> Select Default, On, Off, or No lead from the list box.

Limit the number of read operations performed during report generation

Enter a number in the text box.

Stop retrieving reports after the specified number have been included in the report

Enter a number in the text box.

Use Database Optimization

Enables the database to use its internal optimization techniques which reduce the volume of database-to-server communications and improve response time.

The Database Output section has these options:

Destination Library

Enter name of the library destination for the DB2 report file.

Name

Enter the name of the DB2 file.

Overwrite existing file

Select this option if you need to overwrite an existing file. **Note:** When specifying to overwite an existing database file, the file will not be overwritten if you do not have specific write authority to the file. A message will be displayed which says that the file already exists, even though overwrite was specified.

The Printer section has one option:

Name Enable when the Send to printer check box is selected. Enter the name of the printer.

Notes on Using Lotus Format

The Display Format selection box on the Report options tab lists Lotus as a display format. This format, however, does not create a valid Lotus™ spreadsheet. To work around this limitation, follow these steps:

1. Select the Excel display format.
2. When the request is run, DB2 Web Query prompts you to save or open the file, select **Save**.
3. Save the file with an .xls extension to a valid directory.

   Lotus Release 5.0 or higher can open files with an .xls extension.

Chapter 5. Analyzing Data in an OLAP Report

Presents the terminology and benefits of using Online Analytical Processing (OLAP). Describes how to customize reports with the OLAP selections panel and the OLAP Control Panel. Describes how to sort and apply various selection criteria (to restrict your data) as well as how to troubleshoot an OLAP-enabled report. Explains how the OLAP Control Panel (OCP) provides you with a versatile way to gain more insight from your reports by dynamically manipulating report data. From the Control Panel, you can perform every function available to a DB2 Web Query OLAP user.

If the OLAP license option has been activated, DB2 Web Query Online Analytical Processing (OLAP) enables you to view and quickly analyze data in order to make critical business decisions.

We Do It Every Day: Typical Web Query

Suppose that you own a small business in New York and are exploring a partnership with a company in Oakland, California. You need to get to a Monday morning meeting. How do you go about arranging your flight?

Most likely, you go online.

First, you check available flights on the airline that holds your frequent flyer miles. You discover that your frequent flyer carrier requires a change of planes and you would prefer a direct flight, so you look at routes and fares for other airlines.

In New York, you can get to LaGuardia, JFK, and MacArthur airports on Long Island. In California, you can fly into Oakland or San Francisco.

While you would prefer to fly out on Sunday and return Tuesday morning, you could consider a Saturday flight to California and a return flight on the red-eye Monday night, if fares and schedules are better.

You begin your search by airline and then look at options for each departure point and destination, by day, time and price.

Another approach is to start with an online consolidator, enter the times you can fly, and see what flights and fares are available.

There are a lot of variables to play with, but in ½ hour you have done your research and can make a good decision based on all available factors.

The Web sites you access are designed to facilitate your queries. Various menus and selection boxes make it easy to pursue each line of inquiry. Required and optional information is identified for you. You can move forward down a path of choices, backtrack and start down a different path, or resume the original path with different selections.

You need to keep track of the question you want to answer, but a well-designed site makes your investigation easy. For most of us, this process has become intuitive.

The same process works when analyzing the data in an OLAP-enabled DB2 Web Query report.

OLAP Reporting Requirements

OLAP reporting requires some preparation both of the data to be reported against and of the report itself. In many instances, this preparation is entirely transparent, having been done before a user encounters an OLAP report. However, for developers who are charged with OLAP-enabling data and reports and for users who wish, and are authorized, to OLAP-enable their personal reports, the following summary will be useful.

OLAP-Enabling Data

Behind the scenes of any DB2 Web Query OLAP report is a hierarchical data structure. For example, a typical hierarchy of sales regions might contain a GEOGRAPHY category including the fields (in descending order) Region, State, and City. Region, the highest level in this hierarchy, would contain a list of all available regions within GEOGRAPHY. State, the second highest level in the hierarchy, would contain a list of all available states within those regions, and so on.

In DB2 Web Query, the hierarchical structure is generally built into the Master File for a data source, where it becomes active for any report that uses that data source. Developers or administrators who are responsible for describing data in a Master File can use the underlying language. The keyword WITHIN defines the elements in each dimension in the hierarchy.

In addition, those working in Developer Workbench have access to a variety of graphical tools that make it easy to drag and drop fields into position to form a hierarchy. The hierarchy may be global to all procedures or local to one procedure. To define a:

- Global hierarchy in a Master File for use with multiple procedures, use the Dimension Builder.
- Local hierarchy as a component of a particular procedure, use the Dimension tool. The hierarchy you define with this tool does not affect the source Master File.

OLAP-Enabling a Report

In addition to using OLAP-enabled data, a report must be enabled to support OLAP analysis. OLAP-enabling a report consists of specifying how a user will interact with and drill down on OLAP data.

The primary interactions occur in the report itself. In addition, you can choose to expose two supplementary tools, the OLAP Selections pane and the Control Panel.

Setting OLAP Reporting Options

OLAP Interface Options

Users can control the OLAP interfaces and following drill-down options.

- **OFF.** Provides an OLAP button to open the OLAP Control Panel.
- **Columns only.** Turns off the OLAP Control Panel and the OLAP Selections pane, but allows OLAP functionality from the report itself. You can access

options on right-click menus, drag and drop columns within the report, and use up and down arrows to sort columns from high to low or vice versa. This is the default.

- **Columns with panel.** Provides access to the OLAP Selections pane from a square button to the left of the column titles.

- **Show filters on top.** Opens the OLAP Selections pane above the report. The Measures, Graph, and Dimension controls, as well as the band containing the OLAP, Run, and Reset buttons appear above the report output. You can open the Control Panel by clicking the OLAP button on the Selection pane.

- **Show filters on bottom.** Opens the OLAP Selections pane below the report. The Measures, Graph, and Dimension controls, as well as the band containing the OLAP, Run, and Reset buttons appear below the report output. You can open the Control Panel by clicking the OLAP button on the Selection pane.

- **Show Panel in Report.** Opens the OLAP report with the OLAP Selections pane hidden. You can perform a variety of analytic tasks from the report itself. Selection Criteria is shown next to the OLAP button.

- **Show Tabbed.** For OLAP reports that have multiple dimensions, this option groups the dimension elements under a tab labeled with the dimension name.

Drill Down options

These options enable you to sort instantly from high to low or low to high for selected report columns:

- **None**

  Disables automatic drill downs.

- **Dimensions**

  Enables automatic drill downs on dimensions in both reports and graphs.

- **Dimensions and Measures**

  Enables automatic drill downs on dimensions in both reports and graphs and, also, on measures in reports.

Note: Explicit drill downs in a StyleSheet (if they exist) take precedence over OLAP-enabled hyperlinks. If you click a hyperlink associated with an explicit drill-down, the behavior will be defined by the StyleSheet rather than by the AutoDrill On or All settings.

OLAP Terminology

The following table describes OLAP terms that may be useful as you work in the DB2 Web Query OLAP tools. Some of these terms are directly reflected in the interfaces of the OLAP Selections pane and the OLAP Control Panel. Others provide useful background information.

The first column of the following table provides the term and the second column provides the definition.

Term	Definition
Dimension	Group or list of related elements, usually structured in a hierarchy. For example, a Location dimension could include the elements Country, Region, State, and City arranged in a hierarchy where Country is the top level and City is the base level. Dimensional data usually describes the measured item.
Hierarchy	Logical parent-child structure of elements within a dimension.
Measure	Type of item that specifies the **quantity** of another element with which it is associated. A measure typically defines how much or how many. For example, Units, Revenue, and Gross Margin are measures in the Account dimension and specify how many units were sold, how much revenue was generated, and at what profit margin, respectively.
Pivot	Manipulating (or rotating) the view of a report by moving a field (or a group of fields) from a column to a row, or vice versa.

Characteristics of an OLAP Report

An OLAP-enabled report has a number of features that distinguish it from other DB2 Web Query reports.

A basic OLAP report is shown in the following image.

QUARTER	Store Name:	PRODTYPE	Quantity:	Line Cost Of Goods Sold
Q1	AV VideoTown	Analog	18,449	3,969,296.00
		Digital	22,206	5,109,400.00
	Audio Expert	Analog	78,449	16,467,146.00
		Digital	105,983	25,092,678.00
	City Video	Analog	6,287	1,315,015.00
		Digital	7,196	1,607,513.00
	Consumer Merchandise	Analog	6,980	1,542,036.00
		Digital	14,957	3,251,090.00
	TV City	Analog	19,077	3,772,119.00
		Digital	41,307	10,128,967.00
	Web Sales	Analog	545	124,366.00
		Digital	829	190,201.00
	eMart	Analog	97,128	21,152,262.00
		Digital	108,221	24,990,368.00
Q2	AV VideoTown	Analog	11,781	2,663,655.00
		Digital	27,377	5,928,507.00
	Audio Expert	Analog	57,944	11,868,758.00

Every OLAP user can take advantage of the analytic features that are built into the OLAP report:

- **Hyperlinks.** The values in an OLAP report are usually hyperlinks from which you can drill down to related information.

  Depending on your OLAP settings, the hyperlinks may be active for both the dimension fields (by which the report is sorted) and the measures fields (which display quantitative data), or only for the dimension fields. For related information, see OLAP-Enabling a Report.

- **Context menus.** You can right-click any column title to access a menu of options that facilitate analysis. The options vary slightly to suit the tasks associated with dimensions and measures.

- **Sorting diamonds** ⬍ **.** The measures (fields that make up the body of the report) have blue diamonds adjacent to them. You can click either the top or bottom of the diamond to instantly sort data from high to low or low to high.

- **Drag and drop capabilities for dimensions and measures.**
  - You can drag and drop sort fields to shift sorting from vertical (By) to horizontal (Across) or vice versa.
  - You can change the order in which sorting occurs by dragging sort fields from inner to outer positions (and vice versa).
  - You can drag measures from one position to another to affect the order in which data appears.

Beyond the features in the report itself, your OLAP options depend on the interface and drill down settings that are in effect for a particular report. Those choices determine whether you have access to the following tools:

- **Selections Pane.** When this tool is available, a pane may appear above, as shown in the following image, or below your report. For details, see Selections Pane.

- **OLAP Control Panel.** When this tool is available, the blue squares adjacent to the sort fields (By or Across) in the report become active. You can click a square or the **OLAP** button to open the Control Panel, as shown in the following image. For details, see OLAP Control Panel.
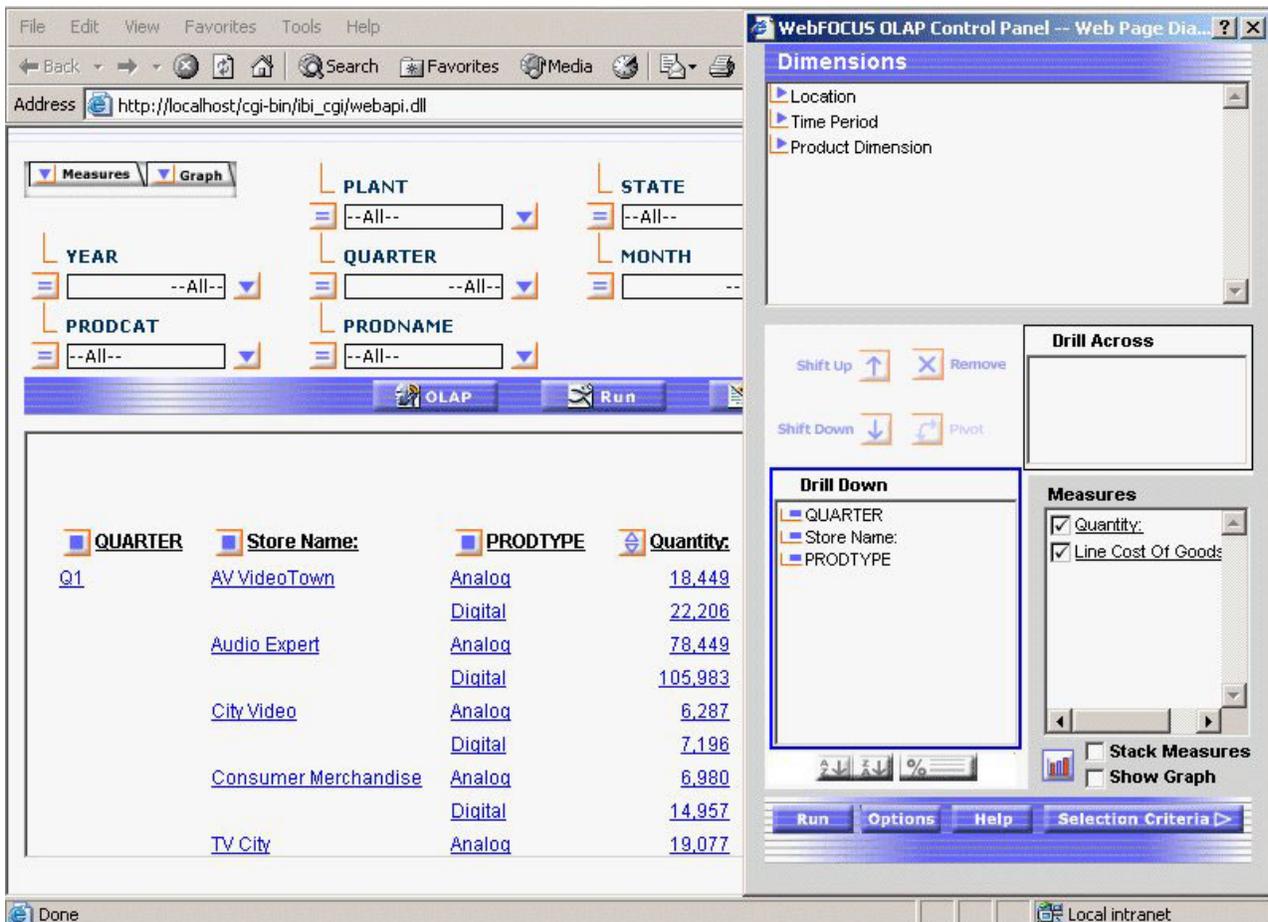
Three Ways of Working With OLAP Data

There are three ways to work with OLAP data: from the report itself, from the Selections pane, and from the Control Panel. This documentation is organized to help you understand what you can do from each location and which method is most suitable and efficient for your particular OLAP settings.

The Report

You can perform a wide range of basic analytic functions from the report itself. Changes you make in the report are implemented instantly. Every OLAP user can perform these tasks:

- Sort the data in measures in either ascending (lowest value to highest) or descending order (highest value to lowest).
- Drill down on measures, dimensions, or both (depending on the settings described in Setting OLAP Reporting Options).
- Hide fields in the current report.
- View hidden fields in the dimensions hierarchy and add them to the report.
- Change a vertical (By) sort field to a horizontal (Across) sort field and vice versa.
- Delete sort fields.

- Add a column of small bar graphs that help you visualize trends in numeric data (measures).
- Display a graphical representation of your data in a frame above the tabular report.

For an illustration of report-powered OLAP analysis, see We Do It Every Day: Typical Web Query.

Selections Pane

When the OLAP Selections pane is turned on, you can quickly limit the data in the report by selecting specific values for the dimensions in the hierarchy. A drop-down list is available for each dimension. You can multi-select values from one or more dimension lists to refine your report output.

If you wish to add a dimension element to the report you can drag it from the Selections pane into the report frame. (The cursor changes to a + sign to indicate an acceptable location.)

Each dimension has a relational operator button located to its left. This button toggles through a selection of basic numeric operators that enable you to quickly define your selection criteria. The operators are: Equal to, Not equal to, Less than or equal to, Less than but not equal to, Greater than or equal to, Greater than but not equal to. For details, see Selection Criteria Relational Operators.

The following image shows the Equal to operator as the selection for each dimension in the Selection Pane.

The name of the dimension field appears as defined in the Master File, even if an alternate column title has been specified.

In addition, you can customize the display of the measures in your report from the Selections pane. You can click either the Measures or the Graphs arrow in the upper left corner of the pane to list the measures.

- From the Measures arrow, you can display or hide the selected measure(s) or request a column of simple bar graphs to reveal trends.
- From the Graphs arrow, you can choose the measure(s) you wish to graph and specify one of seven basic graph types: vertical and horizontal bar, line, area charts and pie charts.

Note that the Selections pane is resizable; the controls for dimensions, measures, and graphs float as you resize the report window so that they continue to be visible in the frame.

Three buttons appear below the Selections pane: OLAP, Run, and Reset.
- **OLAP** opens the OLAP Control Panel (OCP).
- **Run** executes the report with the current set of selections.
- **Reset** resets all the controls in the report to their previous state (that is, before the current set of selections was made and after the last execution of the report).

OLAP Control Panel

From the Control Panel you can perform every analytic function available to a DB2 Web Query OLAP user as shown in the following image.
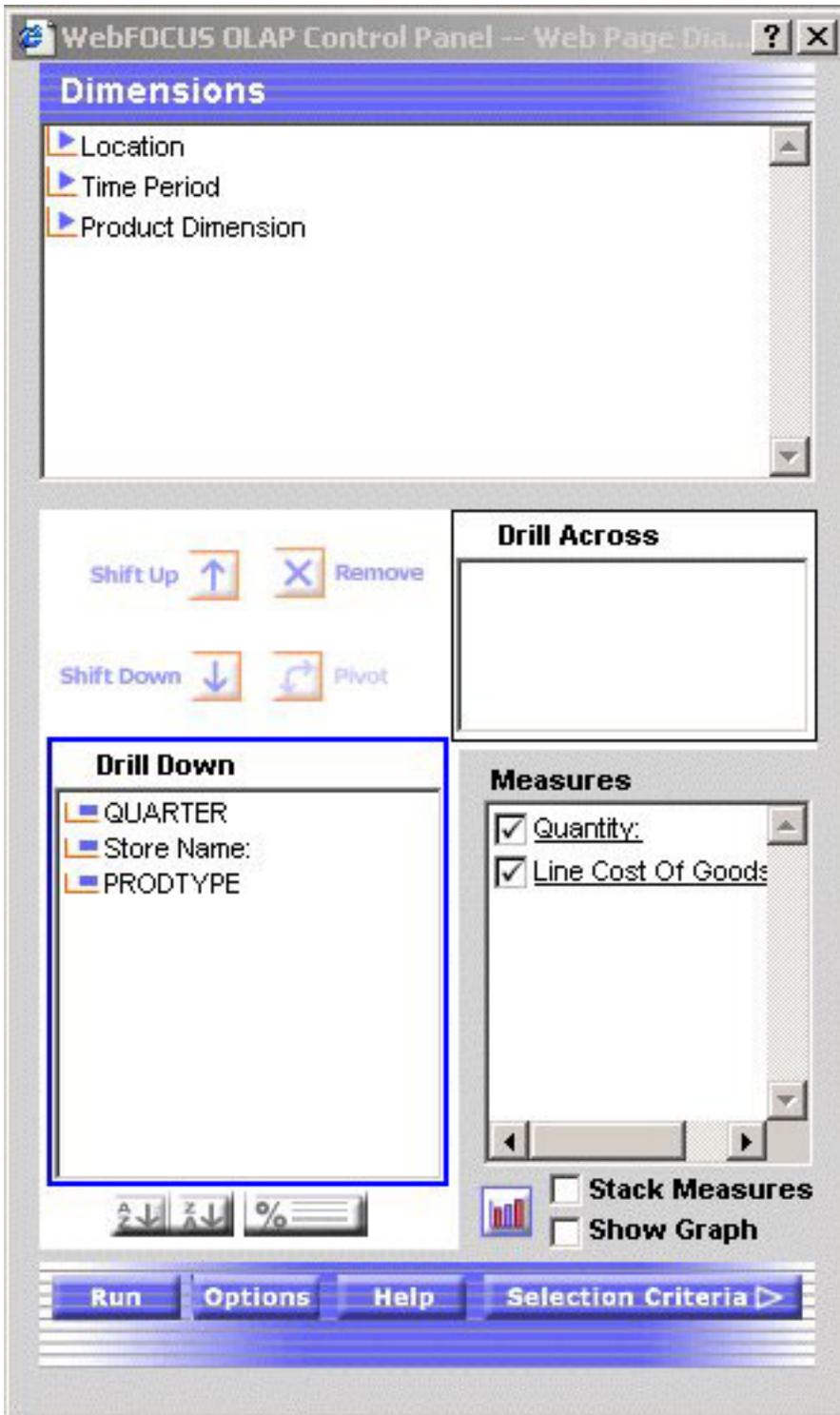
The main window of the Control Panel contains the following components:

- **Dimensions box** reflects the hierarchical structure of the data source being used by the current report (for example, the Location dimension contains the Region, State, and City fields; the Region is made up of several States, and each State contains several Cities). You click the arrow to the left of a dimension name to view the elements that comprise it. (The fields shown here are also listed in the Selections pane.)

- **Drill Down and Drill Across boxes** list the fields being used to sort the report. You can 'pivot' a Drill Down field to a Drill Across field and vice versa, and shift their positions in the report. (You can also accomplish these tasks by dragging fields within the report.)
- **Measures Properties box** contains the body of your report (usually numeric fields). You can change the display mode of a measure by clicking the check box next to the measure; the options are display, hide, and show a column of associated bar graphs. (This is equivalent to the options available from the Measures control in the Selections pane.)

Although the most frequently used functions are available directly from an OLAP report and/or from the Selections pane, several can only be performed from the Control Panel.

Unique Control Panel operations include:

- Sorting options for dimensions: from highest to lowest and vice versa (A>Z or Z>A); restricting sort field values to a specified number of either highest or lowest values; assigning a rank number to each row in the report. For details, see Sorting Data.
- Options for grouping numeric data by tile (for example, percentile, decile, quartile, etc.). For details, see Grouping Numeric Data Into Tiles.
- Defining selection criteria based on omitted or existing characters, dates, and range specifications. For details, see Limiting Data.
- Saving OLAP output in PDF and Excel formats. For details, see Saving and Displaying OLAP Reports and Graphs in Other Formats.
- Stacking multiple measures to limit the width of the report. For details, see Stacking Measures.

Drilling Down On Dimensions and Measures

You can drill down on dimensions in OLAP reports and graphs and, also, on measures in reports. The settings activate the required hyperlinks:

- **Dimensions** enables automatic drill downs on dimensions in reports and graphs.
- **Dimensions and Measures** enables automatic drill downs on dimensions in both reports and graphs and on measures in reports.
- **None** disables automatic drill downs. This is the default.

In Developer Workbench, you can set drill down options from the Report Options Format tab. For details about this setting, see Setting OLAP Reporting Options.

Sorting Data

You can sort the data in an OLAP report based on the values of dimensions in the hierarchy and/or the values of the quantitative measures that constitute the body of the report. Sorting options vary depending on the nature of the data being sorted. For details, see Sorting Measures and Sorting Dimensions.

You can also group numeric data into any number of tiles (percentiles, quartiles, deciles, etc.). See Grouping Numeric Data Into Tiles.

Sorting Measures

You can apply aggregation and sorting simultaneously to a numeric measure in an OLAP report, and sort the data from high to low (descending order) or from low to high (ascending order). All other columns are sorted correspondingly.

For the measure being sorted, you can restrict the report to a specified number of highest values (when sorting high to low) or lowest values (when sorting from low to high).

When you sort a measure, any subtotals, subheadings, or subfootings in the report are automatically suppressed since these elements relate to a specific sort field and are not meaningful when the report is resorted by the values in a measure column.

Note: Sorting by measures is not available in a report in which measures have been stacked. See Hiding and Displaying Measures.

Sort Measures High to Low/Low to High in an OLAP Report

To sort the values of a measure from high to low:

- Click the top half of the diamond button.

  or
- Right-click the measure and select **Sort By Highest** from the menu.

The report runs automatically. The highest value is now first in the column. The top of the diamond button becomes solid blue to indicate the current sort direction.

To sort the values of a measure from low to high:

- Click the bottom half of the diamond button.

  or
- Right-click the measure and select **Sort By Lowest** from the menu.

The lowest value is first in the column. The bottom of the diamond button becomes solid blue.

Tip: After a measure has been sorted, clicking the upper or lower half of the diamond button inverts the sort order of that measure. Place your mouse over either half of the diamond to see a message that indicates the next sort order that will occur if you click that half of the diamond.

Sort Measures High to Low/Low to High From the Control Panel

1. Open the OLAP Control Panel.
2. Click a measure in the Measures box to open the sort options pane (do not click the Measures check box which controls the display of a measure, not its sorting).

   Verify that the Sort box is checked (this setting is required to apply sorting specifications to the selected measure).
3. Select the **High-to-Low** or **Low-to-High** options button to specify the sort order you wish to apply. The default sort order is high to low.
4. Click **OK**.

   The sort pane is replaced by the Measures box, where the measure becomes blue to indicate that sorting specifications have been defined.

5. Click **Run** to display the report with sorting applied to the selected measure.

   The diamond button next to the sorted measure changes to reflect the sort order: if High to Low, the top half of the diamond is solid blue; if Low to High, the bottom half is solid blue.

   Note:
   - Report execution is automatic when you sort a measure in an OLAP report. However, if the Control Panel is open, all current changes in the Control Panel are applied.
   - If an OLAP request contains a horizontal (Across) sort field, the measures appear several times in the report, once for each Across value. If you apply sorting to a measure, the sort is performed on the first column occurrence of the measure, and reflected in all subsequent instances. The appropriate half of the diamond button becomes solid only for the first instance. Any additional sorting you wish to perform must be done from the first occurrence of the measure.

View a Subset of Data for Sorted Measures

You can select to view only a subset of the total number of records in your report.

1. Open the OLAP Control Panel.
2. Click a measure name in the Measures box to open the sort options pane (do not click the Measures check box which controls the display of a measure, not its sorting).

   Verify that the **Sort** check box is selected (this setting is required to apply sorting specifications to a measure).
3. Select the **Rank** check box, then specify the number of sort field values to be included in the report. (Notice that **Highest** or **Lowest** appears to the left of the input box to reflect the current sort order.)
   - Use the spin buttons located to the right of the word Highest or Lowest to increase or decrease the number of sort fields.

     or
   - Position the cursor in the input box and type a number.

   The default number of sort fields values is 5.
4. Click **OK**.

   The sort pane is replaced by the Measures box, where the measure becomes blue to indicate that sorting specifications have been defined.
5. Click **Run** to display the report with the designated number of sorted values.

Remove Sorting Criteria for a Measure

You can remove sorting specifications for a measure whether the measure is appears or hidden.

1. Open the OLAP Control Panel.
2. In the Measures box, click the measure for which you want to remove sorting specifications.
3. Clear the **Sort** check box.
4. Click **OK**.

Sorting Dimensions

There are several ways in which you can sort dimensions in an OLAP hierarchy. You can:

- Control the order in which data is sorted: ascending or descending.
- Restrict sort field values to a specified number of either highest or lowest values.
- Assign a rank number to each row in a vertically sorted report.
- Shift the positions of sort fields in the report. For example, you can change from sorting by State and then by Product to sorting by Product and then by State.
- Pivot a vertical (By) sort field to make it a horizontal (Across) sort field and vice versa.
- Hide a sort field in the report while retaining the sorting associated with it. For example, you can sort data by quarters without showing the Quarter column.
- Group numeric data in tiles (for example, percentile, decile, etc.).

Change Sort Order for a Dimension

1. Open the Control Panel.
2. Select a field from the Drill Down or Drill Across box.
3. Click the **Sort** button.

   The sort pane opens.
4. Under Sort Order, choose the **Low to High** or **High to Low** options button (Low to High is the default for a dimension).
5. Click **OK**.

   The main Control Panel window reopens.
6. Click **Run** to execute the report.

Restrict the Display of Sort Values

To restrict the display of sort field values to a certain number of highest or lowest values:

1. Open the OLAP Control Panel.
2. Select a field from the Drill Down box.
3. Click the **Sort** button.

   The sorting pane opens.
4. Under Sort Order, choose the **Low to High** or **High to Low** options button as shown in the following image on the OLAP Control Panel.
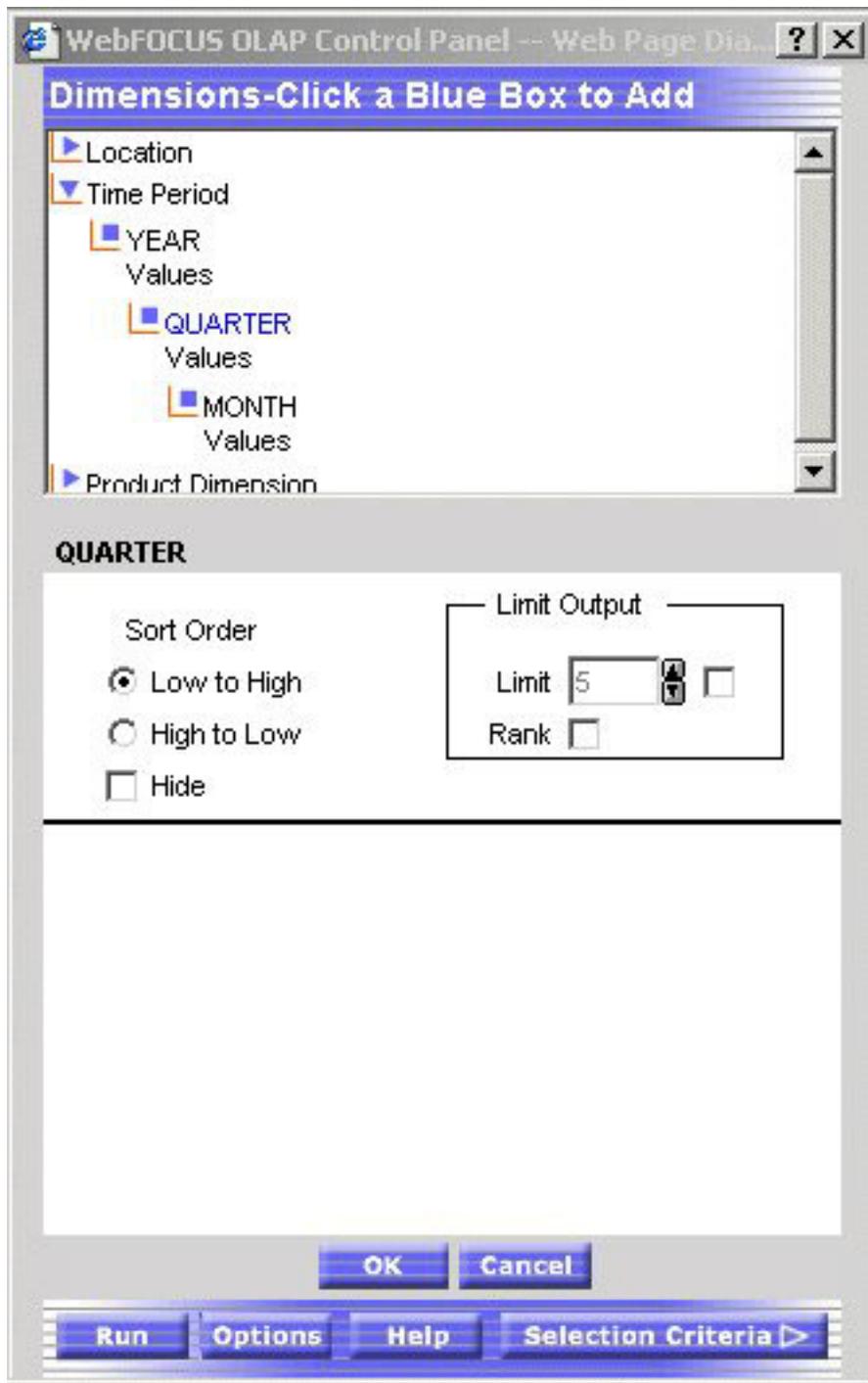
5. Under Limit Output, click the **Limit** check box and choose or type a value in the input area.
6. Click **OK**.

   The main Control Panel window reopens.
7. Click **Run** to execute your report.

Rank Rows in a Vertically Sorted Report

1. Open the OLAP Control Panel.
2. Select a field from the Drill Down box.

3. Click the **Sort** button.

   The sort pane opens.
4. Under Sort Order, choose the **Low to High** or **High to Low** options button.
5. Click the **Rank** check box.
6. If you wish to place a restriction on the number of sort field values to rank, click the Limit check box, choose or type a value in the input area.

   • If the **High to Low** option button is selected, you can rank a specified number of Highest values.

   • If the **Low to High** option button is selected, you can rank a specified number of Lowest values.
7. Click **OK**.

   The main Control Panel window reopens.
8. Click **Run** to execute your report.

Reposition Sort Fields in an OLAP Report

You can change the order in which data is sorted and presented in the report. For example, you can change from sorting by State and then by Product to sorting by Product and then by State.) If you want to reposition:

• Vertical (By) sort fields, drag and drop a field into a new column position.

• Horizontal (Across) sort fields, drag and drop the lower field above the higher one or vice versa.

In each case, the cursor changes to a plus (+) sign to indicate acceptable places into which you can drop the field. Unacceptable positions are shown by a circle with a slash across the center.

Reposition Sort Fields From the Control Panel

1. Open the OLAP Control Panel.
2. Select a field in the Drill Down or Drill Across box.
3. Click the **Shift Up** or **Shift Down** arrow until the field is in the desired position.

   Repeat for other fields as needed.
4. Click **Run** to execute your report.

Pivot Rows and Columns In an OLAP Report

You can quickly change a field from one that sorts data vertically, creating rows, to one that sorts data horizontally, creating columns, or vice versa. To change a:

• Vertical (By) sort field to a horizontal (Across) sort field, drag and drop a field above the row of column titles.

• Horizontal (Across) sort field to a vertical (By) sort field, drag and drop the field into the desired location in the row of column titles.

In each case, the cursor changes to a plus (+) sign to indicate acceptable places into which you can drop the field. (Unacceptable positions are shown by a circle with a slash across the center.)

Pivot Rows and Columns From the Control Panel

You can change a field from one that sorts data vertically, creating rows, to one that sorts data horizontally, creating columns, or vice versa.

1. Open the OLAP Control Panel.
2. Select the title of the row or column you want to pivot in the Drill Down or Drill Across box.
3. Click the **Pivot** button. The title appears in the new location.
4. Click **Run** to execute your report.

Sort by a Field Without Displaying the Sort Column

To use a field to sort your data, but not show the sort field as a column in the report:
1. Open the OLAP Control Panel.
2. Select a field in the Drill Down or Drill Across box.
3. Click the **Sort** button.
   The sort pane opens.
4. Under Sort Order, click the **Hide** check box.
5. Click **OK**.
   The main Control Panel window reopens.
6. Click **Run** to execute the report.

Tip: To expose the hidden sort field, repeat the process and deselect the **Hide** check box.

Grouping Numeric Data Into Tiles

You can group numeric data into any number of tiles (percentiles, deciles, quartiles, etc.) in tabular reports. For example, you can group student's test scores into deciles to determine which students are in the top ten percent of the class or determine which salesmen are in the top half of all salesmen based on total sales.

Grouping is based on the values in the selected vertical (BY) field and data is apportioned as equally as possible into the number of tile groups you specify.

The following occurs when you group data into tiles:
* A new column (labeled TILE by default) is added to the report output and displays the tile number assigned to each instance of the tile field. You can change the column title in the Tiles section of the OLAP Control Panel.
* Tiling is calculated within all of the higher-level sort fields in the request and restarts whenever a sort field at a higher level than the tile field's value changes.
* Instances are counted using the tile field. If the request displays fields from lower level segments, there may be multiple report lines that correspond to one instance of the tile field.
* Instances with the same tile field value are placed in the same tile. For example, consider the following data, which is to be apportioned into three tiles:

  1

  5

  5

  5

  8

  9

In this case, dividing the instances into groups containing an equal number of records produces the following table:

Group	Data Values
1	1,5
2	5,5
3	8,9

However, because all of the same data values must be in the same tile, the fives (5) that are in group 2 are moved to group 1. Group 2 remains empty. The final tiles look like the following table:

Tile Number	Data Values
1	1,5,5,5
2	
3	8,9

Group Data Into Tiles in an OLAP Report

1. Open the OLAP Control Panel.
2. Select a numeric or date field from the Drill Down box.
3. Click the **Tiles** button.

   The Tiles pane opens at the bottom of the OLAP Control Panel as shown in the following image.
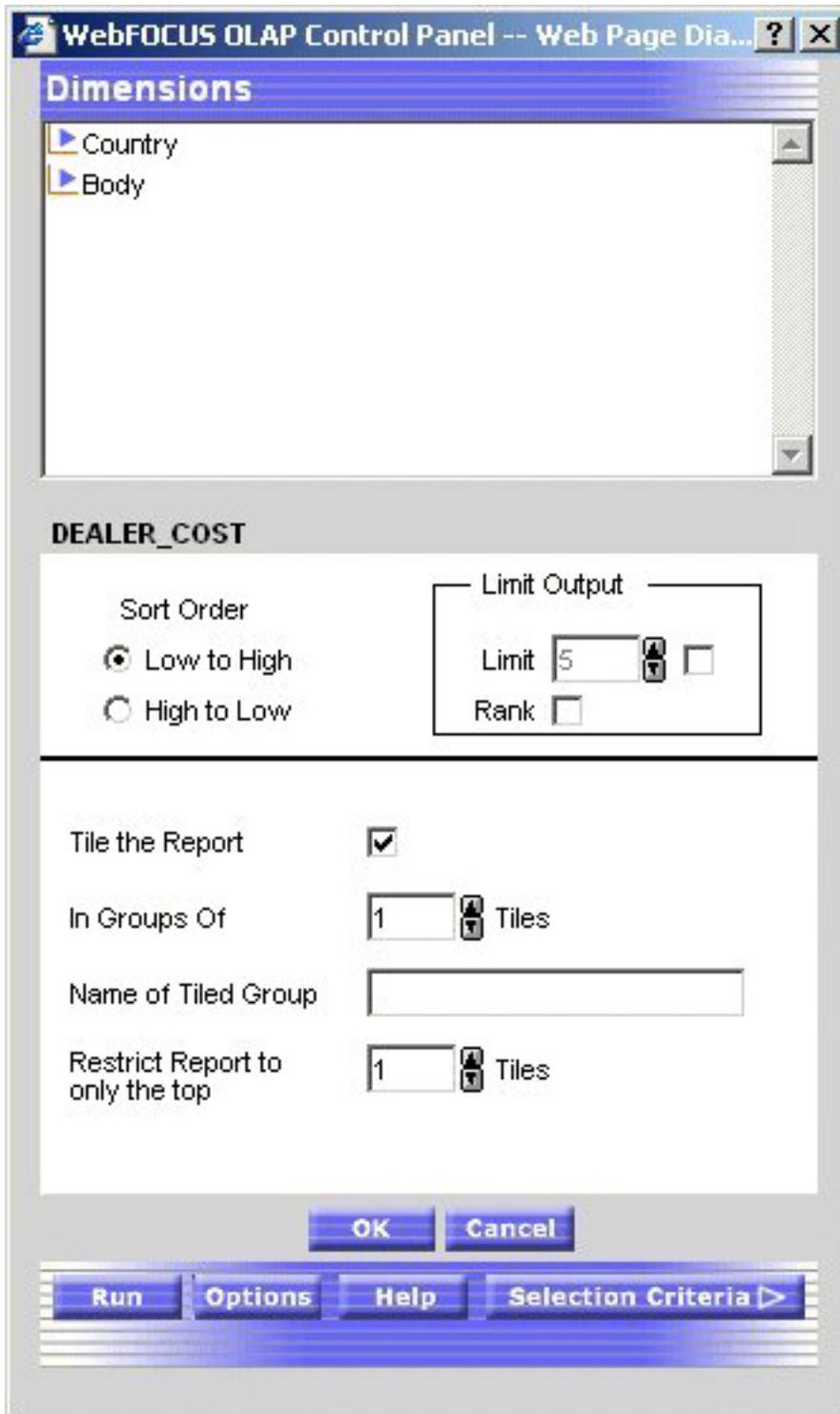
4. Click the **Tile the Report** check box.

5. In the **In Groups Of** input area, select the number of tiles to be used in grouping the data. For example, 100 tiles produces percentiles, 10 tiles produces deciles, etc.

6. In the **Name of Tile Group** input box, type a name for the Tile column.

7. In the **Restrict Report to only the Top** input area, select the number of tile groups to display in the report.

8. Optionally, select a Sort Order option button:
   - Choose **High to Low** to sort data in descending order so that the highest data values are placed in tile 1.
   - Choose **Low to High** to sort data in ascending order so that the lowest data values are placed in tile 1. This is the default.
9. If you wish to specify the highest tile value to appear in the report, select a value from the Limit input area. For example, if you enter a Limit of 3, the report will not display any data row that is assigned a tile number greater than 3.
10. Click **OK** to accept the selections and return to the main Control Panel window.
11. Click **Run** to re-execute and view the report.

Performing a Calculation on a Measure

You can perform standard calculations, such as average, percent, and summarize, on the numeric data in measures on an OLAP report.

Apply a Calculation to a Measure

1. Run the report.
2. Open the OLAP Control Panel.
3. Click a measure in the Measures box.

   The sort options pane opens. Do not click the Measures check box, which controls the display of a measure, not its sorting.
4. Required: Click the arrow under Measure Calculations and select a calculation from the drop-down list.

   None is the default value. For details, see Calculations You Can Perform on a Measure.
5. Click **OK**.

   The sort pane is replaced by the Measures box, where the selected calculation appears as a prefix to the measure.
6. Click **Run**.

   The applied calculation is added to the column title.

Calculations You Can Perform on a Measure

The following table lists the types of calculations in the first column and describes their functions in the second column.

Calculation	Function
Average Sum of Squares	Computes the average sum of squares for standard deviation in statistical analysis.
Average	Computes the average value of the field.
Count	Counts the number of occurrences of the field.

Calculation	Function
Count Distinct	Counts the number of distinct values within a field when using -REMOTE. For other modes of operation, this behaves like Count.
Maximum	Generates the maximum value of the field.
Minimum	Generates the minimum value of the field.
Percent	Computes a field's percentage based on the total values for the field. The Percent can be used with detail as well as summary fields.
Percent Count	Computes a field's percentage based on the number of instances found.
Row	Computes a field's percentage based on the total values for the field across a row.
Summarize	Sums the number of occurrences of the field.
Total	Counts the occurrences of the field for use in a heading (includes footings, subheads, and subfoots).

Limiting Data

An OLAP report is limited to values belonging to the parent categories in the dimensions hierarchy. There are several ways to further limit the data that appears in the report.

From the Selections pane or the Control Panel, you can explicitly limit the data in an OLAP report by selecting dimension values and relational operators (such =, >, <). For a list of the relational operators, see Selection Criteria Relational Operators.

- The Selections pane provides the easiest approach since you can choose both dimension values and relational operators with a few mouse clicks, while the report is fully exposed to view.
- The Control Panel offers several options that are not available from the Selections pane, including record selection based on a date or date range and on the existence or absence of specific characters.

Note that changes you make in the Selections Pane are immediately implemented in the Control Panel (even if the Control Panel is closed). However, the inverse is not true; changes you make in the Control Panel are not reflected in the Selections pane until the report is run.

From the report, you can limit data indirectly by drilling down on measures and dimensions to hone in on subset of information. For details, see Drilling Down On Dimensions and Measures.

Selection Criteria Relational Operators

You can define selection criteria using several relational operators, most of which are supported in both the Selections pane and the Control Panel. Those supported only in the Control Panel are noted in the following table which describes the operators.

The first column shows the operator and the second column describes the operator.

Operator	Displays Records That...
☐ - Equal to	Are equal to the criteria you specified. This is the default operator.
☐ - Not Equal to	Are not equal to the criteria you specified.
☐ - Less than or equal to	Are less than or equal to the criteria you specified.
☐ - Less than	Are less than, but not equal to, the criteria you specified.
☐ - Greater than or equal to	Are greater than or equal to the criteria you specified.
☐ - Greater than	Are greater than, but not equal to, the criteria you specified.
☐ - Contains	Contain the criteria you specified. **Note:** This operator is available only for alphanumeric fields and is only supported in the Control Panel.
☐ - Not contain	Do not contain the criteria you specified. **Note:** This operator is available only for alphanumeric fields and is only supported in the Control Panel.

Note: You can select more than one value using the same relational operator.

The following relational operators are available for selecting a range of dates. They are only available from the Control Panel.

The following table shows the relational operators in the first column and describes them in the second column.

Operator	Displays Records Where...
- **Within range**	The value in the indicated date field falls within the specified range. **Note:** To use this relational operator, you must select the Range check box in the Date Selection panel.
- **Not within range**	The value in the indicated date field does **not** fall within the specified range. **Note:** To use this relational operator, you must select the Range check box in the Date Selection panel.

Apply Selection Criteria From the Selections Pane

When the Selections pane is turned on, there is one control (drop-down list) for every dimension in the OLAP hierarchy. (Note that the name of the dimension field appears as defined in the Master File, even if an alternate column title has been specified.)

To limit data for the dimensions that are included in the report:

1. Click the arrow to the right of the dimension to open the list of values.
2. Select one or more values from the list (**All** is the default value).

   To select multiple values, click the desired values while holding the **Ctrl** key on the keyboard.
3. Select a relational operator from the button to the left of the dimension to indicate the basis for selection (equals (=) is the default).

   You can toggle through a list of operators. See Selection Criteria Relational Operators.
4. Repeat steps 1-3 for each dimension whose values you wish to limit.
5. Click the **Run** button on the band below the Selections pane.

Tip: To change or eliminate selection criteria, reopen the values list and choose another value or choose **All**.

Apply Selection Criteria From the Control Panel

1. Open the Control Panel.
2. Click the **Selection Criteria** button at the bottom right of the window.

   The Selection Criteria pane opens.
3. In the Dimensions box above the Selection Criteria pane, expand a dimension and click **Values**.

   A secondary window opens; select one or more values (press the **Ctrl** key to multi-select).
4. Click **OK** to return to the Selection Criteria pane, where the selected values appear in the drop-down lists.
   - If a Developer has applied selection criteria to an OLAP report, you only see the selected acceptable values of the field.
   - If no selection criteria have been applied, you see all the values of the field in the drop-down lists.

5. In the **Selection Criteria** pane, click a relational operator next to the dimension to specify the relationship that you want to base selection on—for example, =, >, or <. For a complete list, see Selection Criteria Relational Operators.

6. Repeat the process for other dimensions whose values you wish to limit.

7. Click **Run** to execute your report.

Change Selection Criteria From the Control Panel

Tip: If you have access to the Selections pane, it provides the easiest way to adjust or remove selection criteria. See Apply Selection Criteria From the Selections Pane.

From the Selections Criteria pane in the Control Panel:

1. Click the **Select** button next to the dimension value you wish to modify.

   A secondary window opens.

   To change a value, type the new value in the text box or select one or more values from the list. (The value you type must be in the same case as the value in the data source.)

   You can input only one value in the text box. If you select more than one value from the list, only the first value appears. However, all values appear in your report.

   To deselect a value, hold down the **Ctrl** key while clicking the value.

2. Click **OK** to return to the Selection Criteria pane where you can verify the revised value and/or change the relational operator if required.

3. Click **OK** again to confirm your choice and return to the main Control Panel window.

4. Click **Run** to execute your report.

Remove Selection Criteria From the Control Panel

Tip: If you have access to the Selections pane, it provides the easiest way to adjust or remove selection criteria. See Apply Selection Criteria From the Selections Pane.

From the Selections Criteria pane in the Control Panel:

1. Select the criterion you want to remove.

2. Click the **Delete** ✕ button.

   The selection category is removed from the list.

3. Click **Run** to execute your report with all values.

Applying Selection Criteria to Date Elements

You can apply selection criteria to date elements just as you apply them to other types of elements. The results are limited by the date(s) you select. For example, you can select to view data associated with a particular date or to exclude data from the specified date.

Note: Like other dimension elements, date fields must have been defined in the Master File by a developer. The Master File specifies the date formats available for selection criteria.

This feature is only supported from the Control Panel, where you choose the selection criteria from a Date selection pane that contains the appropriate controls for the date format.

You can also select a range of dates in a designated year by specifying a **From** and **To** date. Two relational operators are available for selecting a range of dates:

- The **Within range** operator displays records when the value in the indicated date field falls within the specified range.

- The **Not within range** operator displays records when the value in the indicated date field does **not** fall within the specified range.

For more information on supported date formats, see Date Format Limitations.

Apply Selection Criteria to a Date Field

1. Required: Open the Control Panel.
2. Required: Click the **Selection Criteria** button.

   The Selection Criteria pane opens.
3. In the Dimensions box above the Selection Criteria pane, expand the dimension that includes the date field, and click the **Values** button.

   A secondary window displays controls for the dimension's date format. For example, if the date format is YYM, only the year and month controls appear. If the format is YYMD, year, month, and day controls appear.

   Note: The date selection pane appears only when a supported date format is provided. See Date Format Limitations.
4. Specify a date using the spin controls, drop-down lists, or by typing the value.

   If your date format includes edit masking such as Y.M.D, the date appears with forward slashes in the Date selection list box, the Selection Criteria pane, and the drop-down list at the bottom of the report. However, the date edit mask appears as specified within the body of the report.
5. Click **Add** to display the date in the Selections list box.
6. Click **OK** to return to the Selection Criteria pane and verify the selected date.
7. In the Selection Criteria pane, click a relations button to the left of the date field (for example, =, >, or <) to indicate a basis for record selection.
8. Optionally, define additional date selection criteria by repeating steps 2-7.
9. Click **Run** to execute your report.

Apply Selection Criteria to a Date Range

1. Open the OLAP Control Panel.
2. Click the **Selection Criteria** button.

   The Selection Criteria pane opens.
3. In the Dimensions box above the Selection Criteria pane, expand the dimension that includes the date field, and click the **Values** button.

   A secondary window displays controls for the dimension's date format. For example, if the date format is YYM, only the year and month controls appear. If the format is YYMD, year, month, and day controls appear.

   Note: The Date selection pane appears only when a supported date format is provided. See Date Format Limitations.
4. Required: Click the **Range** check box.

   Inclusive and Exclusive options buttons appear:

- Choose **Inclusive** to show the range including the dates specified.
- Choose **Exclusive** to show the range excluding the dates specified.

Note:

- You can select only one range of dates at a time.
- You can apply selection criteria to a range of dates only if the date format contains a year. See Date Format Limitations.

From and To drop-down lists open for all selectable options. By default, the current date appears.

5. Specify a **From** date and a **To** date by using the spin controls and drop-down lists.
6. Click **OK** to return to the Selection Criteria pane.
7. To view both the From and To dates of the range selected, click the down arrow on the drop-down list.
8. Click a relational operator to the left of the date element in the Selection Criteria pane:

- Choose **Within range** operator to display records when the value falls within the specified range.

- Choose **Not within range** operator to display records when the value does *not* fall within the specified range.

9. Click **Run** to execute your report.

Add Dates to the Selections List Box

1. Open the Control Panel.
2. Click **Selection Criteria** to open the Selection Criteria pane.
3. Click the **Select** button to open the Date selection pane.
4. Specify the date you want to add by using the spin buttons, drop-down lists, or by typing the value.
5. Click **Add**.

   The date appears inside the Selections list box.
6. Click **OK** to return to the Selection Criteria pane.

Delete Dates From the Selections List Box

1. Open the Control Panel.
2. Click **Selection Criteria** to open the Selection Criteria pane.
3. Click **Select** to open the Date selection pane.
4. Select one or more dates that you want to remove from the Selections list box.
5. Click **Delete**.

   The date is removed.
6. Click **OK** to return to the Selection Criteria pane.

Date Format Limitations

Note the following limitations when applying selection criteria to date elements:

- The Date selection pane does not support Julian dates. However, if you are using Julian dates, the Date controls still open.
- Dates containing only a day format (D, I2D, A2D) are not supported from the Date selection pane. Instead, the data source provides a list of values.

- The Range check box is enabled on the Date selection pane when the date format contains one of the following formats:
  - Any smart date format—for example, YMD, MDY, YYMD, MDYY, Q, M.
  - A4YY
  - I4YY
  - I8YYMD
  - A8YYMD
  - I6YYM
  - A6YYM

Visualizing Trends

To make your reports more powerful, you can insert visual representations of selected data directly into the report output. These visual representations, which appear as a column of vertical or horizontal bar graphs adjacent to the numeric data, make relationships and trends among data more obvious.

You can apply data visualization graphs to selected measures from:
- Context menus in the report itself.

  This is the quickest way to apply data visualization bar graphs to numeric measures.
- The Measures control in the Selections pane.
- Check boxes in the Measures box on the Control Panel.

For details about data visualization graphs, see Visualizing Trends in Reports.

Add a Column of Bar Graphs for a Numeric Measure

The quickest way to apply data visualization graphics is from the report itself:
1. Right-click the title of a measure column.
2. Choose **Visualize** from the menu.

The report runs automatically, displaying a column of bar graphs following the selected measures column.

Tip: To remove the bar graphs, right-click the measure column title and choose **Remove Visualization** from the menu.

For other methods of applying bar graphs to columns, see Visualizing Trends in Reports.

Displaying Graphs and Reports

When you graph a measure in an OLAP report, you select the specific data elements to include and view the tabular report and a graphical representation of the identical information simultaneously in a split window. The graph appears in a frame in the top half of the window to facilitate comparison.

To be graphable, the data in the report must include at least one numeric measure and one sort field (By or Across). The Graph control is activated in the Selections pane or the Control Panel when these basic requirements are met.

As shown in the following image, it includes three sort fields (PRODCAT, Store Name, and Manufacturing Plant) and three numeric measures (Quantity, Our Cost, and Price), displayed as horizontal bar charts for quick comparison.

You can request a graph from an OLAP report, from the Selections pane, or from the Control Panel:

- **From an OLAP report,** you can create a vertical bar chart to represent the data in a selected measure.
- **From the Selections pane or the Control Panel,** you can create seven different types of graphs and apply them to one or more measures:
  - Vertical Bar (This is the default graph type.)
  - Vertical Line
  - Vertical Area
  - Horizontal Bar
  - Horizontal Line
  - Horizontal Area
  - Pie

If you choose to graph more than one measure, you can employ different graph types to suit the data in each column, with the following restrictions:

- When you select Vertical or Horizontal Bar, Line, or Area as the controlling graph style for a measure, you can apply any combination of these styles to other measures. For example, the first measure can appear as bars, the second measure as lines, and the third measure as areas. All measures must have the same orientation (vertical or horizontal).
- When you choose Pie as the controlling graph style, you can use only pie charts for other measures.

For details about supported combinations, see Combining Graph Styles and Measure Styles in OLAP Graphs.

Note: If drill down capability has been enabled for the dimensions in a report, the same functionality is automatically enabled for graphs. You can, therefore, drill down from one graphical representation of your data to another.

Combining Graph Styles and Measure Styles in OLAP Graphs

The following table lists the available style combinations in the second column for each graph style in the first column.

Controlling Graph Style	Potential Measure Styles
Vertical Bar (default)	Vertical Bar (default)
	Vertical Line
	Vertical Area
Vertical Line	Vertical Line (default)
	Vertical Bar
	Vertical Area
Vertical Area	Vertical Area (default)
	Vertical Bar
	Vertical Line
Horizontal Bar	Horizontal Bar (default)
	Horizontal Line
	Horizontal Area
Horizontal Line	Horizontal Line (default)
	Horizontal Bar
	Horizontal Area
Horizontal Area	Horizontal Area (default)
	Horizontal Line
	Horizontal Area
Pie	Pie

Graph a Measure From the Selections Pane

1. Click the down arrow to the left of the Graph control to open a pane that contains all the numeric measures in the current report.

There is a check box to the left of each measure and a graph button to the right of each measure. All check boxes are unchecked by default and all graph buttons are grayed (inactive) by default.

2. Select a check box associated with a measure.

   The graph button to the right of the measure becomes active. The default graph style is Vertical bar.

3. Toggle through the seven graph style icons until you reach the one you want to apply to the selected measure.

4. Repeat steps 2 and 3 for any other measures you want to graph.

   For a list of graph types that can be defined, see Combining Graph Styles and Measure Styles in OLAP Graphs.

5. Click the **Run** button on the band below the Selections pane.

   The graph opens in a separate frame above the report and Selections pane.

Graph a Measure From the Control Panel

1. Open the Control Panel.

2. Select the **Show Graph** check box located below the Measures Properties box.

   Note that the contents of the Drill Down and Drill Across boxes determine the X-axis fields. When there are multiple drill (X-axis) fields, multiple graphs appear vertically stacked in the same frame. The measures appear as Y-axis fields on the graphs you display.

3. Click the **Graph** icon adjacent to the Show Graph check box.

   The Measures and GraphStyle pane opens.

   Check boxes associated with the available measures are unchecked by default.

4. Click one of the seven icons at the bottom of the window to set a controlling graph style.

5. Select the check box(es) for the measure(s) you wish to graph.

   The graph icon corresponding to the controlling graph style appears next to each selected measure.

6. Click the icon next to a measure to choose a different graph style from the supported combinations as shown in the following image.
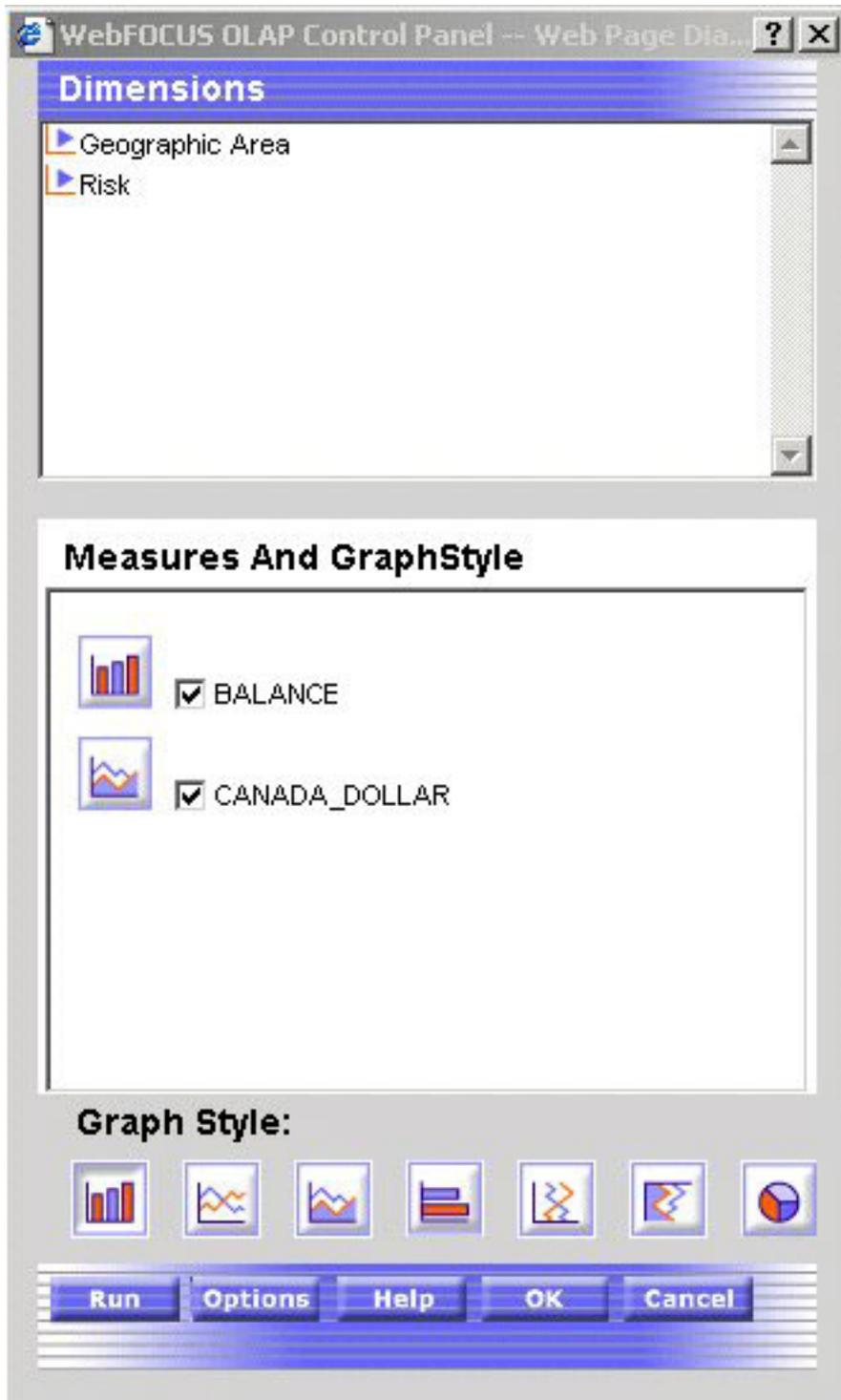
7. Click **OK** to return to the main Control Panel window with all the graph settings retained.

8. Click **Run** to display the graph(s) and the tabular report in a split window.

Note:

- If you select the Show Graph check box and click Run without selecting a controlling graph style, the default style (Vertical Bar) is applied.

- If you click Run without selecting the Show Graph check box, a tabular report appears without a graph.
- If you select at least one measure in the Measures and GraphStyle pane without selecting the Show Graph check box, when you click OK the system automatically selects the Show Graph check box. The tabular report appears with a graph.
- You cannot choose to graph alphanumeric or date fields. If there are no numeric measures, the Show Graph check box and the Graph button are disabled (grayed out).

Controlling the Display of Measures in a Report

While you cannot add new measures to an OLAP report without returning to the original report request, you can adjust the display of the measures in the report in several ways. You can:

- Stack measures in rows.
- Change the order of measure columns.
- Hide and expose measures.
- Add a column of data visualization bar graphs following any numeric measure.

Stacking Measures

When you have more than one measure in an OLAP report, you can stack the measures in separate rows within the same column to reduce the width of the report.

You cannot apply data visualization bar graphs to stacked measures.

Display Stacked Measures

1. Open the Control Panel.
2. Select the **Stack Measures** check box to display measures in separate rows under one column.
3. Click **Run** to execute your report.

Tip: To restore the standard display, deselect the **Stack Measures** check box and rerun the report.

Changing the Order of Measure Columns

You can change the order in which measure columns are presented in the report.

Reposition Measure Columns in an OLAP Report

To reposition a numeric column, drag and drop the field into a new column position.

The cursor changes to a plus (+) sign to indicate acceptable places into which you can drop the field. (Unacceptable positions are indicated by a circle with a slash cross the center.)

Hiding and Displaying Measures

You can hide and expose measures from an OLAP report, the Selections pane, or the Control Panel.

Hide or Expose a Measure From the Report

To hide a measure column, right-click the column title and choose **Hide** from the menu. The column is automatically removed from the display.

To expose a hidden measure column, right-click a displayed measure and choose **Unhide** from the menu. A secondary menu lists any hidden measures.

Choose the one you want to re-expose in the report.

Tip: If you want to add a new measure to the report, you must return to the original request and add the field there.

Hide or Display a Measure From the Selections Pane

1. Click the down arrow to the left of the Measures control to display a list of the measures in the report.
2. Click the check box next to a measure to display or hide it. The check box toggles through three positions.
   - **To hide the measure,** click the check box until it is blank.
   - **To expose a hidden measure,** click the check box until you see a check mark.

Tip: You can use the same check box to display a column of data visualization bar graphs for numeric measures. This setting is represented as a graph in the check box. For details, see Visualizing Trends.

Display or Hide a Measure From the Control Panel

1. Open the Control Panel.
2. In the Measures box, click the check box next to a measure to display or hide it. The check box toggles through three positions.
   - **To hide the measure,** click the check box until it is blank.
   - **To expose a hidden measure,** click the check box until you see a check mark.

   Tip: You can use the same check box to display a column of data visualization bar graphs for numeric measures. This setting is represented as a graph in the check box. For details, see Visualizing Trends.
3. Click **Run** to execute your report.

Adding and Removing Dimensions

Since all of the values in a dimensions hierarchy are available in an OLAP report from Developer Workbench, you can add dimensions to the OLAP report at any time, without returning to the original report request. You can add dimensions from:

- An OLAP report.
- The Control Panel.

Add a Dimension Element From the Control Panel

1. Open the Control Panel.
2. Select a report layout box (Drill Down or Drill Across) to indicate how you want the new sort dimension to be used in the report.

3. Expand a dimension in the Dimensions box at the top of the window, then click the dimension element you want to add to the designated layout box. The new dimension is added to the bottom of the list.

4. If you wish to change the position of the new sort field, click the up arrow to reposition it.

5. Click **Run** to execute your report with the new settings.

Delete a Dimension Element From the Report

Right-click the dimension column you wish to remove and choose **Delete** from the menu.

The report runs automatically.

Delete a Dimension Element From the Control Panel

1. Select the element in the Drill Down or Drill Across box. The buttons above the box become active.

2. Click **Remove** . The element is deleted from the Drill Down or Drill Across box.

3. Click **Run** to see the new report.

Saving OLAP Reports

DB2 Web Query includes several saving features for OLAP reports:

- The dialog for saving reports allows them to be placed in subfolders of the user's choice under Reports; subfolders can also be created from the OLAP tool.
- Users can save their reports with the OLAP functionality removed, so the OLAP tool can serve as a simple report writer tool.
- Field name referencing is uniform throughout the OLAP product. For example, the AS or TITLE phrases will appear in reports generated using the OLAP Selections pane or the OLAP Control Panel (OCP).

Note: When saving OLAP reports, you must refresh the Domain to see the newly saved reports. Otherwise, the new reports will not be listed in the domain tree.

Saving Options

If you are working in the OLAP Selections pane, you can save your report by using the Save button on the toolbar. You can also access other saving options in the OCP by selecting the Options button.

Save a Report in OLAP

1. Required: Click the **Save** button in the OLAP Selections Pane.

The following image shows the OLAP Selections Pane containing five buttons, OLAP, Run, Reset, Save, and Help.

or

Click the **Options** button in the OLAP Control Panel (OCP).

The following image shows the OLAP Control Panel where the Options button appears at the bottom of the panel.
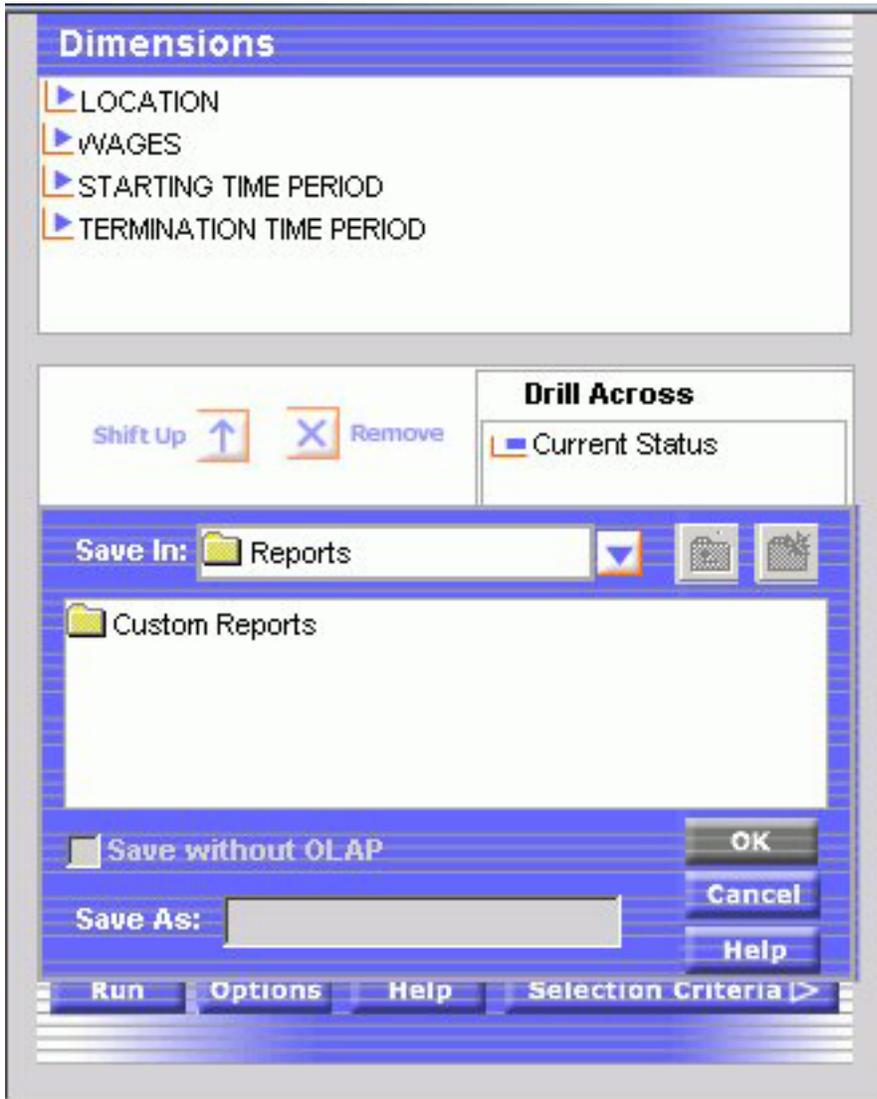
You are now presented with several saving options.

The following image shows the Options menu containing five options, Save the data in an Excel file, Save the data in an Excel 2000 file, Save the data in an Excel 2000 file with formulas, Display as a PDF Report, Display as Active Report (Offline Analysis), and Save Report.
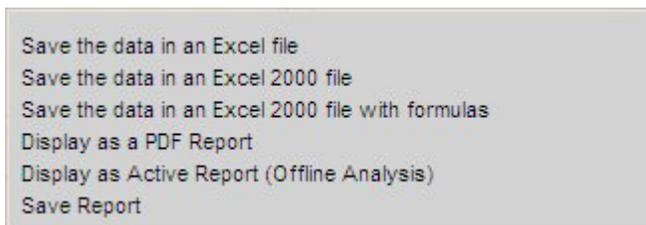
2. Click **Save Report** to open a new dialog box as shown in the following image.

3. Click **Reports** to enable the New Folder icon in the upper right corner as shown in the following image.
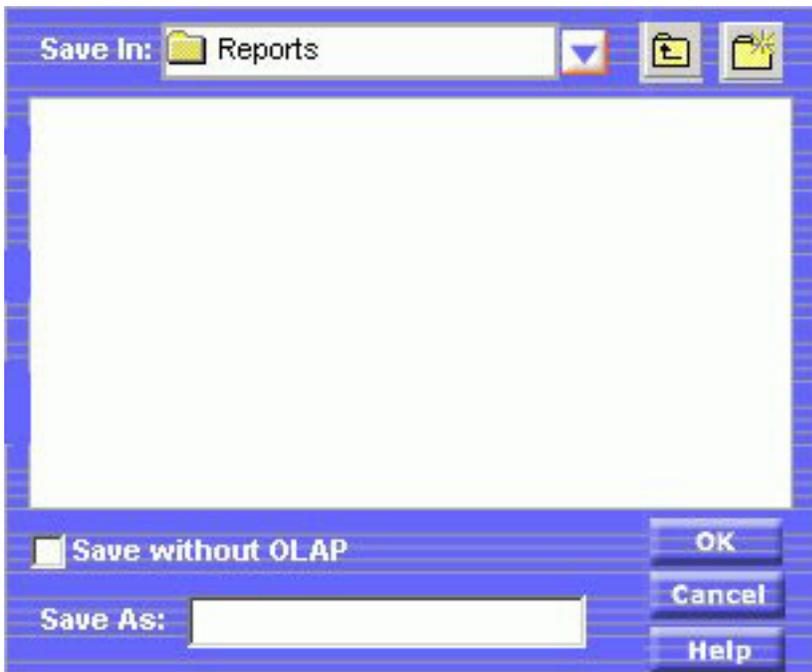
4. A pop-up prompts you to create a new folder, for example, a subfolder called OLAP Reports as shown in the following image.

5. Name your report in the Save As box and click **OK** to return to your report.

Save an OLAP-enabled Report as a Plain Report Without OLAP Functionality

Users can save their reports with the OLAP functionality removed, so the OLAP tool can be used as a simple report writer tool.

1. Create a subfolder by following these procedures: Save a Report in OLAP.
2. After a subfolder is selected, check the **Save without OLAP** box.
3. Enter a new name for your report in the **Save As** box and click **OK**.

DB2 Web Query generates a new report without OLAP functionality. The following image shows a normal report of employees' pay levels which is sorted by employee's last name.

Last Name	Pay,Level							
	1	2	3	4	5	6	7	8
ADAMKIEWICZ	.	.	.	.	5	.	.	.
ADAMS	.	.	.	.	.	6	.	.
ALBOR	.	2	.	.	.	.	.	.
ALIBUDBUD	.	.	.	.	.	.	7	.
ALSMAN	.	.	.	.	5	.	.	.
AMBERSON	.	.	.	4	.	.	.	.
ANDERSON	.	.	.	.	5	.	.	.
ARNOLD	.	2	.	.	.	.	.	.
AUSTIN	.	2	.	.	.	.	.	.

Uniform Field Name Referencing in OLAP

However the developer designs the report with regard to field referencing will carry through to both the OCP and the OLAP Selections pane. Field referencing does not differ between the report and the OCP and OLAP Selections pane. Field references by AS, TITLE, or Field Name, are uniform in the report output and OLAP controls.

Saving and Displaying OLAP Reports and Graphs in Other Formats

OLAP reports and graphs appear in your browser in HTML format. You can display the report and corresponding graph in PDF and Excel formats.

The following image shows a pop up menu listing the available formats to save and/or display.
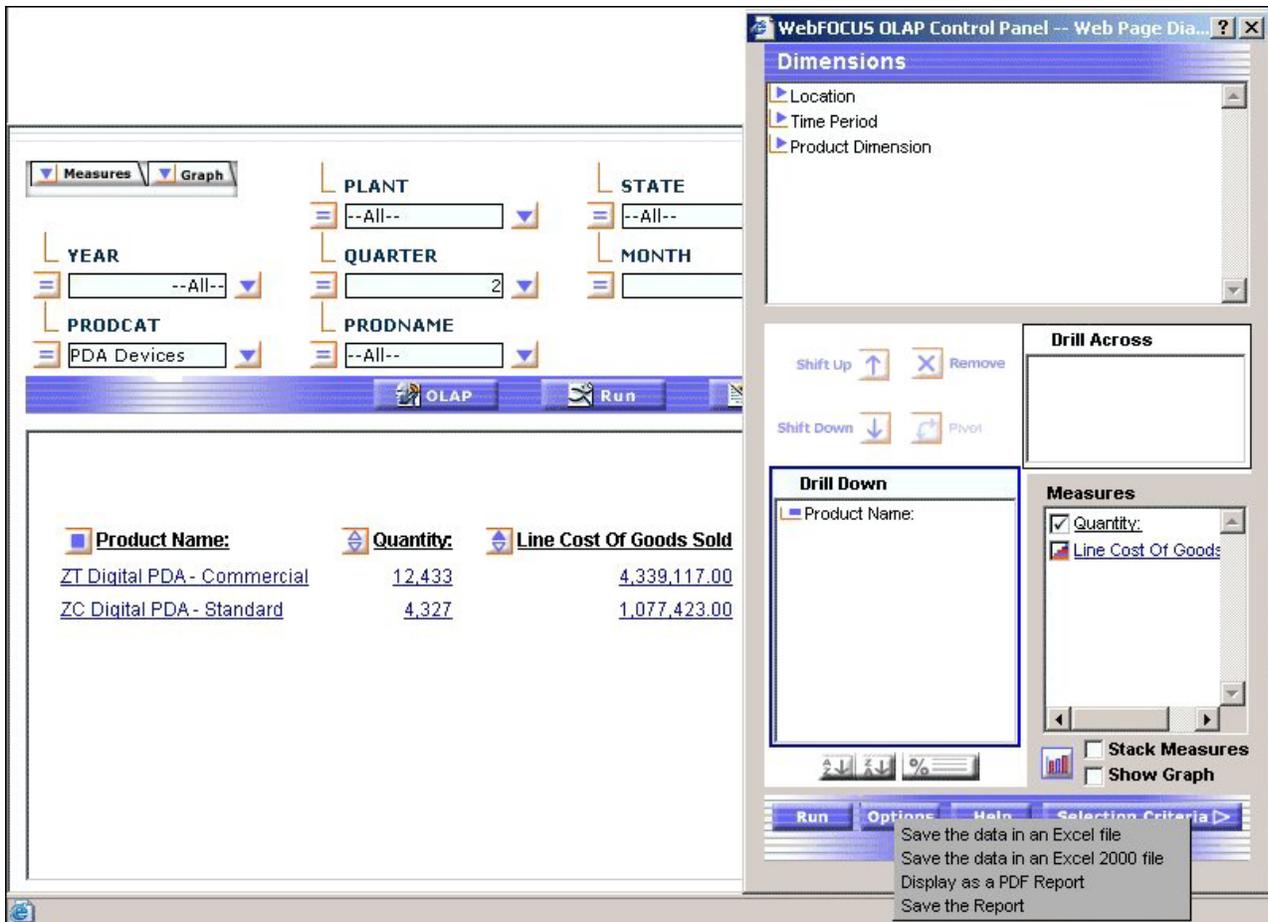
- PDF (Adobe Acrobat's Portable Document Format) is useful when you want a report or graph to maintain its presentation and layout regardless of a user's browser or printer type.

  When you choose PDF format, the report appears in Adobe Acrobat Reader; the graph continues to appear above it in a browser window. If you print from Acrobat, only the report will be printed.

- Excel is useful when you want to convert a large database to a spreadsheet or save a report and graph in a commonly used Office tool. Two Excel formats are available:

  – Excel 2000 supports most StyleSheet attributes, allowing for full report formatting. The computer on which the report is being displayed must have Microsoft® Excel 2000 or higher installed.

  When you choose Excel 2000, the report and graph are displayed in the same tool where you can manipulate the data using Excel options. From Excel you can print both the report and the graph.

  When you save in Excel 2000 format, only explicit drill-downs (based on parameters passed from the base report to the drill-down report) continue to work. Automatic drill downs on Dimensions and Measures are not supported in Excel.

  – Excel is a binary display format with limited formatting support. The computer on which the report is being displayed must have Microsoft Excel installed.

  Drill-downs of any kind are not supported.

A user can save the HTML output in the Reports folder.

Display an OLAP Report and Graph in PDF Format

1. Open the Control Panel.
2. Click the **Options** button at the bottom of the window.
3. Select **Display as a PDF Report**.

   The graph appears in the browser above the report, while a second browser opens and launches the report output in Adobe Acrobat as shown in the following image.
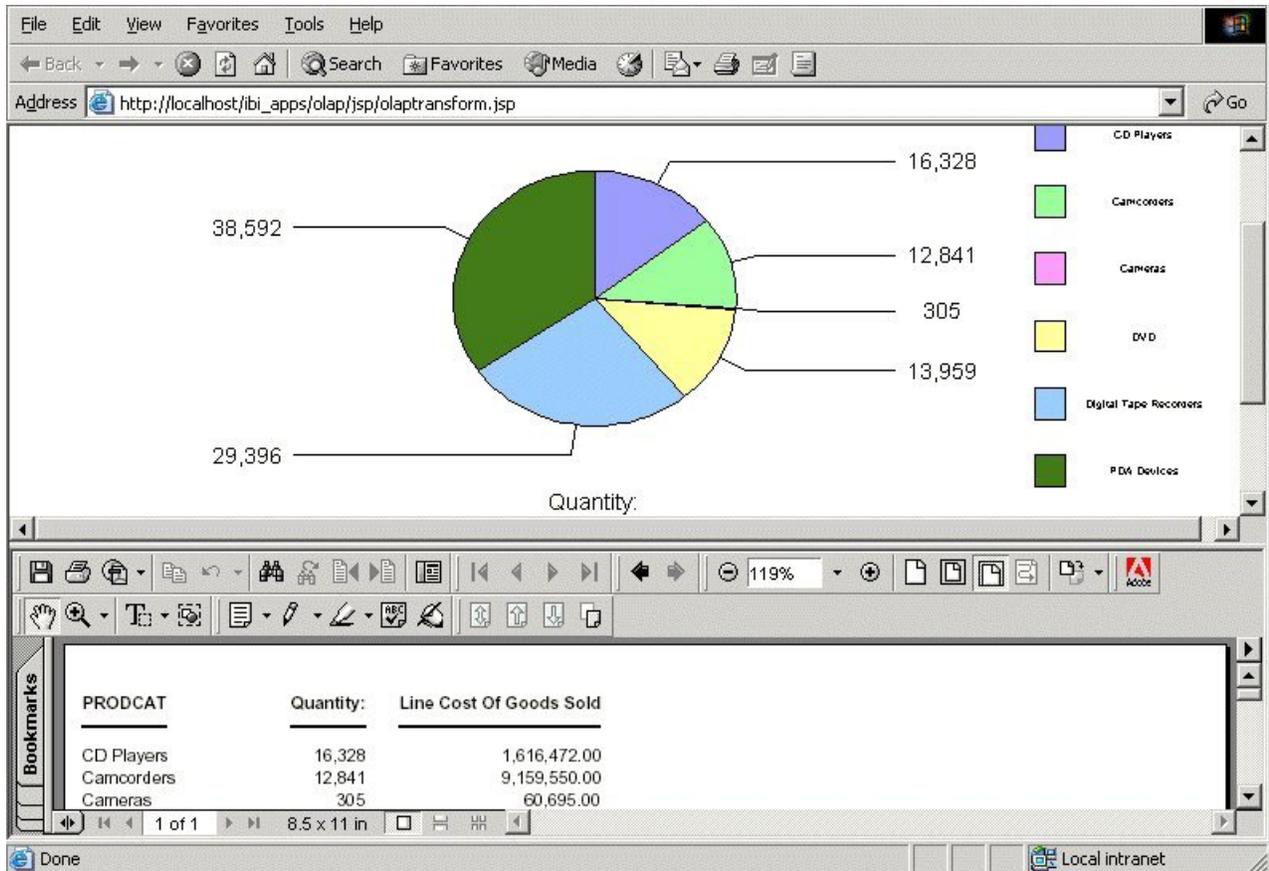
Tip: If you wish, you can save and print the PDF report from Adobe Acrobat.

Save an OLAP Report and Graph as an Excel File

1. Open the Control Panel.
2. Click the **Options** button at the bottom of the window.
3. Select **Save the data in an Excel file** or **Save the data in an Excel 2000 file**.
4. Follow the instructions to export the data.

Save an OLAP Report and Graph in the Reports Folder

1. Open the Control Panel.
2. Click the **Options** button at the bottom of the window.
3. Select **Save as**. A secondary window opens.

4. Enter a descriptive name and click **OK** to save the graph(s) and the tabular report.

Note: There is no limit to the number of characters in a graph legend's label, but long labels may appear truncated.

Chapter 6. Creating a Graph With Graph Assistant

Describes how to use the HTML Graph Assistant to create graphical reports.

This chapter provides information on graphs and how to use the Graph Assistant.

Graph Overview

Graphs often convey meaning more clearly than data listed in tabular format. Using the Graph Assistant, you can easily transform almost any type of data into an effective graph that you can customize to suit your needs.

You can link your graph to other resources. You may also select from a multitude of graph styles, which include the standard graph formats bar, line, pie, and scatter as well as many variations on these types.

You can also represent data graphically using data visualization. For details, see Visualizing Trends in Reports.

Content Analysis: Determining Graphing Objectives

DB2 Web Query offers a range of reporting tools that allow you to create reports that deliver critical information to your users. By selecting a tool that is well suited to your particular needs, you can design the information you deliver to users. One effective option with almost any type of data is a graphical presentation.

Graphs enable you to display multivariate or complex data efficiently, precisely, and in a way that a viewer can intuitively grasp. A graph is an effective presentation tool because it presents a visual idea, communicating meaningful changes in data to a user in a memorable way. By viewing your graph, a user can identify and track a change that you want them to notice.

Creating a meaningful graph is not simply a matter of applying aesthetics to your data. Instead, graphs allow you to design your presentation to capture the essential information in your data.

The first step in creating excellent graphs is determining your graphing objectives. You can break this process into several stages.

1. Assess your data:

   Look for meaningful patterns or changes in the data. Does your data change most dramatically over time or in relationship to some other value? Are there two sets of data that you would like to compare to each other?

   Determine what movement or changes you would like to highlight. Which of the patterns in the data would you most want the viewer to picture?

2. Select the graph type and style that best suits your argument and the overall shape of your data. Determine what will lead viewers to the cognitive task/connection that you want them to make.

3. Begin developing your graph.

4. Refine your graph:

   Are the labels meaningful/useful?

How can the data be organized in a meaningful way? Consider customizing the scales you use with your graph.

Accessing the Graph Assistant

HTML Graph Assistant is accessible:

- During the creation of a new Report.
- When editing a Report within Domains.

The HTML Graph Assistant is best viewed using a resolution of 1024 x 768.

You may be prompted for a DB2 Web Query Reporting Server ID.

Note: If you are using the HTML Graph Assistant with a Firefox browser, the display may be slightly different than Internet Explorer. These differences do not effect functionality.

Options Available on All Tabs

The following options are available from any tab in the Graph Assistant:

Save/Save As

Click Save to save your graph. Click Save As to open the Save New Report dialog box.

Run

Click run to run your graph.

Help

Click the icon to access help about the area of the tab in which you are working. Click About to open a window describing the version of Graph Assistant in which you are working.

Quit

Click to quit the application.

Selecting a Graph Type and Style

When creating a graph, it is important to select the appropriate graph type with which to display your data. You may select from a number of basic graph types, as well as refinements on these types, known as graph styles. Basic graph types include line graphs (connected point plots), bar graphs, pie graphs, and scatter graphs. Use the brief descriptions (see Graph Types) to select a graph type that suits the data set you are displaying and the change you want to highlight. Keep in mind that the data are the sets of numbers that you are displaying, and the scales are the numbers or variable measures that appear along the axes of the graph.

The Graph types tab of the Graph Assistant provides a list and brief descriptions of the many graph types and graph styles available in DB2 Web Query.

Note: When using a stacked chart of any type at least 2 series are required. Negative values are not supported in stacked charts.

The following image shows the Graph types tab with a sample cluster bar chart.
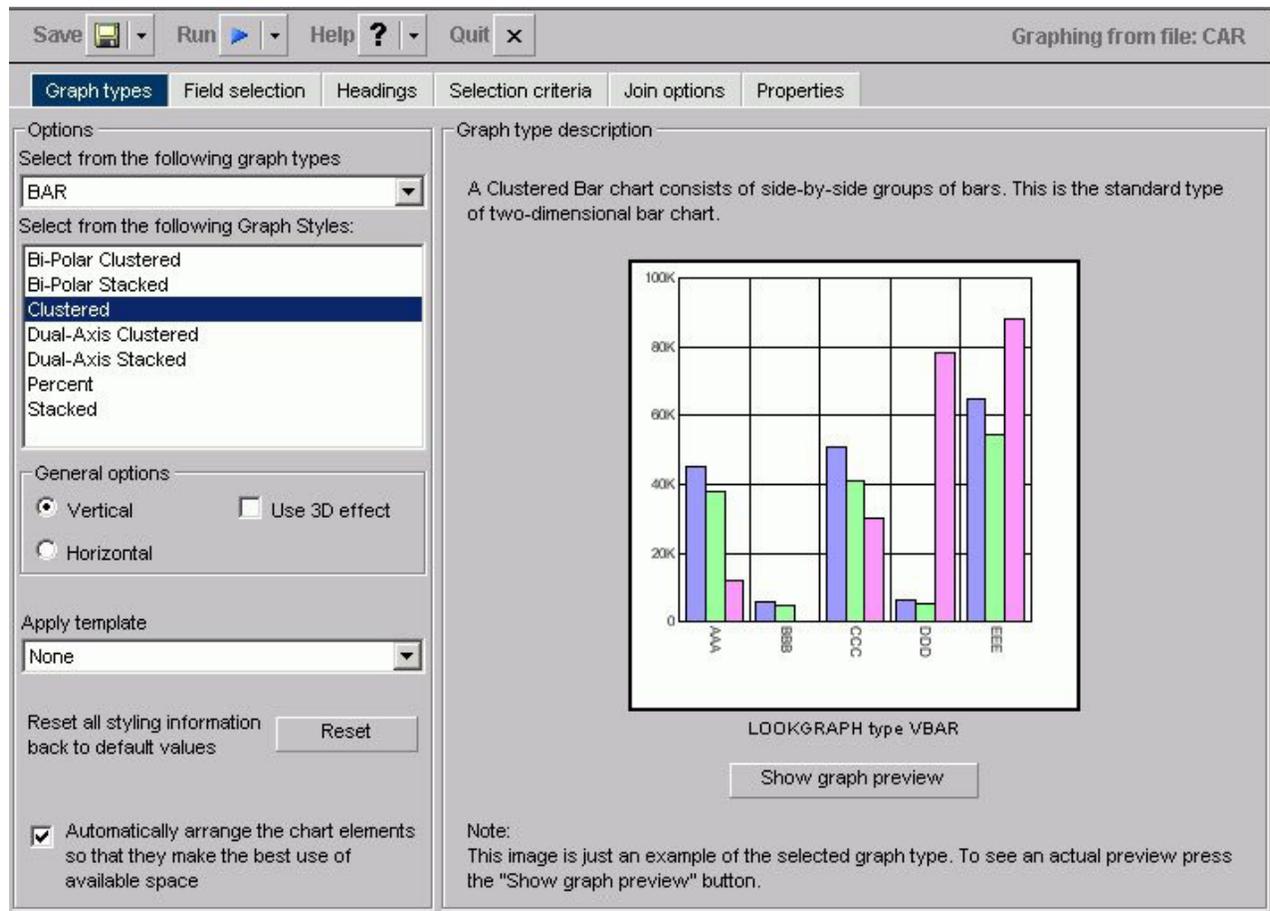
Graph Types

Following are descriptions of the types of graphs you can create:

- **Line graphs.** Line graphs are useful for emphasizing the movement or trend of numerical data over time, since they allow a viewer to trace the evolution of a particular point by working backwards or interpolating. Highs and lows, rapid or slow movement, or a tendency towards stability are all types of trends that are well suited to a line graph.

  Line graphs can also be plotted with two or more scales to suggest a comparison of the same value, or set of values, in different time periods. The number of scales your graph has depends on the type of graph you select. There is a description of each available graph type on the Graph types tab of the Graph Assistant.

- **Bar graphs.** Bar graphs plot numerical data by displaying rectangular blocks against a scale. The length of a bar corresponds to a value or amount. Viewers can develop a clear mental image of comparisons among data series by distinguishing the relative heights of the bars. Use a bar graph to display numerical data when you want to present distributions of data. You can create horizontal as well as vertical bar graphs.

- **Pie graphs.** Pie graphs emphasize where your data fits in relation to a larger whole. Keep in mind that pie graphs work best when your data consists of several large sets. Too many variables divide the pie into small segments that are difficult to see. Use color or texture on individual segments to create visual contrast.

- **Scatter graphs.** Scatter graphs share many of the characteristics of basic line graphs. Data can be plotted using variable scales on both axes. When you use a scatter graph, your data is plotted using a basic line pattern. Use a scatter graph to visualize the density of individual data values around particular points or to demonstrate patterns in your data. A numeric X-axis, or sort field, will always yield a scatter graph by default.

  It is important to note that scatter graphs and line graphs are distinguishable from one another only by virtue of their X-axis format. Line graphs can appear without connecting lines (making them look like scatter graphs) and scatter graphs can appear with connecting lines (making them look like line graphs).
- **Area graphs.** Area graphs are similar to line graphs except that the area between the data line and the zero line (or axis) is usually colored or textured. Area graphs allow you to stack data on top of each other. Stacking enables you to highlight the relationship between data series, showing how some data series approach or shadow a second series.
- **3D graphs.** 3D graphs add dimension to your graphing presentation. Dimensionality enables your viewers to recognize trends based on two or more data sets easily. 3D graphs also add impact to your presentation.
- **Bubble charts.** Bubble charts are used to display three dimensions, requiring only three COLUMN fields representing X, Y, and Z data values in that order. The data points can be either opaque or transparent bubbles. If you want to visualize the precise data point, you can add a dot in the center of the bubble. The size of the bubbles are proportional to the values they represent.
- **Polar graphs.** The Graph Assistant supports two styles of Polar graphs: an XY Polar Chart or a polar coordinate scatter chart and an XY Polar Dual-Axis Chart or a Dual-Y polar coordinate chart. In both styles, only one Column field is allowed in the following order: X (degree) for the Column field and Y (distance from the center) for the Across/By field.
- **Radar graphs.** Radar graphs are used to compare two or more data sets. You can use axes or polygons to represent values in a star or spider configuration. They are essentially analogous to a line chart, except that the scale wraps around. Radar graphs work well with any data that are cyclical, such as the months of a year.
- **Stock Chart.** Stock charts are used to track the trend of a particular stock. Stock charts show the stock's volume, opening and closing values as well as the stock's high and low values over a specific time period. The data is represented by sets of bars and/or lines.
- **Histogram.** Histograms depict the distribution of a data set by grouping all of the data together and assigning it to buckets based on their value. You only measure one variable in histograms. After the data is sorted by this variable, you count the number of instances of this data. This determines the height of each bar. For example, if a company wanted to measure how many franchises there are in each class of annual revenue, a histogram would show the number of franchises that have 1,000,000 to 2,000,000; 2,000,000 to 5,000,000; 5,000,000 to 10,000,000; and 10,000,000 to 15,000,000.
- **Multi-y.** A Multi-y is a vertical, triple/quadruple/quintuple-Y-axis clustered bar chart. Any series can be assigned to any of the triple/quadruple/quintuple axes.
- **Waterfall.** A Waterfall chart is a cumulative stacked chart. The waterfall chart will automatically perform the cumulative sum when using Subtotal or Total. Waterfall charts essentially require one data value for each series or group marker to be drawn in a chart.
- **Miscellaneous.** The Miscellaneous Graph Type includes a variety of Graph Styles:

- **Default (Circular Gauge).** A Gauge Chart usually indicates the current position of a value within a given spectrum.
- **Funnel.** A Funnel Chart is basically a pie chart displaying only one group of data at a time from the first series to the last series at the bottom of the funnel.
- **Pareto.** The X-axis scale is for the group members. The Y-axis scale is the percent of the total accumulation for each selected series.
- **Product Position.** A Product Position chart provides a visual representation of market share and growth versus revenue and measurement (past, present, and future). Product Position charts require a set of three display fields.
- **Resource Return.** Resource charts plot X- and Y-axis data cumulatively. They are useful for plotting two independent variables against each other, particularly in cases where one or both of the axes specify percentages and the user wants to examine issues such as capacity utilization.
- **Spectral Map.** This is a Spectral Map Chart. This is a chart with row or column matrix of markers that are colored according to data values.

Graph Styles

You can choose among several graph styles for each graph type. First you select the graph type with which you want to work in the Graph Type drop-down list box, and then you select the graph style from the Graph Styles drop-down list box. A thumbnail graph with a graph type and style definition appears to the right on the Graph types tab.

Previewing Styling Options for Your Graph

The graph in the Graph Preview window displays the graph type and style you chose as well as any styling information you specified from the template drop-down list or in the Properties tab. The Preview does not open by default for other resolutions. In this case, you have to click the Show Preview button.

The following image is of a bar graph that uses the 3DBAR graph style. This generic chart is a two-dimensional chart with three-dimensional type bars.
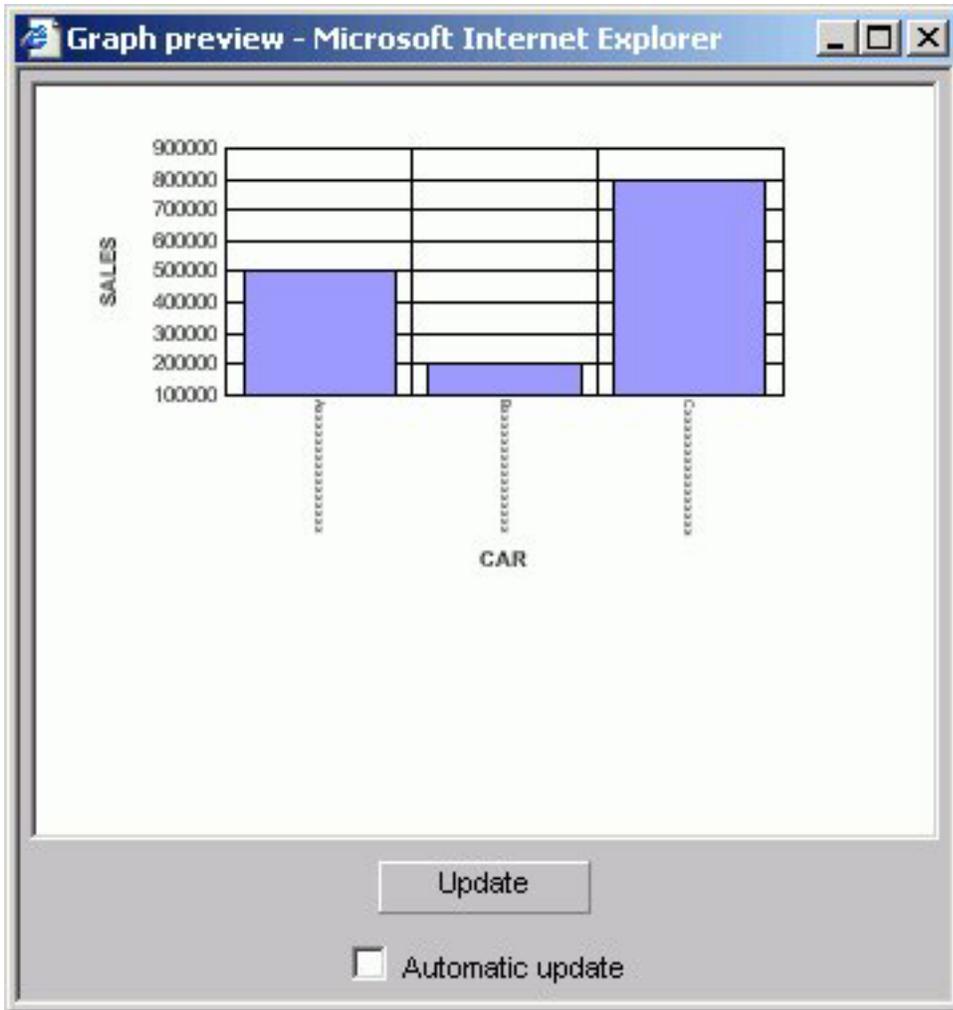
The data used for this Graph Preview is built with the selected data sources' field format types and lengths of the data. In this case, the X-axis field (car) is alphanumeric (A10) and will be displayed as the series label

where:

A, B, C

Represents the data type alphanumeric.

xxxxxxxxx

Indicates the number of characters or digits allowed.

The Y-axis (dealer cost and retail cost) scale is based on a data range of selected Y-axis fields.

You can manually update the Graph Preview by clicking the Update button to see how your changes will look in a graph. You can choose to have the Graph Preview updated automatically any time you make changes by selecting the Automatic update check box.

Important:

- The graphical representation in the Graph Preview is based on an internal algorithm to help show the type and style of the graph. It is not a true representation of your particular data. However, legends and axis labels will reflect selected fields, formats and positioning.
- Merged graphs are not supported in the Preview panel.

Auto Arranging Graph Elements

The auto arrange feature enables the Graph Preview to arrange all the elements in a graph report efficiently. The auto arrange feature is checked by default.

Arrange the Elements of a Graph Efficiently

Check the **Automatically arrange the chart elements so that they make the best use of the available space** option.

Note: This option is checked by default. If you uncheck this feature, DB2 Web Query will arrange the elements.

Comparing the Arrangement of the Elements of a Graph

In the Graph types tab:

1. Uncheck the **Automatically arrange the chart elements so that they make the best use of the available space** option.
2. Click **Show Graph Preview**.

   The Graph preview window opens. The following image shows the Graph types tab with a sample bi-polar stacked bar chart of a sales report with sales and mpg dimensions.

Note how the MPG symbol partially blocks the data along the right Y-axis.

3. Now check the **Automatically arrange the chart elements so that they make the best use of the available space** option.

A new Graph preview window opens. The following image shows the same bi-polar stacked bar chart with the elements arranged automatically.
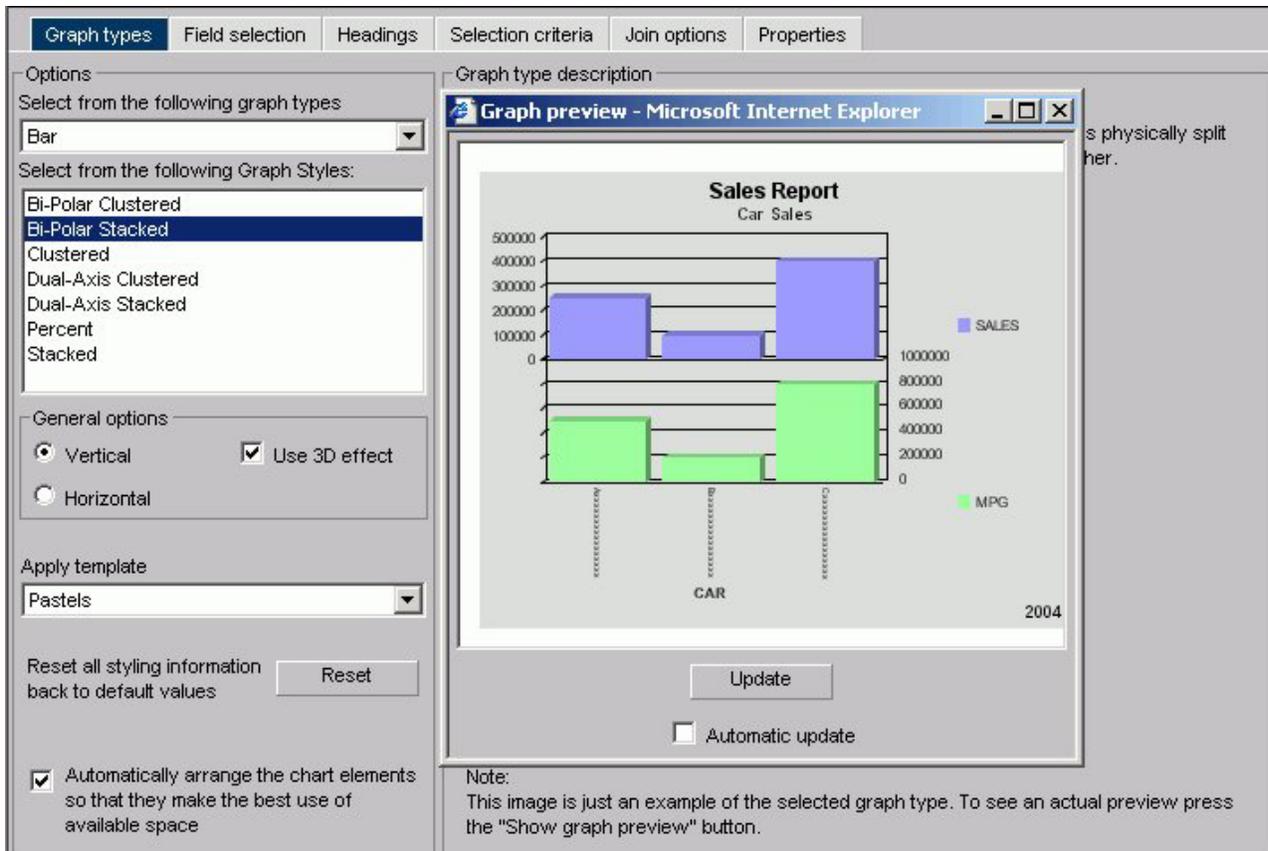
Note how the Y-axis and X-axis labels fit within the size of the report.

Select a Graph Type and Style

1. Highlight a graph type from the Graph Type list on the Graph types tab of the Graph Assistant. Next, highlight a graph style from the Graph Styles drop-down list.

   A thumbnail image and a brief description of the graph are provided when you highlight a graph type and style. Be sure to read the description of the graph before selecting a graph type and style. Certain graph types require a particular number and/or type of data values; therefore, if your data does not satisfy the requirements, your graph will not accurately represent your data.

2. After you have found the graph type and style you desire, click the next tab to continue creating your graph.

Selecting Scales

After you have chosen a graph type, you should select an appropriate scale. A scale is a classification scheme or series of measures that you select for application to the axes of your graph. The scale provides the framework against which your data are plotted. When you choose an appropriate scale for your data, meaningful patterns can emerge, and when you modify a scale, the overall shape of your graph changes.

Steps or measures in the scale are represented along the axes of your graph by marks. The type of scale you choose determines the number of divisions along the scale. There are two general types of scales you can apply to the y-axis of your graph:

- Linear scales
- Logarithmic scales

A linear scale is a scale in which the values increase arithmetically. Each measure along the scale is one unit higher than the one that precedes it. Linear scales are useful when the data you are plotting are relatively small in range.

A logarithmic scale is a scale in which the values increase logarithmically. Each measure along the scale represents an exponential increase in the data value. Logarithmic scales are useful when you need to accommodate a large range of numbers.

Select Scales

1. Click the **Properties** tab of the Graph Assistant.
2. Click the **Y axis** subtab.
3. Find the **Log Scale** check box. When this option is checked, the Y-axis scale uses logarithmic scaling. When unchecked, the Y-axis scale uses linear scaling.

Selecting Values for the X and Y Axes

The values you select for the X- and Y-axes determine what data is included in the graph you are creating, and how it appears.

You can also:

- Select a second horizontal category (X-axis), which will produce multiple graphs. For details, see Creating Multiple Graphs.
- Temporarily hide the display of a Y-axis field. For details, see Hiding the Display of a Y-Axis Field.
- Interpolate X and Y-axis values using linear regression.

You can search fields lists. For details, see Searching Field Lists.

Note: Field names that contain a hyphen "-" cannot be used in the HTML Graph Assistant.

Notes on the Fields List

- Key fields are represented with a key icon in all field lists (tree and list displays) in the HTML Report and Graph Assistant.
- The number of fields that are currently displayed shows at the bottom of the fields list. If a field list contains more than 200 fields, the first 200 fields display initially. Additional fields are retrieved and displayed when you select the next set of fields.

  To select the next set of fields, scroll to the bottom of the field list and select the Next option that appears. The Next option describes which fields will be returned, for example in the following image it shows that the next 201-400 fields of 417 will be retrieved:

  To go back, scroll to the top of the field list and select the previous set of fields. For example, the following image shows the Previous option to select the previous 1-200 of 417 fields:

Name ▲	Alias
Previous (1-200) of 417	▲

- If you are viewing a Fields List in the Dimension Tree mode and you create a recursive join (joining a file to itself), you will not be able to view the Dimensions in the Fields List after the join is created. This is due to duplication of field names in a recursive join. If you delete the join, you will be able to view dimensions again.

Select Values for the Y-axis

1. Click the **Field selection** tab from the Graph Assistant.
2. If available, click the **List** or **Tree** icon.
3. Select the field from the Available fields window and click the **Add** icon to the Field value(s) plotted on Y-axis fields box.

   or

   Click and hold the left mouse button, and drag the field to the Field value(s) plotted on Y-axis fields box.

   or

   Press **Alt+C** to go the Field value(s) plotted on Y-axis fields box. Then press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

To add more than one field name at a time:

1. Ensure the **List** icon is selected.
2. Click the field names you wish to include. The fields will highlight as you click on them.
3. Drag and drop or use the **Add** icon to add all the selected fields to the Field value(s) plotted on Y-axis fields box.

Note: The display field(s) determines the vertical Y-axis of the graph. When the number of Y-axis labels is greater than one, the labels do not appear along the Y-axis. Instead, they appear in a legend that provides the names of the fields being graphed.

Select Values for the X-axis

1. Click the **Field selection** tab from the Graph Assistant.
2. Select the field from the Available fields window and click the **Add** icon to the Field value(s) plotted on X-axis fields box.

   or

   Click and hold the left mouse button, and drag the field to the Field value(s) plotted on X-axis fields box.

   or

   Press **Alt+S** to go the Field value(s) plotted on X-axis fields box. Then press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

Hiding the Display of a Y-axis Field

You can hide the display of a Y-axis field in a graph. This option is useful when you want to temporarily remove a particular Y-axis field while retaining all of the original graph properties.

To hide a Y-axis field temporarily, use the **Make this field invisible** check box located on the subtab of the Show graph field options of the Field Selection tab. By default, the check box is not selected for each Y-axis field. If there are no Y-axis fields, the Show graph field options subtab is disabled.

Hide the Display of a Y-axis Field

On the Field selection tab:
1. From the Field value(s) plotted on Y-axis fields box, highlight the Y-axis field you want to hide.
2. If hidden, click **Show graph field options**.
3. Check the **Make this field invisible** check box.

Assigning Characteristics to Y-axis Values

You can assign a characteristic for each Y-axis field in your graph. In the following table, the first column lists the prefix operators or characteristics, and the second column lists their descriptions.

Summary Type	Description
Field_Name	(Plain field value)
ASQ	Average Square
AVE	Average
CNT	Count
FST	Show first in group
LST	Show last in group
MAX	Maximum
MIN	Minimum
PCT	Percentage
PCT.CNT	Count Percentage
RPCT	Row Percentage
TOT	Total

Assign Characteristics to Y-axis Values
1. From the Field selection tab, select **Summary Type** under Y-axis values.
2. From the Field value(s) plotted on Y-axis fields box, select the field you would like to assign a characteristic (or prefix operator) to.
3. If hidden, click **Show graph field options**.
4. Select the characteristic from the Summary Type list box.

The field name in the Field value(s) plotted on Y-axis fields box is updated with the appropriate prefix. For example, if you have a field named SEQ_NO, and you select the Average Square summary type, the field name changes to ASQ.SEQ_NO.

Selecting Records for a Graph

When generating a report and specifying which fields to display, you may not want to show every instance of a field. By including selection criteria, you can display only those field values that meet your needs. In effect, you can select a subset of the data, which you can easily redefine each time you issue the report request.

When developing a report request, you can define criteria to select records based on:

- The values of an individual field (using a Where statement).
- The aggregate value of a field, for example, the sum or average of a field's values (using a WHERE TOTAL statement).

The Selection criteria tab enables you to create Where or Where Total statements for record selection.

Creating a Where or Where Total Statement

Where and Where Total statements enable you to display only those records that pass your selection criteria. These statements select the data source records to be included in a report. The data is evaluated according to the selection criteria before it is retrieved from the data source. Use the Selection criteria tab to create a new Where or Where Total statement.

Note: In the Graph Assistant, when you create a Where statement in the Selection Criteria tab for a range of dates using FROM - TO, you will not be alerted if the TO field is chronologically before the FROM field. For example, if you enter something like "from 12/31/05 to 1/1/05". There will be no records in the resulting report.

Select Records Based on Values, Parameters, Fields, or a Constant

1. In the Graph Assistant, click the **Selection criteria** tab.
2. Select a field from the Available fields window and drag the field to the **Screening conditions** pane.

   or

   Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

   The field name and Equal to and Select values appear in the Screening conditions pane.
3. Select **WHERE** or **WHERE TOTAL**.
4. Select an operator from the drop-down list (for example, **Equal to**) in the right pane.
5. Click **Select values** to complete the expression.
6. Required: Select one of the following compare type option buttons:

   - **Constant.** Enter a value that will serve as a constant (a value that will not change). For example, enter vehicle.

     After you click **OK**, the constant, vehicle, appears in the WHERE statement which reads BODYTYPE Equal to vehicle.

- **Parameters.** Enter the name of the variable. For example, moped as shown in the following image with the Parameter option button selected and the variable name entered as moped.

You can set parameter properties, for details see Setting Parameter Properties.

After you click **OK**, the parameter, &moped, appears in the WHERE statement which reads BODYTYPE Equal to &moped.

Note: The ampersand is automatically added by DB2 Web Query.

- **Fields.** Select a field from the list.

  After you click **OK**, the field BHP appears in the Where statement which reads CAR.COMP.CAR Equal to CAR.SPECS.BHP.

- **Values.** Select a value for the field you initially chose (in this case, car).

  After you click **OK**, the value, Audi, appears in the Where statement which reads CAR.COMP.CAR Equal to AUDI.

Create a Where Statement Using Date and Time Values

In the Graph Assistant,

1. Click the **Selection criteria** tab.
2. Select a field from the Available fields window and drag the field to the **Screening conditions** pane.

   or

   Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.
3. Click **Equal to** in the right pane to display a list of operators. Click the operator of your choice.
4. Click **Select values** to complete the expression.
5. Click **Field** to access date and time values for that field. For example, EYEAR.
6. Required: Click **Values** and click the value of your choice. For example, 1989/01/18.

   After you click **OK**, the value, 1989/01/18, appears in the WHERE statement which reads START_DATE Equal to 19890118.

Importing Values From External Files for WHERE Statements

When developing a query, you can use a locally saved, external file as selection criteria to limit query results. This enables you to quickly build a query containing a large number of WHERE statement values without having to manually enter repetitive or readily available data.

Create a Value List From an External File

1. Required: Navigate to the **Selection criteria** area.
2. Required: Begin creating a WHERE statement by selecting a field from the list of available fields.
3. Required: Select a data comparison option that can accept multiple values.

   Valid options include EQUAL to, NOT EQUAL to, IN literal list, NOT IN literal list, EXCLUDES literal list, and INCLUDES literal list.
4. Click **Select values**.

   The Values dialog opens.
5. Click the **import** button as shown in the following image.

A dialog box opens as shown in the following image.

6. Select either the Flat file or Excel Spreadsheet (XLS) File Format option.
7. Click the **Browse** button.

A standard file selection dialog opens.

8. Select an external file to import from your local machine or network.

    Note: The external file must only contain text with new line delimiters.

9. Click **OK**.

    The values contained in the file are displayed in the Multiple values entered list in the right pane of the dialog.

10. Optionally, you can remove specific values from the Multiple values entered list or move values up or down within the list.

11. Click **OK**.

    You can save the query for future use and reopen the query to append new or remove existing values.

Setting Parameter Properties

When you create parameters for Selection Criteria (WHERE statements) you can set the properties for the parameter. For example, you can create a dynamic or static list of values to choose from at run time.

Set Parameter Properties

1. In the Graph Assistant, click the **Selection criteria** tab.
2. Create a WHERE or WHERE TOTAL expression.
3. Select an operator. Some operators are not supported with the Variable Editor, see Supported Operators for the Variable Editor for details.
4. Click **Select values**.
5. Select the **Parameter** option button.
6. Click the **Auto Prompt** button.

    The Parameter Properties dialog box opens.

7. Required: Choose the Selection type, **Dynamic** or **Static**.

    The Dynamic option is selected by default.

    The Name and Description fields are automatically populated based on the field you are screening on, but you can edit the populated values.

    Note: The Description field cannot contain a period (.) because a period is the delimiter to specify the beginning and end of the description value.

8. Required: Set the parameter values. For the:
    - Dynamic selection type, the Data Source and Field are selected by default based on the field you are screening on. You may change these as necessary.
    - Static selection type, select the **Constant** or **Show field values** option button. For constant, enter a value or values. For Show field values, all of the values for the selected field appear in the list box. Move the values you want in the selection list to the Prompt values list.

9. Click **OK** to exit the Parameter Properties dialog box.

Supported Operators for the Variable Editor

Operator	Enabled for the Variable editor?
Equal to	Yes
Not equal to	Yes
Equal to multiple	No
Not equal to multiple	No
Greater than	Yes

Operator	Enabled for the Variable editor?
Less than	Yes
Greater than or equal to	Yes
Less than or equal to	Yes
In literal list	No
Not in literal list	No
Missing	No
Not missing	No
From - to	No
Not-from - to	No
Includes literal list	No
Excludes literal list	No
Contains characters	Yes
Omits characters	Yes
Like character mask	Yes
Not like character mask	Yes

Combining Expressions

Use the right pane of the Selection criteria tab to use or delete existing Where statements and to combine expressions.

Combine Expressions

1. Create an expression.
2. When you create additional expressions, they are combined with the default operator AND as shown in the following image with two statements, the first a WHERE and the second an AND statement.

3. Toggle between AND, OR, WHERE, and WHERE TOTAL by clicking the AND to make your choice.

Delete an Active Expression

1. Select the check box next to the expression you want to delete. Click the **Delete** icon above the box.

2. You are prompted to delete the expression. Click **OK** to delete.

Grouping Expressions Together With Parentheses

You can use parentheses to group expressions together to optimize the Where statement.

Group Where Statements Together Using Parentheses

Click the grayed out parentheses to activate the parentheses and group expressions together.

Limiting Data With Filters

Filters enable you to quickly select predefined criteria that limit data included in a graph. Filters are selection criteria (WHERE statements) that an Administrator creates for you to apply as needed, without having to create your own selection criteria.

DB2 Web Query displays filters in filter groups. Each filter group can contain multiple filters. Selecting a single filter within one group creates a report with simple filtering criteria. By selecting multiple filters within a group or combining filters from different groups, you can create complex filtering expressions.

The following image shows a few sample filters as they appear in the Selection Criteria tab of the HTML Graph Assistant. They are listed by Group and Name.

Creating Temporary Fields

You can create temporary fields from the HTML Graph Assistant. Temporary fields are created the same way in the HTML Report and Graph Assistant. For complete details, see Creating Temporary Fields.

Creating Multiple Graphs

You can create multiple graphs by selecting a second horizontal category (X-axis).

The number of graphs created depends on the number of values in the field you select. For example, if you select a field with two values, two graphs are generated. If you select a field with ten values, ten graphs are generated.

You can select the second horizontal category from the Field selection tab in the Graph Assistant.

Multiple graphs can appear in either merged format or in columns. For details, see Merging Multiple Graphs and Displaying Multiple Graphs in Columns.

Create Multiple Graphs

1. Click the **Field selection** tab of the Graph Assistant.
2. Select the field from the Available fields window and click the **Add** icon to the Create a separate graph for each value of this field box.

   or

   Click and hold the left mouse button, and drag the field to the **Create a separate graph for each value of this field** box.

   or

   Press **Alt+A** to go the Create a separate graph for each value of this field box. Then press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.
3. If you want to change the title of the field name, click **Show graph field option** if hidden.
4. In the Axis label text box located under the General subtab, type the new field title name.

Merging Multiple Graphs

When you create a graph with a second horizontal category, multiple graphs are generated. You can merge these graphs into a single graph.

You can do this from the Field selection tab in the Graph Assistant.

Merge Multiple Graphs

1. Click the **Field selection** tab of the Graph Assistant.
2. Add a field to the **Create a separate graph for each value of this field** box.
3. If hidden, click **Show graph field options**.
4. Click the **Merge graphs into a single graph** option button. When you run your graph, the display shows an X, Y, and Z axis to represent the dual X-axis and the Y-axis.

Merging Multiple Graphs

The following image illustrates a graph with two categories (Manufacturing Plant and Product Name) that have been merged.
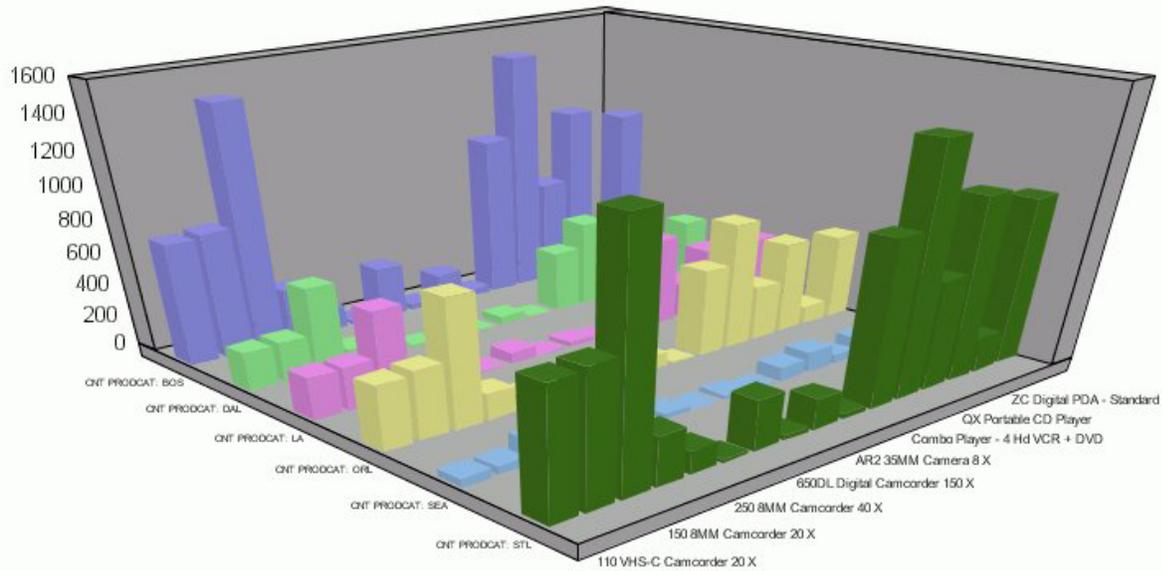
Displaying Multiple Graphs in Columns

When you create a graph with a second horizontal category, multiple graphs are generated. You can display these graphs in columns.

Display Multiple Graphs in Columns

1. Click the **Field selection** tab of the Graph Assistant.
2. Add a field to the **Create a separate graph for each value of this field** box.
3. If hidden, click **Show graph field options**.
4. Select the **Display graphs in number of columns** option button. This is the default selection.
5. Select the number of columns to display the graphs. The default value of 1 displays all of the graphs in one single column, one underneath the other. Selecting a number greater than 1 places the graphs in an HTML table, with the number of cells across the table corresponding to the number of columns specified.

Displaying Multiple Graphs in Columns

The following image shows a graph that has a second horizontal category. The multiple graphs that are generated appear in 2 columns since the Display graphs in columns option button was selected when creating the graph.

Working With Joins

A join is a temporary connection between two or more data sources that share at least one common field. Once you join two data sources, each time DB2 Web Query retrieves a record from the first data source (host file), it also retrieves the matching records from the second data source (target file).

You use the Join tool to link data sources in both Report Assistant and Graph Assistant. The Join tool provides a graphical method for creating and manipulating joins. You can also create define-based joins and multi-field joins.

When you access the Join tool, the window displays a field list for the host data source (which you specified when you created the report), and a field list for any target data source you add to the window.

Create a Join

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.

   The following image shows the Join settings window where you select fields from the Host field and the Target field lists to create a join.

3. Select the fields you want to join from the Host field list and the Target field list and add them to their respective Selected Fields boxes.

   or

   Press **Alt+M** to go to the Host field list.

   or

   Press **Alt+T** to go to the Target field list.

   Then, tab to the field and press **Enter** to add the chosen field to the corresponding Selected Fields box.

   Note: Fields must have the same format and be indexed fields in order to use them to create joins.

4. Select your join properties:

   - **Unspecified.** Indicates neither an inner nor left outer join.
   - **Inner Join.** A join that results when a report includes host rows that have corresponding cross-referenced rows.
   - **Left Outer Join.** Extends the results of an Inner Join and retrieves records from both host and cross-referenced tables, including all records from the left table (host) and any records from the right table (cross-referenced) where the condition values match. If there are no matching values in the cross-referenced table, the join still retrieves records from the host table.
   - **Multiple Instance (formerly Non Unique).** A one-to-many join structure that matches one value in the host data source to multiple values in the cross-referenced field. Joining employee ID in a company's employee data source to employee ID in a data source that lists all the training classes offered by that company would result in a listing of all courses taken by each

employee, or a joining of the one instance of each ID in the host file to the multiple instances of that ID in the cross-referenced file. The default join type is inner.

- **Single Instance (formerly Unique).** A one-to-one join structure that matches one value in the host data source to one value in the cross-referenced data source. Joining an employee ID in an employee data source to an employee ID in a salary data source is an example of a unique join.

5. To see the join syntax, click **View**.

6. Click **OK**.

7. In the Description box, give the join a meaningful and unique name.

8. Click **Save & Create**.

   The new join appears in the Joins list.

Create a Define-based Join

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.

3. Click the down arrow of the Define icon and then click **New define field**.

   The following image shows the list of Define field options.

The following image shows the Define field creator dialog box where you create the Define expression.

4. Create the defined field. The new define field appears in the Available fields list. The field is prefixed with the define symbol as shown in the following image.

5. Add the defined field and the target field to their respective Selected Fields boxes.

   Note: Fields must have the same format and be indexed fields in order to use them to create joins.

6. If you want to see the syntax, click **View** to display the define-based join syntax.

7. Give the join a meaningful and unique name in the Description box.

8. Click **Save & Create**. The new join appears in the Joins list.

Create Multi-field Joins

1. Click the **Join options** tab in Report Assistant or Graph Assistant and click **New**.

   The DB2 Web Query masters list dialog box opens where you select a target data source.

2. Select a data source and click **OK**.

3. Enter multiple fields in the Host field list box and one field in the Target field list box.

4. If you want to see the syntax, click **View** to display the multi-field join syntax.

5. In the Description box, give the join a meaningful and unique name.

6. Click **Save & Create**.

   The new join appears in the Joins list.

Delete a Join

1. Select a join from the Select an existing join list box.
2. Click **Delete**.

Edit a Join

1. Select a join from the Select an existing join list box.
2. Make your desired changes.
3. Click **Save & Create**.

Displaying Missing Data Values in a Graph

You can display missing data values (in a bar graph, line graph, area graph, or any variation of these graph types) in one of the following formats:

- **Graph as zero.** In bar graphs, a bar appears on the zero line. In line graphs, a solid line connects the missing value with the succeeding value. In area graphs, the area appears on the zero line.
- **Graph as gap.** In all graph types (bar, line, or area), missing values appear as a gap in the graph.
- **Dotted line to zero.** In line graphs, a dotted line connects the missing value with the succeeding value. In 3D bar graphs, solid lines outline the flat bar corresponding to the missing value. In 2D bar graphs, a gap appears in the graph. In area graphs, a transparent area extends down to the zero line and then up to the succeeding value.
- **Interpolated dotted line.** In a line graph, missing values appear as an interpolated dotted line that connects the plot points immediately preceding and succeeding the missing value. In bar and area graphs, missing values display as an interpolated (transparent) bar or area.

Display Missing Values in a Graph

1. In the Graph Assistant, click the **Properties** tab.
2. Click the **Y-axis** subtab.
3. Required: From the Missing values display list box, select one of the following values:
   - Graph as zero.
   - Graph as gap.
   - Dotted line to zero.
   - Interpolated dotted line.

Displaying Missing Values as Zero in a Graph

The following image illustrates how missing values are represented in a bar graph when designated to appear as zero. The CURR_SAL values for McCoy and Stevens are missing.
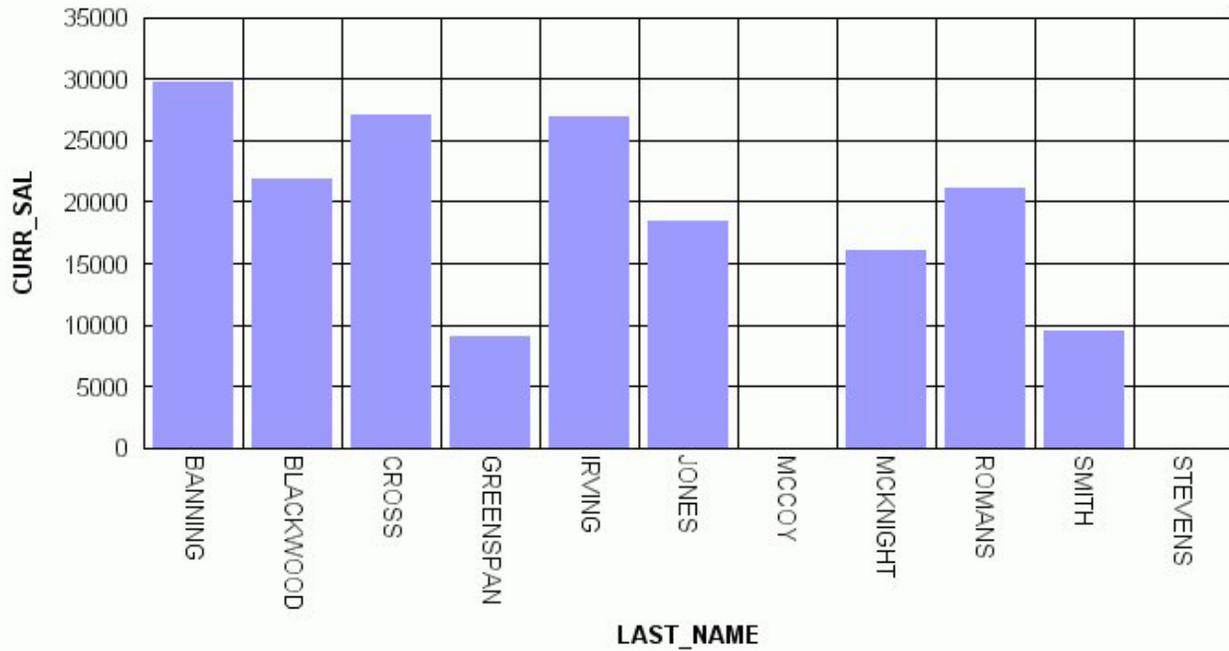
Displaying Missing Values as a Gap

The following image illustrates how missing values are represented in a bar graph when designated to appear as a gap. The CURR_SAL value for McCoy is missing.
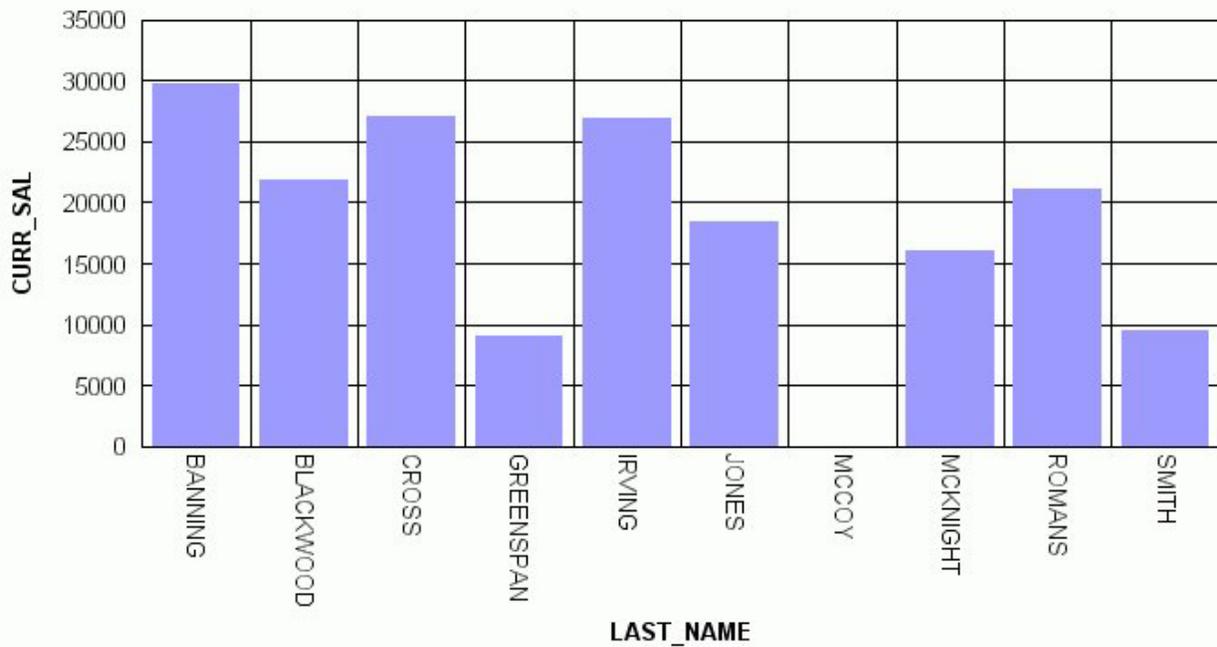
Displaying Missing Values as a Dotted Line to Zero

The following image illustrates how missing values are represented in a line graph when designated to appear as a dotted line to zero. The CURR_SAL value for McCoy is missing.
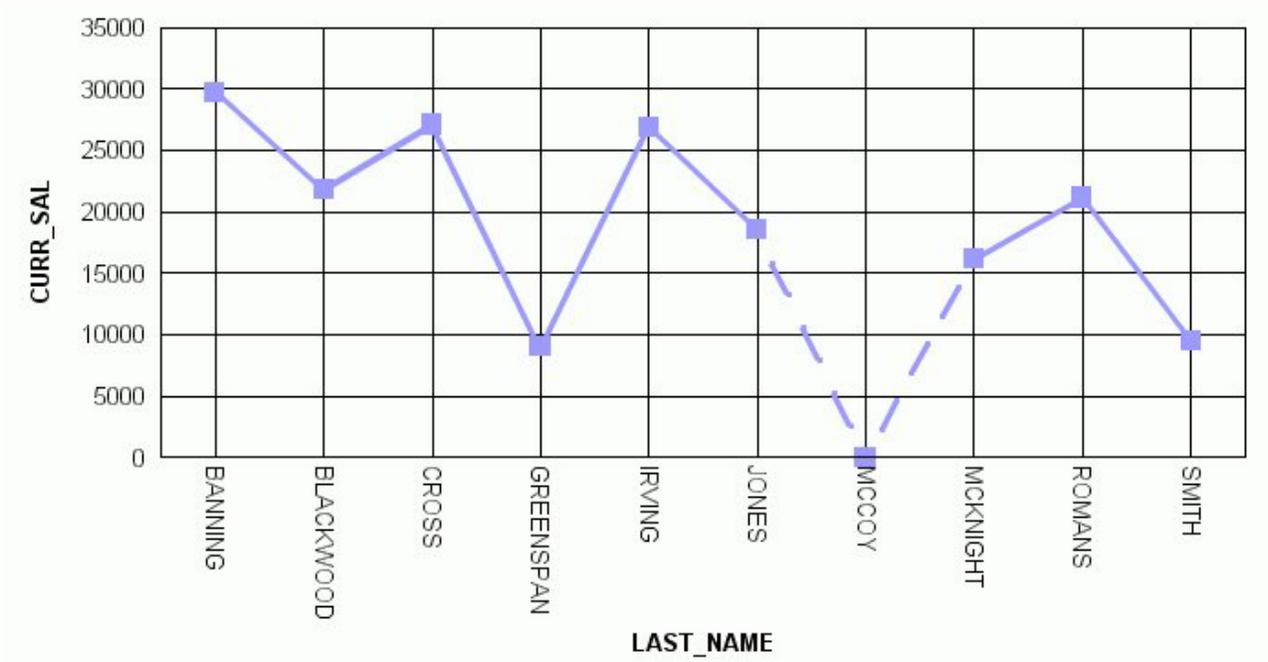
Displaying Missing Values as an Interpolated Dotted Line

The following image illustrates how missing values are represented in a line graph when designated to appear as an interpolated dotted line. The CURR_SAL value for McCoy is missing.
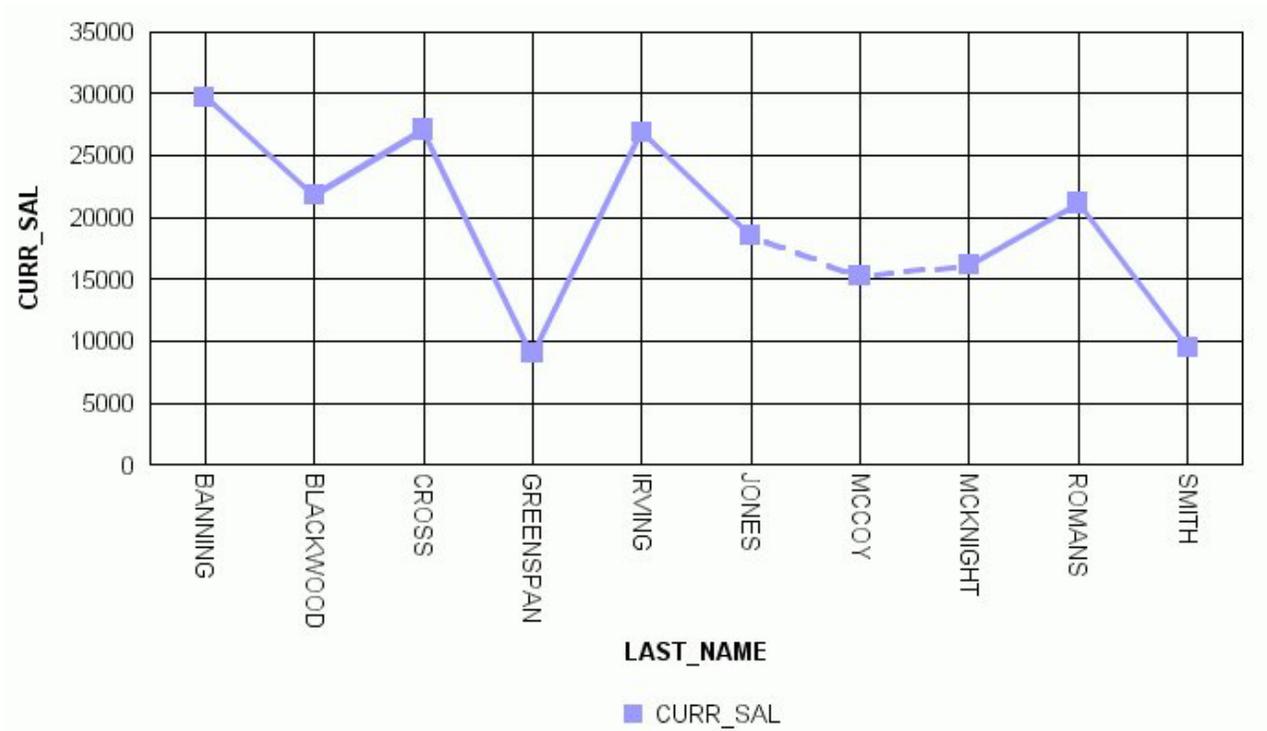
Applying Conditional Styling to a Graph

You can add further value to your graph by using conditional styling to highlight certain defined data with specific styles and colors. Conditional styling, also referred to as stoplighting, enables you to define conditions that determine when to apply particular fonts, point size, text style, foreground and background color, and drill down procedures to your report's data when the report is run.

For example, you can apply the color red to all departments that did not reach their sales quotas and apply the color black to all departments that did reach their sales quotas. In this example, the user can view quickly which departments did or did not reach their quotas. To examine how the results of one department may impact the results of a second department, you may want to provide a drill-down to a report that examines this possibility.

You can apply color to the following graph types:
- Bar graphs.
- Three-dimensional graphs with noncontinuous plot points.
- Pie graphs.
- Stack charts.

Conditional styling is only supported for Y-axis values.

Applying Conditional Styling to a Graph

The following illustrates how you can apply conditional styling to a graph. In this example:
- Blue is specified as the default color for all data in the graph.

- Firebrick is specified as the color for data in the DOLLARS column.
- Silver is specified as the color for data in the DOLLARS column when the value is greater than five million.
- Lime is specified as the color for data in the UNITS column when the value is less than two hundred thousand.

The output is shown in the following image.
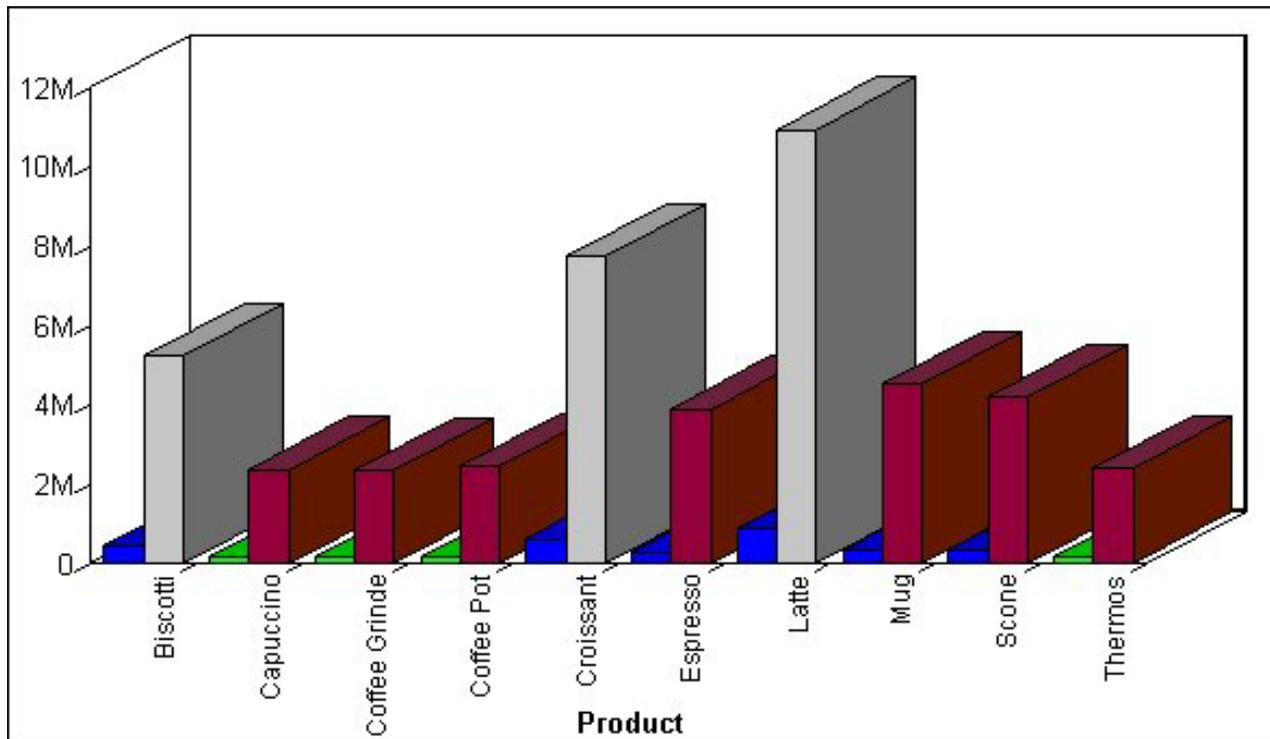
Linking Graphs to Other Resources

To drill down to a more detailed level of information in a graph, you can link a procedure (FOCEXEC) or a URL to one or more values in your graph. When you run your graph, the selected values become "hot spots" that invoke the underlying procedure or URL.

Link a Graph to Other Resources

1. Click the **Field selection** tab in the Graph Assistant.
2. Select a field from the Field value(s) plotted on Y-axis list.
3. If hidden, click **Show graph field options**.
4. Click the **Drill down** button. The Drill Down dialog box opens.
5. Select either **Execute Procedure (FOCEXEC)** or **Execute URL** option button.

   You can select the **No action** option button to disable a drill-down link.
6. If you are linking your graph to a:
   - URL, type the URL in the URL text box. If you don't want the URL to appear when a user moves the mouse over a link in the graph, you can enter different text in the Alternate Comment for Hyperlink text box.
   - Procedure, select the procedure from the hierarchy.

7. Use the **Add** button to add any parameters. For details, see Creating Parameters.
8. Click **OK**.

Note: You can disable drill-down by following steps 1-3 and then selecting the **No action** option button from the Drill Down dialog box.

Creating Parameters

Parameters enable you to specify criteria and conditions for the associated (drill-down) report. By defining parameters, you can control the amount and type of information to retrieve when you click on a hot spot.

Note: To avoid conflicts, do not name variables beginning with Date, IBI, or WF, as variables beginning with these values are reserved for IBM use.

Create a Parameter in the Main and Drill Down Procedures
1. Click the **Selection criteria** tab.
2. Create an expression (WHERE statement) that defines a parameter. For details on creating WHERE statements, see Selection Criteria Tab in HTML Graph Assistant.
3. Select the **Field selections** tab.
4. Select the Sort by field that you want to drill down on, for example, Product.
5. Click **Drill down**. The DB2 Web Query Drill Down dialog box opens.
6. Click **Execute Procedure (FOCEXEC)** or **Execute URL**.

    The following image shows a sample drill down dialog box with Execute Procedure (FOCEXEC) option selected.

WebFOCUS drill down dialog - (GGSALES) -- Web Page Dialog

○ Execute procedure (FOCEXEC):   ○ No action

☐ 🗁 Sales   OK
   ● Coffee Sales (app/coffeesa.fex)   Cancel
   ● sales report (app/salesrep.fex)
☐ 📁 some new folder

Execute procedure:

app/coffeesa.fex

○ Execute URL:

With parameters:

                                        Add
                                        Edit
                                        Remove

Alternate comment for hyperlink:
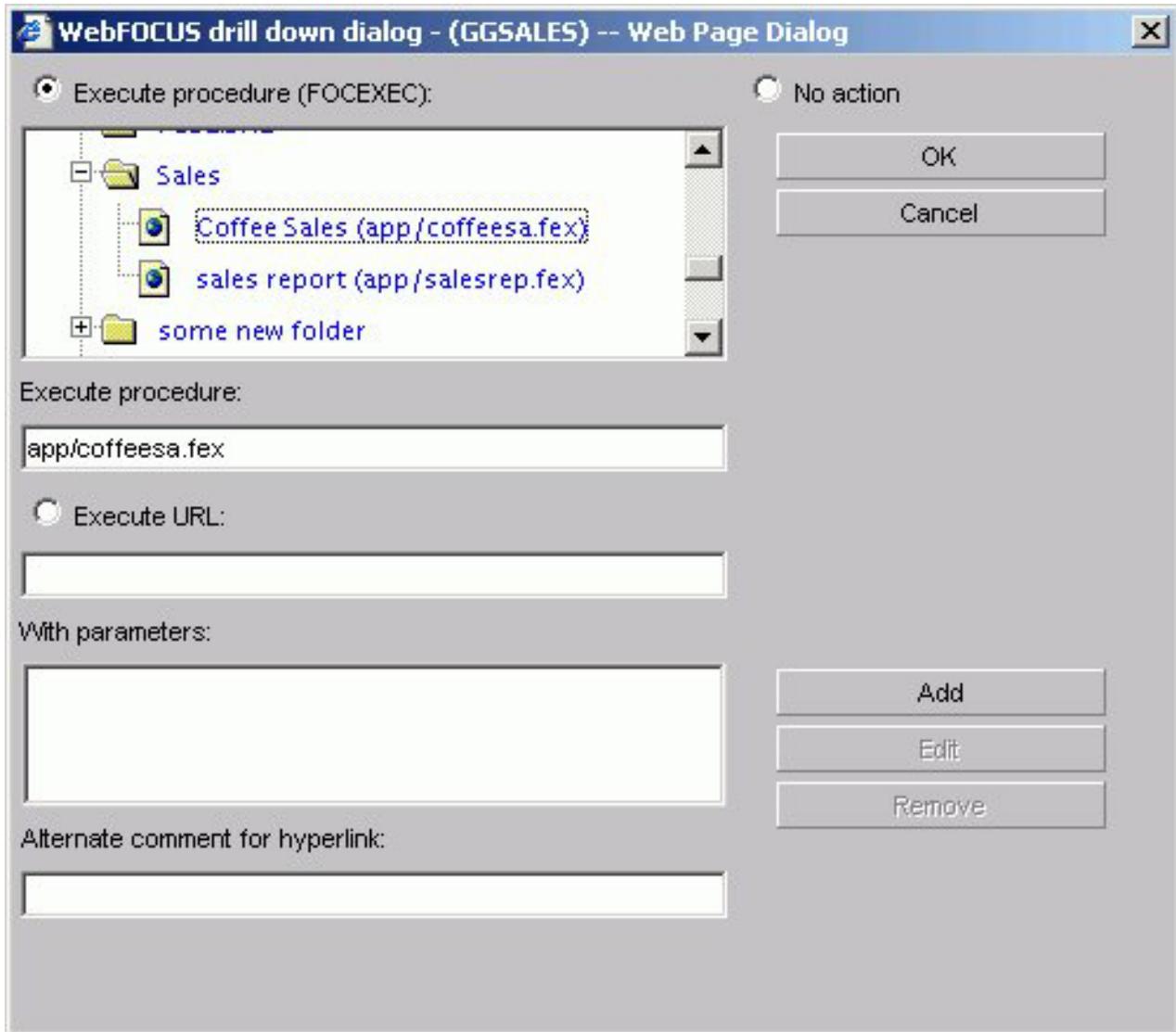
7. Click **Add**. The Drill Down Parameter dialog box opens as shown in the following image.
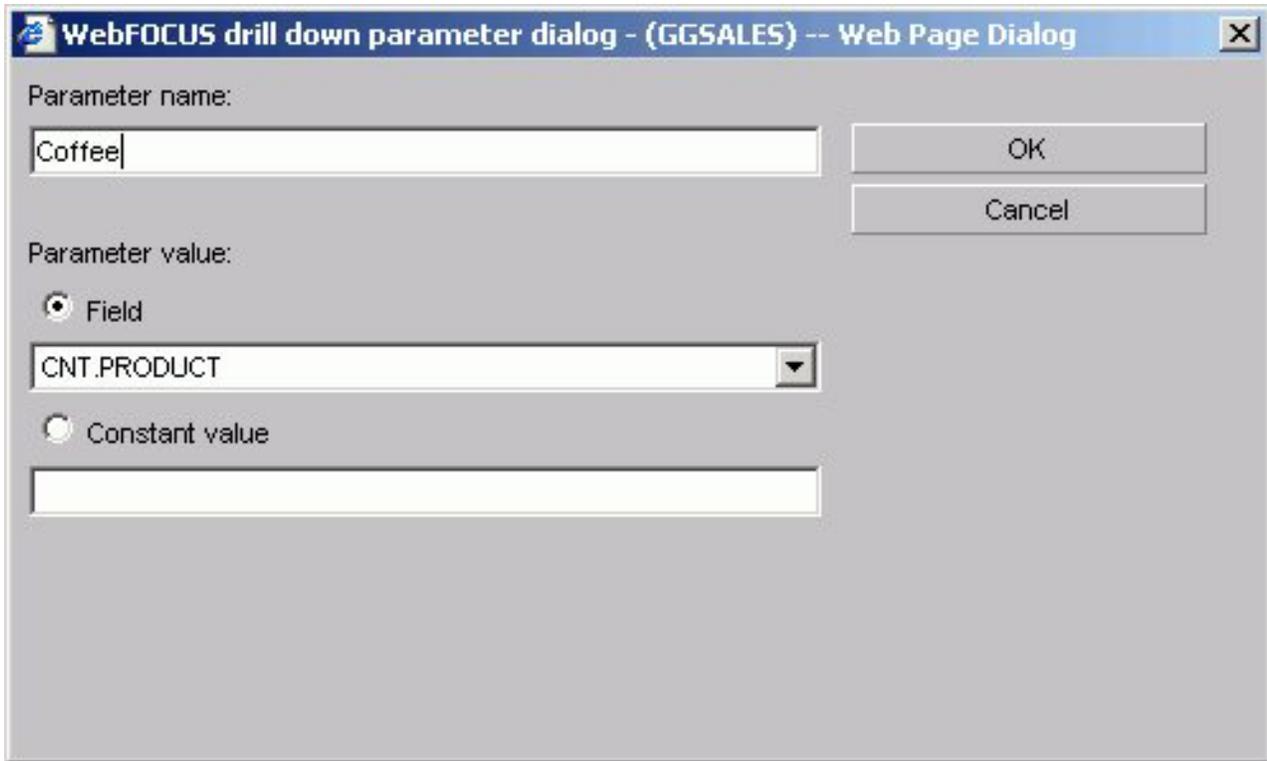
8. Enter the name of the parameter you created in the drill down procedure in the Parameter Name text box, for example, Coffee.

   Note: When passing parameters to a drill-down procedure, you must use local variables (&variables). Global variables (&&variables) cannot be used as drill-down parameters. Also, it is not necessary to type an ampersand (&) before the parameter name. This will create a global variable that cannot be used as a drill-down parameter.

9. When you pass the parameter to the drill down procedure, you must set a value for it in the Drill Down Parameter Dialog box. If you select:

   • **Field,** the parameter will be set to the corresponding value of the object the user drills down on in the specified field.

   • **Constant value,** the parameter is set to the specified value.

   Note: If the drill-down report contains a -DEFAULTS statement that sets a default value to the same variable passed from the main report, the variable value passed down overwrites the -DEFAULTS statement in the target procedure.

10. Once a value has been supplied, click **OK** to return to the Drill Down Dialog box. The parameter is added to the With Parameters list box as shown in the following image.
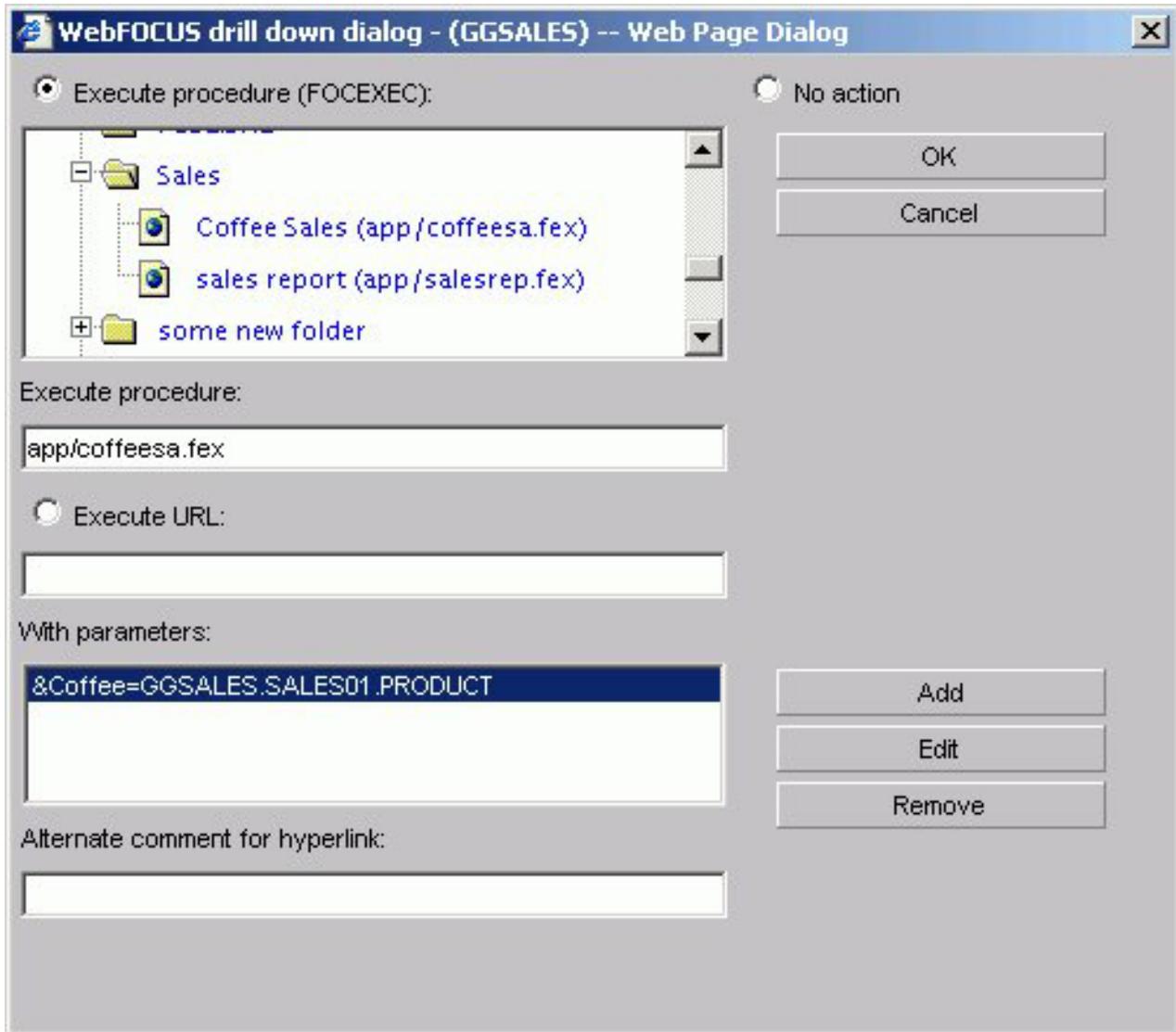
Adding Labels to a Graph

Adding labels to your graph helps provide important information about what the data in your graph represents. You may choose to add headings and/or footings to your graph, as well as style legend text and horizontal (X) and vertical (Y) axis labels.

From the Headings tab of the Graph Assistant, you can add titles, headings, and footings and customize them. For details on customizing, see Customizing Fonts in a Graph.

Note:
- There is a 95-character limit for Graph Titles.
- Dragging and dropping items, including images, is not supported in the HTML Graph Assistant.

The following image shows the Headings tab with a list of available fields on the left and the Page Heading and Page Footing fields on the right.
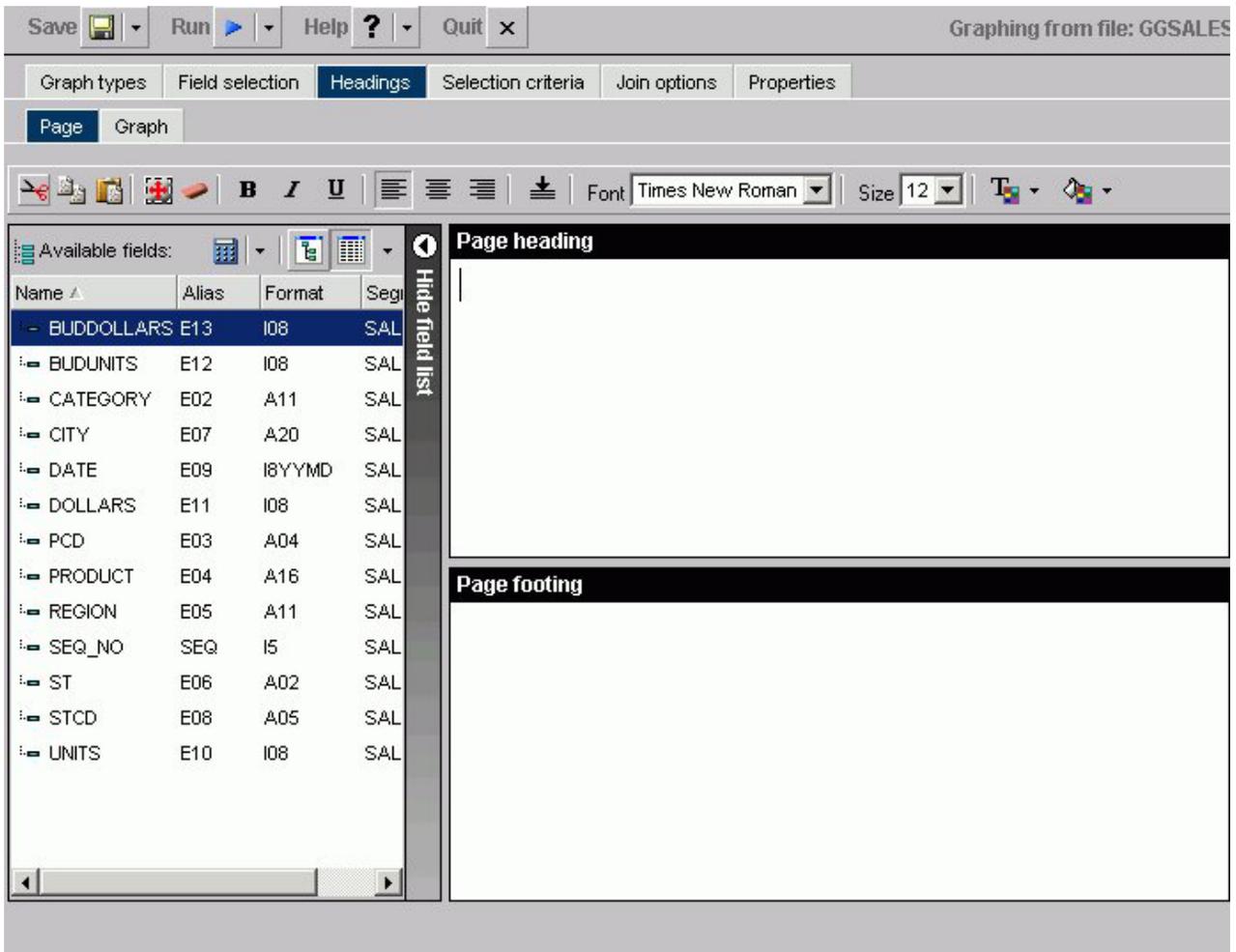
Note: If your graph labels or legends do not appear correctly when you run your graph, see Change Color Settings for details on correcting this.

Location of Headings and Footings in Graph Output

The following image illustrates where FOCUS Titles and Graph Titles appear in graph output. Note that none of the headings in this sample have been formatted and appear in their default format. Also note that the Graph Titles chart title will appear in the graph output as well as in your browser's title bar.

This is a FOCUS Titles page heading.

This is a Graph Titles chart title.

This is a Graph Titles chart subtitle.
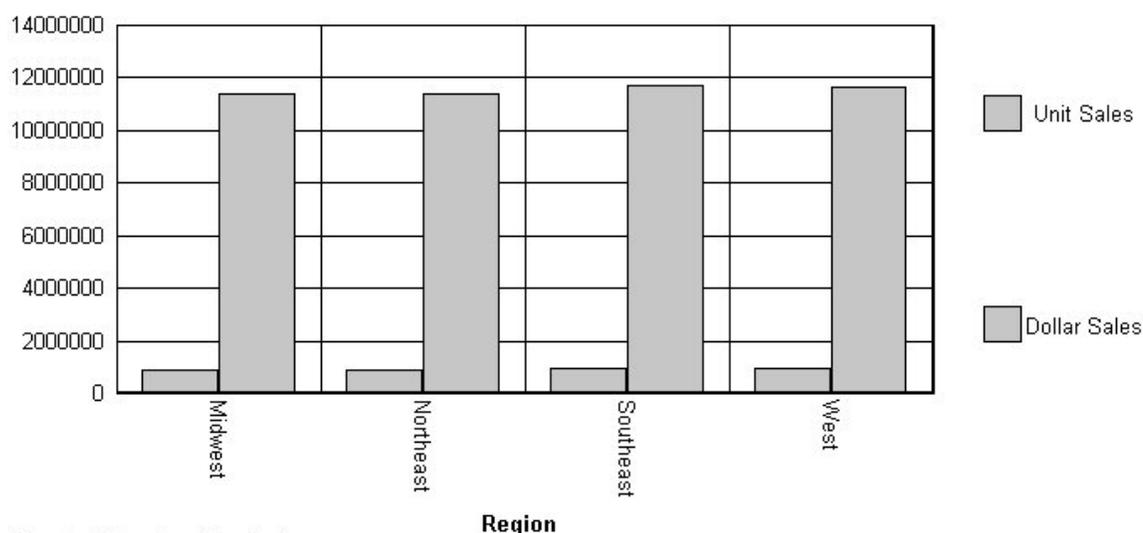
This is a Graph Titles chart footnote.

This is a FOCUS Titles page footing.

Note: The graph preview reflects all display changes to the graph. FOCUS Titles are not shown in the graph preview.

When you use the Graph Assistant to create a graph and add it to a report in the PDF Layout Painter, if the graph contains FOCUS Titles (Page Heading, Page Footing), they are automatically removed from the graph. To utilize headings or footings in a graph you intend to add to the PDF Layout Painter, use the Graph Assistant to create Graph Titles (Chart Title, Chart Subtitle, Chart Footnote). You can also add Text objects to a graph in the PDF Layout Painter and position them to function as a heading or footing.

Add a Heading or Footing to Your Graph

1. Click the **Headings** tab of the Graph Assistant.
2. Click the **Page** subtab.
3. Required: Click in the text box or press **Alt+H** to enter a page heading title.

   or

   Click in the text box or press **Alt+F** to enter a page footing title.

Note:

- If you change the font size of your heading (FOCUS titles), the code may not properly reflect the font size you specified when you open the procedure in a text editor. This does not affect functionality. You can edit the procedure manually to correct the size.
- When selecting a font for the page heading or footing, be sure to click in the text box before you select the font name, otherwise the font may return to the original font selection.

Add a Field to a Graph Heading or Footing

1. Click the **Headings** tab of the Graph Assistant.
2. Click the **Page** subtab.
3. Select a field from the Available fields window and drag the field to the Page heading or Page footing box.

   or

   Click and hold the left mouse button, and drag the field to the text box you chose.

   The following table lists the shortcut keys you can use to quickly go to one of the text boxes. The first column specifies the text box you go to when using the shortcut keys and the second column shows the shortcut key combination.

Text Box	Shortcut Keys
Page Heading	Alt+H
Page Footing	Alt+F

Press **Alt+M** to go to the Available Fields window, tab to the field and press **Enter** to add the chosen field.

Add Titles, Subtitles, and Footnotes to a Graph

1. Click the **Headings** tab of the Graph Assistant.
2. Click the **Page** subtab.
3. Enter the text for the Chart Title, Chart Subtitle, and Chart Footnote in the respective boxes.

Note: There is a 95-character limit for Graph Titles.

Adding Vertical (Y-axis) and Horizontal (X-axis) Labels to a Graph

Vertical (Y-axis) and horizontal (X-axis) graph labels are placed on the graph according to the display fields and sort fields specified in the request. The titles that appear on the graph are the titles that appear in the Master File for that particular field.

The vertical (Y-axis) title of the graph is determined by the display field. Note that when the number of Y-axis labels is greater than one, the labels do not appear along the Y-axis. Instead, the labels appear in a legend that provides the names of the fields being graphed.

The horizontal (X-axis) title of the graph is determined by the sort field.

You can change the titles for the X and Y-axis from the Graph tab in the Headings tab in the Graph Assistant.

Applying Custom Styling to a Graph

Using the Graph Assistant, you may customize your graph using the subtabs (Options, Settings, X-axis, Y-axis, Pie) on the Properties tab. The customizations you can apply to your graph include customizing fonts, output destination, graph on server, label locations for all graph types, legend location, and much more.

You can also select the orientation of the X- and Y- axes and 3D effects as well as choose a predefined template using the Graph types tab.

Selecting Graph Orientation and 3D Effects

You can select either vertical or horizontal orientation for your graph on the Graph types tab. The default selection is vertical. If horizontal is selected, the X-axis appears along the side of the graph while the Y-axis appears along the bottom. You can choose vertical or horizontal orientation for Bar, Line, and Area graphs.

You can apply 3D effects to your graph, also on the Graph types tab. This option is not supported for histograms, spectral, stock, or radar graphs. To display bubble help when using 3D Effects, markers must be checked under Settings in the Properties tab.

Some graph types and graph styles require vertical and horizontal orientations, with and without 3D effects. In such cases, the relevant option buttons are selected and grayed out. You will only be able to make changes to orientation and 3D effects by changing the Graph Type and Graph Style. For example, if you select the 3D Graph Type and Bar Graph Style, the vertical option button is selected and grayed out.

Using Predefined Templates

When you check the Use a predefined template check box on the Graph types tab, you can choose one of the color and texture templates from the drop-down list: Pastels, Beveled on Tan, Color to White, Cylinder on Grey, Fade to Grey, Bumps, Greys, Plum On White, Red Accent, Speckled, and True colors.

Customizing Fonts in a Graph

You can change the font for the X and Y-axis data and labels, legend text, headings, footings, subheadings, and footnotes. From the text properties dialog box you can customize the:

- **Font.** Select the font type. Note that depending on what fonts you have installed on your machine, some fonts in the text properties dialog box may not be distinguishable from other fonts. In particular, Monospaced and Dialog Input may look the same as well as Dialog and San Serif.
- **Style.** Select the text style from normal, italic, bold, underline, or a combination of these.
- **Size.** Select the font size.
- **Set Style for.** Select either Title or Data to apply style changes.
- **Text Color.** Select the font color.
- **Text Justification.** Select left, center, or right justification.
- **Autofit.** Automatically adjusts the font size to fit the graph and disables the Size drop-down list. To select a different font size, uncheck this box and select the font size in the Size drop-down list.
- **Wrap.** Check this box to wrap the text.
- **Text Rotation.** Select the data label to display horizontally, vertically (from top to bottom or from bottom to top), and at a 45-degree angle.

Arrange X-axis Property Data Styles

1. Click the **Properties** tab and then the **X axis** subtab.
2. Click the **Style Labels** button to open the X-axis properties dialog box.

3. To enable the text rotation features, select the check box at the top of the X-axis properties dialog box as shown in the following image.
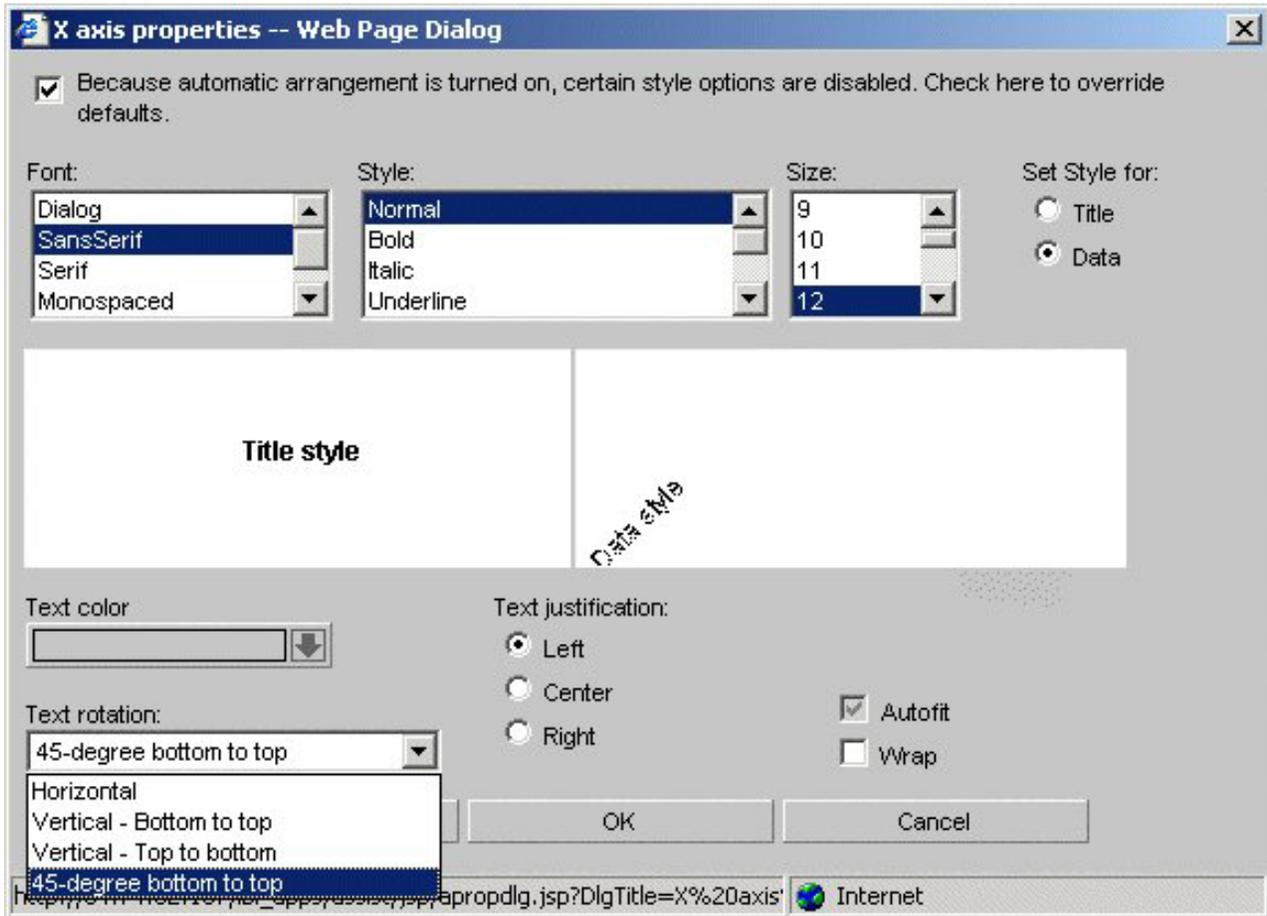
Note: This option is grayed out if the Automatic Arrangement option is de-selected on the Graph Types tab.

4. Required: Under Text rotation, choose one of the following:
   - Horizontal
   - Vertical - Bottom to top
   - Vertical - Top to bottom
   - 45-degree bottom to top

   In this case, 45-degree bottom to top is highlighted. Accordingly, the Data Style label is positioned at a 45-degree angle.

As you make changes to the text properties, sample text appears to the right and reflects all selections. If you leave the Autofit check box checked for a particular object, the font size will be automatically adjusted to fit your graph. You can also wrap the text by checking the **Wrap** check box. Note that when you select the Wrap option, text only wraps to the next line if there is not enough room to display the entire text in the chart.

The text properties dialog box can be invoked from many places in the Graph Assistant. Depending on where it is invoked from, different options are available.

Note: You can choose Background and Frame colors in the Options tab in the Properties tab.

Change X-axis Label Fonts

1. Click the **Properties** tab of the Graph Assistant.
2. Click the **X axis** subtab.
3. Click the **Style Labels** button. The X-Axis Properties dialog box opens.
4. Select the font properties. You can change the fonts for the data text and for the x-axis title text by selecting either the **Data** or **Title** option button.
5. Click **OK**.

Change Y-axis Label Fonts

1. Click the **Properties** tab of the Graph Assistant.
2. Click the **Y axis** subtab.
3. Click the **Style Labels** button. The Y1 Axis Label Properties dialog box opens. If you are selecting fonts for the Y2 axis, the Y2 Axis Label Properties dialog box opens; it contains the same style options.
4. Select the font properties. You can change the fonts for the data text and for the y-axis title text by selecting either the **Data** or **Title** option button.
5. Click **OK**.

Change Graph Legend Fonts

1. Click the **Properties** tab of the Graph Assistant.
2. Click the **Settings** subtab.
3. Click the **Style legend text** button.

   The Legend Properties dialog box opens.
4. Select the font properties.
5. Click **OK**.

Change Graph Title Fonts

1. Click the **Headings** tab of the Graph Assistant.
2. Click the **Graph** subtab.
3. Click **Style Title**, **Style Subtitle**, or **Style Footnote** for Chart title, Chart subtitle, or Chart footnote.

   Depending on the option you select, the Heading Properties, Subheading Properties, or Footnote Properties dialog box opens.
4. Select the font properties.
5. Click **OK**.

Setting the Graph Height and Width

The width (or horizontal axis) of each graph, which includes any surrounding text, is automatically set to 770 pixels. When setting the graph width, you should allow for the inclusion of any text required for the vertical axis and its labels along the left margin.

The height (or vertical axis) of your graph is automatically set to 405 pixels.

The vertical axis is automatically set to cover the total range of plotted values. The height of the axis is set as high as possible (taking into consideration the presence of any headings or footings and the need to provide suitably rounded vertical class markers). The range is divided into intervals called "classes." The scale is

normalized to provide class values rounded to the appropriate multiples and
powers of 10 for the intervals plotted on the axis.

Set the Graph Height and Width

1. Click the **Properties** tab of the Graph Assistant.
2. Click the **Options** subtab.
3. In the Graph Size field, select the **Custom size** option button.
4. Enter the horizontal (width) value and the vertical (height) value, both in
   pixels.

   The horizontal value can be any number between 20 and 985.

   The vertical value can be any number between 20 and 518.

Running, Saving, and Printing Your Graph

When you run your graph, you may print the output directly from the browser.

Note: If your graph labels or legends are not appearing correctly when you run
your graph, see Change Color Settings for details on correcting this.

If you log off DB2 Web Query without first closing the HTML Graph Assistant,
you must manually close the tool.

Save Your Graph From the Graph Assistant

1. Click **Save** or **Save As** from the Graph Assistant.
2. From the Save New Report dialog box, enter a name for the graph.

Note: If you are editing an existing graph, clicking Save will automatically save the
edits to the current graph file. You will not be prompted to name the file again.

Saving Options

When you click the Save or Save As buttons you save your report (procedure). If
you make changes in your report without subsequently saving them and then click
Quit, you are prompted with the following options:

- **Yes.** Click to save your changes and exit the report.
- **No.** Click to discard your changes and exit the report.
- **Cancel.** Click to return to your report to continue working or use Save or Save
  As to save your changes and then click Quit to exit your report.

Note: In the HTML Graph Assistant, if you close the window by clicking the X,
your changes will not be saved.

Run Your Graph

After creating your graph in the Graph Assistant, click **Run** from any tab in the
Graph Assistant to view your graph output.

Print Your Graph

1. Run your graph.
2. From the browser, select **Print** from the File menu.

Note: Some older printers, such as the IBM model 6262, do no support graphical output.

Send Graph Output Directly to a Printer

1. From the Properties tab, click the **Options** subtab.
2. Select **Printer** from the Output list box.

   You do not need to provide a name or select a format.
3. Click **Run**.

   The graph prints to your default printer setting.

Change Color Settings

1. From the Windows® Control Panel, select **Display**.
2. Click the **Settings** tab.
3. In the Color palette box, click the drop-down arrow and select True Color (32 bit) or a higher color count.
4. Click **OK**.

If you use different color settings from this recommended value, your graphs may appear in grayscale format.

Graph Display Formats

Following are descriptions of the graph display formats:

- PNG (Portable Network Graphics). PNG graphs are bitmapped and can support 16 million colors. In addition, PNG graphs have lossless compression (data is decompressed 100% back to the original). Therefore, saving, altering, and resaving a PNG does not degrade its overall quality. The PNG graph appears in the browser.
- GIF (Graphics Interchange Format). GIF compresses well but only supports 256 colors. The GIF graph appears in the browser.
- JPEG (Joint Photographic Experts Group). A compressed file format.
- SVG (Scalable Vector Graphics). SVG is a text-based graph file format that enables Web application developers to design powerful, interactive graphs. SVG is compact and generates high quality images on any media regardless of resolution. The SVG is viewable with an Adobe plug-in.

  Note: To include a graph in the PDF Layout Painter, the graph must be saved in .SVG or .jpg format.
- PDF/SVG (Portable Document Format/Scalable Vector Graphics). The SVG graph is automatically embedded into a PDF and shown only on the screen. Drill down is not available with this format.
- PDF/GIF (Portable Document Format/Graphics Interchange Format). The GIF graph is automatically embedded into a PDF and shown only on the screen. Drill down is not available with this format.

Choosing Formats for Output to the Screen, a File, or Printer

When you create or edit a graph in Graph Assistant, you can choose among these formats in the Output section in the Options tab. If you are designating Output To the Screen, all options listed in Graph Display Formats are available, as shown in the Format drop-down list.

The following image shows the Options subtab.
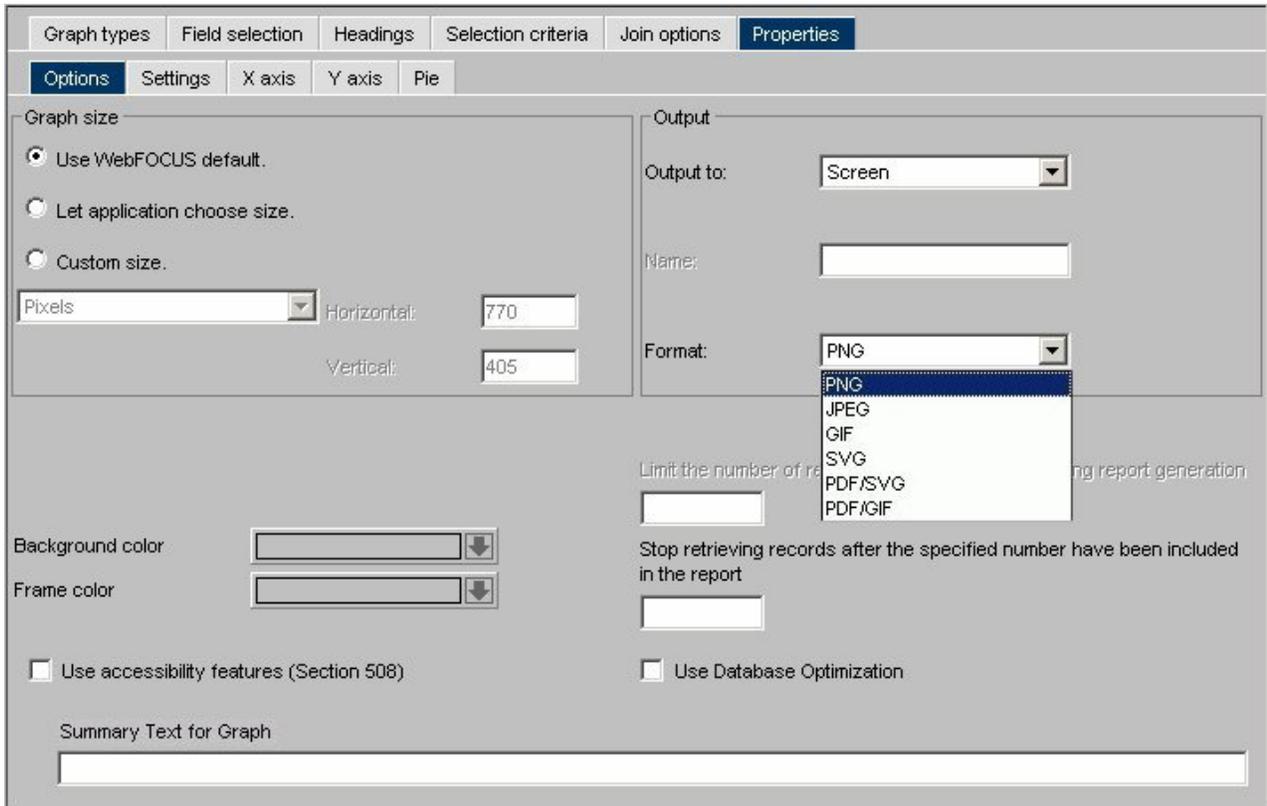
If you are designating Output to File, the PNG, JPEG, GIF, and SVG options are available.

The following image shows the Output section of the Options subtab with the Output to File option selected.
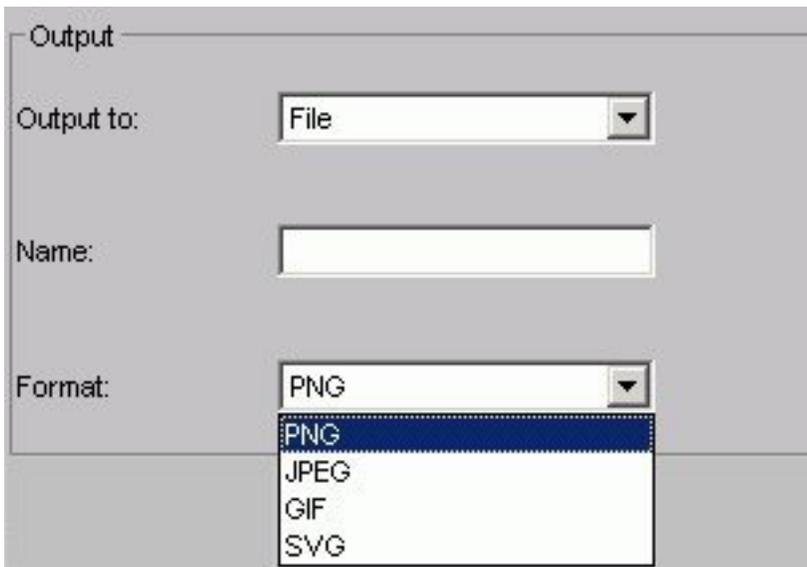
If you are designating Output to a Printer, the PNG, GIF, and SVG options also are available. Note that the printer must be able to print images.

The following image shows the Output section of the Options tab with the Output to Printer option selected.
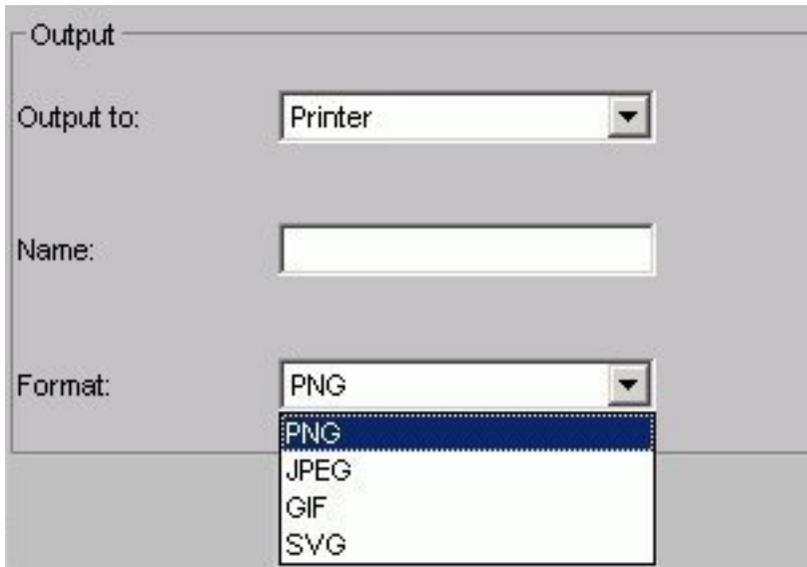
Graph Types Tab

The Graph Types tab is used to create and view a graph type and style.

Graph Types Tab: Graph Types Window

The following image shows the Graph types tab with a sample cluster bar chart.
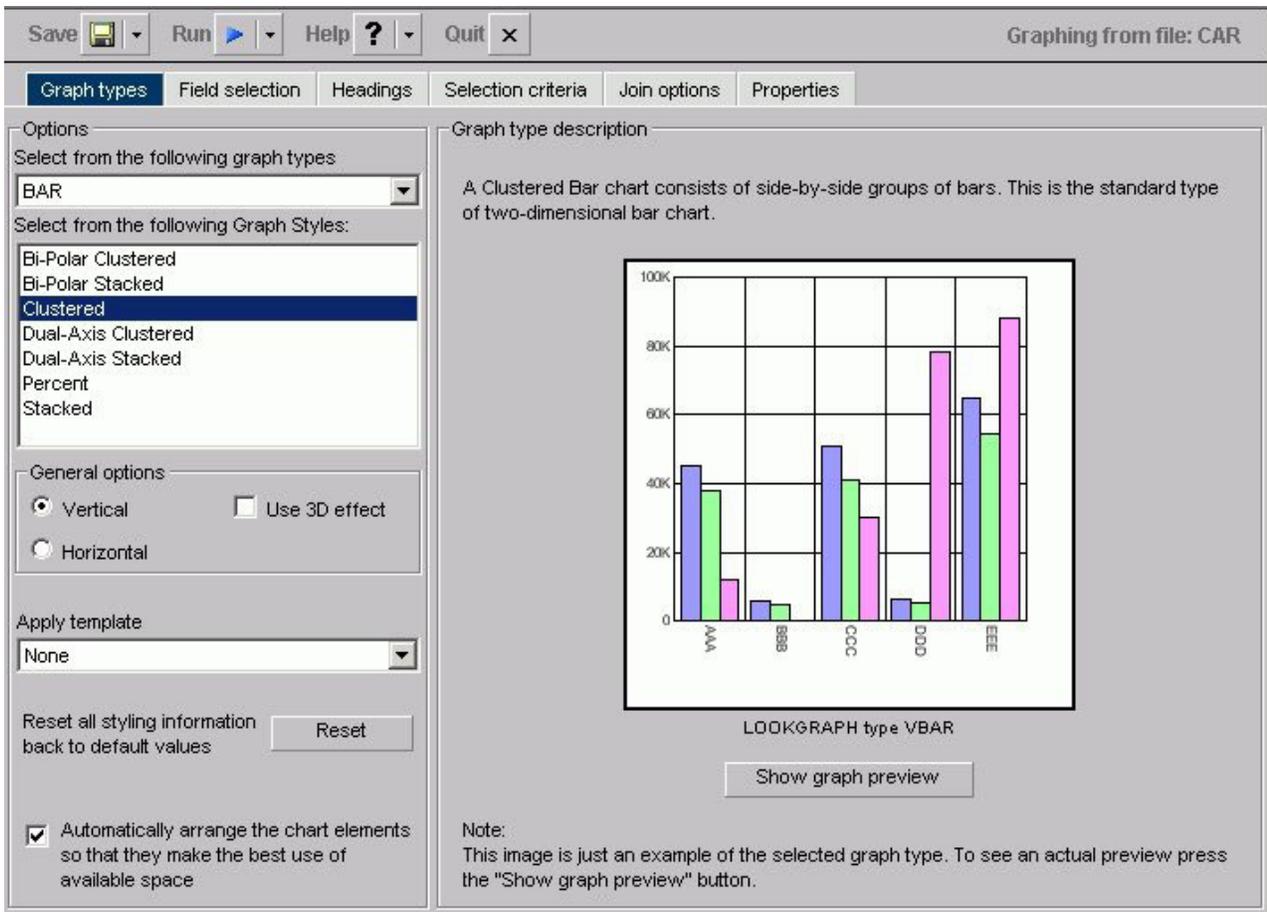
In the Graph types component:

Select from the following graph types

> Displays Line, Bar, Pie, Scatter, Area, 3D, Bubble, Polar, Radar, Spectral Map, Stock, Histogram, Multi-Y, Waterfall, and Miscellaneous graph types.

Select from the following Graph Styles

> Displays several graph styles customized for each graph type.

General options:

Vertical

> Displays the date vertically, along the Y-axis.

Horizontal

> Displays the data horizontally, along the X-axis.

Use 3D effect

> Applies a three-dimensional look to either the vertical or horizontal data.

Apply template

> Displays the Pastels, Beveled on Tan, Color to White, Cylinder on Grey, Fade to Grey, Bumps, Greys, Plum on White, Red Accent, Speckled templates, and True colors.

Reset button

Resets all styling information back to the default values.

Automatically arrange the chart elements so that they make the best use of available space

Specify this option with a check in the check box.

The Graph type description component of the Graph types subtab includes a description of the Graph type and style you have chosen, along with a sample graph. In addition, you have the following options:

Show Graph Preview button

Displays the actual graph in a separate window with the options you specified.

Update button

Updates a graph after you make changes.

Automatic Update check box

Check to have your graph automatically updated each time a change is made.

Field Selection Tab in HTML Graph Assistant

The Field selection tab is used to choose the fields you want in a graph, as shown in the following image.
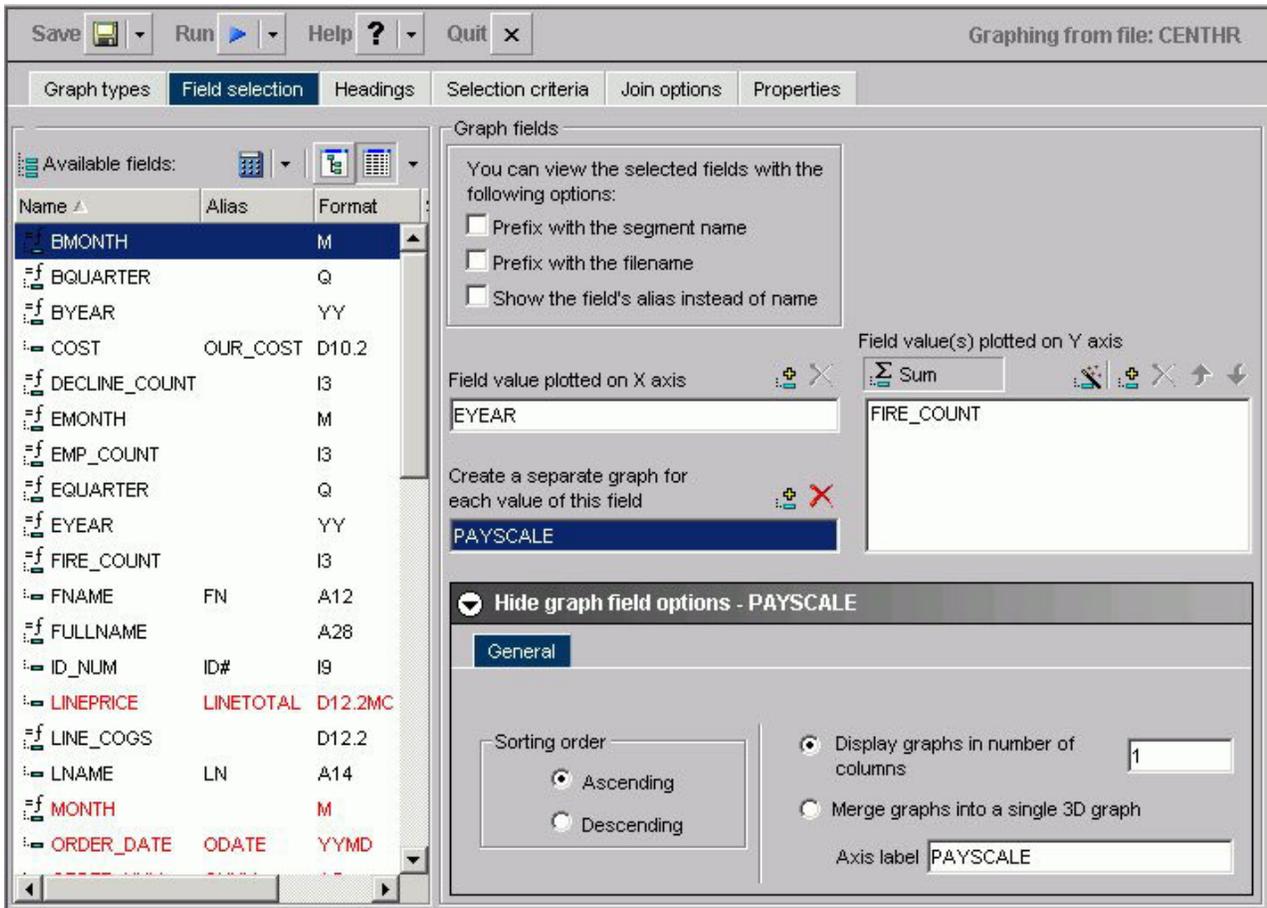
The Field selection tab has two main sections:

Available fields window

Displays a list of field names from the selected data source.

Graph fields

Provide name and sorting options for selected graph fields.

Field Selection Tab: Available Fields Window

The following image shows the Available Fields window of the Field selection tab.

Available Fields Window

Displays a list of field names from the selected data source.

Define icon

Click the Define icon to select: New define field, Edit define field, or Delete define field. If you select the New define field or Edit define field, the Define field creator dialog box opens where you can create or edit a defined field.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click on the field.

List icon

> Displays a list of all field names with information that you select from the adjacent arrow that opens a drop-down list: name, alias, title, remarks, format, description, segment, and file name. You can also choose to sort by file order.

Field Selection Tab: Graph Fields Window

The following image shows the Graph Fields window of the Field selection tab.
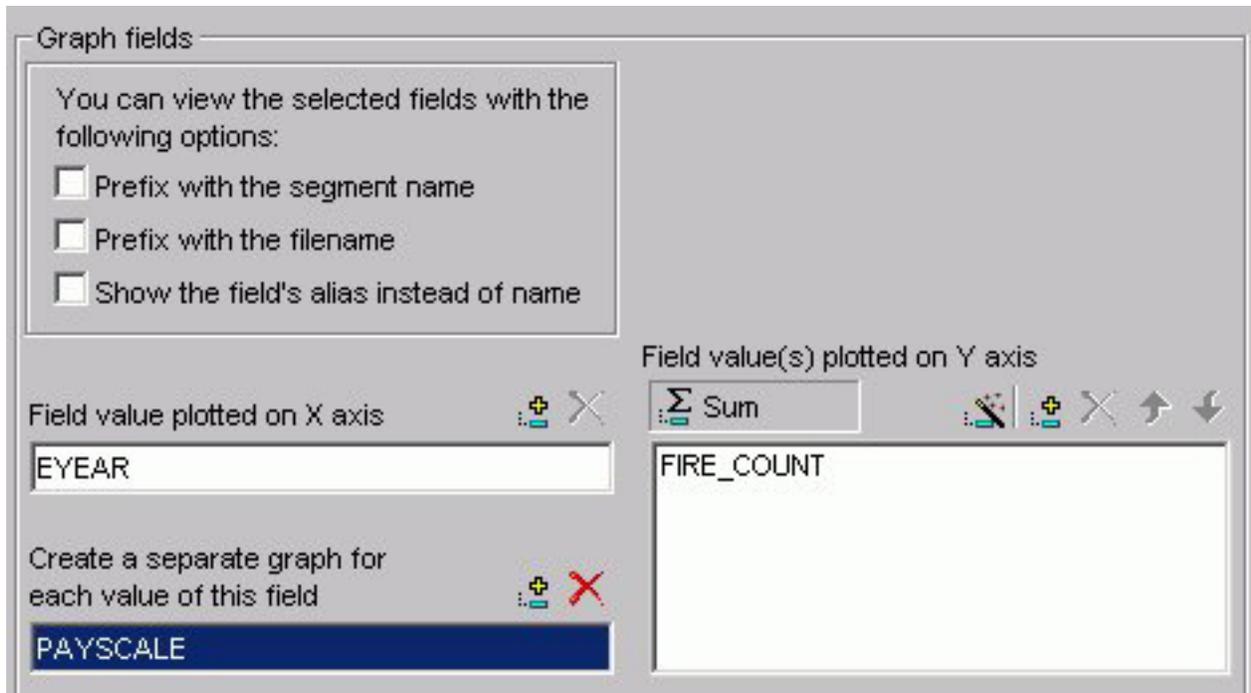
You can view the selected fields with the following options:

> Prefix with the segment name - Prefixes the field name with the segment name.

> Prefix with the filename - Prefixes the field name with the name of the data source.

> Show the field's alias instead of name - Uses the alias defined in the Master File as the field name.

Field value plotted on X axis

> Lists the horizontal (X-axis) field that has been selected from the Available Fields window.

Add button

> Adds a field to the X-axis.

Remove button

> Removes a field from the X-axis.

Create a separate graph for each value of this field

Displays the field you have selected for the second horizontal (X-axis) category. (This was formerly referred to as an Across field.)

Add button

Adds a field to the X-axis.

Remove button

Removes a field from the X-axis.

Field value(s) plotted on Y axis

Sum indicates a graph that aggregates data by the Category (X) axis field. This is the default.

Print plots each Y-axis field value on a record-by-record basis. If the selected X-axis value is numeric, a scatter graph will be generated; if the selected X-axis value is alphanumeric, a line graph will be generated.

New Computed Field button

Opens the Computed Field Creator dialog box where you can define the parameters for a new computed field.

Add button

Adds a field to the Y-axis.

Remove button

Removes a field from the Y-axis.

Move Up or Move Down buttons

Moves the position of the field within the graph.

Field Selection Tab: Show Graph Field Options

The following image shows the Display subtab for the Y-axis field name in the Field selection tab.
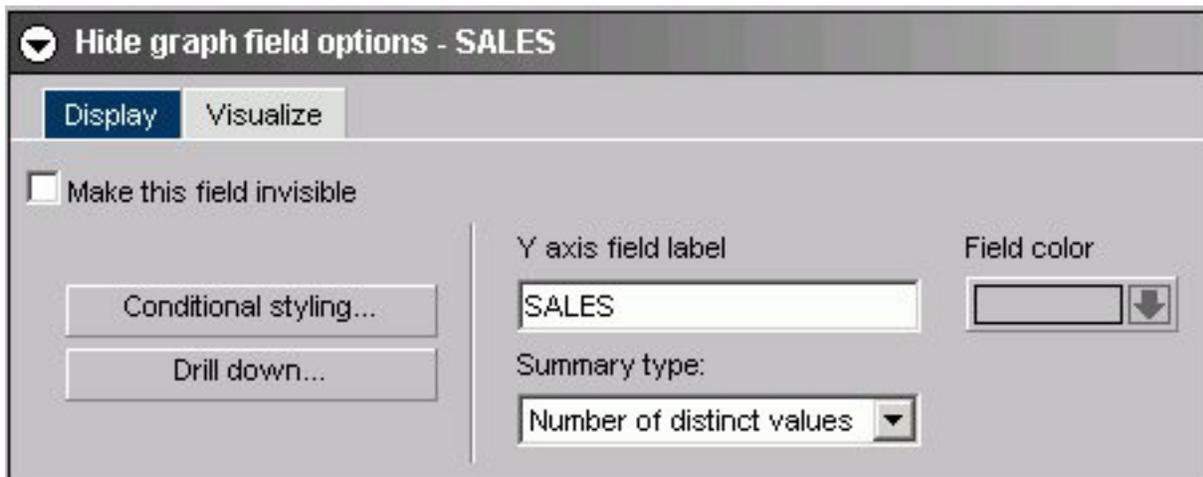
For the Y-axis field name Display subtab:

Make this field invisible

Check to temporarily hide the display of a Y-axis field.

Conditional Styling

Click to open the conditional styling dialog box shown in the following image which you use to add conditional styling in a graph.
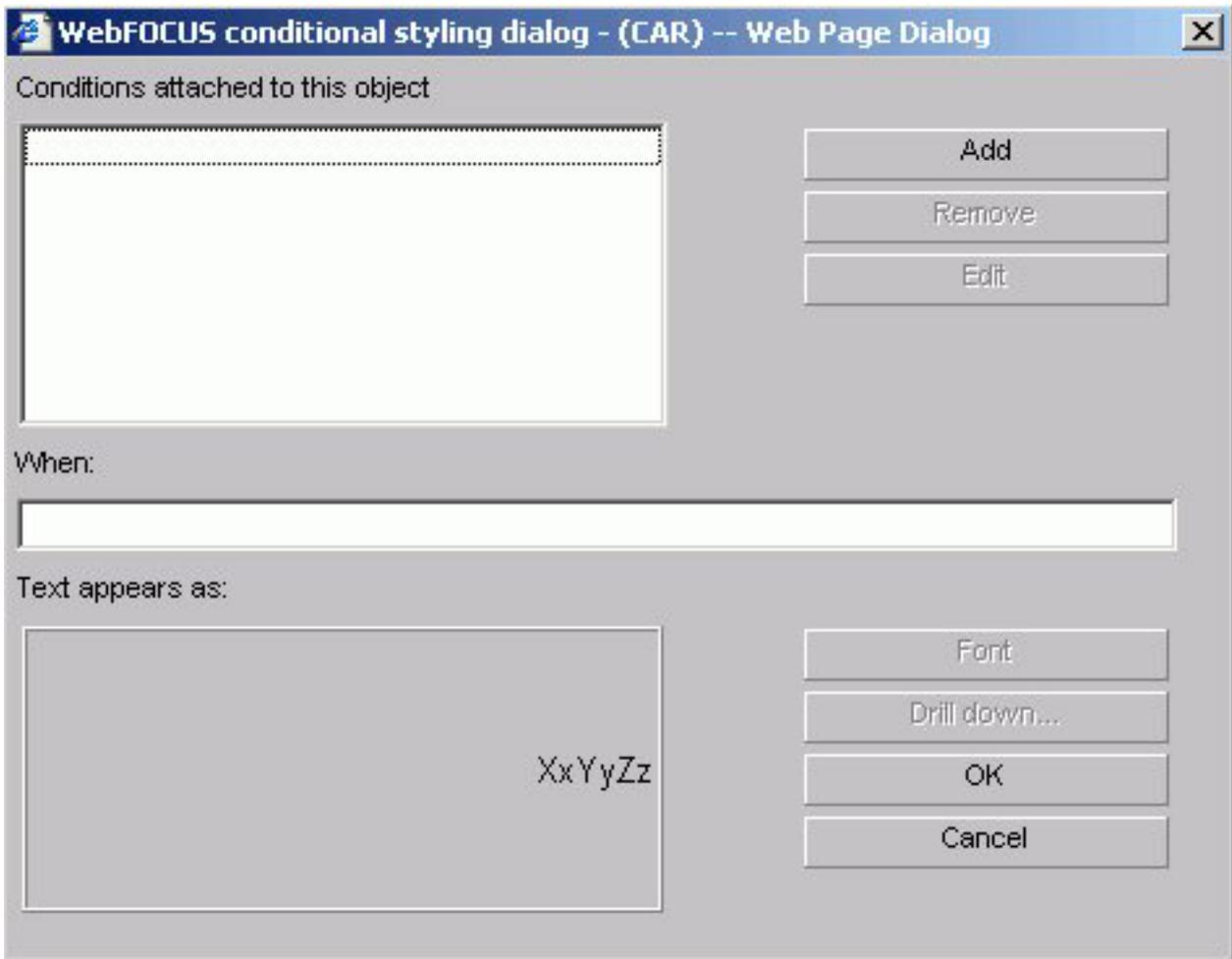
Drill Down

Click to open the drill-down dialog box shown in the following image which you use to add drill down capability to a graph.
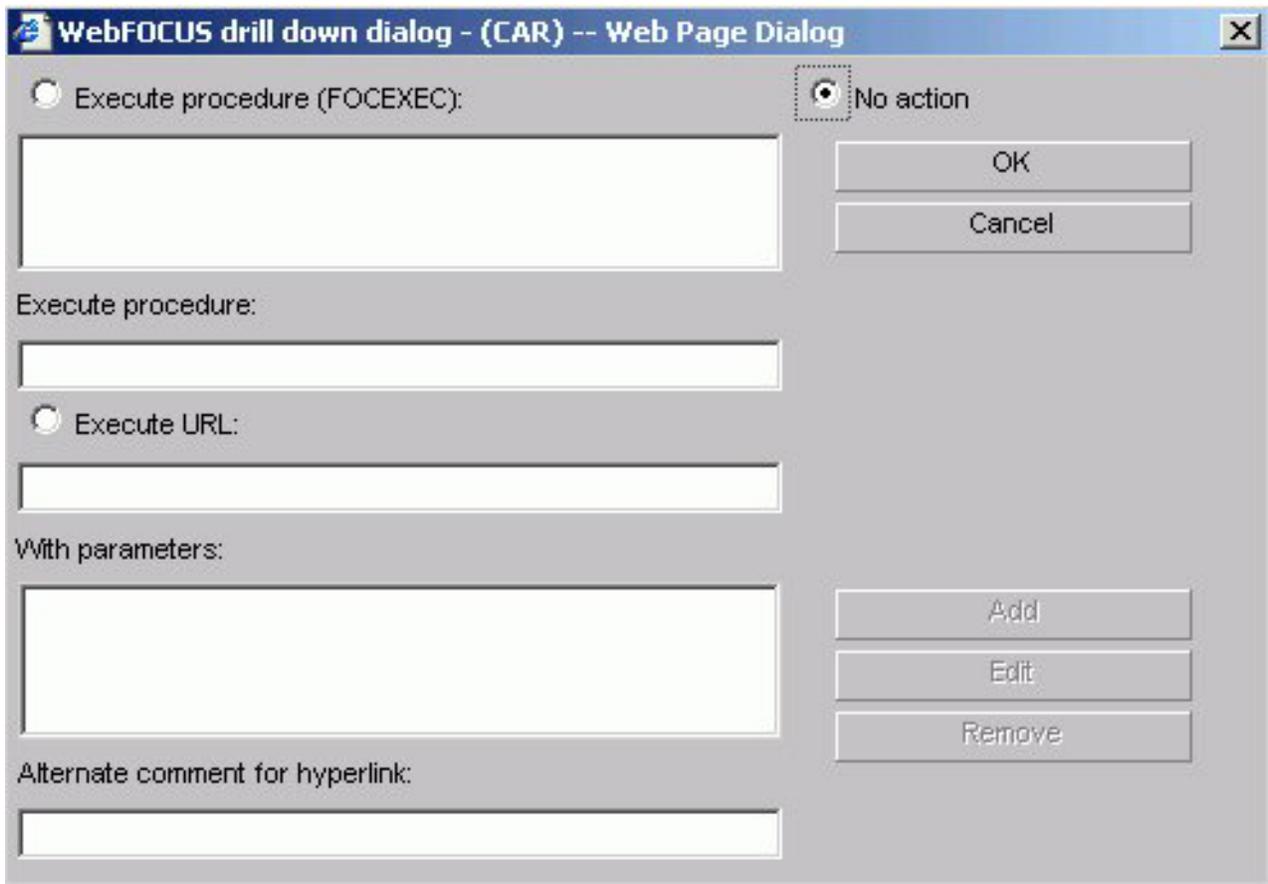
Execute procedure (FOCEXEC)

Lists procedures contained in the Reports folder. Click the procedure you want to execute.

No action

Is the default.

Execute procedure

The procedure you selected appears in this text box.

Execute URL

The URL you selected appears in this text box.

With parameters

Once a parameter is created, it is automatically added to this list box.

Alternate comment for hyperlink

You can place other comments here.

Add button

Click to open the drill-down parameter dialog box shown in the following image.
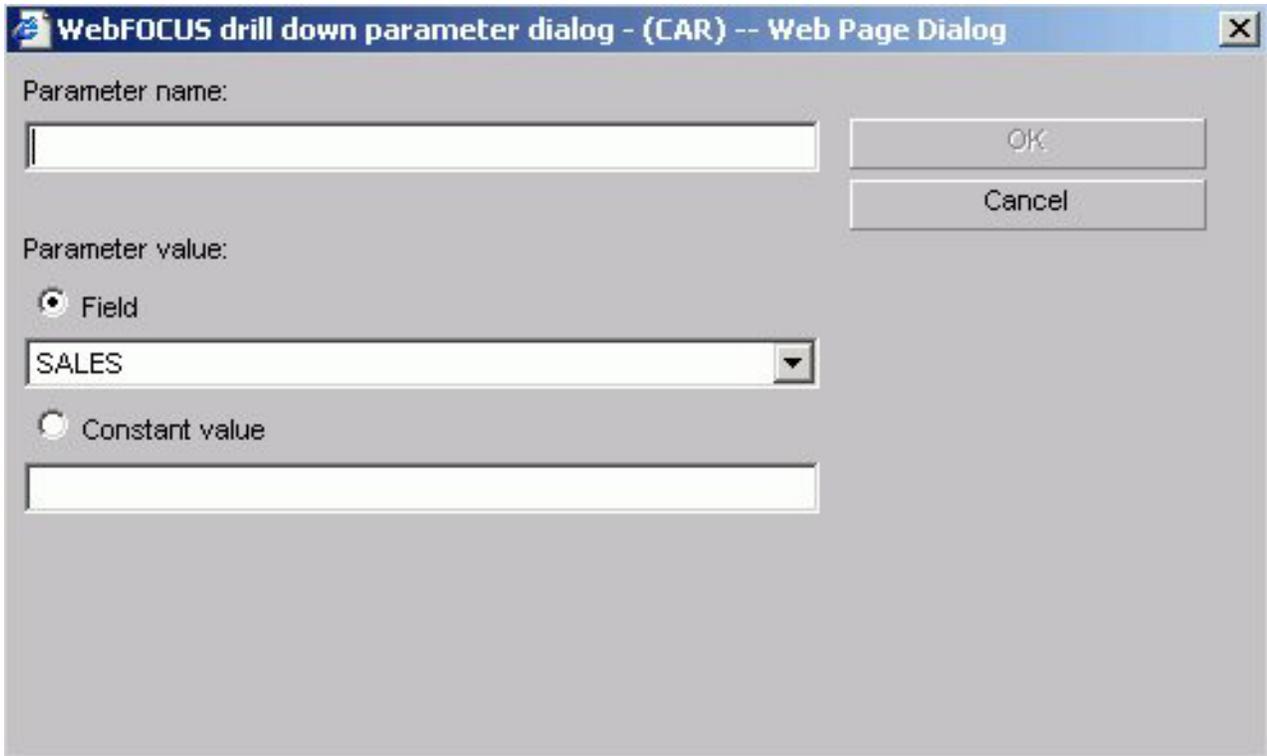
WebFOCUS drill down parameter dialog - (CAR) -- Web Page Dialog

Parameter name

Enter the parameter name you created in the drill down procedure.

Parameter value: Field

The parameter will be set to the corresponding value of the object the user drills down on in the specified field.

Parameter value: Constant value

The parameter is set to the specified value.

OK button

Returns to the drill down dialog box. The parameter is added to the With parameters list box.

Y axis field label

Lists the highlighted field selected from the Y-axis.

Summary type

Select a summary type for the Y-axis field selected in the Value (Y) Fields list. The choices are: Plain field value, Number of distinct values, Percentage, and Total.

Field color

Select the display color for the field currently selected in the Value (Y) Fields list.

The following image shows the Visualize subtab for the Y-axis field name in the Field selection tab.
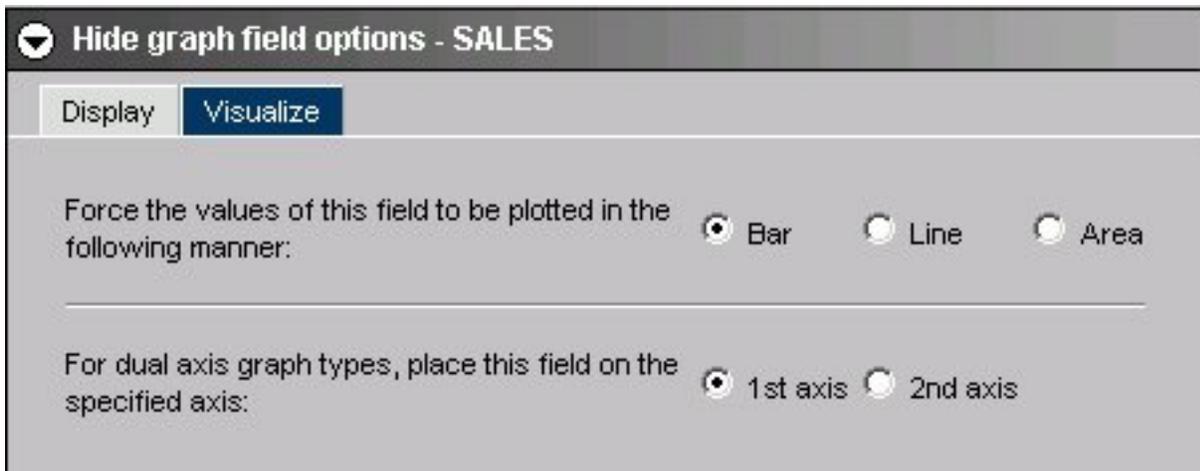
For the Y-axis field name Visualize subtab:

Force the values of this field to be plotted in the following manner

       Choose bar, line, or area.

For dual axis graph types, place this field on the specified axis

       Choose 1st axis or 2nd axis.

The following image shows the General subtab for the X-axis field name in the Field selection tab.
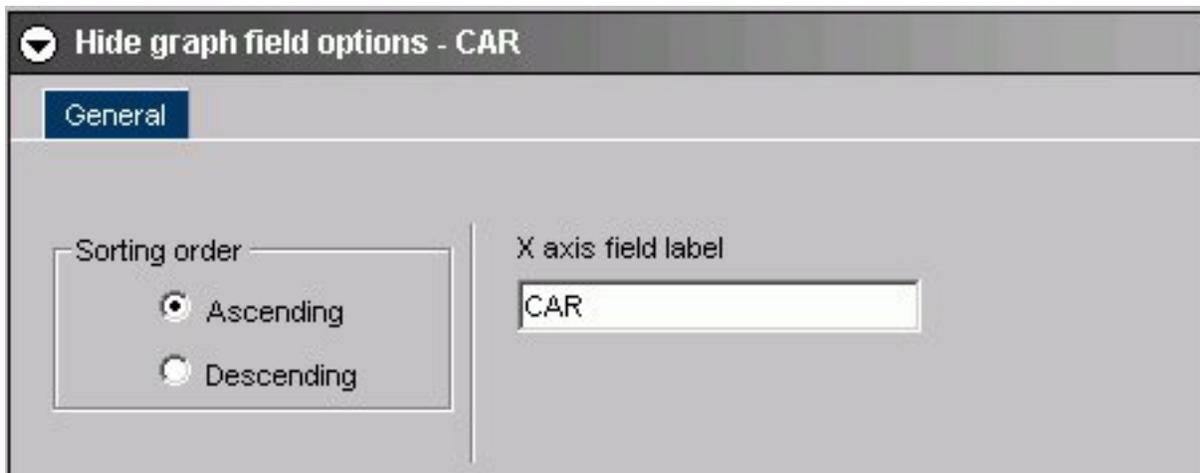
For the X-axis field name:

Sorting order

       Click ascending or descending.

X axis field label

       Field name is entered.

The following image shows the General subtab for Across field names in the Field selection tab.
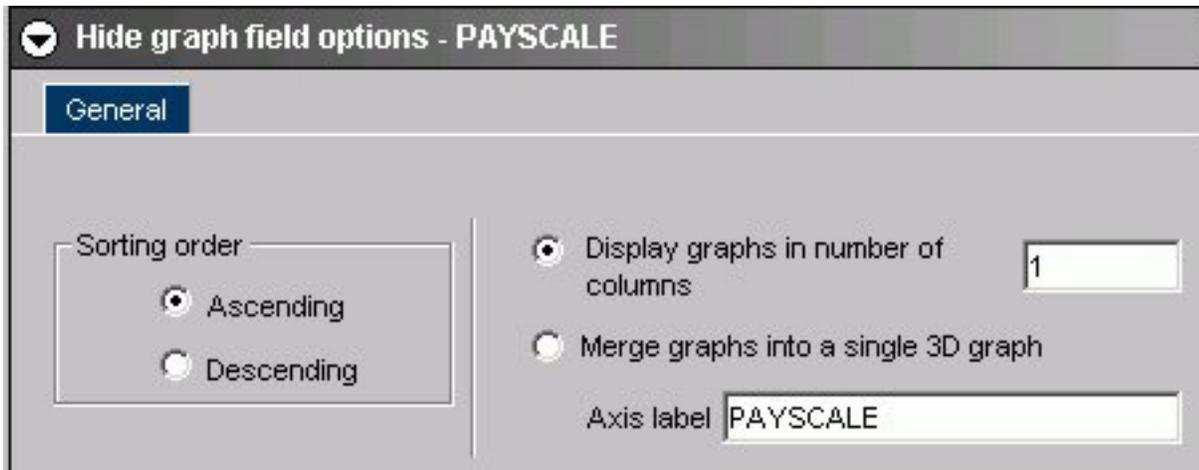
For any additional Across field name(s):

Sorting order

Click ascending or descending.

Display graphs in number of columns

Enter a number in the text box.

Merge graphs into a single 3D graph

Click this option button to activate.

Axis label

The field name is automatically entered in this text box.

Field Selection Tab: Field Creator Dialog Box

Use the Field Creator Dialog Box to create or edit Defined and Computed fields, as shown in the following image.
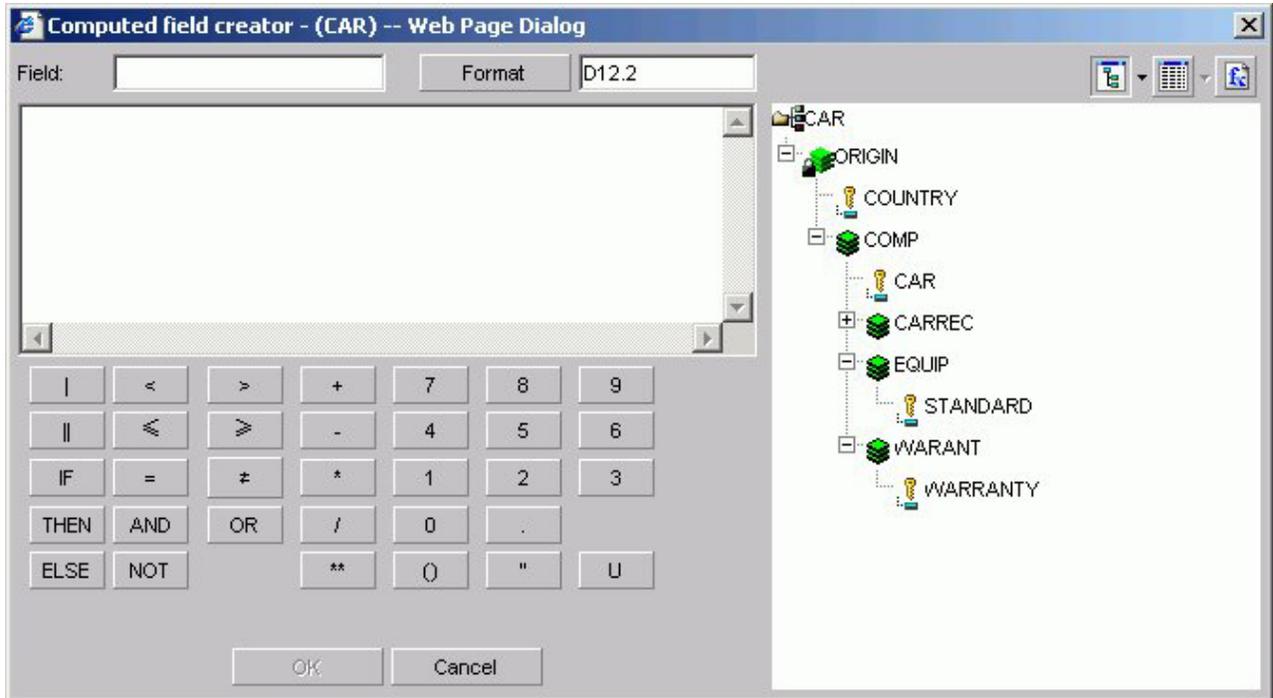
Note that Defined fields are not available for queries that originated in IBM Query/400; defines can be used only with queries that are created in the Web Query product.

Field

> Enter a name for the computed or defined field.

> Click to display the Change Format Dialog box, as shown in the following image.
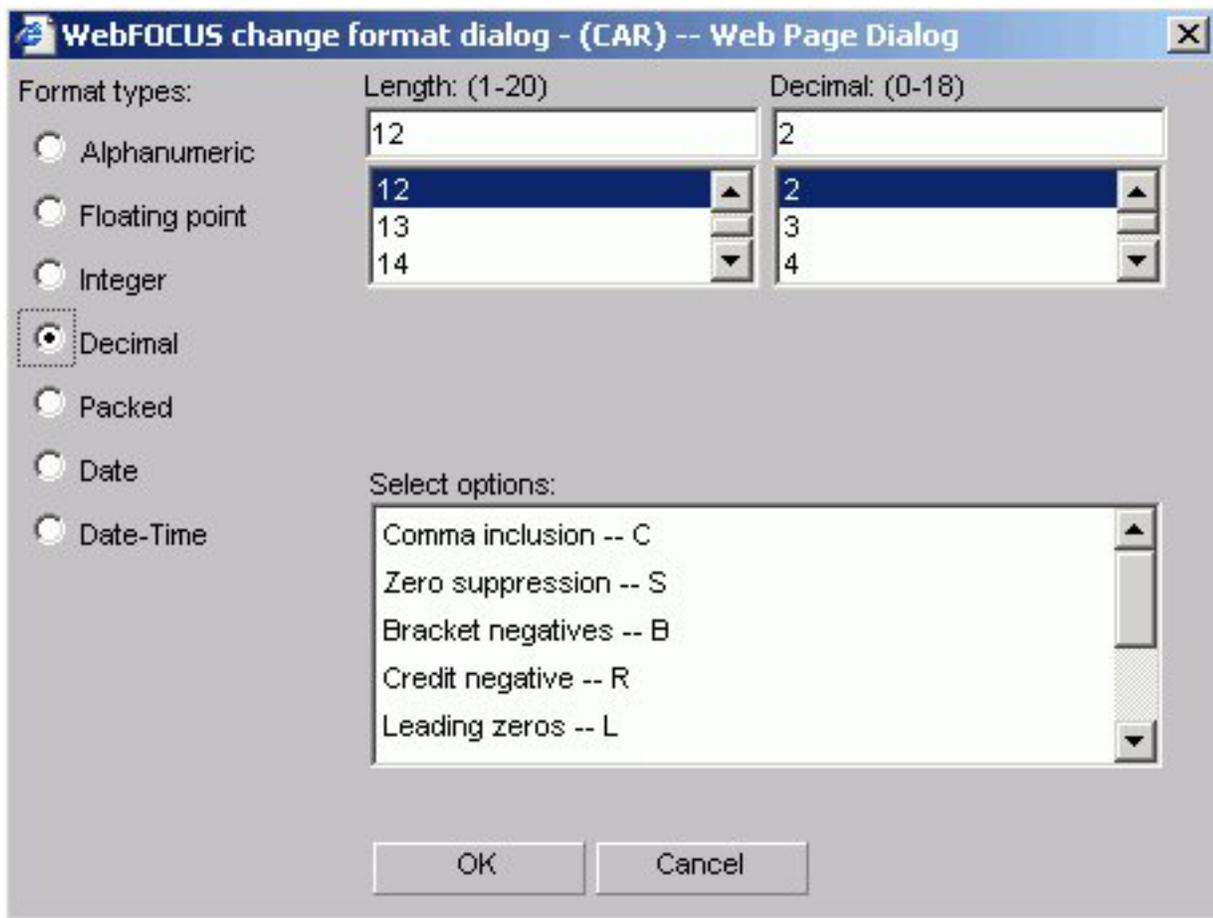
Format types

> Choose:
> - Alphanumeric
> - Floating point
> - Integer
> - Decimal
> - Packed
> - Date
> - Date-Time

Length

> Choose an available number based on the format type you chose.

Select options

> Choose options based on the format type you chose.

Tree or List mode buttons

> Opens the field list in either tree or list mode.

Fields window

> Double-click a field in to include a field name in an expression.

Functions

Displays a list of pre-defined functions shown in the following image.
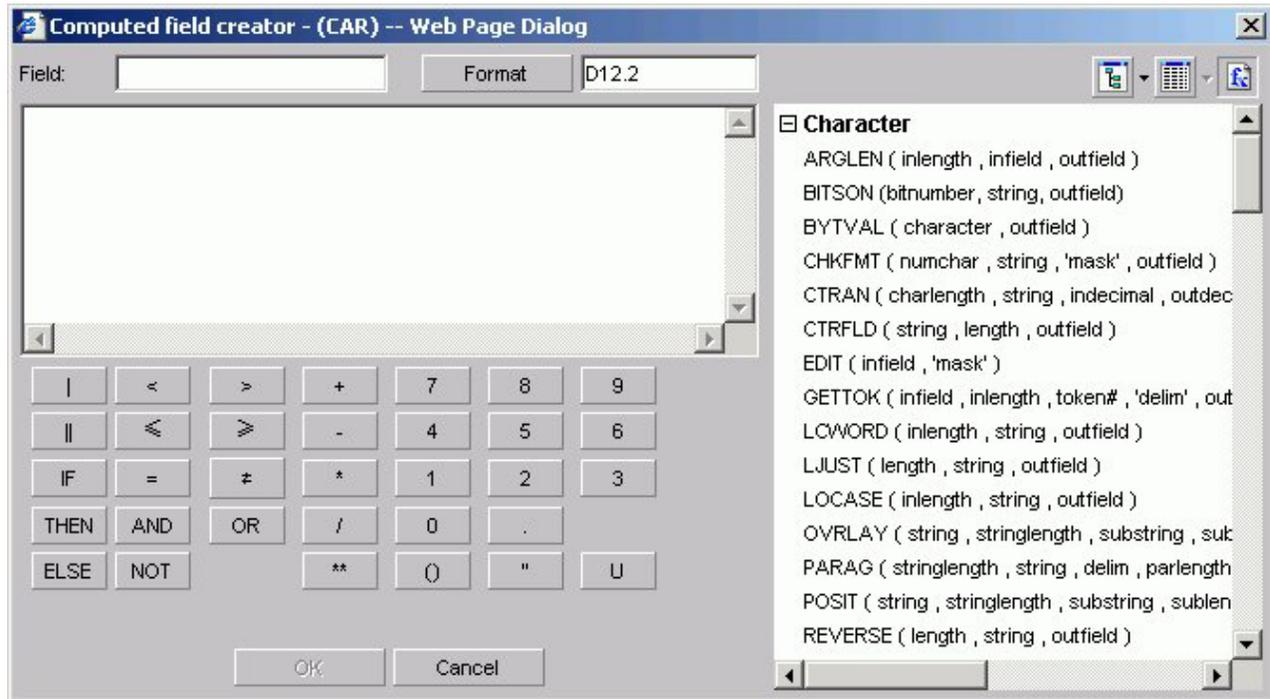
Operator on the computer keypad

Click to include arithmetic operations in an expression.

Boolean operator on the computer keypad

Click to include a Boolean operator in an expression.

Conditional operator on the computer keypad

Click to include a conditional operator in an expression.

Headings Tab

The Headings tab is used to create headings and footings. It has Page and Graph subtabs.

Headings Tab: Page

The Page subtab of the Headings tab shown in the following image is used to create report headings and footings.
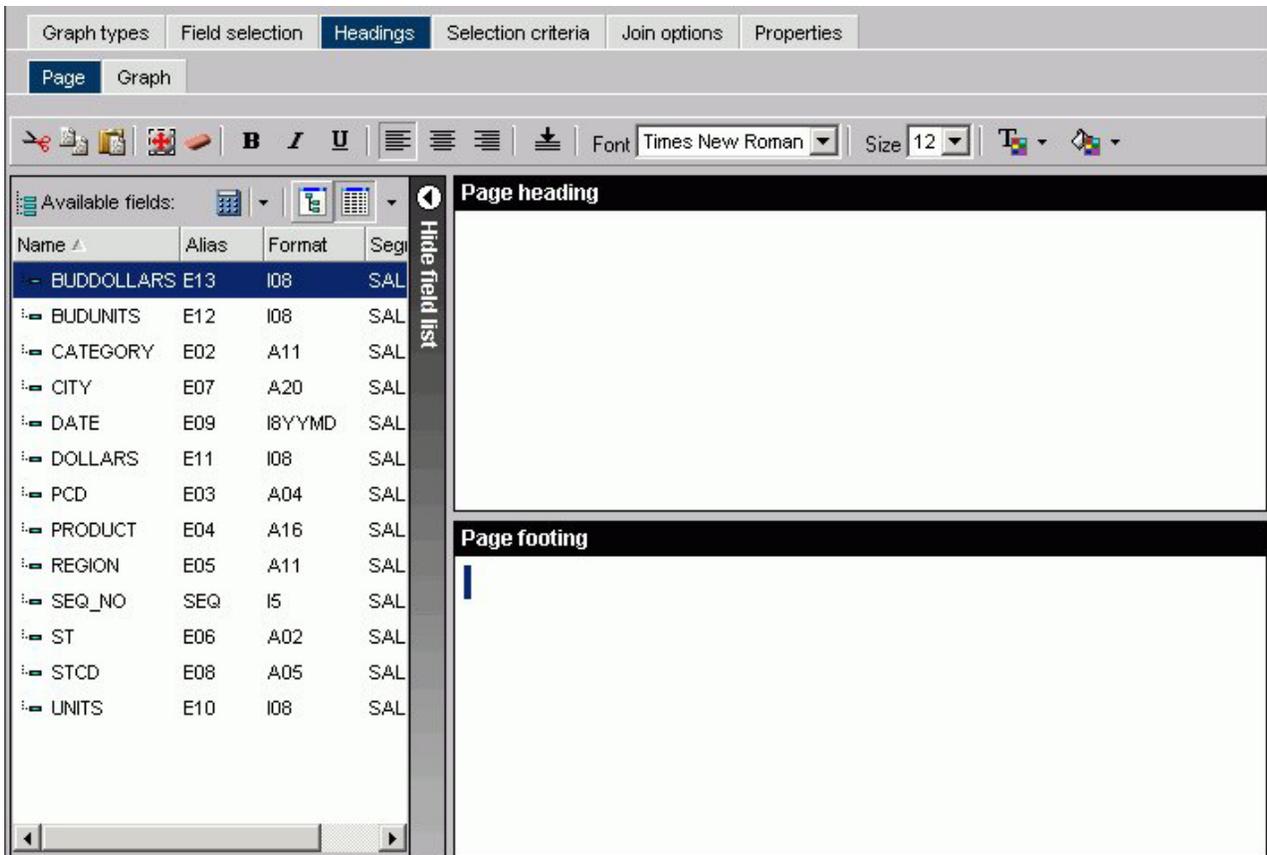
Formatting tool bar

- **Cut, copy, paste.** Cut or copy and paste a selection.
- **Select all.** Select all highlighted text.
- **Remove formatting.** Remove formatting from selection.
- **Font styles.** Select from bold, italic, and underline.
- **Alignment.** Select left, center, right, or bottom alignment.
- **Font.** Select a different font from the drop-down list.
- **Font size.** Select a font size from the drop-down list.
- **Text color.** Select the text color from the color menu.
- **Background color.** Select the background color from the color menu.

Show/Hide Fields list

Insert a field in your heading or footing from the fields list.

Page Heading

Enter the text for the heading in the Page Heading box.

Page Footing

Enter the text for the footing in the Page Footing box.

Headings Tab: Graph

The Graph subtab of the Headings tab shown in the following image is used to create chart titles, subtitles, and footings.
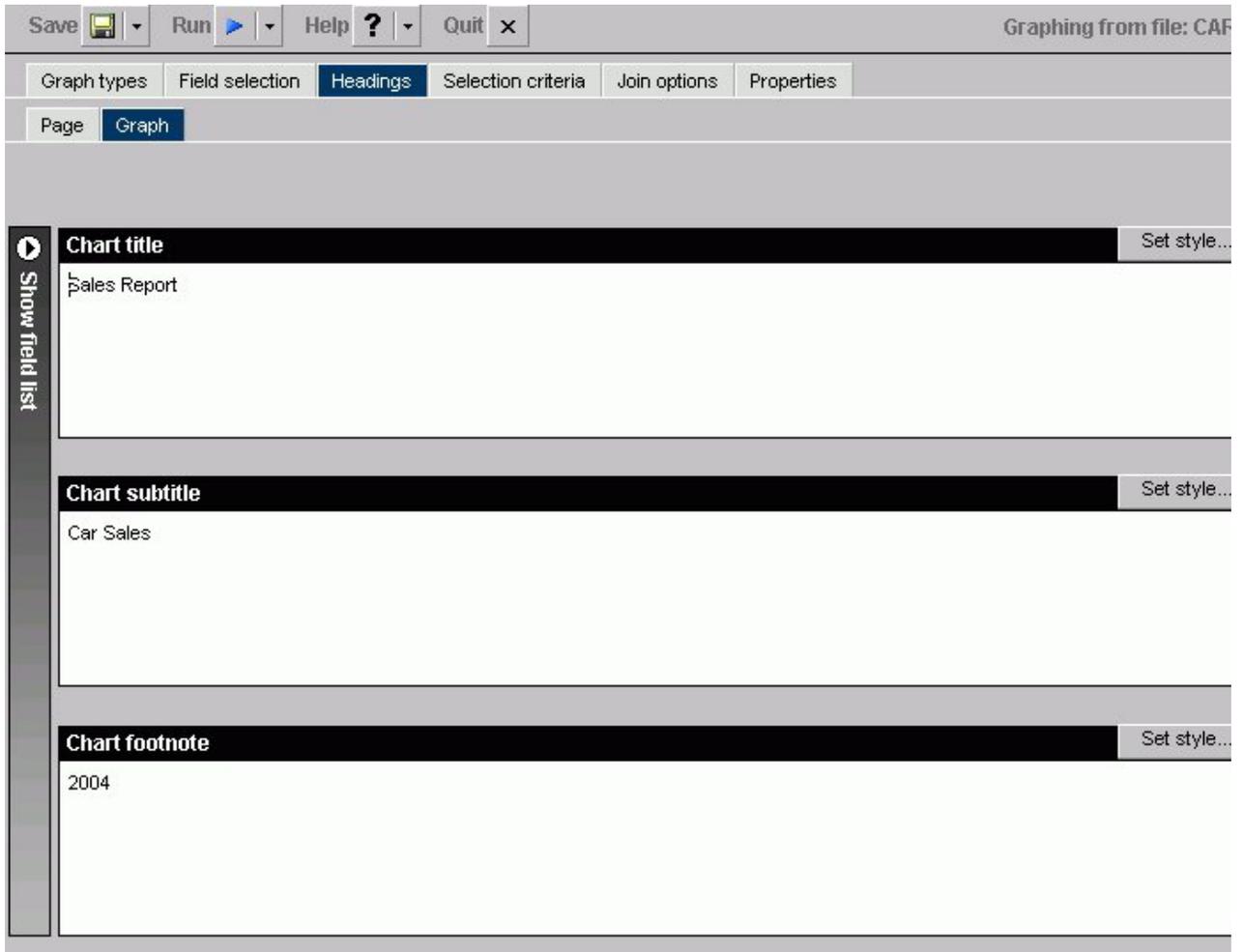
Show/Hide Fields list

Insert a field in your heading or footing from the fields list.

Chart Title

Enter text for the chart title here. The chart title will appear in the graph output as well as in your browser's title bar.

Chart Subtitle

Enter text for the chart subtitle here.

Chart Footnote

Enter text for the chart footnote here.

Style Title, Style Subtitle, Style Footnote

To change the properties, click **Style Title**, **Style Subtitle**, or **Style Footnote** button for the respective text box (Chart Title, Chart Subtitle, Chart Footnote). For details, see Chart Title, Subtitle, and Footnote Properties Dialog Box.

Chart Title, Subtitle, and Footnote Properties Dialog Box

In the Headings tab, click Set style button in the Graph subtab in the Chart Title, Chart Subtitle, and Footnote areas to open the Heading properties dialog box as shown in the following image.
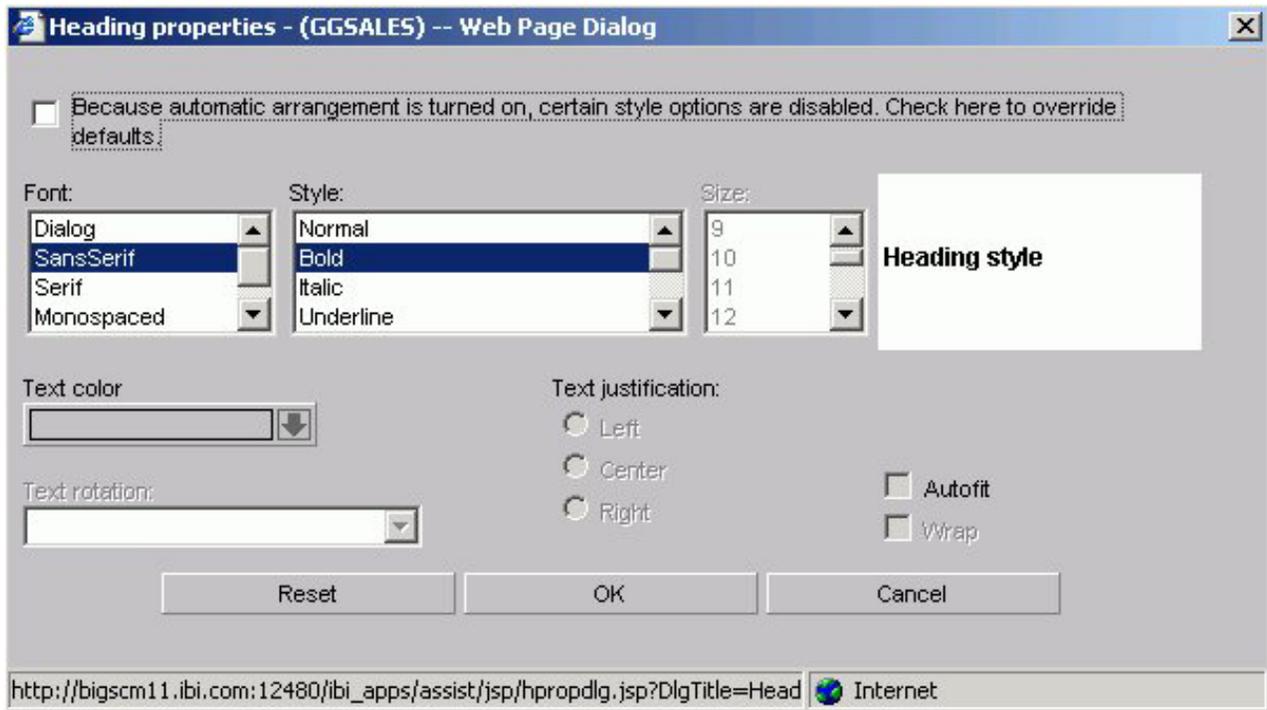
Font

Select the font type.

Style

Select the font style.

Size

Select the text size.

Text Color

Select a text color from the drop-down list.

Text Rotation

Horizontal. Displays text in a horizontal orientation that reads left to right.

Vertical - Bottom to top. Displays text in a vertical orientation that reads from bottom to top.

Vertical - Top to bottom. Displays text in a vertical orientation that reads from top to bottom.

Text Justification

Indicate whether the text will be left, center, or right justified.

Autofit

Checked. Automatically adjusts the heading font size to fit the graph and disables the Size drop-down list.

Unchecked. This is the default. To select a different heading font size, select the font size in the Size drop-down list.

Wrap

Check this box to wrap the text.

Selection Criteria Tab in HTML Graph Assistant

You can create WHERE and WHERE TOTAL statements from the Selection criteria tab in the Graph Assistant.

Selection Criteria Tab - Screen Conditions Window

The Screening conditions window shown in the following image allows you to drag and drop a field from the Available fields window.
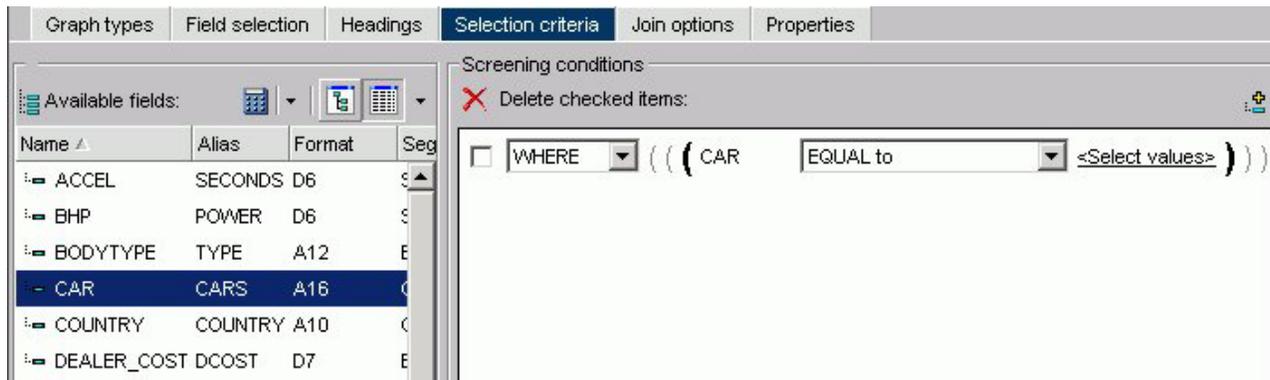
WHERE/WHERE TOTAL

Use WHERE to select records based on the values of an individual field.

Use WHERE TOTAL to select records based on the aggregate value of a field, for example, the sum or average of a field's values.

Fieldname

Is the fieldname you initially chose.

Expression

Select an expression from the drop-down list, for example, equals.

Select Values

Click to open the Values dialog box.
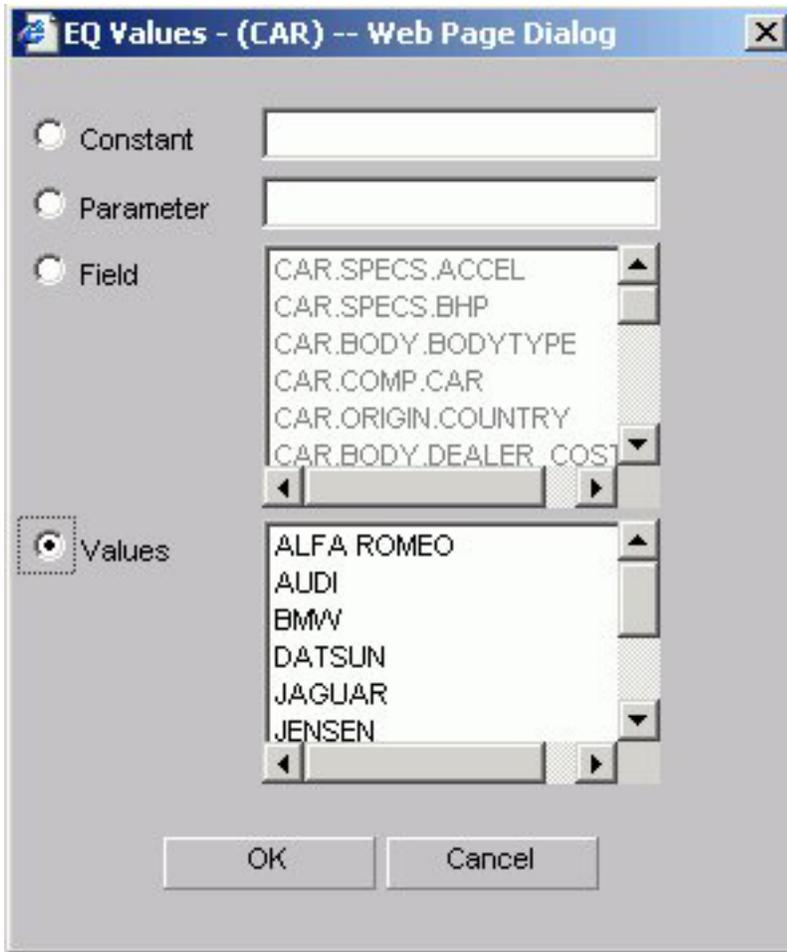
Constant

> Enter a constant.

Parameter

> Enter the name of the &variable.

Field

> Select a field from the Field list box.

Values

> Select a field from the Values list box.

Join Options Tab

The Join options tab is used to create joins.

Join Options Tab: Add or New

The following image shows the Join options tab where you create joins for a graph.
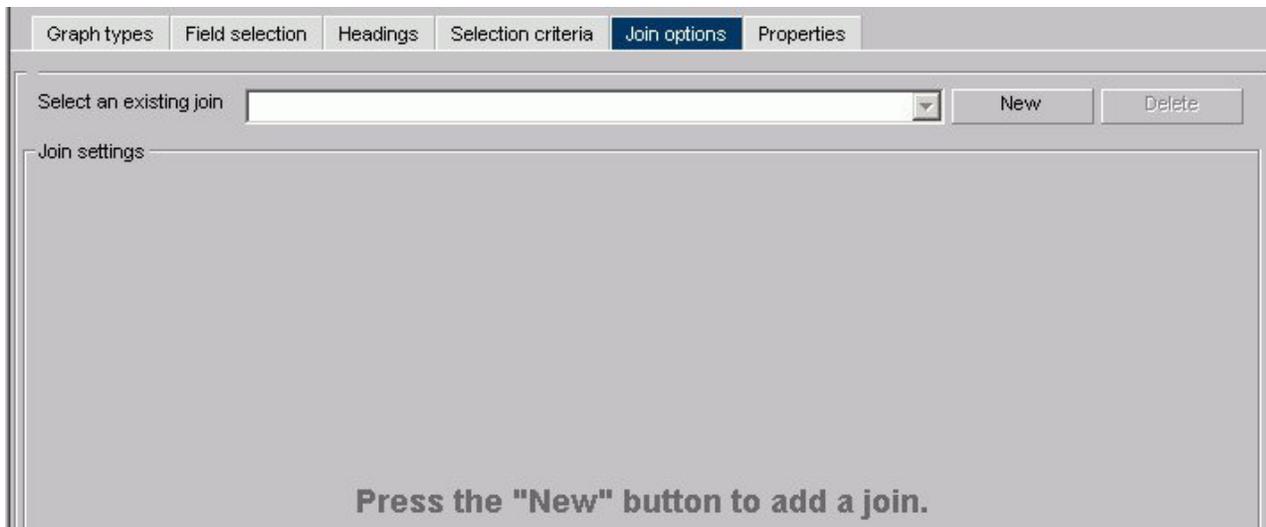
Select an existing join

Enter the name of a join you have previously created.

New

Press the New button to create a new join.

Delete

Click to delete the join.

OK button

Click to select a Master File.

Cancel

Click to return to the Add/New Join window.

When you select a target data source you have multiple join related settings and options, as shown in the following image.

The Join Settings section provides the following fields and buttons for creating joins:

Description

Enter a description for your join.

Internal name

DB2 Web Query assigns an alphanumeric name for the join, for example J001.

Save & Create

Once you have selected your host and target fields, click Save & Create to create the join.

View

Click to view the syntax of your join, which displays the code sent to the DB2 Web Query Reporting Server to validate the join, but may not be the same code required to run the report. This is the case for a DEFINE based JOIN where only the JOIN statement is displayed for validation, but both the JOIN and DEFINE statements are needed when the report is run.

The Join Type drop-down list provides the following join type options:

Unspecified

Select from the Join Types drop-down list to indicate neither an inner or outer join.

Inner Join

Select from the Join Types drop-down list for a join that results when a report omits host rows that lack corresponding cross-referenced rows.

Left Outer Join

Select from the Join Types drop-down list to extend the results of an Inner Join and retrieve records from both host and cross-referenced tables, including all records from the left table (host) and any records from the right table (cross-referenced) where the condition values match. If there are no matching values in the cross-referenced table, the join still retrieves records from the host table.

The Instances drop-down list provides the following join instance options:

Multiple Instance (formerly Non Unique)

Select from the Instances drop-down list for a one-to-many join structure that matches one value in the host data source to multiple values in the cross-referenced field. Joining employee ID in a company's employee data source to employee ID in a data source that lists all the training classes offered by that company would result in a listing of all courses taken by each employee, or a joining of the one instance of each ID in the host file to the multiple instances of that ID in the cross-referenced file.

Single Instance (formerly Unique)

Select from the Instances drop-down list for a one-to-one join structure that matches one value in the host data source to one value in the cross-referenced data source. Joining an employee ID in an employee data source to an employee ID in a salary data source is an example of a unique join.

Host Field List:

Search (binoculars) icon

Opens the Field List Searching dialog box. See Searching Field Lists for details.

Define icon

Click the Define icon to select: New define field, Edit define field, or Delete define field. If you select the New define field or Edit define field, the Define field creator dialog box opens where you can create or edit a defined field.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click on the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a drop-down list: name, alias, title, remarks, format, description, segment, and file name. You can also choose to sort by file order.

Add button

Adds a field.

Remove button

Removes a field.

Move Up or Move Down buttons

Moves the position of the field within the join.

Target Field List:

Select a target button

Click to select a target Master File.

Tree icon

Displays a tree structure of field names by segment with segment, alias, title, description, and format information below the tree. Individual field information appears when you click the field.

List icon

Displays a list of all field names with information that you select from the adjacent arrow that opens a drop-down list: name, alias, title, remarks, format, description, segment, and file name. You can also choose to sort by file order.

Add button

Adds a field.

Remove button

Removes a field.

Move Up or Move Down buttons

Moves the position of the field within the join.

Properties Tab

The Properties tab is used to set properties options for one or more components of a graph.

Legend Properties Dialog Box

Click the **Style Legend Text** button on the Settings subtab in the Properties tab to open the Legend properties dialog box as shown in the following image.
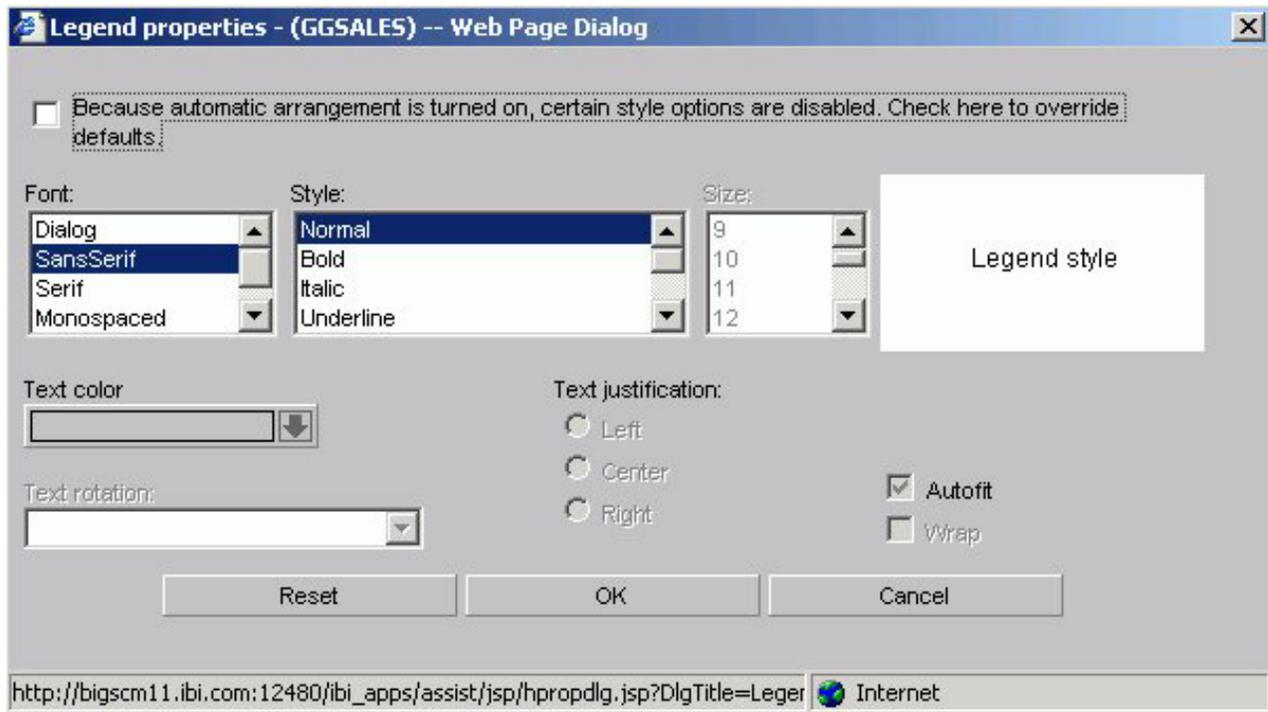
Font

> Select the font type.

Style

> Select the font style.

Size

> Select the text size.

Text Color

> Select a text color from the drop-down list.

Text Rotation

> **Horizontal.** Displays legend text in a horizontal orientation that reads left to right.
>
> **Vertical - Bottom to top.** Displays legend text in a vertical orientation that reads from bottom to top.
>
> **Vertical - Top to bottom.** Displays legend text in a vertical orientation that reads from top to bottom.

Text Justification

> Indicate whether the text will be left, center, or right justified.

Autofit

> **Checked.** This is the default. Automatically adjusts the legend font size to fit the graph and disables the Size drop-down list.
>
> **Unchecked.** To select a different legend font size, uncheck this box and select the font size in the Size drop-down list.

Wrap

Checked to enable wrapping the text.

X-axis Label Properties Dialog Box

Click the **Style Labels** button on the X axis subtab of the Properties tab to open the X-axis properties dialog box as shown in the following image.
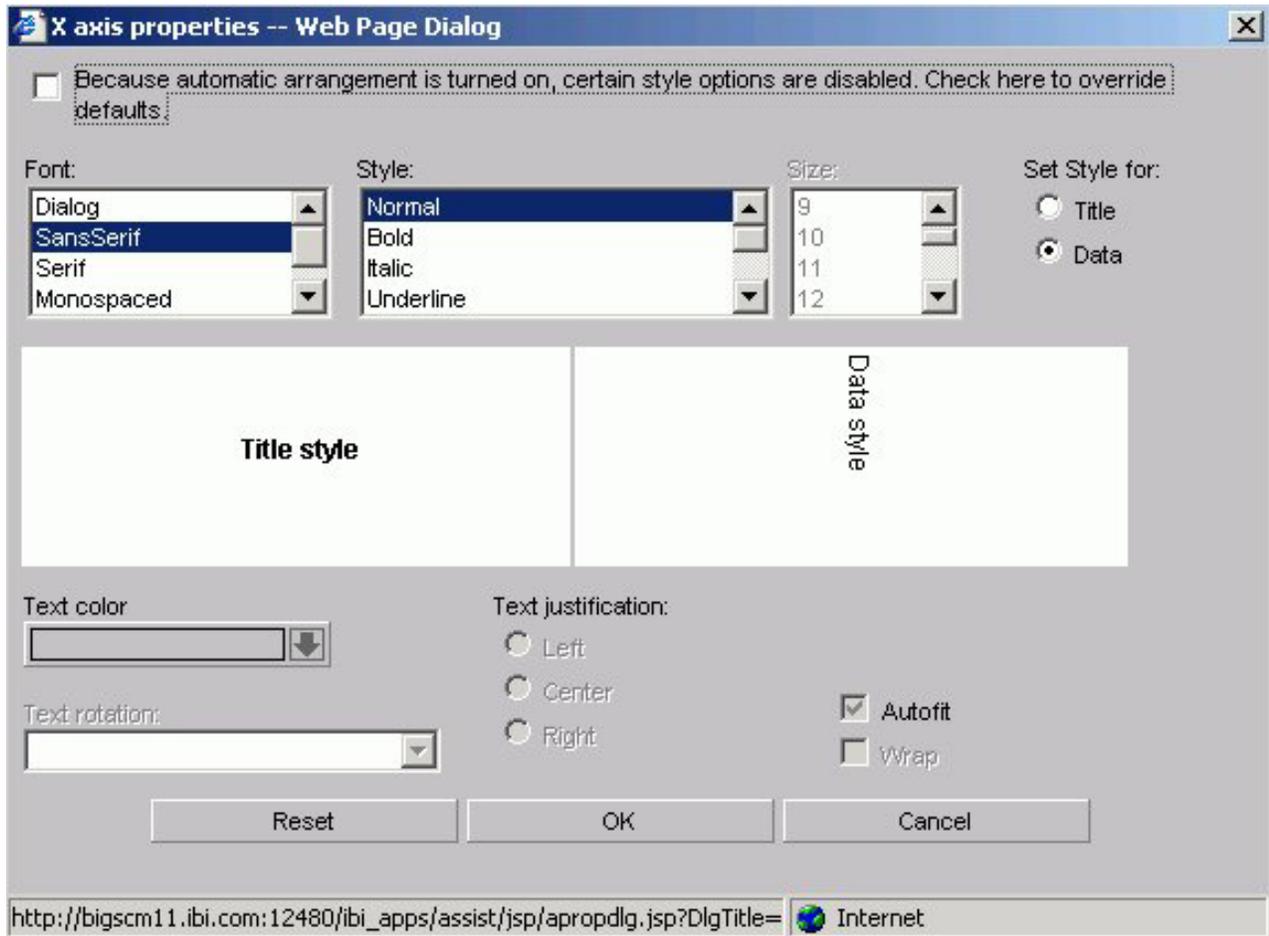
Font

Select the font type.

Style

Select the font style.

Size

Select the text size.

Set Style For

Select to style Title or Data.

Text Color

Select a text color from the drop-down list.

Text Rotation

Horizontal. Displays text in a horizontal orientation that reads left to right.

Vertical - Bottom to top. Displays text in a vertical orientation that reads from bottom to top.

Vertical - Top to bottom. Displays text in a vertical orientation that reads from top to bottom.

45-degree bottom to top. Displays text in a diagonal that reads from bottom to top.

Text Justification

Indicate whether the text will be left, center, or right justified.

Autofit

Checked. This is the default. Automatically adjusts the X-axis font size to fit the graph and disables the Size drop-down list.

Unchecked. To select a different X-axis font size, uncheck this box and select the font size in the Size drop-down list.

Wrap

Check this box to wrap the text.

Y-axis Label Properties Dialog Box

Click the **Style Labels** button on the Y axis subtab of the Properties tab to open the Y-axis properties dialog box as shown in the following image.
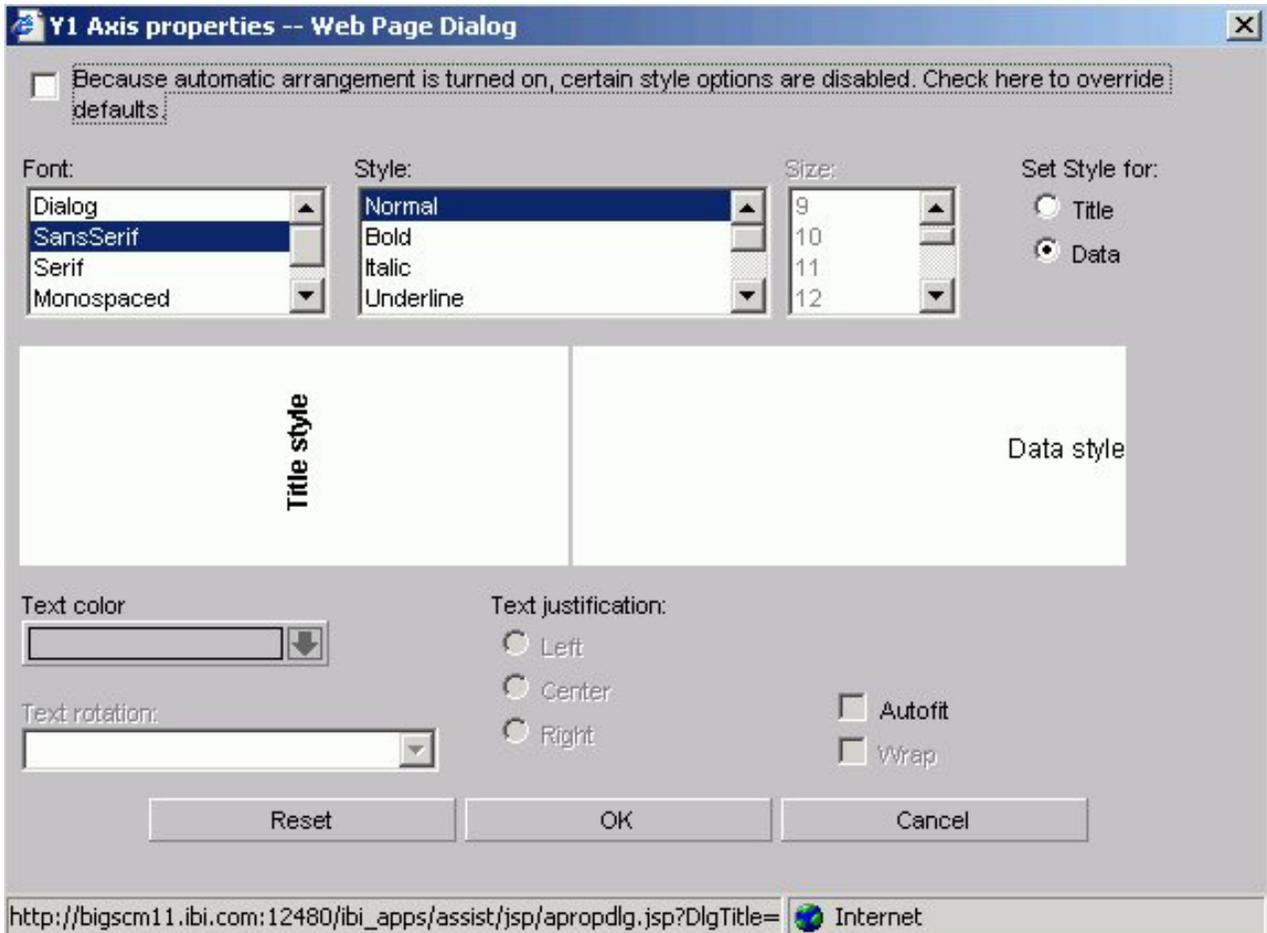
Font

> Select the font type.

Style

> Select the font style.

Size

> Select the text size.

Set Style For

> Select to style Title or Data.
>
> If you have selected more than one Y-axis field, the Title option will not be available in the Label Properties dialog box. The Data option will be selected by default.

Text Color

> Select a text color from the drop-down list.

Text Rotation

> **Horizontal.** Displays text in a horizontal orientation that reads left to right.
>
> **Vertical - Bottom to top.** Displays text in a vertical orientation that reads from bottom to top.

Vertical - Top to bottom. Displays text in a vertical orientation that reads from top to bottom.

45-degree bottom to top. Displays text in a diagonal that reads from bottom to top.

Text Justification

Indicate whether the text will be left, center, or right justified.

Autofit

Checked. Automatically adjusts the Y-axis font size to fit the graph and disables the Size drop-down list.

Unchecked. This is the default. To select a different Y-axis font size, select the font size in the Size drop-down list.

Wrap

Check this box to wrap the text.

Graph Assistant Properties Tab: Options

The following image shows the Options subtab of the Properties tab.

Graph Size

Select the DB2 Web Query default size, let the applet application choose the size, or set a custom size for horizontal and vertical, both in pixels. For more information about graph size, see Set the Graph Height and Width.

Output

Select **Screen**, **File**, or **Printer** from the list box. If you select:

Screen, the output appears in the browser. Choose: PNG, SVG, GIF, JPEG, PDF/SVG, PDF/GIF.

File, enter a file name and select a file type: PNG, SVG, GIF, or JPEG.

Printer, graph output is sent directly to your browser's default printer. Choose: PNG, SVG, GIF, JPEG.

Note: To include a graph in the PDF Layout Painter, the graph must be saved in .SVG format.

Background Color

Select a background color from the color picker for the current graph.

Frame Color

Select a frame color from the color picker for the current graph.

Stop retrieving records after the specified number have been included in the report

Record limits are used to limit the amount of data that appears or is used in your graph.

Limit the number of read operations performed during report generation

Read limits are used to limit the amount of records retrieved (or read) from the data source. The Read Limit option is not available with FOCUS data sources.

Use Database Optimization

Enables the database to use its internal optimization techniques which reduce the volume of database-to-server communications and improve response time.

Summary Text for Graph
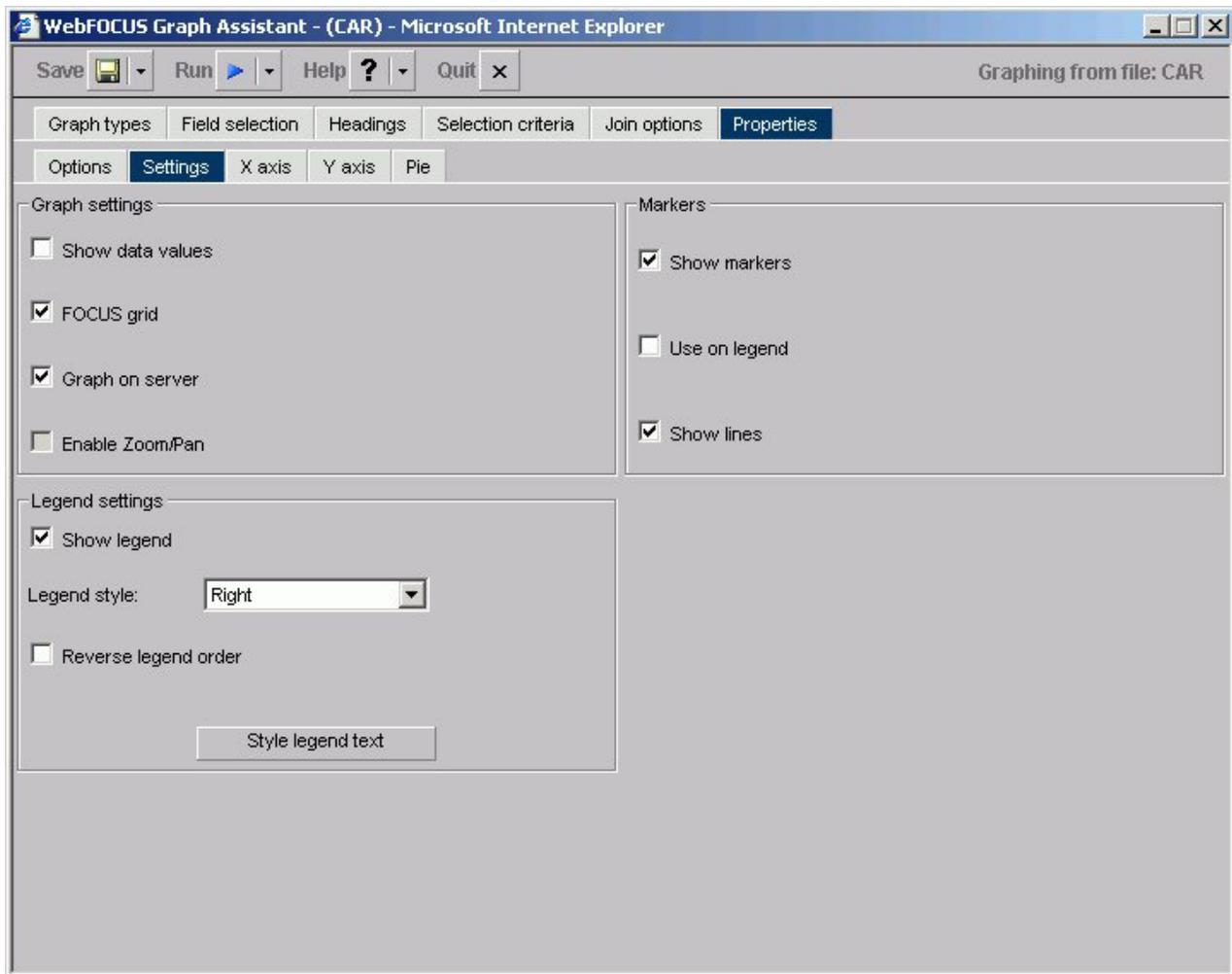
Provides a SUMMARY attribute for reports and graphs that maps to the HTML <TABLE SUMMARY> tag. A description of the graph is placed into a summary object inside the HTML table in the source code. This complies with section 508 accessibility.

The description of the graph can be no longer than 500 characters.

Graph Assistant Properties Tab: Settings

The following image shows the Settings subtab of the Properties tab.

Graph Settings

Show Data Values

Check this box to display data values in your graph. If this box is unchecked, data values will not be included.

FOCUS Grid

Grids are parallel lines drawn across a graph at the vertical and horizontal class marks on the axes. Check this box if you wish grid lines displayed. This option is only available on connected point plots, histograms, bar charts, and scatter diagrams.

Graph on Server

Runs the graph on a server (rather than your local machine) and produces the graph as an HTML file with a GIF image. Graph on Server cannot be used when the Enable Zoom/Pan box is checked.

Note: This option is only available if the server was configured for server side graphics.

Enable Zoom/Pan

Enables you to zoom on a graph. This feature is available for all graphs except radar, polar, 3D, pie, spectral, and stock graphs. Enable Zoom/Pan cannot be used when the Graph on Server box is checked.

Legend Settings

Show Legend

Check this to display the legend in your graph.

Legend Style

Select the position of the legend's text. You may select to have the legend's text on the right or left side, above or below the legend marker, or inside the legend marker.

Reverse Legend Order

Enables the display of the graph legend in reverse order. This is generally most helpful when Reverse Order of Groups is selected.

Style Legend Text

Opens the Legend properties dialog box where you can select and style the font for the legend text.

Markers

Select how you want markers (shapes that represent data points) to appear on your graph.

Show Markers

Will show marker shapes at the data points on line graphs. You must have this option set to on in order for values to appear when you hover your cursor over an area or line graph.

Use on Legend

Will show marker shapes on the graph legend.

Show Lines

Is the default in the Markers group. When this check box is deselected, marker shapes show on a line graph, but connecting lines are not drawn.

Graph Assistant Properties Tab: X axis

The following image shows the X axis subtab of the Properties tab.

Show axis labels

> **Top** - X-axis labels appear above vertically oriented graphs and to the right of horizontally oriented graphs.

> **Bottom** - X-axis labels appear below vertically oriented graphs and to the left of horizontally oriented graphs. (This is the default.)

> **Top and Bottom** - X-axis labels appear both above and below vertically oriented graphs and to both the left and right of horizontally oriented graphs.

> **Stagger Labels** - When this box is checked, X-axis labels will be staggered.

> **Hide first label** - When this box is checked, the first X-axis label will not appear.

> **Hide last label** - When this box is checked, the last X-axis label will not appear.

Value Format

> Enables you to select a format for the display of X-axis values. You can only change the display format if your x-axis values are numeric and the graph style is bubble, histogram (bar), or scatter.

Style Labels

Opens the X-axis properties dialog box where you can select and style the fonts for the X-axis.

Reverse order of groups

When checked, enables the display of the groups (X-axis) data in reverse order. When unchecked, the graph will display groups in natural order.

Major grid lines

Divide a graph at regular intervals according to the scale. Major grid lines cross their axis line at the exact location of the scale label. Styles include:

Regular Grids - Normal grid lines that are the height of the frame.

Grids and Ticks - Normal grid lines that extend outside the frame.

Inner Ticks - Small tick marks from the frame edge inward.

Outer Ticks - Small tick marks from the frame edge outward.

Spanning Ticks - Small tick marks that span the frame edge.

Minor grid lines

Divide a graph at regular intervals according to the scale. Minor grid lines cross their axis line at equal intervals between major grids/ticks; they never align directly with a scale label. Styles include:

Regular Grids - Normal grid lines that are the height of the frame.

Grids and Ticks - Normal grid lines that extend outside the frame.

Inner Ticks - Small tick marks from the frame edge inward.

Outer Ticks - Small tick marks from the frame edge outward.

Spanning Ticks - Small tick marks that span the frame edge.

Graph Assistant Properties Tab: Y axis

The following image shows the Y axis subtab of the Properties tab.

Axis Selection List Box

> If you have more than one Y-axis, select which axis you would like to apply properties to here, either Y1 Axis or Y2 Axis.

Show axis labels

> **Left Side** - Y-axis labels will appear on the low (bottom or left) side of the graph.
>
> **Right Side** - Y-axis labels will appear on the high (top or right) side of the graph.
>
> **Both Sides** - Y-axis labels will appear on both the low and high sides of the graph.
>
> **Hide Maximum Value** - When checked, the largest Y-axis label will not appear.
>
> **Hide Minimum Value** - When checked, the smallest Y-axis label will not appear.
>
> **Always include Zero on Scale** - Includes zero on the Y-axis scale when checked. If you have manually set your scale range to exclude zero, this property will be ignored.
>
> **Log Scale** - When checked, the Y-axis scale will use logarithmic scaling. When unchecked, the Y-axis scale will use linear scaling.

Value Format

Enables you to select a format for the display of Y-axis series values. Value Format cannot be used in combination with Slice Label.

Style Labels

Opens the Y-axis properties dialog box where you can select and style the fonts for the Y-axis.

Reverse order of series

When checked, enables the display of the series (Y-axis) data in reverse order. When unchecked, the graph will display its series in natural order.

Descending Axis

Inverts the direction of the Y-axis so values of zero or less appear at the top of the graph, while values greater than zero appear at the bottom of the graph.

Axis Line

Enables the display of the Y-axis base line.

Zero Line

Enables the display of the Y-axis Zero line when zero is within the Y-axis range.

Missing Values Display

Displays missing data values (in a bar graph, line graph, area graph, or any variation of these graph types) in one of the following formats:
- Graph as zero.
- Graph as gap.
- Dotted line to zero.
- Interpolated dotted line.

Major Grid Lines

Divide a graph at regular intervals according to the scale. Major grid lines cross their axis line at the exact location of the scale label. Styles include:

Regular Grids - Normal grid lines that are the height of the frame.

Grids and Ticks - Normal grid lines that extend outside the frame.

Inner Ticks - Small tick marks from the frame edge inward.

Outer Ticks - Small tick marks from the frame edge outward.

Spanning Ticks - Small tick marks that span the frame edge.

Minor Grid Lines

Divide a graph at regular intervals according to the scale. Minor grid lines cross their axis line at equal intervals between major grids/ticks; they never align directly with a scale label. Styles include:

Regular Grids - Normal grid lines that are the height of the frame.

Grids and Ticks - Normal grid lines that extend outside the frame.

Inner Ticks - Small tick marks from the frame edge inward.

Outer Ticks - Small tick marks from the frame edge outward.

Graph Assistant Properties Tab: Pie

The following image shows the Pie subtab of the Properties tab.

Show Axis Labels

When checked, enables the display of feelers and data text in a pie graph.

Feeler Lines and Labels - Shows both feelers and data text.

Labels Only - Shows only data text.

Labels on Slices - Shows data text on slices.

A feeler is a line or set of lines that stretch from a pie slice label to its pie slice. Feelers are visual aids that help you know that a particular number belongs to a particular pie slice.

Slice Label

When this option button is selected, the Y-axis label will appear at the end of the feeler.

Percent Value

When this option button is selected, the Y-axis value expressed as a percentage appears at the end of the feeler.

Slice Label and % Value

When this option button is selected, the Y-axis label, and its value expressed as a percentage, appear at the end of the feeler.

True Value of Slice

When this option button is selected, the Y-axis value appears at the end of the feeler.

Value Format

Enables you to select a format for the display of Y-axis series values. Value Format cannot be used in combination with Slice Label.

Chapter 7. Visualizing Trends in Reports

Describes how to insert visual representations (in the form of bar graphs) of selected data directly into your report output.

To make your HTML reports more powerful, you can insert visual representations of selected data directly into the report output. These visual representations are in the form of vertical or horizontal bar graphs that make relationships and trends among data more obvious.

Applying Bar Graphs

Vertical or horizontal bar graphs highlight relationships and trends among data.

- **Vertical Bar Graph.** You can apply a vertical bar graph to report columns associated with an ACROSS sort field. The report output displays a vertical bar graph in a new row above the associated data values as shown in the following image.

Bar graphs that project above the zero line represent positive values, while bar graphs that project below the zero line represent negative values.

- **Horizontal Bar Graph.** You can apply a horizontal bar graph to report columns. The report output displays a horizontal bar graph in a new column to the right of the associated data values as shown in the following image.

City	Budget Dollars	Dollar Sales	DIFFERENCE	
Atlanta	$4,247,597.00	$4,100,107.00	$147,490.00	
Boston	$3,818,397.00	$3,707,986.00	$110,411.00	
Chicago	$3,866,856.00	$3,924,401.00	-$57,545.00	
Houston	$3,680,679.00	$3,714,978.00	-$34,299.00	
Los Angeles	$3,669,484.00	$3,772,014.00	-$102,530.00	
Memphis	$3,689,979.00	$3,687,057.00	$2,922.00	
New Haven	$3,832,202.00	$3,782,049.00	$50,153.00	
New York	$3,926,333.00	$3,902,275.00	$24,058.00	
Orlando	$3,870,405.00	$3,923,215.00	-$52,810.00	
San Francisco	$3,916,863.00	$3,870,258.00	$46,605.00	
Seattle	$4,055,166.00	$4,010,685.00	$44,481.00	
St. Louis	$3,646,838.00	$3,761,286.00	-$114,448.00	

Bar graphs that project to the right of the zero line represent positive values, while bar graphs that project to the left of the zero line represent negative values.

The length of each vertical or horizontal bar graph is proportional to the magnitude of its associated data value. The shortest bar graph appears for the

value with the minimum magnitude, the longest bar graph for the value with the maximum magnitude, and bar graphs of varying length appear for each value within the minimum-maximum magnitude range. Notice in the figure that a value of 147,490.00 produces a longer horizontal bar graph than a value of 50,153.00. Therefore, a complete row of vertical bar graphs or a complete column of horizontal bar graphs forms a bar chart.

You can only apply data visualization bar graphs to numeric report columns (integer, decimal, floating point single-precision, floating point double-precision, and packed). Bar graphs applied to alphanumeric, date, or text field formats are ignored.

You can display data visualization bar graphs in OLAP-enabled HTML reports, where bar graphs are applied to Measures. See Associating Bar Graphs With Measures.

Associating Bar Graphs With Measures

You can associate data visualization bar graphs with any numeric measure that appears in the report output.

The type of bar graph that you can apply depends on the placement of the dimensions included in the report:
- If all report dimensions are vertical (By) sort fields (listed in the Drill Down box in the OCP), you can apply a horizontal bar graph to the specified measures.
- If any dimension is a horizontal (Across) sort field (listed in the Drill Across box in the OCP), you can apply a vertical bar graph to the specified measures.

For illustrations, see Applying Bar Graphs.

For more information about OLAP reports, see Analyzing Data in an OLAP Report.

Data Visualization Bar Graph Attributes

The following table outlines the default attributes used to display data visualization bar graphs applied from the OLAP selections pane or the OLAP Control Panel. The first column lists the bar graph attribute, while the second column lists the default value.

Bar graph attribute	Default value
Color	Positive values: Blue Negative values: Red
Length	Vertical bar graph: 60 pixels Horizontal bar graph: 80 pixels
Width	The size of the font in the report output is used to define a default value for the width of the bar graph.

Note: Currently, you cannot modify bar graph attributes from the OLAP selection panel or the OLAP Control Panel.

Applying Bar Graphs to Measures in an OLAP Report

The quickest way to apply data visualization bar graphs to numeric measures is from the report itself.

Apply Bar Graphs to Measures in an OLAP Report

1. Right-click the title of a measure column.
2. Choose **Visualize** from the menu.

The report runs automatically, displaying a column of bar graphs following the selected measures column.

Tip: To remove the bar graphs, right-click the measure column title and choose **Remove Visualization** from the menu.

Applying and Sorting Bar Graphs in a Report

In the following OLAP report:

1. Right-click **Line Cost of Goods Sold** and choose **Visualize** to apply a data visualization bar graph to each value in the column, as shown in the following image.

QUARTER	Store Name:	PRODTYPE	Quantity:	Line Cost Of Goods Sold
Q1	AV VideoTown	Analog	18,449	**Sort by Highest** 296.00
		Digital	22,206	**Sort by Lowest** 00.00
	Audio Expert	Analog	78,449	**Graph** 46.00
		Digital	105,983	**Hide**
				Visualize ← Choose Visualize
	City Video	Analog	6,287	**Full Screen**
		Digital	7,196	**Help** 13.00
	Consumer Merchandise	Analog	6,980	1,342,036.00
		Digital	14,957	3,251,090.00

The display changes instantly, as shown in the following image.

QUARTER	Store Name:	PRODTYPE	Quantity:	Line Cost Of Goods Sold	
Q1	AV VideoTown	Analog	18,449	3,969,296.00	▮
		Digital	22,206	5,109,400.00	▮
	Audio Expert	Analog	78,449	16,467,146.00	▬▬
		Digital	105,983	25,092,678.00	▬▬▬
	City Video	Analog	6,287	1,315,015.00	▏
		Digital	7,196	1,607,513.00	▏
	Consumer Merchandise	Analog	6,980	1,542,036.00	▏
		Digital	14,957	3,251,090.00	▮
	TV City	Analog	19,077	3,772,119.00	▮
		Digital	41,307	10,128,967.00	▬
	Web Sales	Analog	545	124,366.00	
		Digital	829	190,201.00	▏
	eMart	Analog	97,128	21,152,262.00	▬▬
		Digital	108,221	24,990,368.00	▬▬▬
Q2	AV VideoTown	Analog	11,781	2,663,655.00	▮
		Digital	27,377	5,928,507.00	▮
	Audio Expert	Analog	57,944	11,868,758.00	▬
		Digital	111,421	28,064,250.00	▬▬▬

2. Sort the data by highest value. You can either right-click **Line Cost of Goods Sold** and choose **Sort by Highest**, or click the **Up** arrow (the tool tip reads **Sort LINE_COG highest to lowest**).

The following image shows the results of sorting the data by the highest value.

QUARTER	Store Name:	PRODTYPE	Quantity:	Line Cost Of Goods Sold	
Q2	Audio Expert	Digital	111,421	28,064,250.00	
Q1	Audio Expert	Digital	105,983	25,092,678.00	
Q1	eMart	Digital	108,221	24,990,368.00	
Q2	eMart	Digital	115,102	24,971,512.00	
Q1	eMart	Analog	97,128	21,152,262.00	
Q2	eMart	Analog	74,737	16,789,403.00	
Q1	Audio Expert	Analog	78,449	16,467,146.00	
Q4	eMart	Digital	72,126	14,000,951.00	
Q3	eMart	Digital	66,156	13,867,709.00	
Q2	Audio Expert	Analog	57,944	11,868,758.00	
Q3	Audio Expert	Digital	50,076	11,210,406.00	
Q4	Audio Expert	Digital	53,275	11,190,923.00	
Q1	TV City	Digital	41,307	10,128,967.00	
Q4	eMart	Analog	39,515	9,383,389.00	
Q3	eMart	Analog	36,306	8,308,647.00	
Q2	TV City	Digital	29,627	6,732,303.00	
Q2	AV VideoTown	Digital	27,377	5,928,507.00	
Q4	Audio Expert	Analog	25,897	5,916,936.00	

Applying Bar Graphs to Measures Using the Selections Pane or Control Panel

You can apply data visualization bar graphs to any numeric measure.

To indicate the measures for which you want to display bar graphs, you click the check box located to the left of each measure. This check box has three states that control the display modes for the measure.

In the following table the first column shows the three check box states and the second column provides descriptions for the display modes.

Check Box State	Display Mode for the Measure
Check mark	Displays the measure.
Graph icon	Applies a bar graph to the measure and displays both the measure and its associated bar graph.
Blank box	Does not display the measure or an associated bar graph.

You click the check box next to a measure until it reflects the display mode you want.

If an OLAP report contains a measure that does not appear in the report, the Measure control shows a blank check box. To display the measure, click the check box once. To display the associated bar graph, click the check box again.

Note: The three-state check box is *not* active when you apply Stack Measures to your report. These features are mutually exclusive.

Apply Bar Graphs to Measures Using the Selections Pane

1. From the OLAP selections pane, click the arrow to the left of the Measures control.
2. Click the check box beside each numeric measure to which you want to add a bar graph. The check mark in the box is replaced with the Graph icon.
3. Click **Run**. The new report appears with the associated bar graphs.

Apply Bar Graphs to Measures Using the Control Panel

1. Click the **OLAP** button in the OLAP selections pane to open the OLAP Control Panel. The Measures box appears in the lower right corner.
2. If Stack Measures is applied to the report, click the **Stack Measures** check box to turn off this feature.
3. To apply data visualization bar graphs to a measure, click the check box to the left of the measure.

   To apply data visualization graphs to a non-displaying measure, click the check box twice.

   The check mark in the box is replaced with the Graph icon. This icon indicates that data visualization bar graphs are applied to the measure. (If you have not done so in step two, this also deactivates the Stack Measures feature.)

   You can apply data visualization bar graphs to as many numeric measures as you want.
4. After you select all the measures for which you want to display bar graphs, click **Run**.

   The new report output appears with the associated bar graphs.
5. To continue to modify the report (either data visualization or another OLAP configuration), click the **OLAP** button again.

Remove Bar Graphs Using the Selections Pane or Control Panel

1. From the Measures drop-down list in the OLAP selections pane or the Measures box in the OLAP Control Panel, click the check box for any measure to which you have applied data visualization bar graphs.

   This removes the Graph icon and displays a blank check box indicating that the measure will not appear in the report output when you run the report.
2. To display the measure, click the same check box again. A check mark appears in the box.
3. Click **Run** to display the new report output, where the measure appears without its associated bar graph.

Applying Data Visualization Bar Graphs to Measures Using the Selections Pane

Suppose that you want to associate data visualization bar graphs with the Profit column in the following report in order to represent visually the differences between the Costs for and the Prices of your various Products.

You have created the following OLAP report, as shown in the following image, which displays the report data by Product Name.

PAGE 1			
Product ■Name:	Our ⊜ Cost:	⊜ Price:	⊜ Profit
110 VHS-C Camcorder 20 X	744,759.00	1,043,859.00	299100
120 VHS-C Camcorder 40 X	796,943.00	1,227,723.00	430780
150 8MM Camcorder 20 X	1,303,440.00	1,732,489.00	429049
2 Hd VCR LCD Menu	185,889.00	257,939.00	72050
250 8MM Camcorder 40 X	251,520.00	313,614.00	62094
330DX Digital Camera 1024K P	32,437.00	45,477.00	13040
650DL Digital Camcorder 150 X	940,750.00	1,191,175.00	250425
750SL Digital Camcorder 300 X	105,750.00	140,859.00	35109
AR2 35MM Camera 8 X	64,385.00	88,835.00	24450
AR3 35MM Camera 10 X	13,395.00	18,189.00	4794
Combo Player - 4 Hd VCR + DVD	1,166,404.00	1,610,364.00	443960
DVD Upgrade Unit for Cent. VCR	754,909.00	1,080,769.00	325860
QX Portable CD Player	245,916.00	419,796.00	173880
R5 Micro Digital Tape Recorder	297,459.00	383,679.00	86220
ZC Digital PDA - Standard	233,313.00	280,163.00	46850
ZT Digital PDA - Commercial	1,376,805.00	1,968,555.00	591750

To associate data visualization bar graphs with the Profit column:

1. Click the **Measures** drop-down list in the report (or open the OLAP Control Panel (OCP) by clicking the **OLAP** button), as shown in the following image.

The check marks indicate that the measures will appear in the report output.

2. Click the **Profit** check box again. The following images shows the Measures drop-down list in the OCP with the Profit check box selected as a Graph icon.

The Graph icon replaces the check mark. This icon indicates that the measure will appear with its associated bar graph.

3. Click the **Run** button to display the new report output, as shown in the following image, visualizing the Profit values in a bar graph representation.

PAGE 1

Product Name:	Our Cost:	Price:	Profit	
110 VHS-C Camcorder 20 X	744,759.00	1,043,859.00	299100	
120 VHS-C Camcorder 40 X	796,943.00	1,227,723.00	430780	
150 8MM Camcorder 20 X	1,303,440.00	1,732,489.00	429049	
2 Hd VCR LCD Menu	185,889.00	257,939.00	72050	
250 8MM Camcorder 40 X	251,520.00	313,614.00	62094	
330DX Digital Camera 1024K P	32,437.00	45,477.00	13040	
650DL Digital Camcorder 150 X	940,750.00	1,191,175.00	250425	
750SL Digital Camcorder 300 X	105,750.00	140,859.00	35109	
AR2 35MM Camera 8 X	64,385.00	88,835.00	24450	
AR3 35MM Camera 10 X	13,395.00	18,189.00	4794	
Combo Player - 4 Hd VCR + DVD	1,166,404.00	1,610,364.00	443960	
DVD Upgrade Unit for Cent. VCR	754,909.00	1,080,769.00	325860	
QX Portable CD Player	245,916.00	419,796.00	173880	
R5 Micro Digital Tape Recorder	297,459.00	383,679.00	86220	
ZC Digital PDA - Standard	233,313.00	280,163.00	46850	
ZT Digital PDA - Commercial	1,376,805.00	1,968,555.00	591750	

Notice that the report now contains a new column to the right of the Profit measure. This column displays a horizontal bar chart comprised of bar graphs that represent the individual data values for the Profit measure.

Display Modes in the OLAP Control Panel

The Measures box, from which you select a display mode, is located in the lower right corner of the Control Panel, as shown in the following image.

The state of each measure's check box determines how the measure appears in the report output. In this illustration:

- The COST and PRICE measures will appear in the report output (check mark in the boxes).
- The Profit measure and its associated bar graph will appear in the report output (Graph icon in the box).

Note that the Stack Measures option is inactive when a bar graph is applied to a measure.

Chapter 8. Using the DB2 Web Query Viewer

Describes how to use the DB2 Web Query Viewer to view long reports.

The DB2 Web Query Viewer uses the On-demand Paging facility. When On-demand paging is enabled, DB2 Web Query saves the bulk of your report to your Web server and delivers one page of report output at a time, decreasing the amount of time you wait for your report to process. The bulk of your report remains on the Web server until you request it or close the Viewer.

The DB2 Web Query Viewer improves your ability to handle long reports by allowing you to view a single page of report output. You can use the Viewer to:

- View single pages of long reports.
- Search for specific pages in a report.
- Search for specific strings of information.
- Deliver a full report to your Web server.

Navigating a Report With the DB2 Web Query Viewer

When you run a report designated for On-Demand Paging, the DB2 Web Query Viewer opens automatically and displays the first page of the report. The Viewer consists of two panes: the Report Pane and the Viewer Control Panel as shown in the following image.

```
PAGE 1


Product  Unit               Order   Order     Ordered
Code     Price  Product     Number   Date        Units

B141     58.00  Hazelnut        1  01/01/96      300
                                2  01/01/96      117
                               16  01/01/96      285
                               17  01/01/96      140
                               31  01/01/96      349
                               46  01/01/96      240
                               61  01/01/96      509
                               76  01/01/96      358
                               91  01/01/96      179
                              106  01/01/96      583
                              121  01/01/96       37
                              136  01/01/96      448
                              151  01/01/96      267
                              166  01/01/96      363
```

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The Report Pane is the larger pane and contains one page of report output. When you first run a report, the Report Pane contains the first page of report output. The Viewer Control Panel contains the controls that allow you to display specific pages, deliver the entire report to your Web server, and search your document for particular strings of information.

Using the Viewer Control Panel

The Viewer Control Panel, as shown in the following image, (located at the bottom of the window) contains the controls you use to navigate through the report and to search for a string in the report. The Viewer Control Panel's navigational controls allow you to display the next or previous page, the first or last page, or a specific page. You use the searching function to have the Viewer locate a search string you specify within all report pages.

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Note: When specifying a search string, you must specify the actual number of spaces between characters because HTML displays a single space, even when multiple spaces are used between characters.

Navigate Through a Report

The Viewer Control Panel offers several ways to view pages in your report:

- To display a specific page:
    1. Enter a page number in the Page input box as shown in the following image.

2. Click Go to Page as shown in the following image.

- To display the previous or the next page in sequence, click **Previous** or **Next** as shown in the following image.

- To display the first or last page of the report, click **First Page** or **Last Page** as shown in the following image.

- To download the entire report to the browser as a single document, click **All Pages** as shown in the following image.

- To close the DB2 Web Query Viewer, click **Close** as shown in the following image.

Searching a Report

The Viewer Control Panel contains controls that offer several ways to search your report. Using the Viewer's search controls, you can select a string of information, such as a phrase that occurs in your report or a group of numbers, and search for each occurrence of that string. You can further customize your search by matching capitalization of words exactly (a case-sensitive search) or by controlling the direction of your search (either forward or backward from your starting point in the report). Use these controls to search your report:

- To perform a case-sensitive search, click **Match Case** as shown in the following image.

- To search backward in a report, click **Search Backward** as shown in the following image.

- To locate a specific string, type the string you want to search for and click **Find** as shown in the following image.

Search the Report

1. Required: Enter the string in the Search input box.
2. Required: Click **Match Case** if you want to perform a case-sensitive search.

   Notice that the DB2 Web Query Viewer displays the Match Case button with a red line across it to indicate that it is active.
3. To begin your search, click:
   a. **Search Backward** to search for the string from the current page back to the first page, or
   b. **Find** to search from the current page to the end of your report.

   The DB2 Web Query Viewer searches the report and underlines the first occurrence of the string.
4. Click **Find** again to search for another occurrence of the string.

Using the Viewer Control Panel to Search

You want to use the Viewer Control Panel to navigate a long report called Coffee Sales to find occurrences of the string "Kona," a type of coffee that you sell. After you run the report, DB2 Web Query displays the first page of the report in the Viewer.

1. To search for sales of Kona, type Kona in the input box and click **Find** as shown in the following image.

PAGE 1

Product Code	Unit Price	Product	Order Number	Order Date	Ordered Units
B141	58.00	Hazelnut	1	01/01/96	300
			2	01/01/96	117
			16	01/01/96	285
			17	01/01/96	140
			31	01/01/96	349
			46	01/01/96	240
			61	01/01/96	509
			76	01/01/96	358
			91	01/01/96	179
			106	01/01/96	583
			121	01/01/96	37
			136	01/01/96	448
			151	01/01/96	267
			166	01/01/96	363
			167	01/01/96	535

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Kona

The DB2 Web Query Viewer returns your report with the first occurrence of your search string underlined as shown in the following image.

```
                        4260 12/01/97       230
                        4261 12/01/97       175
                        4274 12/01/97       254
                        4275 12/01/97       194
                        4276 12/01/97       380
                        4289 12/01/97       307
                        4290 12/01/97       427
                        4291 12/01/97       306
                        4304 12/01/97       221
                        4305 12/01/97       396
                        4306 12/01/97       149
                        4307 12/01/97       376
B144    76.00 Kona        35 01/01/96       471
                          50 01/01/96       377
                          80 01/01/96        47
                         125 01/01/96       510
                         140 01/01/96        38
                         155 01/01/96       347
                         215 02/01/96       472

Page 25   of 87                              Kona
```

2. Click **Find** again to locate the next occurrence of Kona.

Creating On-demand Paging Reports

You can create your own On-demand Paging report from Report Assistant. Note that On-demand Paging is not currently available with OLAP-enabled reports.

Create an On-demand Paging Report

1. Required: From the Domains list window, select the Reports folder.
2. Required: Select a report from the list.
3. Click **Report Assistant**.

   Report Assistant opens.
4. Add fields and customize your report. For more information on creating reports with Report Assistant, see Creating a Report With Report Assistant.
5. Click the **Report Options** tab and check the **On-demand Paging** check box.
6. Click **Run** to view your report.

   DB2 Web Query displays your report within the Viewer.

   Note: The Viewer is launched over a blank browser window. This window is necessary for the operation of the Viewer. It must be closed separately from the Viewer.

7. To return to Report Assistant, close the DB2 Web Query Viewer and close the blank browser page.

8. Close Report Assistant.

   DB2 Web Query prompts you to save your report before exiting.

Creating an On-demand Paging Report

You want to select On-demand Paging for a report on the sale of coffee products called Coffee Sales.

1. Navigate to the Domains view.

2. Open the **Regional Sales** domain.

3. From the Reports folder, expand the **Product Sales** group folder and select **Coffee Sales**.

4. Open **Report Assistant**.

   Report Assistant displays the Fields dialog box with the fields already selected for the report.

5. Select the **Report Options** tab. The Report Options window opens.

6. Check the **On-demand Paging** check box to enable On-demand Paging.

7. Click **Run** to run Coffee Sales immediately.

   DB2 Web Query displays the first page of Coffee Sales in the Viewer as shown in the following image.

```
PAGE 1


Product  Unit             Order  Order   Ordered
Code    Price Product   Number Date      Units

B141    58.00 Hazelnut       1 01/01/96     300
                             2 01/01/96     117
                            16 01/01/96     285
                            17 01/01/96     140
                            31 01/01/96     349
                            46 01/01/96     240
                            61 01/01/96     509
                            76 01/01/96     358
                            91 01/01/96     179
                           106 01/01/96     583
                           121 01/01/96      37
                           136 01/01/96     448
                           151 01/01/96     267
                           166 01/01/96     363

Page 1    of 87
```

8. Click **Close** on the DB2 Web Query Viewer.

   DB2 Web Query notifies you that the report has been deleted from the server.

Chapter 9. Understanding User Interface Basics

Introduces user interface design in DB2 Web Query and describes the components of a typical user interface.

A user interface for a Web application is a collection of HTML files that display pages in a browser.

You can design a user interface by using the HTML Layout Painter to create HTML forms and procedures in one integrated process. For details, see Designing a User Interface for a Web Application With the HTML Layout Painter.

Note: The HTML Layout Painter is accessible only through the DB2 Web Query Developer Workbench.

User Interface Basics

A user interface is the means by which you enable communication between a user and your application.

A DB2 Web Query user interface allows a user to supply information, choose options, and run reports. A simple one typically consists of:

- **A launch page,** which enables a user to run one or more reports.
- **An HTML display page,** on which a report appears.

User interface design is one of the most creative phases of application development. Developer Workbench provides many tools that support it.

About a Launch Page

Suppose that managers on their company intranet periodically need a sales report for one of four regions. You:

- Create the procedure, including a variable for the region so that the report can run with different values.
- Create the launch page, from which a manager runs the report. The page prompts for the region of interest.

The following image shows a sample launch page.

If a manager selects **Midwest** and clicks **Run**, the report appears.

At minimum, a launch page is a simple form that contains a Run and Clear button, allowing the user to run a report. More often, it is a form, like the one shown, containing controls that prompt for user input.

Controls include text boxes, check boxes, radio buttons, drop-down menus, push buttons, and hyperlinks. A launch page usually displays default values or valid values to help the user provide input. The Reporting Server uses the input to process the procedure and return the desired output.

When a launch page is complete, deploy it to the Web server using the Deploy Wizard. Supporting files such as procedures are deployed to the Reporting Server. Once the files are stored on the appropriate servers, users can access the launch page by typing the URL in the browser.

Adding a Control to a Form

A control prompts a user for a value required by a procedure. You can add a single control, or a combination of controls, to a form on a launch page.

You must add a Submit button. Submitting a form calls DB2 Web Query and passes the supplied values to the procedure.

DB2 Web Query Controls

The following table describes types of controls.

Control	Enables a user to...
One-Line Text Box	Enter a single value for a variable, such as user name or password on a custom logon page.
Radio Button	Choose one value from a group.
Check Box	Choose multiple values.
Drop-Down List	Choose a value from a drop-down list. You can add text to describe the values.
Multi-Select Drop-Down List	Choose multiple values from a drop-down list. Allows a user to report on several field values at one time.
Dynamic Multi-Select Drop-Down List	Choose multiple values from a drop-down list populated by field values retrieved live from a data source.
Text Area	Enter an ad hoc report request.
Submit Button	Run a report. You must include a Submit button on a form. You may optionally include a button that clears the form of current values and restores the defaults.
Push Button	Trigger an action.
Hyperlink	Run a procedure using fixed values.

Types of Launch Pages

A launch page can be a single page or a frameset. A single page is a one-page display that is replaced by report output when a user submits a request. A frameset is a multiple-page display, and any page (frame) can be replaced by report output.

Ways to Create a Launch Page

A launch page calls the DB2 Web Query Client to pass the name of a report to run, with any required values.

You can create a launch page using the HTML Layout Painter. The HTML Layout Painter allows you to create a launch and display page in an integrated process within Developer Workbench. See Designing a User Interface for a Web Application With the HTML Layout Painter.

About an HTML Display Page

Report output from a Reporting Server appears on an HTML page in a browser. You have many design options for report display. For example, you can display a report on a page by itself or in a frame on a page, or you can design a custom page with multiple reports.

Your application will probably include different types of reports, which may influence the display pages you design. Some types of reports include:

- **Dynamic.** A report created and formatted at the time a user requests it. This type of report displays the most current information from live data retrieval.
- **Drill-Down.** A dynamic, multilevel report consisting of a parent (summary) component and a child (detailed) component.
- **Static.** HTML file created and formatted before a user requests it. Ready for access without live data retrieval. Called by HTML code (A HREF).

You can create a report using the Report Assistant or Power Painter.

Chapter 10. Creating a Reporting Procedure With SQL Report Wizard

Describes how to use the SQL Report Wizard.

The SQL Report Wizard assists you with SQL passthru, which allows you to execute SQL code that retrieves data from an RDBMS. You can use the resulting extract file in the Report Assistant or the Graph Assistant.

Note: The SQL Report Wizard is accessible only through the DB2 Web Query Developer Workbench.

Using the SQL Report Wizard

The SQL Report Wizard supports DB2 cli engines.

Include SQL Commands From an External .sql File

1. Access the SQL Report Wizard by doing one of the following:

   In the Explorer, right-click a group folder under the Reports folder and select **New**, **Procedure**. In the New Report dialog box, enter a file name and then select **SQL Report Wizard** from the Create with drop-down list. Click **Create**.

   The SQL Report Wizard - Welcome window opens.

2. Click the option button next to **Included from an external '.sql' file**. This enables you to browse and select external procedures that exist in the DB2 Web Query repository. This enables sites to leverage pre-existing SQL procedures.

3. Required: Click **Next** to see the SQL Report Wizard - Data access information window.

4. In the Select the SQL database engine area, select a database engine from the drop-down list. The list consists of available engines in the edasprof.prf file.

5. In the Select the connection area, choose a connection from the drop-down list generated from the engine that you selected. You can choose the default value, which is the first connection in the edasprof.prf file for the selected engine, or choose another connection defined in edasprof.prf.

6. Click **Next** to see the SQL Report Wizard - Include external SQL file window.

7. Enter the external SQL file name in the field, or click **Browse** to select it.

8. Optionally, you can run with limited records by clicking **Run SQL**. By default, the **Run with limited records** check box is selected so you can test your procedure with a readlimit if the engine supports it. There is a field box next to the check box in which you can enter the number of records to be read. 100 is the default limit.

9. Click **Next** to see the SQL Report Wizard - Summary of SQL options window.

   Do one of the following:

   • To create a report, select the **Create Report** option button. This option is selected by default.

   • To create a graph, select the **Create Graph** option button.

10. Click **Finish** to run the SQL procedure. The Report Assistant or Graph Assistant opens. When you have completed the procedure, you can run it from the group folder in the Explorer view.

Pass SQL Commands to the RDBMS Using SQL Passthru

1. Required: Access the SQL Report Wizard by doing one of the following:

   In the Explorer, right-click a group folder under the Reports folder and select **New**, **Procedure**. In the New Report dialog box, enter a file name and then select **SQL Report Wizard** from the Create with drop-down list. Click **Create**.

   The SQL Report Wizard - Welcome window opens.

2. Click the option button next to **Type SQL statements in the report request**. This enables you to enter SQL commands that will be passed on to the RDBMS with the SQL Passthru feature.

3. Click **Next** to see the SQL Report Wizard - Data access information window.

4. In the Select the SQL database engine area, select a database engine from the drop-down list. The list consists of available engines in the edasprof.prf file.

5. In the Select the connection area, choose a connection from the drop-down list generated from the engine that you selected. You can choose the default value, which is the first connection in the edasprof.prf file for the selected engine, or choose another connection defined in edasprof.prf.

6. Click **Next** to see the SQL Report Wizard - Enter SQL statements window.

7. In the field box, type the SQL statements you want to pass to the RDBMS.

8. Optionally, you can run with limited records by clicking **Run SQL**. By default, the **Run with limited records** check box is selected so you can test your procedure with a read limit if the engine supports it. There is a field box next to the check box in which you can enter the number of records to be read. 100 is the default limit.

9. Click **Run SQL** to run your report.

10. Click **Next** to see the SQL Report Wizard - Summary of SQL options window.

   Do one of the following:
   - To create a report, select the **Create Report** option button. This option is selected by default.
   - To create a graph, select the **Create Graph** option button.

11. Click **Finish** to run the SQL procedure.The Report Assistant or Graph Assistant opens. When you have completed the procedure, you can run it from the group folder in the Explorer view.

Import SQL Commands From an Existing .sql File

1. Access the SQL Report Wizard by doing one of the following:

   In the Explorer, right-click a group folder under the Reports folder and select **New**, **Procedure**. In the New Report dialog box enter a file name and then select **SQL Report Wizard** from the Create with drop-down list. Click **Open**.

   The SQL Report Wizard - Welcome window opens.

2. Click the option button next to **Import from an existing .sql file**. This enables you to modify SQL code after importing it from an external file to the procedure being built. It enables you to modify the request using bits of code.

3. Click **Next** to see the SQL Report Wizard - Data access information window.

4. In the Select the SQL database engine area, select a database engine from the drop-down list. The list consists of available engines in the edasprof.prf file.

5. In the Select the connection area, choose a connection from the drop-down list generated from the engine that you selected. You can choose the default value, which is the first connection in the edasprof.prf file for the selected engine, or choose other connections defined in edasprof.prf.

6. Click **Next** to see the SQL Report Wizard - Import external SQL file window.

7. Type the SQL file name that you want to import or click **Browse** to select it.

8. Optionally, you can run with limited records by clicking **Run SQL**. By default, the **Run with limited records** check box is selected so you can test your procedure with a readlimit if the engine supports it. There is a field box next to the check box in which you can enter the number of records to be read. 100 is the default limit.

9. Click **Run SQL** to run your report.

10. Click **Next** to see the SQL Report Wizard - Enter SQL statements window. You can edit the imported SQL code if necessary.
11. Click **Run SQL** to run your report.
12. Click **Next** to see the SQL Report Wizard - Summary of SQL options window.

    Do one of the following:
    - To create a report, select the **Create Report** option button. This option is selected by default.
    - To create a graph, select the **Create Graph** option button.
13. Click **Finish** to run the SQL procedure. The Report Assistant or Graph Assistant opens. When you have completed the procedure, you can run it from the group folder in the Explorer view.

Chapter 11. Designing a User Interface for a Web Application With the HTML Layout Painter

Describes how to create a user interface in the local development environment using the HTML Layout Painter.

The HTML Layout Painter allows you to graphically create an HTML page that incorporates forms, reports, graphs, and Web objects. You can also directly edit HTML code in the HTML Editor or a third party editor. The HTML Layout Painter is fully integrated with JavaScript and Cascading Style Sheets (CSS).

Note:
- The HTML Layout Painter does not support OLAP-enabled reports.
- The HTML Layout Painter is accessible only through the DB2 Web Query Developer Workbench.

Uses for the HTML Layout Painter

You can do the following when creating an HTML layout:
- Build an HTML launch page. The HTML Layout Painter allows you to add push buttons, hyperlinks, and other objects that launch other DB2 Web Query reports in your application.
- Create a launch page for one or more reports that contain parameters.
- Create a complete report by adding multiple reports and graphs into a single HTML formatted report.
- Create an advanced report layout by including images, frames, and other Web elements. You can change the location, size, and properties of all objects in your layout.
- Directly edit an HTML page in the HTML Editor or in a third party editor.
- Set background, font, and other properties in the Style Composer tool.

Getting Started With the HTML Layout Painter

Note: The HTML Layout Painter does not support OLAP-enabled reports. If you execute a report from the HTML Layout Painter with this option, the output window will not display the OLAP controls and you will receive a scripting error. In order to execute this type of report, you must use a frame. For more information, see Adding a Frame to the Layout.

Access the HTML Layout Painter

1. Required: Create a new HTML file by completing one of these actions:
   - With the HTML folder highlighted, select **New** from the File menu, then select **HTML file**.

   or

   - Click **Layout Reports and Graphs** in the QuickLinks pane.

   The Add HTML File dialog box opens.

2. Enter a name for the new procedure in the File name field.
3. Select **HTML Layout Painter** from the Create with drop-down list.
4. Click **Open**.

The HTML Layout Painter opens.

HTML Layout Painter Windows and Toolbars

When you open the HTML Layout Painter, it appears as shown in the following image.

The main elements of the HTML Layout Painter are:

Menu Bar

Displays pull-down menus for the HTML Layout Painter.

Developer Workbench

Displays tool buttons such as Open and Run.

Standard Toolbar

Displays buttons such as Cut and Paste that allow you edit the layout.

Components Toolbar

Contains buttons that add objects and form controls to the layout.

Positioning Toolbar

Contains buttons that control the appearance of the layout. For details, see Positioning Toolbar.

Properties Window

Displays the properties and events of objects in the layout. For details, see Working With the Properties Window.

Events Tab

Displays the events associated with objects in the layout. For details, see Working With the Properties Window.

QuickLinks Window

> Displays links to information on Help, configuration options, metadata creation, and reports and procedures.

Parameters Tab

> Displays information about the parameters in your report or graph. For details, see Working With the Parameters Tab in the Properties Window.

Thumbnails Tab

> Select an image from the Thumbnails tab to jump to the selected object in the HTML layout.

Standard Toolbar

The Standard toolbar contains the following buttons:

Button	Description
	Saves the existing procedure (.fex) and HTML files to the current project. This button is grayed out once the layout is saved and no new changes have been made. When a change has been made to the layout, the Save button is active until the report is saved again.
	Removes the highlighted object(s) and saves it to the clipboard.
	Copies the highlighted object(s) to the clipboard.
	Pastes the object(s) to the specified location.
	Deletes the highlighted object(s).
	Resets the layout by reversing the last action performed.
	Repeats the last action performed.

Components Toolbar

The Components toolbar contains the following buttons:

Button	Description
	Inserts a report object to the layout.
	Inserts a graph object to the layout. **Tip:** You may right-click a graph object to open the Advanced Graph Assistant.
	Inserts a placeholder for a form control.

Button	Description
	Inserts a placeholder for an IFRAME. An IFRAME can have its own URL and contain HTML content, and it can be a placeholder for a drill-down report.
	Inserts a placeholder for an image.
	Inserts text.
	Inserts a line.
	Adds a group box.
	Adds a text box.
	Adds a hidden text box.
	Adds a drop-down list.
	Adds a list box (a drop-down list that allows multiple selections).
	Inserts a placeholder for a double list parameter control.
	Adds a push button.
	Adds a reset button.
	Adds a radio button.
	Adds a check box list.
	Inserts a text area.
	Inserts a tree control.
	Inserts a hyperlink.
	Adds a calendar.
	Adds an ActiveX control.
	Saves a selection.

Button	Description
	Inserts a panel to group objects together. The panel is invisible at runtime.
	Inserts a slider parameter control bar.

Creating a Report Page Layout

You can use the HTML Layout Painter to create an HTML page that launches and displays your report or graph. You can add elements to the HTML page including a report or graph, text, form controls, and so on.

You can also set properties for the HTML page in the HTML Layout Painter. For details, see Setting HTML Page Properties.

Adding a Report or Graph to the HTML Layout

You can add a report or graph to the HTML Layout that will display when you run the procedure. You can add an existing report or graph that resides on an available server.

You can also include parameters in a report whose values can be assigned with forms that are added with the HTML Layout Painter. For information, see Using Form Controls to Supply Parameter Values.

You can set the graphic used as a placeholder for a report or graph in the layout using the Settings dialog box. For details, see Set Page Properties.

Add an Existing Report or Graph to a Layout

1. Insert a report or graph object by doing one of the following:
   - Click the **Report** or **Graph** button from the Components toolbar.

     The cursor changes into a crosshair. Click and drag the crosshair to create a report or graph object and adjust it to the size you want.

     A report or graph object is created in the layout and assigned the name reportn or graphn where n is a number. The object will appear in gray and white to indicate that the placeholder does not have a report or graph associated with it. Once a report or graph is associated with the object, the object displays the contents of the report or graph.
   - From the Insert menu, select **Import Existing Procedure**.

     Note: If you want to access the Manage Layout dialog box, choose this method.
   - Right-click in the layout and select **New Report** or **New Graph** from the pop-up menu.
2. Do one of the following:

   For a report:

   Right-click the report object and select **Import existing report**.

   For a graph:

   Right-click the graph object and select **Import existing graph**.

   The Get source file dialog box opens.

Enter the name of the procedure you want to add to the layout.

3. Click **Open**.

   The report or graph object appears in the Design View of the HTML Layout Painter.

4. Optionally, change the properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Report Properties in the Properties Window.

Report Properties in the Properties Window

When a report is selected, the Properties tab in the Properties window contains options that control the properties of your report.

Click a property to display a description of the selected property at the bottom of the Properties window.

Graph Properties in the Properties Window

When a graph is selected, the Properties tab in the Properties window contains options that control the properties of your graph.

Properties

graph1 <IFRAME>	
Access key	
Alignment	
Auto Execute	False
Class identifier (CSS)	
Frame border	
Long description	
Margin height	
Margin width	
Name	graph1
Position: Left	40px
Position: Top	380px
Size: Height	90px
Size: Width	90px
Sizing and Scrolling	no
Styling: Advanced (CSS)	Z-INDEX: 11; LEFT: 40px
Styling: Font	
Tab index	11
Title	
Unique Identifier	graph1

◄ ► \ Properties /Events /   ◄   ►

☐ **Properties** | ☐ Parameters | ☐ Thumbnails

Click a property to display a description of the selected property at the bottom of the Properties window.

Selecting Components to Import Into a Procedure

You can select to include or exclude components to be imported into your procedure with the Manage Layout dialog box. The Manage Layout dialog box allows you to select from components of your request such as TABLE, SET, and GRAPH.

If you have several requests in one procedure, you can use the Manage Layout dialog box to suppress the display of individual TABLE, SET, and GRAPH components (for example, temporary HOLD files). By default, the last TABLE is set to display.

Select Components to Import Into a Procedure

1. Select **Import Existing Procedure** from the Insert menu.

   The Get source file dialog box opens.

2. Select a File name and click **Open**.

   The Manage Layout dialog box opens. For details, see Manage Layout Dialog Box.

Manage Layout Dialog Box

The following image is the Manage Layout dialog box.

The Manage Layout dialog box contains the following fields/options:

Components

> Displays all the components (SET, DEFINE, etc.) in the request.

Data

> Displays the contents of the selected component.

Component Legend

> Determines whether the request is included in the procedure, outside of the procedure, or in the procedure and layout.

> **In focexec and layout**

>> Activates the component and displays the component in the layout.

> **In focexec only**

>> Deactivates the component and does not display the component in the layout. This is a good method for hiding report requests that produce temporary files.

> **Not in focexec**

>> Removes the component from the procedure.

Show layout items only (reports and graphs)

> Displays the layout's reports and graphs in the Data field.

> This check box only displays when you access the Manage Layout dialog box from the Insert menu. When accessing it from the pop-up menu, only the report or graph component displays, and the check box does not apply.

Adding a Frame to the Layout

You can use a frame to embed additional Web sources or run reports. You can also use a frame as the output location or target for a drill-down report. You can also use a frame to run a table of contents report, an OLAP report, a PDF report, or an Excel report.

Add a Frame to the Layout

1. Required: Insert a frame by doing one of the following:
   - Click the **Frame** button.
   - From the Insert menu, select **Frame**.

   The cursor changes into a crosshair.
2. Click and drag the crosshair to create a frame and adjust it to the size you want.

   A frame is created in the layout and assigned the name iframe*n*, where *n* is a number.
3. Optionally, change the frame's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Frame Properties in the Properties Window.

Assign a URL, HTML Form, or Report to a Frame

1. Insert a frame by doing one of the following:
   - Click the **Frame** button.
   - From the Insert menu, select **Frame**.

   The cursor changes into a crosshair.

2. Click and drag the crosshair to create a frame and adjust it to the size you want.

   A frame is created in the layout and assigned the name iframen, where n is a number.
3. Right-click the frame, and select **Frame Properties** from the pop-up menu.

   The Hyperlink Properties dialog box opens.

4. Click the **New** icon to create a new action. From the drop down list in the Action field you can select:
   - **URL:** To assign a URL address to the frame, select **URL** and enter the fully qualified URL in the Source field.
   - **HTML File:** To assign an HTML file to the frame, click select **HTML File** and enter the file's location in the Source field, or click the **browse** (...) button to browse to the location. An HTML file refers to the HTML files in your application.
   - **Embedded Procedure:** To assign an embedded procedure to the frame, select **Embedded Procedure** and enter the procedure's location in the Source field, or click the **browse** (...) button to browse to the location.
   - **External Procedure:** To assign an external procedure to the frame, select **External Procedure** and enter the procedure's location in the Source field, or click the **browse** (...) button to browse to the location.
5. Click **OK**.
6. Optionally, change the frame's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Frame Properties in the Properties Window.

Show/Hide a Frame in the Layout

1. From the HTML Layout Painter, use form controls to supply parameter values for a report.

   Note: A report with parameters requires that you to select values (at run time) in order to generate the output.

2. Click the frame (report object) and select **False** from the Auto Execute drop-down list in the Properties tab of the Properties window.

   Note: False is the default Auto Execute option for reports with parameters.

3. Right-click the frame (report object) in the Design View and select **Style** from the context menu.

The Style Composer opens.

4. Select **Layout** from the left-side of the Style Composer to view the layout options for the selected frame.

5. From the Flow control area, select **Do not display** from the Display drop-down list.

This option hides the frame at run time until the values are selected.

6. Click **OK** to close the Style Composer.
7. Run the HTML page. In the example below, the frame is not shown before the values are selected.

In the same example below, parameter values have been selected and the frame
appears showing the output results.

Frame Properties in the Properties Window

When a frame is selected, the Properties tab in the Properties window contains options that control the properties of your frame.

Properties	
iframe1 <IFRAME>	▼

Access key	
Alignment	
Auto Execute	False
Class identifier (CSS	
Frame border	
Margin height	
Margin width	
Name	iframe1
Position: Left	110px
Position: Top	80px
Size: Height	250px
Size: Width	280px
Sizing and Scrolling	
Styling: Advanced ((	Z-INDEX: 1; LEFT: 110px; WIDTH: 28
Styling: Font	
Tab index	1
Title	
Unique Identifier	iframe1

◄ ► Properties / Events / ◄

Properties | Parameters | Thumbnails

Click a property to display a description of the selected property at the bottom of the Properties window.

Adding a Line to the Layout

You can add a horizontal or vertical line to the layout. This is useful for distinguishing between sections of your launch or display page.

Add a Line to the Layout

1. Do one of the following:
   - Click the **Line** button.
   - From the Insert menu, select **Line**.

   The cursor changes into a crosshair.

2. Click and drag the crosshair to create a horizontal or vertical line.

   A line is created in the layout.

3. Optionally, change the line's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Line Properties in the Properties Window.

Line Properties in the Properties Window

When a line is selected, the Properties tab in the Properties window contains options that control the properties of lines.

Properties	
line1 <SPAN>	
Access key	
Class identifier (CSS)	
Direction of text	
Language information	
Position: Left	20px
Position: Top	250px
Size: Height	8px
Size: Width	65px
Styling: Advanced (CSS)	FONT-SIZE: 1pt; Z-INDEX
Tab index	13
Title	
Unique Identifier	line1

Properties / Events /

Properties   Parameters   Thumbnails

To view a description of a property at the bottom of the Properties window, click the desired property.

Adding an Image to the Layout

You can add an image to the layout. This is useful for including graphics such as a company logo.

You can insert an image into your report layout and add a hyperlink to it. After you run your report and click the image you can launch a URL or run a report the same way you can by clicking a hyperlink or push button. For more information, see Add a Hyperlink to a Push Button or an Image.

Note: When inserting images, images must be referenced from a specific directory location. Links to images are not supported.

Add an Image to a Layout

1. Do one of the following:
   - Click the **Image** button.
   - From the Insert menu, select **Image**.

   The Get source file dialog box opens.
2. Navigate to the directory where the image is located using the Look in menu, then select the image you want to add to the layout.
3. Click **Open**.
4. Optionally, change the image's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Image Properties in the Properties Window.

   Note: You can always return an image to its original size by right-clicking the image and selecting **Image properties** from the pop-up menu, then selecting **Restore size**.

Image Properties in the Properties Window

When an image is selected, the Properties tab in the Properties contains options that control the properties of images.

Properties	
image1 <IMG>	
Access key	
Alignment	
Alternate text	
Border	0
Class identifier (CSS)	
Client side map name	
Direction of text	
Horizontal space	-1
Language information	
Long description	
Name	image1
Position: Left	30px
Position: Top	160px
Server side image map	
Size: Height	
Size: Width	
Src	powered.gif
Styling: Advanced (CSS)	Z-INDEX: 14; LEFT: 30px;
Styling: Font	
Tab index	14
Title	
Unique Identifier	image1

Properties / Events /

Properties   Parameters   Thumbnails

Click a property to display a description of the selected property at the bottom of the Properties window.

Adding Text to the Layout

You can add text to the layout. This is useful for including headings for your Web page, or adding directions or explanation for your report or graph.

Add Text to a Layout

1. Insert text to the layout by doing one of the following:
   - Click the **Text** button.
   - From the Insert menu, select **Text**.

   A text object appears.
2. Replace the text with the text you want to appear in the layout.
3. Optionally, change the text's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Text Properties in the Properties Window.

Text Properties in the Properties Window

When text is selected, the Properties tab in the Properties window contains options that control the properties of text in your report.

Adding a Hyperlink to the Layout

You can create a hyperlink for your HTML page. A hyperlink can execute a report, link to a URL, or open an HTML page. You can create a hyperlink in two ways:

- Insert a hyperlink. For details, see Create a Hyperlink.
- Add a hyperlink to a push button or image. For details, see Add a Hyperlink to a Push Button or an Image.

Create a Hyperlink

1. Do one of the following:
    - Click the **Hyperlink** button.
    - Select **Hyperlink** from the Insert menu.

    The Hyperlink Properties dialog box opens.

2. Enter the text you want to display as the hyperlink in the Display Text field.
3. Required: Set the action of the hyperlink:
   - To link to a URL, select **URL** in the Action section, and enter the URL in the Source field.
   - To open an HTML page, click select **HTML** in the Action section, and enter the HTML page in the Source field.
   - To execute an embedded procedure, select **Embedded procedure** and enter the procedure name in the Source field, or click the **browse** (...) button to browse to the procedure.
   - To execute an external procedure, select **External procedure** and enter the procedure name in the Source field, or click the **browse** (...) button to browse to the procedure.
4. Optionally, direct the output to a specific location by selecting **Window** or **Frame** in the Target Type field.
5. Specify a name for the target window or frame by selecting one of the default values from the Target Name drop-down list or by typing the name of a new or existing window or frame in the Target Name field. If you enter the name of a new frame, a frame object will be added to the layout.
6. Click **OK**.
7. Execute the request and click the image to launch the web page of the URL Address you typed in the Source field.

Add a Hyperlink to a Push Button or an Image

To add a hyperlink to a push button or image, complete the following steps.

1. Right-click the push button or image, and select **Create hyperlink**. The Hyperlink Properties dialog box opens.

2. Click the **New** icon to generate a new request and select **URL** from the Action drop-down list.
3. Type a URL in the Source field.
4. Optionally, in the Target Type field, direct the output to a specific location by selecting **Window** or **Frame** from the drop-down list.
5. In the Target Name field, specify a target window or frame by selecting one of the default values from the drop-down list or by typing the name of a new or existing window or frame. If you enter the name of a new frame, a frame object will be added to the layout.
6. Click **OK**.
7. Execute the request and click the image to launch the web page of the URL Address you typed in the Source field.

Adding a Group Box to the Layout

A group box can be used to create a border around a group of objects, for example, forms or reports and graphs.

Add a Group Box

1. Insert a group box by doing one of the following:
   - Click the **Group box** button.
   - From the Insert menu, select **Group box**.

   The cursor changes into a crosshair.
2. Click and drag the crosshair to create a group box and adjust it to the size you want.

   A group box is created in the layout and assigned the name groupboxn, where n is a number.
3. Optionally, change the group box's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Group Box Properties in the Properties Window.

Group Box Properties in the Properties Window

When a group box is selected, the Properties tab in the Properties window contains options that control the properties of a group box.

Click a property to display a description of the selected property at the bottom of the Properties window.

Adding a Push Button to the Layout

You can add a push button to the layout. A push button enables you to execute a report, or link to a URL or HTML form. This behavior is similar to a hyperlink.

For information on adding a hyperlink to a push button, see Add a Hyperlink to a Push Button or an Image.

Create a Submit Button

1. If the submit button is deleted from the layout, a push button can be used to replace the button. Insert a push button by doing one of the following:
   - Click the **Push** button from the Components toolbar.
   - From the Insert menu, select **Push Button**.

The cursor changes into a crosshair.

2. Click and drag the crosshair to create a push button and adjust it to the size you want.

   A push button is created in the layout and assigned the name button where n is a number.

3. Assign an action to the push button by using the Hyperlink Properties dialog box. Right click on the push button and select **Hyperlink properties** from the context menu.

   The Hyperlink Properties dialog box opens. Use the Hyperlink Properties dialog box to assign a target and action to the push button.

4. Click **OK** to close the Hyperlink Properties dialog box.

5. Run the HTML page.

6. Click the push button to submit your request.

Run Multiple Reports with One Submit Button

1. Right click on the submit button, or the frame for the whole control, and select **Hyperlink properties** from the context menu.

   The following image is an example of the submit button selected.

The following image is an example of the whole control selected.

The Hyperlink Properties dialog box opens.

2. Required: Click the New icon and use the drop-down lists to add the second report request to be executed with the submit button.

Repeat these steps for multiple procedures.

Push Button Properties in the Properties Window

When a push button is selected, the Properties tab in the Properties window contains options that control the properties of your buttons.

Properties	button1 <INPUT> ▼
Access key	
Class identifier (CSS)	
Direction of text	
Disabled	
Language information	
Name	button1
Position: Left	190px
Position: Top	390px
Size	20
Size: Height	30px
Size: Width	70px
Styling: Advanced (CSS)	Z-INDEX: 14; LEFT: 190px.
Styling: Font	
Tab index	15
Title	
Type	Button
Unique Identifier	button1
Value	Button

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Properties   Parameters   Thumbnails

Click a property to display a description of the selected property at the bottom of the Properties window.

Adding a Reset Button to the Layout

You can add a reset button to the layout. A reset button enables you to reset the form back to its initial settings.

Create a Reset Button

1. If the reset button is deleted from the layout, you may create a new reset button. Insert a reset button by doing one of the following:

   - Click the **Reset** button from the Components toolbar.
   - From the Insert menu, select **Reset Button**.

   The cursor changes into a crosshair.

2. Click and drag the crosshair to create a reset button and adjust it to the size you want.

   A reset button is created in the layout and assigned the name button where n is a number.

3. Run the HTML page.

4. When selecting criteria to submit a report, click the reset button to reset the form back to its initial settings.

Reset Button Properties in the Properties Window

When a Reset button is selected, the Properties tab in the Properties window contains options that control the properties of your buttons.

Properties	
🔲 button1 <INPUT>	▾
Access key	
Class identifier (CSS)	
Direction of text	
Disabled	
Language information	
Name	button1
Position: Left	190px
Position: Top	390px
Size	20
Size: Height	30px
Size: Width	70px
Styling: Advanced (CSS)	Z-INDEX: 14; LEFT: 190px,
Styling: Font	
Tab index	15
Title	
Type	Button
Unique Identifier	button1
Value	Button

◄ ► \ Properties ∕ Events ∕ ◄

📝 **Properties**   🐞 Parameters   ▦ Thumbnails

Click a property to display a description of the selected property at the bottom of the Properties window.

Using Form Controls to Supply Parameter Values

Form controls allow you to prompt users for a parameter value. When you create a parameter as part of a report or graph, the HTML Layout Painter automatically adds a form control, Submit button, and Reset button for the parameter to your layout, and the parameter appears in the parameters box. You can also add a form control and then associate it with a parameter.

When you delete a parameter in the Report that was assigned a form control in the HTML Layout Painter, you must delete the associated controls individually.

Form controls, with the exception of a text box which does not supply a list of possible values, can supply values to the user with a dynamic or static list of values:

- A dynamic list retrieves values from a specified data source when the request is run.
- A static list consists of a list of values you supply. These values do not change unless you change them.

The properties of a form control, as well as the parameters associated with each form control, can be controlled with the Properties tab and Parameters tab of the Properties window. For details, see Working With the Properties Window and Working With the Parameters Tab in the Properties Window, respectively.

Types of Form Controls

Form controls can be single or multi-select.

Examples of single-select form controls are:

- **A text box.** For details, see Using a Text Box.
- **A drop-down list.** For details, see Using a Drop-Down List.
- **Radio buttons.** For details, see Using Radio Buttons.
- **A text area.** For details, see Using a Text Area.

Examples of multi-select form controls are:

- **A list box.** For details, see Using a List Box.
- **Check boxes.** For details, see Add a List Box.
- **A tree control.** For details, see Using Tree Controls.

The default control type for all single select parameters is a drop down list. The default control type for all multi-select parameters is a list box.

You can change the type of form control using the Parameters tab. For details, see Change the Type of Form Control Associated With a Parameter.

Note: Individual multi-select parameters must be designated as multi-select in the Report Assistant in order to process multiple values.

Using a Text Box

A text box enables the user to enter a parameter's value in a text entry field.

Create a Text Box

1. Add a text box by doing one of the following:
   - Click the **Text Box** button.
   - From the Insert menu, select **Text box**.

   The cursor changes to a crosshair.

2. Click and drag the crosshair to create a text box and adjust it to the size you want.

   A text box is created in the layout and assigned the name editn, where n is a number.

3. To associate an existing parameter with the text box, click the **Parameters** tab of the Properties window, find the row with the name of the text box (edit*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the text box.

4. Optionally, enter a value for the text box.

5. Optionally, change the text box's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Text Box Properties in the Properties Window.

Text Box Properties in the Properties Window

When a text box is selected, the Properties tab in the Properties window contains options that control the properties of your text box.

Properties — edit1 <INPUT>

Property	Value
Access key	
Class identifier (CSS)	
Direction of text	
Disabled	
Language information	
Maximum length	2147483647
Name	edit1
Position: Left	170px
Position: Top	460px
Read only	
Size	20
Size: Height	
Size: Width	85px
Styling: Advanced (CSS)	Z-INDEX: 15; LEFT: 170px.
Styling: Font	
Tab index	16
Title	
Type	Text
Unique Identifier	edit1
Value	

Properties / Events

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Click a property to display a description of the selected property at the bottom of the Properties window.

Using a Text Area

A text area is a single-select form control that enables you to enter multiple lines of text that can be assigned to a single variable. The behavior is similar to a text box, but a user is not restricted to entering just one line of text. For example, if you want to assign a paragraph (multiple lines of text) to a variable that can be referenced by a procedure, you can add the paragraph to a text area from the Parameters tab of the Properties window.

The following image shows the HTML Layout Painter, where you can access the text area option in the Components toolbar.

Create a Text Area

1. Click the **Text Area** button.

   or

   From the Insert menu, select **Text Area**.

   The cursor changes to a crosshair.

2. Click a location on the layout page, drag the crosshair to create a rectangular text area, release the left mouse button, and adjust the text area to the desired size.

   A text area is created in the layout and assigned the name textarea*n*, where *n* is a number.

3. To associate values from an existing parameter with the text area, click the **Parameters** tab in the Properties window, find the row with the name of the text area (textarea*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the text area.

4. To associate static text values or dynamically retrieved data source values, select the **Static** or **Dynamic** option in the Control Values section of the Parameters tab.

   - **Static** - To add one or more lines of text as static values, type or paste text in the area below the Static values label in the Parameters tab.
   - **Dynamic** - To add dynamic values, select the **Data source** option to retrieve values from a data source, or select the **Procedure** option to retrieve values from a procedure. Click the **browse** (...) button, select a source file from the Get source file dialog box, and click **Open**. For the Data source option only, select a data field from the tree structure displayed at the bottom of the Parameters tab.

5. Optionally, you can change the text area's properties in the Properties tab of the Properties window.

Text Area Properties and Events in the Properties Window

When a text area is selected on the layout page and the Properties tab is selected in the Properties window, properties are listed in the left column that can be controlled from the right column. Selecting an option in the left column displays a description at the bottom of the Properties window.

A text area is associated with the following properties:
- Access key
- Class identifier
- Columns
- Direction of text
- Disabled
- break style
- Language information
- Name
- Read only
- Rows
- Tab index
- Title
- Unique identifier

When a text area is selected on the layout page and the Events tab is selected within the Properties tab in the Properties window, events are listed in the left column that can be assigned an action from the right column.

A text area is associated with the following events:

- onblur
- onchange
- onclick
- ondblclick
- onfocus
- onkeydown
- onkeypress
- onkeyup
- onmousedown
- onmousemove
- onmouseout
- onmouseover
- onmouseup
- onselect

Optionally, you can change the text area's properties and parameters. For details, see Working With the Properties Window and Working With the Parameters Tab in the Properties Window.

Using a Drop-Down List

A drop-down list allows a user to select a single value from a list of supplied values. You can use either a dynamic drop-down list, or a static drop-down list.

Add a Drop-Down List

1. Add a drop-down list by doing one of the following:
   - Click the **drop-down list** button.
   - From the Insert menu, select **drop-down list**.

   The cursor changes to a crosshair.
2. Click and drag the crosshair to create a drop-down list, and adjust it to the size you want.

   A drop-down is created in the layout and assigned the name combobox*n*, where *n* is a number.
3. To associate an existing parameter with the drop-down list, click the **Parameters** tab of the Properties window, find the row with the name of the drop-down list (combobox*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the drop-down list.
4. In the Control Values section of the Parameters tab, select static or dynamic values for the drop-down list. For details, see Associating Form Controls With Parameters.
5. Optionally, change the drop-down list's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Drop-Down List Properties in the Properties Window.

Drop-Down List Properties in the Properties Window

When a drop-down List is selected, the Properties tab in the Properties window contains options that control the properties of your drop-down list.

Click a property to display a description of the selected property at the bottom of the Properties window.

Using a List Box

A list box allows a user to select single or multiple values at one time:

- A single select list allows the user to select only one value for each time a request is run.
- A multi-select list allows the user to select multiple values by using the Ctrl key while selecting values. In order to provide multiple values, the procedure must be set up to accept multiple values.

List box values can be dynamic or static.

Add a List Box

1. Add a list box by doing one of the following:
   - Click the **list box** button.
   - From the Insert menu, select **List box**.

   The cursor changes to a crosshair.

2. Click and drag the crosshair to create a list box, and adjust it to the size you want.

   A list box is created in the layout and assigned the name listbox$n$, where n is a number.

3. To associate an existing parameter with the list box, click the **Parameters** tab of the Properties window, find the row with the name of the list box (listbox$n$), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the list box.

4. In the Control Values section of the Parameters tab, select static or dynamic values for the list box. For details, see Associating Form Controls With Parameters.

5. Optionally, change the list box's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see List Box Properties in the Properties Window.

List Box Properties in the Properties Window

When a list box is selected, the Properties tab in the Properties window contains properties of your list box.

Click a property to display a description of the selected property at the bottom of the Properties window.

Using a Double List Control

You may add a double list form control for displaying multi-select parameter values. This enables you to view a list of the available values and add or remove them from one list to another. At run time, a report is generated based on the values that are added.

Add a Double List Form Control

1. Add a double list control by doing one of the following.
   - Click the **Double List control** button from the Components toolbar.
   - From the Insert menu, select **Double List Control**.

   The cursor changes to a crosshair.
2. Click and drag the crosshair to create a double list control, and adjust it to the size you want.

   A double list control is created in the layout and assigned the name customselect*n*_selectfrom and customselect*n*_selectto, where *n* is a number.
3. To associate an existing parameter with the double list control, click the **Parameters** tab of the Properties window, find the row with the name of the double list control (listbox*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the double list control.

   Note: You may also add a double list control from the New Parameters dialog box that appears when creating a report with multi-select parameters. For more information about the New Parameters dialog box, see Setting Form Controls for New Parameters.
4. In the Control Values section of the Parameters tab, select **Static** or **Dynamic** values for the double list control. For details, see Associating Form Controls With Parameters.
5. Optionally, change the double list control's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Double List Box Properties in the Properties Window.
6. Run the HTML page and select values by using the arrows to add or remove values to the selected column.

   Note: The selected values appear in the second column. The output is generated based on the selected values in the second column. In the example below, Action and Classic are the selected values for the report.

Double List Box Properties in the Properties Window

When a double list box is selected, the Properties tab in the Properties window contains properties of your double list control.

Click a property to display a description of the selected property at the bottom of the Properties window.

Using Check Boxes

Check boxes allow a user to select values from a list of values. Check box lists can allow the user to select single or multiple values at one time:

- A **single select** list allows the user to select only one value each time a request is run.
- A **multi-select** list allows the user to select multiple values. In order to provide multiple values, the procedure must be set up to accept multiple values.

Check box list values can be dynamic or static.

Add Check Boxes

1. Add check boxes by doing one of the following:
   - Click the **Check box** button.
   - From the Insert menu, select **Check box**.

The cursor changes to a crosshair.

2. Click and drag the crosshair to create a check box list and adjust it to the size you want.

   A check box is created in the layout and assigned the name checkbox*n*, where *n* is a number.

3. To associate an existing parameter with the check box, click the **Parameters** tab of the Properties window, find the row with the name of the check box (checkbox*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the check box.

4. In the Control Values section of the Parameters tab, select static or dynamic values for the check boxes. For details, see Associating Form Controls With Parameters.

5. Optionally, check box list's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Check Box Properties in the Properties Window.

Check Box Properties in the Properties Window

When a check box is selected, the Properties tab in the Properties window contains properties of your check box.

Click a property to display a description of the selected property at the bottom of the Properties window.

Using Radio Buttons

Radio buttons allow a user to select a single value from a list of supplied values. Radio button values can be static or dynamic.

Add Radio Buttons

1. Add radio buttons by doing one of the following:
   - Click the **Radio** button.
   - From the Insert menu, select **Radio button**.

   The cursor changes to a crosshair.
2. Click and drag the crosshair to create a radio buttons list and adjust it to the size you want.

A radio button placeholder is created in the layout and assigned the name radio*n*, where *n* is a number.

3. To associate an existing parameter with the radio buttons, click the **Parameters** tab of the Properties window, find the row with the name of the radio buttons (radio*n*), click the Parameter field in that row, click the down arrow that appears to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the radio buttons.

4. In the Control Values section of the Parameters tab, select static or dynamic values for the radio buttons. For details, see Associating Form Controls With Parameters.

5. Optionally, change the radio buttons' properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Radio Buttons Properties in the Properties Window.

Radio Buttons Properties in the Properties Window

When a radio button is selected, the Properties tab in the Properties window contains options that control the properties of your radio buttons.

Properties

radio1 <SPAN>	▼

Access key	
Class identifier (CSS)	
columns	1
Direction of text	
Language information	
Position: Left	5px
Position: Top	26px
Size: Height	70px
Size: Width	100px
Styling: Advanced (CSS)	Z-INDEX: 8; LEFT: 5px;
Tab index	8
Title	
Unique Identifier	radio1

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Styling: Advanced (CSS)
STYLE: Inline Cascading Style Sheet syntax that
defines styling for the element.

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Click a property to display a description of the selected property at the bottom of
the Properties window.

Using Tree Controls

You can show hierarchical data from a multi-dimensional data source (for example,
SAP BW), by using a tree structure in an HTML report. This feature is only
available for hierarchies that use the parent/child model; level hierarchies are not
supported.

The behavior of the tree control is integrated with the parameter definition. If a
parameter is defined as a single value and that parameter is assigned to a tree
control, the control uses option buttons for each node in the hierarchy. If the
parameter is defined as MULTIPLE OR then the control uses check boxes for each
node in the hierarchy, enabling the user to select multiple nodes.

The following image shows the HTML Layout Painter, where you can access the Tree Control option in the toolbar. It also shows the properties for the tree control.

Add a Tree Control to an HTML Page Using a Data Source

1. In the HTML Layout Painter, click the **Tree Control** icon from the toolbar.
2. Click and drag your cursor over the canvas to select the area for the tree control.
3. Select the tree control and click the **Parameters** tab on the Properties window.
4. In the Control Values field, select **Dynamic**.
5. Select the **Data Source** option button and click the browse **(...)** button adjacent to the text box.
6. Select a multi-dimensional data source and click **OK**.
7. Expand the Dimensions folder, a Dimension, and the Hierarchies folder.
8. Select a field from the hierarchy and add it to the Value field text box and the Display field text box.

Add a Tree Control to an HTML Page Using an Existing Procedure

You can select an existing procedure to add to the tree control in an HTML report. When you select a procedure, it should use fields from the parent/child hierarchy and be set up as follows:

```
TABLE FILE file
SUM FST.dispfield
BY ParentUniqueField
```

```
BY UniqueField
BY datafield
ON TABLE PCHOLD FORMAT XML
END
```

where:

file

> Is the name of the data source.

dispfield

> Is the field whose values display in the tree control.

ParentUniqueField

> Is the field that represents the parent for the parent/child hierarchy (PROPERTY = PARENT_OF).

UniqueField

> Is the field that represents the unique IDs for the hierarchy members (PROPERTY=UID).

datafield

> Is the field whose values are passed as the parameter value.

After the procedure is set up, follow these steps:

1. In the HTML Layout Painter, click the **Tree Control** icon from the toolbar.
2. Click and drag your cursor over the canvas to select the area for the tree control.
3. Select the tree control and then click the **Parameters** tab on the Properties window.
4. In the Control Values field, select **Dynamic**.
5. Select the **Procedure** option button and click the browse **(...)** button adjacent to the text box.
6. Select a procedure and click **Open**.

Properties and Events for the Tree Control

The tree control has the following properties:
- Class identifier
- Direction of text
- break style
- Language information
- Title
- Unique Identifier

The tree control is associated with the following events:
- onclick
- ondblclick
- onkeydown
- onkeypress
- onkeyup

- onmousedown
- onmousemove
- onmouseout
- onmouseover
- onmouseup

Using a Slider Control

You may add a slider control for numeric range values in a report or graph. This enables you to use a slider bar to select from a range of values.

Add a Slider Control

1. Add a slider control by doing one of the following.
   - Click the **Slider** button from the Components toolbar.
   - From the Insert menu, select **Slider**.

   The cursor changes to a crosshair.

2. Click and drag the crosshair to create a slider control, and adjust it to the size you want.

   A slider control is created in the layout and assigned the name slider*n*, where *n* is a number.

   Note: The Slider control is determined by the default slider control type selected from the Settings Dialog Box. For details about changing the slider bar, see How to Change the Default Slider Bar.

3. To associate an existing parameter with the slider control, click the Parameters tab of the Properties window, find the row with the name of the slider control (slider*n*), click the Parameter field in that row, click the down arrow to the right of Unassigned at the edge of the Parameter field, and select the parameter you want to associate with the slider control.

   Note: You may also add a slider control from the New Parameters dialog box that appears when creating a report or graph with numeric range values. Slider is automatically selected as the control type if a numeric range parameter is detected. For more information about the New Parameters dialog box, see Setting Form Controls for New Parameters.

4. You may modify the static minimum and maximum values for the range by using the Parameters tab of the Properties window.

> **Note:** Step indicates how the numbers increment on the slider bar.

5. In addition, you may change the range of values from static to dynamic by using the Parameters tab of the Properties window. Select a data file to retrieve values from.

Note: Click Ctrl + Shift to add a value to the Display field.

6. Optionally, change the slider control's properties by adjusting the properties displayed in the Properties tab of the Properties window. For details, see Slider Control Properties in the Properties Window.

7. Run the HTML page and use the slider bar to slide the parameter values up or down. You may also use the end arrows to increase or decrease the numbers in the range. The output is generated based on the selected number from the slider bar.

Change the Default Slider Bar

The default slider type is determined from the Settings dialog box.

1. To change the default slider type, select **Settings** from the Tool menu. The Settings dialog box opens.
2. Click the **Form's Settings** button to open the Form settings dialog box.
3. Use the drop-down list to change the default slider control type. You may select from:
   - Horizontal or Vertical Slider Simple bar. The slider bar has no end arrows, just a bar with the slider.
   - Horizontal or Vertical Slider with Color Bar and Arrows. Arrows appear at each end of the slider bar.
   - Horizontal or Vertical Slider with Color Bar, Arrows, and Edit. Arrows and an edit box appear at the end of the slider bar, showing the current value.

   Note: Once a slider control is inserted into the HTML Layout, changing these options will not affect the existing sliders, the option is only applied to new slider controls. To change the existing slider bar type, delete the slider object and insert a new slider control.

Slider Control Properties in the Properties Window

When a slider control is selected, the Properties tab in the Properties window contains properties of your slider control.

Click a property to display a description of the selected property at the bottom of the Properties window.

Adding a Dynamic Calendar

Date parameters can utilize a built-in calendar control that allows users to select the desired date or range of dates in a pop-up dynamic calendar. A procedure that is added to or referenced in the HTML Layout Painter and contains date parameters will have a Calendar control type available in the Properties tab of the Properties window.

When the Calendar control type is selected, a text box with a calendar icon will display in the Design View of the Layout. The text box is the only control available for the calendar, and the icon will always display to the right of the text box. The icon cannot be positioned independently from the text box.

Note that when programmatically returning a date to the calendar, the date must be in a FOCUS date format that specifies the complete date from the list of supported data types in Calendar Properties.

Set Calendar Properties

1. Right-click the calendar icon, and select **Calendar Properties**.

   The following menu appears.

This menu allows the developer to set the range of dates available to the user at run time. Available dates will be represented as an active hyperlink (blue and underlined) and unavailable dates will be static (black without underlines).

2. Select an option for setting the range of dates:

   - **Static.** This option will set a static date range in which the developer will select a start date and an end date using a pop-up calendar or by clicking the month, day, or year from the controls. This setting is the default.

     By default, the current date is selected and circled in red. As you scroll through the calendar with the left/right arrows, the currently selected day will remain highlighted for each month. Clicking a date will add that date to the control. Dates can be selected by scrolling left to right, entering the month, day, and year as text, or by selecting the month, day, and year from the drop-down list and spin boxes.

   - **Relative.** This option allows the developer to set a specific number of days, months, and years relative to the current date. The current date (at run time) will always be the reference or starting point and the calendar will show a number of days, months, and years relative to the current date. The range

could be all in the past (for example, five years prior to the current date) or all in the future (for example, five years in the future).

- **Dynamic.** This option allows the developer to point to a procedure that returns a range of dates. Clicking the browse **(...)** button allows the developer to choose a preexisting procedure located in the current APP (data server) or Domain (MR). The procedure must return two date values on the same data line in XML format. The date values must be returned in a format that returns two digits for the month and day, and four digits for the year, for example MM/DD/YY.

Calendar Properties in the Properties Window

When a calendar is selected in the HTML Layout Painter, the Properties tab in the Properties window contains properties of that calendar.

Properties	
calendar1 <INPUT>	
Access key	
Class identifier (CSS)	
Direction of text	
Disabled	
Language information	
Maximum length	2147483647
Name	calendar1
Position: Left	370px
Position: Top	160px
Read only	
Size	20
Size: Height	
Size: Width	70px
Styling: Advanced (CSS)	Z-INDEX: 20; LEFT: 370px;
Styling: Font	
Tab index	21
Title	
Type	Text
Unique Identifier	calendar1
Value	

Properties / Events

Unique Identifier
ID: a unique text string used to identify the element.

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Click a property to display a description at the bottom of the Properties window.

Working With the Properties Window

The Properties window is a dockable window that consists of several tabs and components.

- A Properties tab consists of the following components:
  - A drop-down list that contains a list of all objects currently in the layout. For the selected object, there are additional subtabs on the Properties tab.

- A Properties subtab that lists attributes for the selected object. The attributes appear on the left. Click in the right column to set the properties for the attribute.

- An Events subtab lists all events that can be assigned an action for an object.

  Note: To code an event for an object, select an event and click the ellipse button in the Events tab. The HTML Layout adds the event to the HTML code and switches from Design to HTML view. In the HTML view, you are prompted to define the event. Add the appropriate JavaScript code.

The following image is an example of the HTML code that appears when the Events tab is selected in the HTML Layout Painter.

- A Parameters tab enables you to assign parameters to controls. For details on the properties than can be set for an object, see the topic on that object.

- A Thumbnails tab enables you to view thumbnails of each page in the layout. Thumbnails work similar to thumbnails in Adobe PDF, and enable you to scroll to different pages. You may also refresh the Thumbnails tab, and enlarge or reduce the thumbnails.

Move the Properties Window

To **undock** the Properties window, double-click the **Properties** title bar, then move the window to the desired location in the layout.

To **dock** the Properties window, double-click the **Properties** title bar.

Setting Form Controls for New Parameters

When a report contains one or more new amper variable parameters created in the Report Assistant, the New Parameters dialog box appears when you save the report. You can set the Control Type for each parameter prior to returning to the HTML Layout Painter. This eliminates the need to select each parameter individually to edit the associated Control Type setting using the Parameters tab of the Properties window.

The following image shows the New Parameters dialog box. For each parameter, you will find Name and Type fields, a Create control check box, and a drop-down menu to set the Control Type to either text box, calendar, list box, drop-down list, radio button, check box, hidden, text area, or tree control. The Type field is set to Unresolved unless the amper variable parameter is created with the Dialogue Manager using the ⌂DEFAULT command (which sets the Type field to Default).

The Parameter grouping options menu in the New Parameters dialog box provides options for the placement of the form controls associated with new amper variable parameters created in the Report Assistant. Select **Do not create a form** to insert the form controls for each of the new parameters in separate locations on the HTML page. Select **New form element** to insert the form controls for all of the new parameters inside one form element you can position anywhere on the HTML page. This form element also contains submit (run) and reset buttons.

Working With the Parameters Tab in the Properties Window

The Parameters tab is a component of the Properties window. The Parameters tab consists of the following components:

- The top pane contains information on the controls in the layout.
- The bottom pane contains information on parameter values.

For more detailed information, see Associating Form Controls With Parameters.

Associating Form Controls With Parameters

When a parameter is created in the Report Assistant, a text box is automatically added to the layout and associated with the parameter. However, you can change the form control and form control type associated with the parameter.

Change the Type of Form Control Associated With a Parameter

1. In the Parameters tab, select the parameter name listed in the Parameter column.
2. Select the form control you want to use from the drop-down list in the Control Type column to the right, and your change is reflected in the report layout.

Unassign or Reassign a Parameter to an Existing Form Control

1. In the Parameters tab, select the desired form control in the Control Name column.
2. To the right of the desired form control, click the Parameter field, then select the **down arrow** that appears at the right edge of the Parameter field.

   All existing parameters are shown in the drop-down list, along with Unassigned.
3. Select an existing data field to assign the parameter to, or select **Unassigned** to remove the association to the control.

   Note: Unassigned parameters may result in no data returned for the request. An unassigned parameter must have a default value assigned in the underlying DB2 Web Query code.

Creating a Static List of Parameters

When creating a list of static parameters, you can select from the following options:

- Add new value.
- Add ignore value.
- Add everything value.
- Use values from procedure.
- Use values from external file.

When the options are added to the Value list, the display text can be customized, but the value cannot be changed.

Parameters Tab in the Properties Window (Static Values)

The following image is the Parameters tab in the Properties window with Static control values.

The Parameters tab contains the following fields and options when Static is selected in the Control Values section:

Control Name

> Contains the name of the form control associated with each parameter.

Parameter

> Contains the name of each parameter in the current procedure.

> **Unassigned** - Specifies the parameter is not associated with a form control.

Control Type

> Contains the type of form control associated with each parameter. The options are:

> **Text box**

> **Calendar**

List box

Drop-down list

Radio button

Check box

Hidden

Text Area

Tree Control

Control Values

Determines whether parameter values are obtained from a static or dynamic list.

Static - Uses a static list of parameter values you supply. A list of static values can also be assigned in the Report Assistant.

Static values

Is a list of supplied values for a static list.

Value - Is the value to be passed to the selected parameter.

Display - Is the text that represents the parameter value in the form control the user views.**Note:** Click Ctrl + Shift to add a value to the Display field.

Selected - Is the value to act as the default value. If the form control is multi-select, more than one value can be selected.

New - Creates a new parameter value.

Delete - Deletes a supplied parameter value from the list.

Move Up - Moves the selected value up in the list.

Move Down - Moves the selected value down in the list.

Add a New Static Value

To manually add new static values, do the following in the Parameters tab:

1. In the Control Values section, select **Static**.
2. Click the **New** icon, and enter parameter value information in the Static values section:
   a. In the Value column, enter the value to be passed to the selected parameter.
   b. In the Display column, enter the text that represents the parameter value in the form control the user views.
   c. In the Selected column, check the box for the value you want to be selected by default. If the form control is multi-select, more than one value can be selected.
3. Repeat Step 2 until the list contains all of the values you want to include.
4. Optionally, click the **Delete** button to eliminate any values, and the up and down arrows to rearrange the order of the values.

Add an Ignore Value

The add ignore value option sends FOC_NONE to the server at run time and is intended for use with complex applications.

1. From the HTML Layout Painter, use form controls to supply parameter values for a report.

   Note: A report with parameters requires that you to select values (at run time) in order to generate the output.

2. Required: Click the **Parameters** tab in the Properties window.

   The properties of a form control, as well as the parameters associated with each form control, can be controlled with the Properties tab and Parameters tab of the Properties window.

3. Select **Add ignore value** from the Static values drop-down list.

4. Run the HTML page and select the **Ignore All** value to ignore the parameter values.

Note: Sending FOC_NONE to a compound WHERE statement will result in the entire WHERE criteria being ignored. Therefore, when working with multiple parameters that may be chained together, each parameter should be created in an individual WHERE statement as follows:

```
WHERE ( REGION EQ &REGION.(OR(Midwest,Northeast)).Region:. );
WHERE ( ST EQ &STATE.(OR(CA,CT)).State:. );
WHERE ( CITY EQ &CITY.(OR(Atlanta,Boston)).City:. );
```

Add an Everything Value

The add everything value option uses JavaScript to send every value present in the parameter list to the server at run time.

1. From the HTML Layout Painter, use form controls to supply parameter values for a report.

2. Click the **Parameters** tab in the Properties window.

3. Select **Add everything value** from the Static values drop-down list.

   Note: The Add everything value option is only available with a Multiselect OR variable type.

4. Run the HTML page and click the **Select All** parameter value to view all the parameter values.

Use Values from a Procedure

This is the default option which populates the static list with values predefined in the procedure.

1. From the HTML Layout Painter, use form controls to supply parameter values for a report.

2. Click the **Parameters** tab in the Properties window.

3. Select **Use values from procedure** from the Static values drop-down list.

4. Run the HTML page and select the parameter values from the procedure.

Import Values from an External File

This option enables you to use a local external file to provide a query limit for the selected data.

1. From the HTML Layout Painter, use form controls to supply parameter values for a report.

2. Required: Click the **Parameters** tab in the Properties window.

3. Highlight the static parameter that you want to import external values for.

4. Required: Select **Use values from external file** from the Static values drop-down list.

The Open dialog box appears.

5. Select a text file from your local machine and click **Open**.

Note: The external file can be a file with single values on each line, or two values per line, comma delimited.

For example, in the following text file, **BOS** is the return value and **Boston** is the display value.

The imported values are loaded into the Static values area of the Parameters tab.

Note: If there is only one value, the value will populate both the return and the display values.

6. Run the HTML page to see the imported values for the selected parameter.

Creating a Dynamic List of Parameters

Dynamic values are available by default if a data field used in the procedure is associated with the selected form control. The Parameter field at the top of the Parameters tab displays this data field (or displays Unassigned if there is no associated parameter).

Parameters Tab in Properties Window (Dynamic Values)

The following image is the Parameters tab in the Properties window with Dynamic control values.

The Parameters tab contains the following fields and options when Dynamic is selected in the Control Values section:

Control Name

Contains the name of the form control associated with each parameter.

Parameter

Contains the name of each parameter in the current procedure.

Unassigned - Specifies the parameter is not associated with a form control.

Control Type

Contains the type of form control associated with each parameter. The options are:

Text box

Calendar

List box

Drop-down list

Radio button

Check box

Hidden - Hides the control type in the layout.

Text Area

Tree Control

Control values

Determines whether parameter values are obtained from a static or dynamic list.

Dynamic - Uses a list of values retrieved from a selected data source when the request is executed. This is the default if you use an Accept clause in a Master File to create an amper variable parameter within a procedure. For more information, see Select a Dynamic List of Values.

Data Source

Is the data source from which the values will be retrieved.

Procedure

Is the procedure that will be called.

Value field

Is the data source field from which the values will be retrieved.

Display field

Is the text that represents the parameter value in the form control the user views.

Note: Click Ctrl + Shift to add a value to the Display field.

Add "ALL" Option

Adds the option to select ALL data source values to the control. Alternate text can be substituted for "ALL" using the text field to the right. For more information, see Parameter List Options.

Limit values returned

Indicates that a specific number of field values will be retrieved from the data source. The specific number of fields is selected with the menu to the right.

Select a Dynamic List of Values

To add or select a different dynamic list of values to populate a form control, do the following in the Parameters tab of the Properties window:

1. Select the **Dynamic** option in the Control Values section.

2. To find the desired source file you want to retrieve values from, select the **Data source** option to retrieve values from a .mas file, or select the **Procedure** option to retrieve values from a .fex file. Click the browse **(...)** button, select a source file from the Get source file dialog box that opens, and click Open.

   For the Data source option only, select the data field that has the desired values from the tree structure displayed at the bottom of the Parameters tab. The data field you select will be populated in the Value field.

3. Optionally, type a new name in the Display field for the data field populated in the Value field.

4. Optionally, select **Limit values returned**, and select or type the number of field values you want to retrieve from the data source in the box to the right of this option.

Parameter List Options

When creating a static or dynamic list of parameters, you may add an all value to the list of parameter values and show the display value in the report output.

The ALL feature allows developers to automatically add an ALL value to a list of parameter values. An ALL value does the following:

- For dynamic parameters, the ALL feature sends a value of FOC_NONE to the reporting server alerting the server to bypass or ignore the parameter altogether. (Ignoring the parameter would return all values in the data source.)

- With static parameters, the ALL value typically uses JavaScript to return all of the values displayed in the list. This prevents the user having to select every value in the list manually. When using the ALL feature with static parameters, you can select from the following options:

  – Add ignore value. This option sends FOC_NONE to the server at run time, alerting the server to bypass or ignore the parameter altogether. It is intended for complex applications.

  – Add everything value. This option uses JavaScript to send every value present in the parameter list to the server at run time. The Add everything value option is only available with a Multiselect OR variable type.

Send the Display Value for Static and Dynamic Controls

From the HTML Layout Painter, you may show the display value, rather than the actual data, for headings and footings in the report output.

1. From the HTML Layout Painter, import a report that contains a parameter.

   When importing a report with parameters, the New Parameters dialog box appears prompting you to create the control type.

The report and control type is added to the HTML Layout Painter.

2. To show the display value for the parameter selection, use the Parameters tab of the Properties window and choose **Static** or **Dynamic** as the type of control value.

3. For a Static control type, use the Parameters tab to manually change the display value for the Static control.

Note: You may also update the display values from the Variable Editor in the Report Assistant.

4. Select the **Send display value** check box from the Parameters tab.

   The display values are shown in the control type of the HTML Layout.

5. For a Dynamic control type, use the Parameters tab to set both the Value Field and the Display Field.

Note: Setting the display value for Dynamic controls is only applicable if you are using a Data source that contains both a code and description field.

- Double-click a field from the Fields list to add it as the Value Field.
- Select a field from the Fields list, click Ctrl + Shift to add it as the Display Field.
- Ensure that **Send display value** is checked.

The following image is an example of the Parameters tab with Send display value selected.

The display values are shown in the control type of the HTML Layout.

6. Add a heading to the report to show the display value. Double-click the report from the HTML layout to open and edit the report.

   The report opens in the ReportAssistant.

7. Manually add &Variable_TEXT to the report heading or footing.

   Tip: This is different from adding the actual value from the datasource, where clicking the variable name would add <STCD to the report heading.

8. Save and close the report to return the HTML Layout Painter.

   Note: When you create the Text variable (&Variable_TEXT), you are not prompted to set a control type for this variable when returning to the HTML Layout, as no control type is needed.

9. Run the HTML page.

10. Select the parameter for the report and run the report.

    The display value is shown in the report heading.

    For example, in the image below, Gotham 40 is selected as the Store Code and shows the display value in the report heading. The actual value, R1040, is shown in the Store ID column.

Filtering Dynamic Parameter Values

Use the chain feature to associate two or more related parameters. When you chain parameters together, chained dynamic values are filtered as selections are made to each parameter control. For example, if you chain the PLANT parameter to the STATE parameter, only PLANT values for the currently selected STATE parameter will be available instead of all the plants in the data source. Each time a selection is made, all chained parameters will be dynamically updated. The chain feature also allows you to add, remove, and reverse the order of parameters in the chain. See other topics in this section for details.

Dynamic parameters are processed with a caching mechanism that gathers all of the necessary values prior to loading the page. This method automatically

combines all of the necessary requests into a single HTTP request and maps the
result sets to the appropriate controls, greatly reducing the load time involved with
sending multiple requests for data.

Filter Parameter Values

1. In the Control Values section of the Parameters tab, click the **Dynamic** radio
   button.

2. Press the **Shift** key and then click two or more parameters to select them
   simultaneously and activate the chain feature buttons on the positioning
   toolbar.

3. Click the **Add to chain** button. The parameters you selected are labeled
   with numbers to indicate the order in which they will be chained when you
   run your report.

You can also reverse the order of parameters in the chain. See Reverse the
Order of Chained Parameter Values for details.

Reverse the Order of Chained Parameter Values

1. Click the **Chain order** button in the positioning toolbar.
2. Click the parameter you want to display first in the chain.

You can continue to reverse the order in the chain by clicking the numeric labels
on the chained parameters. If you would like to see the numeric labels on the
chained parameters, select the **Chain order** button. Double-click a parameter to
designate it as the first parameter in the chain.

Remove a Parameter from the Chain

1. Click the parameter you want to remove from the chain.

2. Click the **Delete chain** button in the positioning toolbar.

3. Press the **Shift** key and click the remaining chained parameters.

4. Click the **Chain order** button in the positioning toolbar. You will no
   longer see a numeric label on the parameter that you removed.

Enable Cached Processing for Chained Parameters

1. Create a report with parameters in the HTML Layout Painter:

   a. From the HTML Layout Painter, select **New Report** from the Insert menu.

   The cursor changes into a crosshair.

   b. Click and drag the crosshair to create a report object and adjust it to the size you want.

   c. Right-click the report object and select **Import existing report**.

   Tip: You may create parameters directly in your report or add them later in the HTML Layout Painter.

2. To create dynamic parameters for your report in the HTML Layout Painter, right-click the report object and select **Add a filter** from the context menu.

The Filter options dialog box opens.

3. Select the field to be used for the parameter, the Multiselect option, and click **OK**.

The New Parameters dialog box appears.

You may select a control type for the parameter from this dialog box, or adjust them later using the Parameters tab.

Note: If the New Parameters dialog box does not appear, ensure that **Show New Parameters dialog** is selected from the Settings dialog box.

4. Click **OK** to close the New Parameters dialog box.

5. The filter appears above the report object.

Repeat this procedure for each additional parameter for the report.

6. Select two or more controls from the parameters and click **Add to chain** from the Positioning toolbar.

The parameters are chained together.

7. To view the chained parameters in the Design View, select **Chain order** ![icon] from the Positioning toolbar.

The parameters are numbered in the logical order that they were chained.

8. Select a numbered parameter, right-click and select **Cache run time data**.

When executing the document, data for the chained parameter is cached to improve performance.

Note: Cache run time data is the default option.

Applying Chaining Logic Options in the HTML Layout Painter

Previously, parameters could only be chained together with an Equal logic scenario, mainly suited for hierarchical data filtering. For example, only seeing cities within the selected state.

Additional chaining logic scenarios include such options as Not Equal to, Greater than, Less than, and so on. This is useful when reusing existing code to populate parameters that may be used multiple times in the same layout, and in different locations of the hierarchy of the chain.

For example, a form offers two lists of dates so that you can select a FROM / TO date range. By chaining these parameters together and applying the Greater than chaining logic, this ensures that when a date is selected for the FROM parameter, only dates that follow the FROM date display in the TO date control, eliminating the possibility of selecting an invalid date range.

Apply Chaining Logic to a Parameter

1. Create a report with parameters in the HTML Layout Painter.

2. Select two or more controls from the parameters and click **Add to chain** from the Positioning toolbar.

The parameters are chained together.

3. Select a parameter, right-click, and select **Chaining logic** from the context menu.

4. Select a chaining logic option from the submenu.

   Note: Equal is the default chaining logic option.

   The chaining logic is applied to the parameter selected.

Customizing Dynamic Parameters

You have the option to allow customized retrieval of dynamic parameter values. By using a custom procedure, you can use the FOCUS language to utilize temporary HOLD files, filtering, etc. This allows the HTML Layout Painter to better integrate with a multitude of large and/or proprietary data sources that may require unique retrieval methods. The procedure must meet the following criteria:

- The procedure must return a name and value pair for each parameter value that will populate the list. The first value is the submission value which is passed to the form control when the user clicks the Submit button. The second value is the display value which is what the user will see in the control. These two values can be the same or different.

- The procedure must return the two data values on a single data line in XML format (PCHOLD FORMAT XML).

Note: Different parameters in the same procedure can use both this option and the data source method.

For chained parameters, there are two options based on whether caching is enabled:

- By default, caching of parameter values in not enabled. Each parameter control must be mapped to its own procedure and the developer is responsible for writing filters or WHERE criteria to properly filter the hierarchy of controls.

- If caching is enabled for the chained parameters, a single procedure can be used to populate the controls of the chained variables. In this case, the HTML Layout Painter writes the WHERE criteria.

Hidden Parameters

You can select a HIDDEN control type in the HTML Layout Painter. This allows parameter name value pairs to be passed in the form control without the user seeing them. This option can be chosen in the Parameters tab in the Control Type column. When this control type is selected, the current control assigned to the parameter will be removed. The value of the parameter can be entered in the Value column of the Parameters tab.

Automatically Populating Fields With Parameter Values

When the name of a dynamic parameter matches a corresponding field name in a data source, the HTML Layout Painter automatically populates the field name for the parameter.

The data source is populated by a default based on the first data source specified by a TABLE FILE or GRAPH FILE command. The data source field is populated for the Value and Display field controls in the Parameters tab. This generates a "run ready" Layout report as long as the parameter names match the field names.

Supplying Parameter Values to External Reports

You can supply parameters to external reports the same way you apply them to reports created with the Report Assistant. The report layout can also contain multiple reports associated with a common set of parameters. Launch mechanisms such as a push button, hyperlink, or image can be associated to external reports that contain different sets of parameters. You can also update and target parameters for an external report to a frame or window directly within your report layout.

Before you can supply parameter values to an external report, you must create a hyperlink to the report and associate a launch mechanism to it. After you associate a launch mechanism, such as a push button, hyperlink, or image, to the external report, the report layout is populated with the parameters.

Supply Parameter Values to External Reports With a Push Button

In this procedure you will create a push button to launch an external report and target the output to a window.

1. From the Insert menu, select **Push Button**.

   The cursor changes into a crosshair.

2. Click and drag the crosshair to create a push button and adjust it to the size you want.

3. Right-click the button and select **Create hyperlink**.

   The Hyperlink Properties dialog box opens.

4. To set the action of the hyperlink to execute an external report, select the **New** icon, then select **External procedure** from the Action drop-down list.

5. Enter the external report's procedure name in the Source field, or click the browse **(...)** button to browse to the procedure.

6. Optionally, direct the output to a specific location by selecting **Window** or **Frame** in the Target Type field.

7. Specify the text you want to display as the hyperlink in the Target Name field, or select one of the default values from the Target Name drop-down list.

8. Click **OK**.

   The parameters for the report are automatically added to objects in the layout and displayed in the Parameters tab.

9. From the File menu, click **Run**.

10. Click the push button to view the external report.

    The report opens in a separate window as you specified in the Hyperlink Properties dialog box for that push button.

Supply Parameter Values to an External Report With an Image

In this procedure you will insert an image that will launch an external report when you click it. You will target the output to a window.

1. From the Insert menu, select **Image**.

   The cursor changes into a crosshair.

2. Click and drag the crosshair to position the image.

   The Get source file dialog box opens.

3. Navigate to the image using the Look in menu, select the image, and click **Open**.

4. Adjust the image to the desired size and location.

5. Right-click the image and select **Create hyperlink**.

   The Hyperlink Properties dialog box opens.

6. To set the action of the hyperlink to execute an external report, select the **New** icon, then select **External procedure** from the Action drop-down list.

7. Enter the external report's procedure name in the Source field, or click the browse **(...)** button to browse to the procedure.

8. Direct the output to a window by selecting **Window** in the Target Type field.

9. Specify the text you want to display as the hyperlink in the Target Name field, or select one of the default values from the Target Name drop-down list.

10. Click **OK**.

   The parameters for the report are automatically added to objects in the layout and displayed in the Parameters tab.

11. From the File menu, click **Run**.

12. Click the image to view the external report.

   The report opens in the window you specified in the Hyperlink Properties dialog box for that hyperlink.

Supply Parameter Values to an External Report With a Hyperlink

In this procedure, you will create a frame and target report output from an external report to it. You will also create a hyperlink to launch the external report.

1. From the Insert menu, select **Frame**. Click and drag the crosshair to create a frame and adjust it to the size you want. Enter a name for the frame by double-clicking the **Name** field in the Properties tab of the Properties window.

2. From the Insert menu, select **Hyperlink**. Click and drag the crosshair to create a hyperlink and adjust it to the size you want.

   The Hyperlink Properties dialog box opens.

3. To set the action of the hyperlink to execute an external report, select the **New** icon, then select **External procedure** from the Action drop-down list.

4. Enter the external report's procedure name in the Source field, or click the browse **(...)** button to browse to the procedure.

5. Direct the output to the frame you inserted by selecting **Frame** in the Target Type field and entering the name of the frame you created.

6. Specify the text you want to display as the hyperlink in the Target Name field, or select one of the default values from the Target Name drop-down list.

7. Click **OK**.

The parameters for the report are automatically added to objects in the layout and displayed in the Parameters tab.

8. From the File menu, click **Run**.
9. Click the hyperlink to view the external report.

   The report opens in the frame you specified in the Hyperlink Properties dialog box for that hyperlink.

Supplying Parameter Values to Multiple External Reports

In this example, you will add two reports to a layout. You will associate a push button to one report and target the output to a window. You will associate a hyperlink to the second report and target the output to a frame.

1. From the Insert menu, select **Push Button**.

   The cursor changes into a crosshair.
2. Click and drag the crosshair to create a push button and adjust it to the size you want.

   A push button is created in the layout and assigned the name button*n*, where *n* is a number.
3. Right-click the button, and select **Create hyperlink**.

   The Hyperlink Properties dialog box opens.
4. Set the action of the hyperlink to execute a report by clicking the **New** icon and selecting **External Report** from the Action drop-down list.
5. Enter the external report's procedure name in the Source field, or click the browse **(...)** button to browse to the procedure.
6. In the Target Type field, select **Window** from the drop-down list.
7. In the Target Name field, select **_blank** frames from the drop-down list.
8. Click **OK**.

   The parameters for the first report are automatically added to objects in the layout and displayed in the Parameters tab.

9. From the Insert menu, select **Frame**. Click and drag the crosshair to create a frame and adjust it to the size you want. Enter a name for the frame in the name field of the frame's Properties dialog box.

10. From the Insert menu, select **Hyperlink**. Click and drag the crosshair to create a hyperlink and adjust it to the size you want.

11. Right-click the button, and select **Create hyperlink**.

   The Hyperlink Properties dialog box opens.

12. Set the action of the hyperlink to execute a report by clicking the **New** icon and selecting **External Report** from the Action drop-down list.

13. Enter the external report's procedure name in the Source field, or click the browse **(...)** button to browse to the procedure.

14. In the Target Type field, select **Frame** from the drop-down list.

15. In the Target Name field, select the name of the frame you created.

16. Click **OK**.

17. From the File menu, select **Run**.

18. Click the push button to view the first external report.

   The report opens in a separate window as you specified in the Hyperlink Properties dialog box for that push button.

19. Click the hyperlink to view the second external report. The report opens in the frame you specified in the Hyperlink Properties dialog box for that hyperlink.

Styling Your Layout

When you create an HTML page in the HTML Layout Painter, the objects in the layout will display in your browser using the browser's default styles. You can customize the appearance of your HTML page by adding a theme or template. A template can be any HTML file containing styling information and other elements.

Adding a CSS or Script to the Layout

Cascading Style Sheets (CSS) or scripts can be added to your layout to determine the look of the Web page. This is a good way to quickly apply corporate styling to your layout or to assign global styling to a layout. It is also an easy method of assigning default styling to all elements in the entire layout with one action. Styling included in a CSS or script will display only in Preview mode.

Add a CSS or Script to the Layout

1. From the Insert menu, select **CSS/Scripts**.

   The Insert Web Files dialog box opens.

2. Click the **New** icon and navigate to the directory in which your CSS or script resides, select the file, and click **Open**.

3. Add additional files if desired. Click **OK** to add the specified files.

Setting HTML Page Properties

You can set properties for the HTML page you create in the HTML Layout Painter in the Properties tab of the Properties window.

Properties set for the HTML page will be inherited by most objects added to the layout. Once a style has been changed for an object in the layout, it cannot be styled with a template or theme. It is recommended that global styling of the HTML page be set before properties are set for individual objects.

HTML Page Properties in the Properties Window

When the background of a report is selected, the Properties tab in the Properties window contains options that control the body of the HTML page.

Click a property to display a description of the selected property at the bottom of the Properties window.

Specifying Browser Defaults with Style Composer

You can use the Style Composer to control default settings for font, background properties, position mode, flow control, margins, list styles, and visual effects.

Note: On the following pages, the images of the Style Composer windows show many blank fields. You may actually see the words "Not Set" populated in these blank fields when viewing these Style Composer windows in Developer Workbench.

Access the Style Composer

To access the Style Composer, complete the following steps.

1. Right-click the background of an HTML page in the HTML Layout Painter.
2. From the pop-up menu, select **Style**.

   The Style Composer window opens.

Specifying Font Styles Using the Style Composer

To specify the font styles that will be used in the browser for your HTML report, make your selections in the Font window of the Style Composer.

The Font window of the Style Composer is comprised of the following elements:

Font name

> Determines the font displayed in a browser. You can specify:

> **Family** - launches the Font Picker dialog box

> **System Font**

Font attributes

> Determines the attributes of the font displayed in a browser. The options include:

> **Color**

> **Italics**

> **Small Caps**

Size

> Determines the size of the font displayed in a browser. The options include:

> **Specific**

> **Absolute**

> **Relative**

Bold

> Determines whether the font is displayed as bold in a browser. The options include:

> **Absolute**

> **Relative**

Effects

> Determines whether the font effects displayed in a browser. The options include:

> **None**

> **Underline**

> **Strikethrough**

> **Overline**

> **Capitalization**

Specifying Background Properties Using the Style Composer

To specify the background styles that will be used in the browser for your HTML report, make your selections in the Background window of the Style Composer.

The Background window of the Style Composer is comprised of the following elements:

Background color

> Determines the font displayed in a browser. You can specify:
>
> **Color**
>
> **Transparent**

Background image

> Determines the properties of the background image displayed in a browser. The options include:
>
> **Image**
>
> **Tiling**
>
> **Scrolling**
>
> **Position** (Horizontal and Vertical)
>
> **Do not use background image**

Specifying Text Styles Using the Style Composer

To specify the text styles that will be used in the browser for your HTML report, make your selections in the Text window of the Style Composer.

The Text window of the Style Composer is comprised of the following elements:

Alignment

Determines the alignment of a text. You can specify:

Horizontal

Vertical

Justification

Spacing Between

Determines the spacing. You can specify spacing between the following text elements:

> **Letters**
>
> **Lines**

Text Flow

> Determines the flow of the text. You can specify:
>
> **Indentation**
>
> **Text Direction**

Specifying Position Mode Using the Style Composer

> To specify the position mode that will be used in the browser for your HTML report, make your selections in the Position window of the Style Composer.

> The Position window of the Style Composer is comprised of the following elements:
>
> **Position Mode**

From which you can specify:

Position in normal Flow

Offset from normal flow

Absolutely position

HeightWidth

When Absolutely Position is selected, you can specify the following position indicators in the measurements you select:

Top

Left

Z-Index (optional). Sets or retrieves the stacking order for absolute or relatively positioned objects.

Specifying Layout Styles Using the Style Composer

To specify the layout styles that will be used in the browser for your HTML report, make your selections in the Layout window of the Style Composer.

The Layout window of the Style Composer is comprised of the following elements:

Flow Control

> From which you can specify:

> **Visibility**

> **Allow Text to Flow**

> **Display**

> **Allow Floating Objects**

Content

> From which you can specify:

> **Overflow**

Clipping

> From which you can specify whether or not to clip the layout from the following positions:

> > > > **Top**
> > > >
> > > > **Bottom**
> > > >
> > > > **Left**
> > > >
> > > > **Right**
>
> > **Printing page breaks**
> >
> > > From which you can specify:
> > >
> > > **Before**
> > >
> > > **After**

Specifying Margin Styles Using the Style Composer

> To specify the margin styles that will be used in the browser for your HTML report, make your selections in the Margins window of the Style Composer, which is shown in the following image.

The Edges window of the Style Composer is comprised of the following elements:

Margins

> From which you can specify:

> **Top, Bottom, Left, Right** margins

Padding

> From which you can specify:

> **Top, Bottom, Left, Right** padding

Borders

> From which you can specify:

> **Select the edge to be changed**

> **Style**

> **Width**

> **Color**

Note: Borders are displayed as a single solid line in the Style Composer preview window, regardless of whether you select a single or double line border. Borders are accurately displayed in the Style Composer Design View and in the HTML output of an application.

Specifying List Styles Using the Style Composer

To specify the list styles that will be used in the browser for your HTML report, make your selections in the Lists window of the Style Composer.

The Lists window of the Style Composer is comprised of the following elements:

Lists

> From which you can specify:

> **Bulleted**

> **Unbulleted**

Bullets

From which you can specify:

Style

Position

Custom bullet

Specifying Interface Effects Using the Style Composer

To specify the interface styles and visual effects that will be used in the browser for your HTML report, make your selections in the Other window of the Style Composer.

The Other window of the Style Composer is comprised of the following elements:

User Interface

From which you can specify:

Cursor

Tables

From which you can specify:

Borders

Layout

Laying Out Objects With the HTML Layout Painter

You can change the size and position of objects in your layout in the following ways:

- Set relationships between objects. This is done by setting relationships between objects and a controlling, or dominant, object. The controlling object is the last object selected. For details, see Setting Relationships Between Objects.
- Click and drag with your mouse.

Setting Relationships Between Objects

You can set relationships between underlying objects and a controlling, or dominant, object. The controlling object is the last object or placeholder selected. You can use these relationships to set properties of the selected objects according to the controlling object. Any object on the HTML page layout can be the controlling object.

You can set the following types of relationships:

- Relationships that maintain a distance between objects. This is useful since a report or graph may take up more or less room when your procedure is run than is accounted for in the layout. When setting relationships between objects in this way, you should select the corners of the objects that are closest to each other. This will ensure that the reports do not overlap if either report takes up more room than anticipated.
- Relationships that affect the positioning of objects. This allows you to ensure that objects remain aligned regardless of a change in size or position of one of the objects and that objects remain the same size even when an object's size is changed.

Set Object Size

1. Highlight multiple objects with your mouse by holding the **Shift** key to select items contiguously, or the **Control** key to select items non-contiguously. The controlling object is the last object selected.

   The size buttons on the positioning toolbar are active.

2. Click the button in the positioning toolbar that corresponds to what you want:

   Make same width sets the width of the highlighted objects to the width of the controlling object.

   Make same height sets the height of the highlighted objects to the current height of the controlling object.

   Make same size sets the height and width of the highlighted objects to the height and width of the controlling object.

All selected objects change in size according to the size of the controlling object. If an image becomes distorted when you resize it, you can restore its original size. Right-click the image, select **Image Properties**, and then **Restore Size**.

Set the Distance Between Objects

1. Highlight multiple elements with your mouse holding the **Shift** key to select items contiguously, or the **Control** key to select items non-contiguously. The controlling object is the last object selected.

2. Click the button in the positioning toolbar that corresponds to the relationship you want. The selected objects' position will be set according to the controlling object, which is the last object selected. The options are:

   Relate top left maintains the distance between the controlling object's top left corner and the highlighted objects' top left corners.

   Relate top right maintains the distance between the controlling object's top right corner and the highlighted objects' top left corners.

   Relate bottom right maintains the distance between the controlling object's bottom right corner and the highlighted objects' top left corners.

   Relate bottom left maintains the distance between the controlling object's bottom left corner and the highlighted objects' top left corners.

   For details on the buttons in the positioning toolbar, see Positioning Toolbar.

Break Relationships

Click **Break** in the toolbar.

Positioning Toolbar

The positioning toolbar contains the buttons listed in the following table.

For buttons that use relationships, the relationship is controlled by the controlling object, or dominant object, which is the last object or placeholder selected. These buttons are only highlighted when more than one object is selected.

Button	Descriptions
	Toggles the grid on and off. Use the grid to assist in lining up objects in the layout. This button is recessed when the grids are enabled.
	Specifies Tab Order.
	Aligns the highlighted objects' left edge with the left edge of the controlling object.
	Aligns the highlighted objects' right edge with the right edge of the controlling object.
	Aligns the highlighted objects' top edge with the top edge of the controlling object.
	Aligns the highlighted objects' bottom edge with the bottom edge of the controlling object.
	Aligns objects at the horizontal center point of the canvas in Design View.
	Aligns objects at their vertical center (or middle) point of the canvas in Design View.
	Sets the width of the highlighted objects to the width of the controlling object.

Button	Descriptions
	Sets the height of the highlighted objects to the current height of the controlling object.
	Sets the height and width of the highlighted objects to the height and width of the controlling object.
	Maintains the distance between the controlling object's top left corner and the highlighted objects' top left corners.
	Maintains the distance between the controlling object's top right corner and the highlighted objects' top left corners.
	Maintains the distance between the controlling object's bottom right corner and the highlighted objects' top left corners.
	Maintains the distance between the controlling object's bottom left corner and the highlighted objects' top left corners.
	Breaks the relationship set between highlighted objects. This button is only highlighted when selected objects have relationships set.
	Toggles the display of arrows illustrating the relationships between objects. This button is only highlighted when selected objects have relationships set. This button will stay highlighted when relationships are displayed. It will not be highlighted when relationships are not displayed.
	Adds a parameter to a chain. Chained dynamic values are filtered as selections are made to each parameter control. Each time a selection is made, all chained parameters will be dynamically updated. For details about chained parameters, see Filtering Dynamic Parameter Values.
	Removes a chained parameter from a chain. For details about chained parameters, see Filtering Dynamic Parameter Values.
	Activates chained parameters for viewing and editing. For details about chained parameters, see Filtering Dynamic Parameter Values.

Customizing the Layout

All changes to your layout be can made in the Design mode of the HTML Layout Painter or the HTML editor. The changes made to a layout in an editor will be preserved when you re-enter the HTML Layout Painter.

Controlling the HTML Layout Painter Environment

You can set properties for the HTML Layout Painter with the Settings dialog box. This dialog box allows you to set page properties such as the location of reports and graphs, as well as the display of a grid in your layouts. The changes that are made in the Settings dialog box are saved to the registry. This allows a customized environment to be created for various users.

Set Page Properties

1. Select **Settings** from the Tools menu. The Settings dialog box opens. For details, see Settings Dialog Box.
2. Make your changes, and click **OK**.

Select Form Settings From the Settings Dialog Box

1. From the HTML Layout Painter, select **Settings** from the Tools menu.

   The Settings dialog box opens.
2. Click the **Form's Settings** button.

   The Form Setting dialog box opens.

3. Select the orientation for the form object in the layout.
4. Use the spin buttons to increase or decrease the distance between the prompt, horizontal and vertical controls of the form, and the number of columns for the form.

   or

   Position the cursor in the input box and type a number.
5. Use the slider control type options to select how the slider bar appears.

   Note: Slider bars are available when using numeric range value parameters in your report or graph.
6. Click **OK** to close the Form settings dialog box.

   The form settings are applied and shown in the HTML Layout Painter Design view.

7. To reset the default form settings, right-click the form object and select **AutoArrange** from the context menu.

The form is auto arranged on the layout, using the default form settings.

Settings Dialog Box

The following options are available from the Settings dialog box of the HTML Layout Painter.

Grid Settings

Show Grid

> Displays a grid. If this is not selected, the grid is turned off for all layouts.

Snap to Grid

> Causes objects in the layout to snap to grid lines when being positioned. For detailed positioning, deselect this option.

Width

> The width of the grid in pixels.

Height

> The height of the grid in pixels.

Change current layout only

> Select this check box to apply the grid settings to the current layout.

Preview Settings

Report and Graph Preview

> Previews report and graph data in the Design View. If checked, additional options are available (Simulated Data or Live Data).

> **Note:** This option is selected by default.

> If unchecked, icons are used to represent the area in the Design View for reports and graphs. This is the fastest method of loading reports since no request are made to the server.

Simulated Data

> Selecting to preview simulated data sends a request to the reporting server that gathers formatting information from the Master file. The database is not accessed, but rather mock data is used to visually represent the report.

Note: This option is only available when previewing reports and graphs.

Live Data

Selecting to preview live data sends a request to the reporting server, and to the database, to get a snapshot of the actual data in the report.

Note: This option is only available when previewing reports and graphs.

Record limit for reports

Enables you to limit the number of records used to gather data for previewing the report in live data mode. For example, if you set 500 as the record limit for the report, then 500 rows of data are gathered for the report results.

Note: This option is only available if the Live Data option is selected.

Record limit for input controls

Sets the number or records to be shown for the input controls when gathering data for reports and graphs.

Note: This option is only available if the Live Data option is selected.

Show New Parameters Dialog

Controls whether or not the New Parameters dialog box shows when adding parameters in the HTML Layout Painter.

Note: The New Parameters dialog box is shown by default.

Form's Settings button

Options are available so that you may customize how the forms are populated and arranged in the document.

Form's Settings Dialog Box

The following options are available from the Form's Settings dialog box of the HTML Layout Painter.

Prompt orientation

Prompt refers to the descriptive text used to label the control/parameter in the output.

To the left of the input

Places the descriptive text used to label the control/parameter to the left of the input.

Above the input

Places the descriptive text used to label the control/parameter above the input.

Distance between the prompt and input

Sets the distance between the prompt and input.

Horizontal distance between controls

Sets the horizontal distance between controls.

Vertical distance between controls

Sets the vertical distance between controls.

Number of columns

Determines when the form will wrap and start laying controls out in a new row.

Default slider control type

Sets how the slider control appears. Select from the following types of slider bars:

Note: Slider controls are available when using numeric range value parameters in your report or graph.

- Horizontal or Vertical Slider Simple bar. The slider bar has no end arrows, just a bar with the slider.
- Horizontal or Vertical Slider with Color Bar and Arrows. Arrows appear at each end of the slider bar.
- Horizontal or Vertical Slider with Color Bar, Arrows, and Edit. Arrows and an edit box appear at the end of the slider bar, showing the current value.

Note: Once a slider control is inserted into the HTML Layout, changing these options will not affect the existing sliders, the option is only applied to new slider controls. To change the existing slider bar type, delete the slider object and insert a new slider control.

Chapter 12. Describing and Accessing Data: Overview

Introduces data source descriptions and explains how to use them.

Developer Workbench provides a set of graphical tools that you can use to describe and access many types of data sources, including:

- Relational, such as DB2.
- Multi-dimensional, such as SAP BW and Essbase.
- Procedures, such as Web Services and CICS® Transactions.
- XML, such as XML and Tamino.
- Hierarchical, such as IMS™ and FOCUS.
- Sequential, both fixed-format and free-format.
- Indexed, such as ISAM and VSAM.
- Network, such as CA-IDMS.
- Other popular data sources, such as Lotus Notes® and LDAP.

These graphical tools are designed to:

- Translate the schema of the data source into metadata that DB2 Web Query can read and report against.
- Optionally, enable you to customize and enhance the generated metadata, without having to know the subtleties of the underlying DB2 Web Query data description language.

A Note About Data Source Terminology

Different types of data sources make use of similar concepts, but refer to them differently. For example, the smallest meaningful element of data is called a *field* by many hierarchical database management systems and indexed data access methods, but called a *column* by relational database management systems.

There are other cases in which a common concept is identified by a number of different terms. For simplicity, we have standardized on a single set of terms. For example, we usually refer to the smallest meaningful element of data as a *field*, regardless of the type of data source. However, when required for clarity, we use the term specific to a given data source. Each time we introduce a new standard term, we define it and compare it to equivalent terms used with different types of data sources.

How Applications Interpret Data

When your application accesses a data source, it needs to know how to interpret the data that it finds. To accomplish this it reads a synonym, which is a term for the generated *metadata* associated with the particular data source.

Your application needs to know about:

- The overall structure of the data. For example, is the data relational, hierarchical, multi-dimensional, sequential? Depending upon the structure, how is it arranged or indexed?

- The specific data elements. For example, what fields are stored in the data source, and what is the data type of each field—character, date, integer, or some other type?

The synonym provides an alias for the data source that tells the server how tables are described and where to find them.

The primary component of a synonym is a Master File. The Master File describes the structure of a data source and its fields. For example, it includes information such as field names and data types.

For some types of data sources, an Access File supplements the Master File. An Access File includes additional information that completes the description of the data source. For example, it includes the full data source name and location. The nature of the information in the Access File is specific to each data source. You need one Master File—and, for some types of data sources, one Access File—to describe a data source.

How to Obtain a Synonym

You can generate synonyms using the Metadata menu option in Web Query, which enables you to explore DBMS catalogs and select the objects for which you wish to create synonyms. The tool prompts for all the information it needs to create a synonym for a particular data source and stores the generated synonym on the server.

There are some prerequisites: you must be authorized to use the data against which you plan to report and you must have configured an adapter to access that type of data. In fact, when you begin to create a synonym, Developer Workbench opens the adapter configuration window. The option to create the synonym becomes available only after the adapter is successfully configured.

Adapters are available for many data sources. Every adapter is specifically designed for the data source that it accesses, and, as a result, is able to translate between SQL or DB2 Web Query and the data management language (DML) of the data source. Adapters provide solutions to product variations, including product differences in syntax, functionality, schema, data types, catalogs, data representations, message processing, and answer set retrieval. It is the adapter that manages the synonym creation process. For related information, see How an Adapter Works.

How an Adapter Works

The adapter manages the communication between the data interface and the data source, passing data management requests to the data source and returning either answer sets or messages to the requestor. To perform these functions, the adapter:
- Translates the request to the applicable DML.
- Attaches to the targeted data source, using standard attachment calls. The adapter then passes the request to the data source.
- The data source processes the request.
- The results or error conditions are returned to the client application for further processing.

What You Can Do With a Synonym

Once you have generated a synonym, you can report against it using all of Web Query's reporting tools. In many instances, the configured adapter and the generated synonym are all you need to access your data and create reports and graphs.

However, you may wish to enhance the synonym in order to implement particular capabilities that are supported in the DB2 Web Query data description language. To do this, you can use a second data description tool, the **Synonym Editor**.

When you use the Synonym Editor, there is no need to know the data description language since the graphical tool displays all viewable and editable attributes of the synonym components. If you make changes to the generated synonym, the Synonym Editor validates your entries and displays messages if they violate the underlying syntax of the data description language.

Ways to Enhance a Synonym

Here are just a few of the attributes you might want to add to the synonym to enhance your data access and reporting capabilities. You can:

* Create a cluster Join view by linking available synonyms to create a multi-segment (multi-table) file for reporting.
* Apply security rules for fields and values to ensure that user access is based on a data source security (DBA) specifications.
* Add dimensions for OLAP analysis.
* Add virtual columns (DEFINEs) and columns for aggregated values (COMPUTEs).
* Add filters to specify data selection criteria.
* Add group definitions for data sources that support groups.
* Add meaningful titles and descriptions, including Multilanguage variations.
* Change the format of fields (for example, the size of an alpha field or the format of a date field).
* Create business views of the metadata in order to limit the fields available to any retrieval request that references the business view and to group fields together based on their roles in an application.
* Define parent/child hierarchies for cube data sources such as SAP BW and Essbase.

The Synonym Editor is fully described in Using the Synonym Editor.

How an Application Uses a Synonym

Synonyms are stored apart from the associated data source. Your application uses a synonym to interpret the data source in the following way:

1. It identifies, locates, and reads the Master File for the data source named in a request.
2. It locates and reads the Access File for the data source named in the request, if that type of data source requires an Access File.
3. It locates and reads the data source(s).

The data source contents are interpreted based on the information in the synonym.

Chapter 13. Using the Synonym Editor

Describes the Synonym Editor and how you may use it to view and edit synonyms.

This chapter describes the Synonym Editor and how you may use it to view and edit synonyms.

Note: The Synonym Editor is accessible only through the DB2 Web Query Developer Workbench.

Accessing the Synonym Editor

The following image is an example of how to access the Synonym Editor from Developer StudioWorkbench.

A synonym consists of a set of attributes that describe the data source. It provides the metadata for a data source, which enables an adapter to access and interpret the corresponding data.

Synonym Editor Layout

The Synonym Editor occupies the Developer StudioWorkbench workspace and displays Tree View, Modeling View, Synonym Text View, and Access File Text View tabs.

Synonym Editor - Tree View Tab

The Tree View tab shows a hierarchy of segments and columns on the left, with the attributes and values of the selected item on the right.

Note: The attributes available depend on the type of synonym.

The image below is an example of an SQL data source with a key column selected.

Note: Information about the attribute that has focus is displayed at the bottom of the attribute list. In this case, an explanation of the FIELDNAME attribute appears.

The following objects may appear on the Tree View tab.

Object	Function
	Synonym. General icon used to indicate synonyms, visible on top of the Tree View tab. It provides information about the file name used and the application it resides in.

Object	Function
	Segment. Indicates a segment in a synonym. The root or parent segment appears first in the tree.
	Key Column. Indicates a key column.
	Column. Indicates a general column.
	Virtual Column (Define). Indicates a virtual or defined column. For more information about virtual columns. See Adding Virtual Columns (DEFINE) in a Synonym.
	Index Column. Indicates the native DBMS has an index for quick retrieval of values for this field.
	Filter. Indicates a Master File filter.
	Compute field. Indicates a computed field.

Synonym Editor - Segment Pop-up Menu

When you right-click a segment in the Synonym Editor, the following pop-up menu appears in the Tree View tab.

The image below is an example of an SQL data source with the root segment selected.

The following options are available:

Add

    Enables you to add one of the following:

    Segment From Existing Synonym

        Adds an existing synonym to the current synonym.

    Segment Via Metadata Import

        Enables you to create and add a new synonym to the current synonym through the Create Synonym tool.

    Segment Manually

        Adds a synonym that must by coded manually.

    Column

        Adds a column to the segment.

    Virtual Column

        Adds a virtual column to the segment.

    Filter

        Adds a filter to the segment.

    Compute

        Adds a calculated value to the file.

Group

> Adds a group column to the segment.

Data Profiling

> Provides the characteristics of the data for a segment.
>
> Data Profiling is available from the right-click context menu for all columns in the Master File hierarchy tree.

Sample Data

> Displays sample data in the workspace.
>
> Sample data is available from the Synonym Editor toolbar, the right-click context menu for all columns in the Master File hierarchy tree, and from the Modeling View.
>
> The following image is an example of the sample data that appears for a segment:

> **Note:** Sample Data is a great way to test the synonym for field data and to view the type of records returned. This can assist when performing Joins, testing connectivity to data sources, and so on.

Delete

> Deletes the segment.

Rename

> Enables you to rename the segment.

Synonym Editor - Column/Field Pop-up Menu

When you right-click a column in the Synonym Editor, the following pop-up menu appears in the Tree View tab.

The image below is an example of an SQL data source with a column selected.

The following options are available:

Add

> Enables you to add one of the following:
>
> **Column**
>
> > Adds a column to the synonym.
>
> **Virtual Column**
>
> > Adds a virtual column to the synonym.
>
> **Filter**
>
> > Adds a filter to the segment.
>
> **Compute**
>
> > Adds a calculated value to the file.
>
> **Group**
>
> > Adds a group column to the synonym.

Impact Analysis

> Displays an Impact Analysis report for the particular column in the workspace. An Impact Analysis report identifies the procedures that access a Master File or field within a Master File. For detailed information on Impact Analysis, see Chapter 14, "Analyzing Metadata and Procedures," on page 511.

Data Profiling

Provides the characteristics of the data for a column. Data Profiling is available from the right-click context menu for all columns in the Master File hierarchy tree.

Sample Data

Displays sample data in the workspace.

Sample data is available from the Synonym Editor toolbar, the right-click context menu for all columns in the Master File hierarchy tree, and from the Modeling View.

The following image is an example of the sample data that appears for a column:

Note: Sample Data is a great way to test the synonym for field data and to view the type of records returned. This can assist when performing Joins, testing connectivity to data sources, and so on.

Decompose Date

Decomposes date fields into virtual columns representing Year, Month, Day, and Quarter fields.

Note: Decompose date is visible for date fields.

Delete

Deletes the column.

Rename

Allows you to rename the column.

Synonym Editor - Modeling View Tab

The Modeling View tab shows a graphical representation of the synonym. Use the Modeling View to define dimensions for OLAP analysis, view join properties, create cluster joins, and add or edit segments.

The image below is an example of an SQL data source in the Modeling View.

For more information about the Modeling View, see Enhancing Synonyms Using the Modeling View.

Synonym Editor - Synonym Text View Tab

The Synonym Text View tab shows the description of the underlying table.

You can print the Master File code by selecting **Print** from the File menu.

Synonym Editor - Access File Text View Tab

The Access File Text View tab shows the description of a synonym's Access File, which is used to access the database.

Note: You can print the Master File code by selecting **Print** from the File menu.

The image below is an example of an SQL data source in the Access File Text View tab.

Note: The text views are read-only. You cannot edit the underlying description from these tabs.

Synonym Editor Toolbar

The Synonym Editor toolbar contains buttons that provide quick access to commonly performed functions. The behavior of the button is determined by the selected object. Therefore, certain toolbar buttons may be inactive.

Button	Definition
	Saves the edits made to the synonym.
	Enables you to add segments from an existing synonym by using the Select Synonym dialog box.
	Enables you to add segments via metadata import by using the Create Synonym tool. This tool creates a synonym and includes it as a segment in the synonym from which the tool was launched.
	Enables you to add segments manually, assigning values to segment attribute fields in the Synonym Editor. **Note:** You would only use this approach if you are coding a Master File from scratch, as you would for a FOCUS data source.
	Adds a column field.
	Adds a virtual column (DEFINE) field. For more information about virtual columns, see Adding Virtual Columns (DEFINE) in a Synonym.
	Adds a Master File filter. For more information about filters, see Creating Filters in a Synonym.
	Adds a COMPUTE field. For more information about computed fields, see Adding Computed Fields (COMPUTE) in a Synonym.

Button	Definition
	Adds a group. For more information about groups, see Adding Group Fields in a Synonym.
	Deletes the selected item.
	Adds field/value security DBA. For more information about DBA security, see Applying Database Administrator Security.
	Enables you to view and refresh sample data for the object.
	Enables you to create a business view and create a custom Master File that can use selected fields from the original synonym. In addition, you may customize field names, titles, and descriptions. For more information about business views, see Creating Business Views in Developer Studio.

Viewing and Editing Synonym Attributes

The Synonym Editor enables you to view and edit a synonym's attributes.

View and Edit Synonym Attributes

To view and edit synonym attributes:

1. From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab, which shows a hierarchy of segments and columns on the left, with the attributes and values of the selected item on the right.

   Note: The attributes available depend on the type of synonym.

   The image below is an example of an SQL data source with a key column selected.

Note: The Format, Expression, Description, and Nulls values are viewable in the hierarchy with the columns. To edit these values, use the corresponding attribute fields on the right-hand side of the Synonym Editor.

2. You can change the attribute values by typing in new values or by using the drop-down menus and check boxes.

   Note: The Synonym Editor does not let you make any changes that would render the Master File unusable. Therefore, you cannot edit any value field that is highlighted gray. In addition, if a change does not have proper syntax/format applied, the field may appear in red text. Messages and warnings appear if trying to save a file with an error.

3. Save changes by clicking **Save** from the File menu.

4. To close the Synonym Editor, select **Close** from the File menu or click the control button in the upper right corner.

Note: If you close the Synonym Editor without saving your changes, you are prompted to do so.

File Attributes Summary

The image below is an example of an SQL data source with the synonym file name selected.

Note: Information about the attribute that has focus is displayed at the bottom of the attribute list. In this case, an explanation of the SUFFIX attribute appears.

Synonyms can have the following file attributes:

General

> **SUFFIX**
>
>> Identifies the type of synonym or data source.
>
> **FDEFCENT**
>
>> Defines the default century value, specifying a century number for handling cross-century dates.
>>
>> **Note:** Use the default setting (0) unless you wish to retrieve data from a earlier century. For example, 19xx.
>
> **FYRTHRESH**
>
>> Defines the base years—to represent the lowest year to which the century value applies (FDEFCENT).
>>
>> **Note:** Use the default setting (0) unless you wish to retrieve data from a earlier century. For example, 19xx.
>
> **REMARKS**
>
>> Enables you to include descriptive information at the file level and specify multiple language descriptions for the synonym. Remarks are displayed along with the file name during reporting.
>>
>> For more information about multilingual descriptions, see Setting Up Multilingual Titles and Descriptions.
>
> **DATASET**
>
>> Identifies the physical location of the data source to be used in the file name, including the extension and the location of the data file.

Note: The attributes available depend on the type of synonym.

Segment Attributes Summary

The image below is an example of an SQL data source with a segment selected.

Note: Information about the attribute that has focus is displayed at the bottom of the attribute list. In this case, an explanation of the SEGMENT attribute appears.

Segments in a synonym can have the following attributes:

General

> **SEGMENT**
>
>> Is the name of the segment.
>
> **ENCRYPT**
>
>> Check this box to scramble field values in the current segment in order to protect it from unauthorized examination.
>>
>> **Note:** You must assign a DBA password to the file before setting the Encrypt option on. For details, see Encrypting and Decrypting a Master File. You must then turn the Encrypt option on before adding any records. If you add a record to a segment before setting the Encrypt option on, that value will not be encrypted.

Once a segment is encrypted, you can remove encryption only if you remove the segment and recreate it without turning on the Encrypt option.

Tip: Because there is a loss of processing efficiency when data is encrypted, encryption should be used selectively.

SEGTYPE

Specifies the type or relationship that a segment has to its parent and indicates which of the segment's fields are key fields, and in what order they are sorted.

Type - Identify the segment type and sorting options from the Type drop-down list.

Keys - Records are sorted in a data source by key fields. Enter the number of key fields that you want to use for sorting. For example, no two employees can have the same employee ID number, so you can use that field as the key. A segment instance can have more than one field that makes up the key; that is, two or more field values may be used to distinguish records.

SEGSUF

SEGSUF is used when part of the data source being described by the Master File is of a different data source type than that declared for the entire structure.

Note: SEGSUF is the data source type of a segment and any descendants it might have, where that type differs from the SUFFIX value.

Miscellaneous

DESCRIPTION

Contains a description or comments about the segment.

For more information about multilingual descriptions, see Setting Up Multilingual Titles and Descriptions.

CRFILENAME

Is the name of the cross-referenced data source.

CRSEGNAME

Is the name of the cross-referenced segment.

CRKEY

Identifies the common join field for the cross-referenced segment.

Note: These cross-referenced values (CRFilename, CRSegname, CRKey) are available for FOCUS data sources.

Adapter Specific

Note: Adapter Specific fields are shown if an Access File component has been generated with the synonym.

CONNECTION

Indicates the host server or data source for synonyms.

TABLENAME

Identifies the table or view. It may contain the owner ID, as well as the table name. For some synonyms, it must also contain the data source name.

KEYS

Identifies how many columns constitute the primary key.

KEYORDER

Identifies the logical sort sequence of data by the primary key.

WRITE

Specifies whether write operations are allowed against the table.

CARDINALITY

Defines the number of records that are found in the original data source when the synonym was created.

DBSPACE

Identifies the storage area in which the table resides.

Note: The attributes available depend on the type of synonym.

Column/Field Attribute Summary

The image below is an example of an SQL data source with a key column selected. **Note:** The attributes available depend on the type of synonym.

Note: Information about the attribute that has focus is displayed at the bottom of the attribute list. In this case, an explanation of the FIELDNAME attribute appears.

Columns in a synonym can have the following attributes:

General

FIELDNAME

Is the name of the column.

ALIAS

Assigns an alternative name for a column, or the real column name for a DBMS synonym.

MISSING

Controls how null data is handled, that is, if no transaction value is supplied.

TITLE

Supplies a title to replace the column name that is normally used in reports and enables you to specify multiple language titles for the column or field.

For more information about multilingual titles, see Setting Up Multilingual Titles and Descriptions.

USAGE

Describes the data type and format for the column for usage or display.

Note: Additional attributes, DEFCENT and YRTHRESH, are available if the Usage field is set to Date, Time, or DateTime (Timestamp) format. Use these attributes to enter the century and year threshold values for the column/field.

Miscellaneous

DESCRIPTION

Contains a description or comments about the column or field.

For more information about multilingual descriptions, see Setting Up Multilingual Titles and Descriptions.

ACCEPT

Specifies criteria for validating data.

OR enables you to specify an acceptable value.

FROM-TO enables you to specify a range of acceptable value fields.

FIND enables you to supply file and field names to instruct DB2 Web Query where to search for a data source and for a list of acceptable values. You supply the field name of the data field for which the validation criteria are being assigned, the file name of the target FOCUS data source where the field can be found, and the field name of the target data field that contains the validation criteria.

Note: Find is only available for FOCUS data sources and does not apply to OLAP-enabled Master Files. Note also that, in the Maintain environment, Find is not supported when developing a Master File.

WITHIN

Contains the name of a field to be included in a dimension.

These WITHIN statements are added to the synonym through the Dimension Builder to OLAP enable FOCUS files and relational tables. This enables you to perform OLAP analysis using the OLAP Control Panel, or to use it with the FML Painter.

FIELDTYPE

Identifies an indexed column.

Note: FIELDTYPE=R indicates a read-only column, which will not be updated by DM flows. This setting is useful for columns are that automatically assigned a value by the RDBMS.

ACCESS_PROPERTY

Specifies access options for the column's data.

INTERNAL defines a column that does not appear in sample data or in the list of available columns. Restricts the field from showing in any of the Field Lists in the reporting tools.

NEED_VALUE defines a column that requires a value to access the data.

Select By defines a column by value, range, or multivalues.

AUTHRESP defines a column that describes the result of an authentication operation. Correct response values must be provided in the ACCEPT attribute (using the OR predicate if more than one value is acceptable).

AUTHTOKEN defines a column that contains a response token to be passed as an input value to the operation to be executed.

HELPMESSAGE

Appends a help message to a column.

Note: The attributes available depend on the type of synonym.

Setting Up Multilingual Titles and Descriptions

You can open a synonym in the Synonym Editor and provide text for the title, caption, and description in multiple languages. These descriptions appear in the specified language in reports generated against the synonym.

The Multilingual Titles dialog box is available from the Remarks, Title, and Description attribute value fields in the Synonym Editor.

Note: The attributes available depend on the type of synonym.

Set Up Multilingual Titles and Descriptions

1. From the Data Servers area, double-click the Master File or select **Edit in Synonym Editor** from the File menu.

   The Master File opens to the Tree View tab in the Synonym Editor.

2. To add multilingual text:
   - For **Title**, click a column from the Master File hierarchy of columns on the left.
   - For **Remarks**, click the root level of the Master File (application/filename) on the left.
   - For **Descriptions**, click a column, segment, or custom field from the Master File hierarchy of fields on the left.

   The corresponding attributes and values appear on the right.

3. Click the ellipsis (**...**) at the end of the value field for either Remarks, Title, or Description.

   The Multilingual dialog box opens.

4. From the Specify Titles/Descriptions for different languages drop down list, choose the language in which you want the remarks (descriptions) and/or titles to be displayed.

Specify Titles for different languages:

| Arabic | ▼ | Add |

Chinese (Taiwan)	▲	Text
Czech		
Danish		
Dutch		
English (United Kingdom)		
English (United States)		
Finnish		
French	▼	

5. Click **Add**.

The selected language is added below the default language (which is determined by your code page selection).

Multilingual Titles for OINFO.PLANT (synonym CENTORD)

Specify Titles for different languages:

| Arabic | ▼ | Add |

Language	Text
[Default]	Manufacturing,Plant
French	

| Edit | Delete |

| OK | Cancel |

6. Type in a description/title in the Text field.
7. Required: You may add, edit or delete additional titles/descriptions:

   To add an additional language:

   a. Required: Select another language from the drop-down list.

b. Required: Click **Add**.

   c. Required: Type in a title/description for the field.

   To edit an existing specified title/description:

   a. Select the title/description and click **Edit**.

   You may also double-click the title.

   b. Manually type a title/description name.

   To delete a specified title:

   a. Select the title/description and language to be deleted.

   b. Click **Delete**.

8. Required: Click **OK** to close the Multilingual Titles dialog box.

9. Required: Click **Save** from the File menu to save the synonym.

10. To close the synonym, select **Close** from the File menu or click the control button in the upper right corner.

Enhancing Synonyms Using the Modeling View

The Synonym Editor Modeling View tab provides a visual presentation for the synonym for which positioning is preserved and stored in the Access file. Use the Modeling View to define dimensions for OLAP analysis, view join properties, create cluster joins, and add or edit segments. For more information about using the Dimension Builder in the Modeling View, see Defining Dimensions for OLAP Analysis.

Note: The Modeling View is not available for Cube data sources.

Enhance Synonyms Using the Modeling View

Use the Modeling View to enhance a synonym by adding a segment.

1. From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens.

2. Click the **Modeling View** tab.

   The Synonym Editor Modeling View tab opens in the workspace.

3. Right-click a segment in the workspace.

   The following pop-up menu appears.

4. Add segment through one of the methods listed:
   - Add Segment From existing synonym adds an existing synonym as a segment to the current synonym.
   - Adding Segment Via metadata import enables you to add segments by using the Create Synonym tool. This tool creates a synonym and includes it as a segment in the synonym from which the tool was launched.
   - Add Segment Manually enables you to add segments manually to the current synonym.

   Note: You would only use this approach if you are coding a Master File from scratch, as you would for a FOCUS data source.

5. Required: Optionally, you can double-click the arrowed lines between tables to open the Join Properties dialog box and determine how the tables are linked.

   Tip: You may also right-click a file icon and select **Join Properties** from the context menu.

   In addition, when creating a Cluster Join, there are two additional options for linking tables: Join All (default) is shown by a double arrow and Join Unique is shown as a single arrow.

Note: Join options are not available for FOCUS files.

Edit Synonyms Using the Modeling View

To edit synonyms using Modeling View:

1. From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens.

2. Click the **Modeling View** tab.

3. Right-click a segment icon.

   A pop-up menu appears, providing options for adding segments.

   Note: Options for adding segments are also available from the icons above the workspace.

To Add a Segment From an Existing Synonym:

a. Required: Select **Add Segment From Existing Synonym** from the pop-up menu.

The Select Synonym dialog box opens.

b. Click a synonym and click **Select**.

The segment is added to the synonym.

To Add a Segment Via Metadata import:

a. Select **Add Segment Via metadata import** from the pop-up menu.

This method enables you to launch the Create Synonym tool, create a synonym, and incorporate it as a new segment in the synonym from which you initiate the import.

The Create Synonym dialog box opens.

b. Create a synonym.

The segment is added to the synonym.

To Add a Segment Manually:

a. Select **Add Segment Manually**.

The segment is added to the Modeling View and a default field is created, using a default name SEG name.

b. Right-click the segment and select **Properties**.

The Segment Properties dialog box opens.

c. Required: Edit the segment's properties, if needed, and click **OK**.

d. Switch to the tree view to add or change attributes for the new segment(s).

The following image shows a synonym which has had several segments added in the Modeling View tab.

You can select the Synonym Text View or Access File Text View tab to see the resulting segment attributes.

Modeling View Pop-up Menu

When you right-click a synonym or segment in the Synonym Editor Modeling View tab, the following pop-up menu appears.

The following pop-up menu appears.

The pop-up menu has the following options:

Toggle

> Changes the view from a file icon to a table view, which enables you to see columns, sample data, and sample data parent keys.

> **Tip:** You may also double-click a file icon to open the table view. Double-click the table to close the table view, or click the X button from the toggle toolbar to close.

Join Properties

> Provides access to the Join Properties window.

> **Note:** Join options are not available for FOCUS files.

Add Segment From Existing Synonym
> Enables you to add an existing synonym as a segment to the current synonym.

Add Segment Via metadata import

> Enables you to create a new synonym through the Create Synonym tool and add it to the current synonym.

Add Segment Manually

Adds a segment to the current synonym, that must by coded manually.

Delete

Deletes the segment.

Rename

Enables you to rename the segment.

Properties

Launches the Segment Properties dialog box where you can edit the segment.

Join Properties Dialog Box

When you select Join Properties from a segment in the Synonym Editor Modeling View tab, the Join Properties dialog box appears.

The Join Properties dialog box contains Left and Right Source Columns, Join Type, and Join Condition options. Use the left and right source columns to create join maps and view sample data.

Note: Join options are not available for FOCUS files.

Creating Cluster Joins

Cluster Joins enable you to create a new file structure by linking existing synonyms of two or more relational tables using the same or mixed data sources. For example, you may join a DB2 table and an Oracle table, and so on. Use Cluster Joins to create new views in the metadata by linking together physical tables and easily report against the new view/structure. You can create cluster joins by using the Modeling View of the Synonym Editor.

The Master File description that is created combines the fields of the joined tables within a single file. The Access File from the combined file contains information about the actual location of the data sources, the Join information, and shows how the tables are linked.

The total number of tables that you can add to the tool is 64 (using 63 joins) that results in a new Master File that has a maximum of 64 segments.

Create a Cluster Join by Enhancing Existing Synonyms

Use the Modeling View to enhance an existing synonym by adding a segment.

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens.

2. Click the **Modeling View** tab.

   The Synonym Editor Modeling View tab opens in the workspace.

3. Right-click a segment in the workspace.

   The following pop-up menu appears.

4. Add tables (segments) through one of the methods listed:

   a. Add Segment From Existing synonym.

      Select a synonym to be added and click **Select**.

      Note: Use this method if you are creating a cluster join with an existing table/synonym.

> **Tip:** Click **Save As** from the Modeling View File menu if you do want to modify the original synonym.

    b. Required: Adding Segment Via metadata import enables you to add segments by using the Create Synonym tool. This tool creates a synonym and includes it as a segment in the synonym from which the tool was launched.

> **Note:** Use this method if you are creating a cluster join and need to use a synonym that does not exist. This option enables you to create the synonym and continue to create the cluster join.

    c. Add Segment Manually enables you to add segments manually, assigning values to segment attribute fields in the Synonym Editor.

> **Note:** Use this method if you are coding a Master File from scratch, as you would for a FOCUS data source.

The segment is added in the Modeling View.

5. Right-click the arrowed lines between tables to view the join options.

Note: These join options are not available, and do not appear, for FOCUS tables. The only way to view these options are by using Relational tables.

- Join All indicates a multiple instance (one-to-many) type of join. At run time, each host record can have many matching records in the cross-referenced file.

  Note: Join all is the default option.

- Join Unique indicates a single instance (one-to-one) type of join. At run time, each host record has, at most, one matching record in the cross-referenced file.

- Join Properties opens the Join Properties dialog box, from which you can determine how the tables are linked. You may:

  – Create Inner, Outer, or Cross Joins.

    Note: Outer joins are subdivided into Left Outer Joins, Right Outer Joins, or Full Outer Joins.

  – Combine records from the selected tables by mapping source columns.

Use the Tree and Text View tabs of the Synonym Editor to view or edit the details of these tables (segments).

Tip: Click **Save As** from the Modeling View File menu if you do want to modify the original synonym.

Create a Cluster Join Using a New Synonym

Another way to create a cluster join is to start with an empty synonym:

1. Right-click a Master Files folder, select **New**, then **Synonym via Synonym Editor**. The Add Master File dialog box opens.

2. Enter a unique file name in the File name field.

3. Click **Open**.

   The Synonym Editor opens to the Modeling View tab.

4. Right-click in the workspace and select from one of the available options to start building the new view.

Defining Dimensions for OLAP Analysis

Synonyms can be modified to support Online Analytical Processing (OLAP). The Synonym Editor provides tools to create OLAP hierarchies and dimensions. OLAP enables you to drill down or roll up on hierarchical data, pivot fields from columns to rows (or vice versa), and slice-and-dice information by filtering or querying data sources based on specified criteria thresholds.

You OLAP-enable the Master File by using the Synonym Editor to create dimension(s) at the field level and associate fields with each dimension.

Note: OLAP is a reporting facility; it is not relevant to data maintenance projects.

Using the Dimension Builder in the Synonym Editor Modeling View

The Dimension Builder enables you to create logical views based on enterprise data (relational or legacy data sources) for multi-dimensional analysis without manually editing metadata. The Dimension Builder works with relational and FOCUS data sources.

Add a Parent/Child Hierarchy

1. From the Synonym Editor, click the **Modeling View** tab.

   The Dimension Builder appears on the right side of the window.

Note: If the Dimension Builder is not visible, ensure that **Dimension Builder** is selected from the Synonym menu.

2. Right-click the dimension and select **Parent/Child** from the Add Hierarchy submenu.

Note: You may also select this option by clicking the **Add Parent/Child Hierarchy** button from the Dimension Builder toolbar.

The Mandatory Properties for Parent/Child Hierarchy dialog box appears.

3. Select a field from the Field Tree and click **Assign** to assign a Unique ID for the hierarchy.

4. Repeat Step 3 for the Caption and Parent hierarchy properties.

5. Required: Click **OK** to close the Mandatory Properties for Parent/Child Hierarchy dialog box.

   The Mandatory Properties are added to the Dimension Builder.

6. Use the right-click menu to rename the dimension, view properties, or view sample data for the dimension.
7. Click **Save** from the File menu to save the dimension.

Delete a Dimension

To delete a dimension, right-click a dimension and select **Delete**, or click the **Delete** button from the Dimension Builder toolbar.

Add Levels to the Hierarchy

This process enables you to edit an existing Master File, add tables (for non-FOCUS Master Files), and create and modify dimensions.

1. From the Synonym Editor, click the **Modeling View** tab.
2. Select the **Add Levels Hierarchy** button from the Dimension Builder toolbar.

   A level is added to the hierarchy. Use the right-click menu to rename the dimension or keep the default name.
3. Right-click the **file** icon in the Modeling View to toggle to the table view, which enables you to see columns, sample data, and sample data parent keys.

The table view appears in the Modeling View.

Tip: You may also double-click a file icon to open the table view.

4. Using the Columns tab of the table view, drag and drop selected fields to the Dimension Builder hierarchy folder.

You may also drag and drop fields to and from other hierarchies using the Dimension Builder.

5. Click **Save** from the File menu to save the dimension.

   The dimension is saved and store in the Master File.

Dimension Builder Toolbar

You can access the following commands from the Dimension Builder toolbar:

Button	Definition
	Adds a level hierarchy.
	Enables you to create a parent/child hierarchy and assign mandatory properties for the hierarchy.
	Deletes the selected item.
	Enables you to view and refresh sample data for the selected field.
	Enables you to switch back to properties in the Tree View tab of the Synonym Editor.

Creating Business Views

By defining a Business View of a Master File, you can limit the fields available or create a subset of fields from the original Master File. Fields can be grouped into meaningful folders and field names, titles, and descriptions can be customized for each Business View. The Business View points to its underlying Master File, and all of the actual field and security information comes from the original Master File when the Business View is used in DB2 Web Query tools (such as Joins and Defines) and in reports.

Fields in a Business View are organized into folders. Each folder contains a group of fields. The fields in a folder can come from different segments in the original Master File. The Business View may contain existing fields and can include existing custom fields (DEFINEs), COMPUTES, and Filters. Custom fields are associated with a specific segment in the original Master File and are subject to the same rules as real fields. A report can reference fields from multiple folders if they all lie along a single path in the original Master File.

The Business View Master File is stored as if it were a real Master File. However, it has no SUFFIX attribute. Instead, it contains a VIEW_OF attribute that identifies it as a Business View. It can be saved to a different application from the original Master File.

Note: Impact Analysis searches Business Views in addition to FOCUS procedures. This enables you to see if changes in the original Master File will impact fields used in the Business View. For detailed information on Impact Analysis, see Chapter 14, "Analyzing Metadata and Procedures," on page 511.

You may create a Business View for an existing Master File by using the Synonym Editor.

Create a Business View Using the Synonym Editor

1. From the Data Servers area, navigate to the Master Files folder where you wish to create the Business View and highlight the Master File to be altered.

   Note: You may create a Business View anywhere where you can select a Master File.

2. Required: Double-click the Master File or select **Edit in Synonym Editor** from the File menu.

   The Master File opens to the Tree View tab in the Synonym Editor.

3. Select **Create Business View** from the Synonym menu.

   The Business View window opens to the Business View Tree tab.

   A default File name and folder appears. Additional folders may be created for grouping fields.

   Note: A Business View Master File may contain only one root folder.

The Properties Bar on the bottom of the Business View window shows information for the selected fields and folders.

Tip: Use the Properties bar to change the title and descriptions for the field names. Items that cannot be edited are grayed out.

4. To add additional folders for the Business View, select **New Folder** from the BusinessView menu.

   Note: Multiple sub-folders can be created and folder may be empty for organizational purposes.

5. Required: Select fields from the Master File listed on the right and drag to the appropriate folder on the left. Use Shift-click and Ctrl-click to select multiple fields.

Note: If needed, fields may be duplicated and placed under multiple folders.

The selected fields appear in the Business View Tree tab.

6. Select **Save As** from the File menu to save the Business View as a Business View Master file.

Note: The Business View Master File may be saved in a different application then the main files.

7. Select **Close** from the File menu to return to the Synonym Editor.

Business View Menu Options

The following menu items are available from the Business View window.

New Folder

Adds a new folder to the Business View. You may also access this option from the right-click context menu and from the new folder icon, located on the Business View toolbar.

Delete Items

Deletes the selected item.

Rename Item

Enables you to rename a selected field or folder. You may also rename items from the Properties bar and the from the right-click context menu.

Refresh

Refreshes the Business View. A Refresh icon is also available on the Business View toolbar.

Use Application Directory Names

Specifies the application name where the original file exists. Information is written in the new master file. The following image is an example of the application directory name for the business view.

Note: This option is turned off by default and is only available during the creation of the business view.

Sample Data

Test the business view for field data and view the type of records returned.

Impact Analysis

Opens the Impact Analysis tool which enables you to analyze data, control search criteria, save reports, and interactively open and edit procedures based on search results. For detailed information on Impact Analysis, see Chapter 14, "Analyzing Metadata and Procedures," on page 511.

Exposed Synonym

Shows the Synonym referenced by the Business View.

Properties Bar

Shows the Properties Bar where you may edit properties for the selected fields and folders. Items that cannot be edited are grayed out.

Note: The Properties Bar may be moved or docked anywhere on the Business View window.

Business View Tree

Shows the contents of the Business View in the Business View Tree. This is the default option.

Text View

Shows the contents of the Business View in the Text View. You may also select this option by clicking the Text View tab from the bottom of the Business View window.

Note: The text view is read-only. You cannot edit the underlying description from this tab.

Usage Notes for Business Views

- The detailed information about fields, such as USAGE and ACTUAL formats or indexes remain in the original Master File.
- All information about Cluster Master Files remain in the original Master File.
- DBA attributes are only allowed in the original Master File and are respected by the business view.
- When a Master File description contains more than one field with the same name, as can occur when files are joined, the BELONGS_TO_SEGMENT attribute identifies which instance of the field name is being referenced in the Business View.
- Folders can be empty for organizational purposed. For example, Region can have empty folders called North, South, East, and West.
- You can issue an SQL SELECT command against a Business View. However, a Direct SQL Passthru request is not supported against a Business View.
- Business Views support alternate file views and fully qualified field names.
- The SEG. operator against a Business View folder displays all of the fields in that folder, not all of the fields in the real segment.
- Requests against a Business View cannot reference any fields or segments not in the Business View.
- All HOLD formats are supported against a Business View.
- All adapters for non-FOCUS data sources support retrieval requests against a Business View.
- Business Views are not supported with data source maintenance commands such as Maintain or REBUILD.
- Business Views are not available for Cube Data Sources.

- For OLAP enabled Master Files, dimensions are not visible while creating a business view. Only fields from the original Master File will be visible.
- When using Business Views, the following SET command must be specified: SET FOCTRANSFORM=ON. This SET command can be placed in a procedure or can be set in the global server profile or specified in a user profile and can be set while using the Business View or regular Master Files. For thin client tools (Power Painter, HTML tools, and so on), it needs to be in the profile as end-users do not have access to the SET tool or ability to access an editor and manually enter the required command.

  Adding this SET command in the profile is a good practice as it will avoid errors during reporting in case command is missing and users will not need to be concerned about what type of file they are using during reporting (Business View or existing master file).

Using a Business View Master File

When you use the Business View Master File in the DB2 Web Query tools and reports, the Field formats, descriptions and titles will be retrieved from the original Master File, unless they are customized and a title and description is available through the Business View.

You may access the Business View Master Files from all development areas of Developer Workbench.Studio:

The Table list shows all available Master Files including the Business Views that are available. The Remarks column shows a description from original Master File unless the Business View file contains it own remarks.

The following image is an example of a Business View Master File in the DB2 Web Query Table List, that appears when creating a report in the Data Servers area.

In the Report Assistant, when using a Business View Master File with the Report Assistant, only fields from the Business View are shown in the Fields list.

The following image is an example of a Business View Master File in the Report Assistant.

Adding Virtual Columns (DEFINE) in a Synonym

You may create a DEFINE field as a custom field in the Synonym Editor. A custom field can be used in a request as though it is a real data source field. Virtual columns (DEFINES) are available when the data source is used for reporting.

A virtual column can contain an expression, a constant, or a column name.

- If the virtual column is a complex expression, you can create the expression with the Virtual Column Calculator or just type it into the Expression field.
- If the virtual column is a simple expression, like a constant value, you can type the value in the Expression field.

Virtual columns are designated by the following icon:

After creating a virtual column, you can test it by right-clicking the synonym and selecting **Sample Data**. Sample Data appears in a separate dialog box.

Create a Virtual Column in a Synonym

To create a virtual column in a synonym:

1. From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens.
2. Right-click a segment (or column) and click **Add**.
3. Select **Virtual Column** from the Add submenu.

   The Virtual Column Calculator opens.

4. From the Virtual Column Calculator, type a name for the column in the Column input field, or use the default define name.
5. Required: You may enter a descriptive title for the virtual column (DEFINE) in the Title input field.

   Tip: From the Synonym Editor, click the browse **(...)** button at the right of the TITLE and DESCRIPTION value fields to specify multiple language titles.
6. Use the Expression tab and the calculator buttons to build the expression for the virtual column (DEFINE).

   or

   Use the Filter Builder tab to build the expression.

   a. From the Filter Builder tab, use the drop-down lists to select the filter Column, Relation, and Type.

      Note: Parameters are not supported.

   b. Click the browse **(...)** button at the right of the Value input field.

The Value Selection dialog box opens.

    c. Select from the available value(s) and use the arrows to add or remove values.

    d. Click **OK** to close the Value Selection dialog box and return to the Filter Builder tab.

       The expression is added to the value field.

e. To add another filter, double-click a column or variable from the Columns/Variables tab on the right side of the Virtual Column Calculator. The filter is added to the Filter Builder. Add the expression value.

f. To delete an expression from the Filter Builder, click the red X in the row of the filter that you are deleting. The filter is removed from the Filter Builder.

7. You may select the Check expression and Sample Data buttons, located on the top right of the Virtual Column Calculator, to verify that the expression is valid and to view sample data for the filter.

8. Click **OK** to close the Virtual Column Calculator and return to the Synonym Editor.

    Note: To edit the DEFINE, Title, or Expression, you may do so directly from the Synonym Editor or you may click the browse **(...)** button at the right of the EXPRESSION value field to relaunch the Virtual Column Calculator.

9. If no columns from the synonym are used in the expression or have been defined, you can use the WITH option to identify the logical home of the defined calculation. You can also use the WITH option to move the logical home for the virtual column to a lower segment than it would otherwise be assigned to (for example, to count instances in a lower segment).

    Tip: You can click and drag the DEFINE field and move it to a different segment in the Tree View tab, which also changes the segment association.

10. Specify the Missing Data options for columns that allow null data. You can allow all missing data.

11. Click **Save** from the File menu to save the synonym.

12. To close the Synonym Editor, select **Close** from the File menu or click the control button in the upper right corner.

For more information about expressions and virtual column (DEFINE) attributes, see Defining Attributes and Creating Expressions for Custom Fields.

Creating Filters in a Synonym

Filters are created in the Master File through the Synonym Editor and can be used in a Business View file or in reporting tools such as Power Painter, HTML Report Assistant, and so on. You can also use filters to perform other data checking and validation, and sort data based on the conditions that you create.

Filters are created under a specific segment and by default they have association with the selected segment. Filters can also be created without segment association.

Create Filters in a Synonym

1. Required: From the Data Servers area, double-click a synonym from the Master Files folder, or right-click the synonym and select **Edit in Synonym Editor**.

   The Synonym Editor opens.

2. Required: Right-click a segment or field and select **Filter** from the Add submenu. The Filter Calculator opens.

3. From the Filter Calculator, type a name for the filter in the Column input field, or use the default Filter name.

   Note: It is recommended that filters have a descriptive name to help identify the filter action during reporting.

4. The Format field shows a default value of I1.

   Note: The format field cannot be changed. Values for filters return 0 for false and 1 for true.

5. You may enter a descriptive title for the filter in the Title input field.

Tip: From the Synonym Editor, click the browse **(...)** button at the right of the TITLE and DESCRIPTION value fields to specify multiple language titles.

6. Use the Expression tab and the calculator buttons to build the expression for the filter. or Use the Filter Builder tab to build the expression.

   a. From the Filter Builder tab, use the drop-down lists to select the filter Column, Relation, and Type.

      Note: Parameters are not supported with Master File Filters.

   b. Click the browse **(...)** button at the right of the Value input field.

      The Value Selection dialog box opens.

   c. Select from the available value(s) and use the arrows to add or remove values.

   d. Click **OK** to close the Value Selection dialog box and return to the Filter Builder tab. The expression is added to the value field.

e. To add another filter, double-click a column or variable from the
    Columns/Variables tab on the right side of the Filter Calculator. The filter
    is added to the Filter Builder. Add the expression value.

f. To delete an expression from the Filter Builder, click the red X in the row of
    the filter that you are deleting. The filter is removed from the Filter Builder.

7. You may select the Check expression and Sample Data buttons, located on the
    top right of the Filter Calculator, to verify that the expression is valid and to
    view sample data for the filter.

8. Click **OK** to close the Filter Calculator dialog box to return to the Synonym
    Editor.

    Note: To edit the Filter, Title, or Expression, you may do so directly from the
    Synonym Editor or you may click the browse **(...)** button at the right of the
    EXPRESSION value field to relaunch the Filter Calculator.

9. Required: To create a Filter without segment association, use the WITH
    drop-down list to select a blank segment.

    Note: Filters are created under a specific segment and by default they have
    association with the selected segment. Filters can also be created without
    segment association.

Note: If using a field that appears in multiple segments, the WITH segment associated should be the lowest level segment, or it should be left empty to prevent errors.

In addition, If no fields from the synonym are used in the expression or have not been computed, you can use the WITH option to identify the logical home of the Filter calculation. You can also use the WITH option to move the logical home for the Filter field to a lower segment than it would otherwise be assigned to (for example, to count instances in a lower segment).

10. Click **Save** from the File menu to save the synonym. The filter is saved as part of the synonym.

11. To close the Synonym Editor, select **Close** from the File menu or click the control button in the upper right corner.

Adding Computed Fields (COMPUTE) in a Synonym

You may create a Computed field as a custom field in the Synonym Editor. The procedure for adding a custom field is similar to the procedure used to add a Defined field. The Computed field is identified as the Master File Computed Field and is differentiated from the Defined fields and the other Computed Fields.

Note: Computed fields from the Master File appear in the Windows versions of the Graph Assistant and in the Report Assistant fields list.

Create a Computed Field in the Synonym Editor

To create a computed column in a synonym:

1. Required: From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens.

2. Required: Right-click a segment (or column) and click **Add**.

3. Required: Select **Compute** from the Add submenu.

   The Compute Calculator opens.

4. From the Compute Calculator, type a name for the column in the Column input field, or use the default compute name.

5. You may enter a descriptive title for the computed field (COMPUTE) in the Title input field.

   Tip: From the Synonym Editor, click the browse **(...)** button at the right of the TITLE and DESCRIPTION value fields to specify multiple language titles.

6. Use the Expression tab and the calculator buttons to build the expression for the computed field (COMPUTE). or

   Use the Filter Builder tab to build the expression.

   a. From the Filter Builder tab, use the drop-down lists to select the filter Column, Relation, and Type.

      Note: Parameters are not supported.

   b. Click the browse **(...)** button at the right of the Value input field.

The Value Selection dialog box opens.

c. Select from the available value(s) and use the arrows to add or remove values.

d. Click **OK** to close the Value Selection dialog box and return to the Filter Builder tab.

The expression is added to the value field.

e. To add another filter, double-click a column or variable from the Columns/Variables tab on the right side of the Compute Calculator. The filter is added to the Filter Builder. Add the expression value.

f. To delete an expression from the Filter Builder, click the red X in the row of the filter that you are deleting. The filter is removed from the Filter Builder.

7. You may select the Check expression and Sample Data buttons, located on the top right of the Compute Calculator, to verify that the expression is valid and to view sample data for the filter.

8. Click **OK** to close the Compute Calculator and return to the Synonym Editor.

   Note: To edit the Compute, Title, or Expression, you may do so directly from the Synonym Editor or you may click the browse **(...)** button at the right of the EXPRESSION value field to relaunch the Compute Calculator.

9. Specify the Missing Data options for columns that allow null data. You can allow all missing data.

10. Click **Save** from the File menu to save the synonym.

11. To close the Synonym Editor, select **Close** from the File menu or click the control button in the upper right corner.

For more information about expressions and COMPUTE attributes, see Defining Attributes and Creating Expressions for Custom Fields.

Defining Attributes and Creating Expressions for Custom Fields

A custom field is a field whose value is not stored in the data source but can be calculated from the data that is there. You can create a custom field in your synonym by adding a virtual column (DEFINE), Master File filter (FILTER) and a Computed Field (COMPUTE). The fields are available whenever you access the corresponding data source in a reporting tool.

You can define attribute values and create expressions for custom fields by using the Synonym Editor.

Custom Field Attributes

The following attributes may be available for custom fields (DEFINE, FILTERS, and COMPUTE) in the Synonym Editor.

Note: The attributes available depend on the type of synonym and the type of custom field selected. The image below is an example of an SQL data source with the virtual column (DEFINE) selected.

Custom fields (DEFINE, FILTER, COMPUTE) typically have the following attributes:

General

> **DEFINE**
>
>> Is the name of the virtual column.
>>
>> **Note:** This attribute only appears when a virtual column (DEFINE) is selected.
>
> **FILTER**
>
>> Is the name of the Master File filter field.
>>
>> **Note:** This attribute only appears when a virtual Filter field is selected.

COMPUTE

> Is the name of the computed field.

> **Note:** This attribute only appears when a virtual computed field is selected.

EXPRESSION

> Is the calculation that creates the virtual column.

TITLE

> Supplies a title to replace the column name that is normally used in reports and enables you to specify multiple language titles for the virtual column.

FORMAT

> Describes the data type and format for the virtual column.

> **Note:** This attribute only appears for DEFINE and COMPUTE custom fields.

Allow Missing Data

> Allows missing data if not, transaction value is supplied.

> **Note:** This attribute only appears for DEFINE and COMPUTE custom fields.

All

> Allows all missing data if not transaction value is supplied.

> **Note:** This attribute only appears for DEFINE and COMPUTE custom fields.

Miscellaneous

WITH

> If no columns from the synonym are used in the expression or have been defined, you can use the WITH option to identify the logical home of the defined calculation. You can also use the WITH option to move the logical home for the virtual column to a lower segment than it would otherwise be assigned to (for example, to count instances in a lower segment).

> **Note:** This attribute only appears for DEFINE and FILTER custom fields.

DESCRIPTION

> Contains a description or comments about the virtual column.

WITHIN

> Contains the name of a field to be included in a dimension.

> These WITHIN statements are added to the synonym through the Dimension Builder to OLAP enable FOCUS files and relational tables. This enables you to perform OLAP analysis using the OLAP Control Panel, or to use it with the FML Painter.

> **Note:** This attribute only appears for DEFINE and FILTER custom fields.

SCD Type

Sets slowly changing dimensions. This option is only available for existing relational targets.

A **surrogate key** is the first column in the table and has an SCD type of **blank**. Other columns with a blank SCD type have no SCD processing done to them.

Logical Key Field is the database key.

Activation Flag indicates that the row is current.

Begin Date/End Date indicates date range for the row values. A null end date indicates the row is current.

Type I (overwriting history) designates columns whose database values are overwritten with new values.

Type II (preserving history) designates columns that whose database rows are flagged as inactive or assigned an end date; new rows are inserted with the new values.

blank (non-key columns) indicates that database values are not changed.

Note: The attributes available depend on the type of synonym.

Calculators for Custom Fields

To launch the Virtual Column Calculator, Filter Calculator, or Compute Calculator, click the browse **(...)** button at the right of the EXPRESSION value field in the Synonym Editor.

The selected calculator opens., depending on the type of custom field that you are creating.

The calculator has the following fields/options:

Column

> The name of the object being created (virtual field, filter, computed field).

Format

> Is the fields format.

Expressions tab

> Location for typing an expression. You can add data source fields from the Columns/Variables tab, functions from the Functions tab, and numbers and operators from the calculator as you type.

Filter Builder tab

> Displays the filter building window from which you can add and delete columns, choose the relation, type, and select values for your filter.

Columns/Variables tab

> Displays a hierarchical list of available source columns, and System Variables folders that you can use in creating an expression.

Functions tab

> A function is a program that returns a value. This tab lists the built-in functions that you can use to derive the value of a temporary field.

Function Assist button

> Enables you to specify parameters for the function through a dialog box when creating or editing a transformation.

Calculator buttons

> Insert numbers and operators.

The following operators are available:

| (single concatenation bar)

> Concatenates two values, retaining any trailing blanks after the first one. For example, if FIRST_NAME and LAST_NAME were both in A15 format, the expression
>
> ```
> FULL_NAME = FIRST_NAME | LAST_NAME
> ```
>
> would produce a column like the following:
>
> ```
> MICHAEL      SMITHSONJANE        JONES
> .
> .
> .
> ```

|| (double concatenation bar)

> Concatenates two values, suppressing any trailing blanks in the first. For example, to construct the full name and insert a comma, the syntax
>
> ```
> FULL_NAME = LAST_NAME || (', ' | FIRST_NAME)
> ```
>
> would produce a column like the following:
>
> ```
> SMITHSON, MICHAEL JONES, JANE
> .
> .
> .
> ```
>
> The concatenation in the parentheses is done first (preserving the blank space after the comma), and the result is then concatenated to LAST_NAME, suppressing the trailing blanks of LAST_NAME.

IF

> Establishes a conditional test.

THEN

> Specifies the action to perform if the result of a conditional test is TRUE.

ELSE

> Specifies the action to perform if the result of a conditional test is FALSE.

LT

> Returns the value TRUE if the value on the left is less than the value on the right.

NOT

> Returns the value TRUE if the operand is false.

LE

> Returns the value TRUE if the value on the left is less than or equal to the value on the right.

EQ

> Returns the value TRUE if the value on the left is equal to the value on the right.

AND

Returns the value TRUE if both operands are true.

GT

Returns the value TRUE if the value on the left is greater than the value on the right.

GE

Returns the value TRUE if the value on the left is greater than or equal to the value on the right.

NE

Returns the value TRUE if the value on the left is not equal to the value on the right.

OR

Returns the value TRUE if either operand is true.

**

Raises a value to the specified power.

( )

Adds parentheses.

"

Inserts two single quotation marks. Enter alphanumeric test values between these.

a->A

Converts selected text to uppercase.

A->a

Converts selected text to lowercase.

Check expression button

Verifies the validity of the expression.

Sample data button

Produces sample data for the expression.

Adding Group Fields in a Synonym

For data sources that support groups, you can assign a unique name to multiple fields to create a group field. A group field is created by two or more alphanumeric fields, physically next to each other. A group field provides an efficient means for grouping similar or logically connected fields that will be accessed as a single unit, but do not warrant a separate segment.

Note: In the Maintain environment group fields are supported in a Master File as long as they are not group keys, that is groups that are actual fields, as supported by VSAM. If you create a group field in the Maintain environment, the group will not be visible, only the fields that make up the group will be visible.

Add a Group Field to a Segment

1. Required: From the Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

The Synonym Editor opens.

2. Required: Right-click a segment (or column) and click **Add**.

3. Required: Select **Group** from the Add submenu.

    Note: The groups option may not be available for some data sources.

    A group is added to the synonym and its attributes and values appear on the right.

4. Type a name for the group in the **GROUP** field.
5. Select the USAGE **Type** value for the group. Specify the length, the decimal places (if applicable) and any display options for the group.
6. Click the **I - Index** box if you want the group to be indexed.
7. Select the ACCESS_PROPERTY values to specify access options for the group's data.
8. Optionally, you can specify the TITLE and DESCRIPTION display options.
9. Click **Save** from the File menu to save the synonym.
10. To close the Synonym Editor, select **Close** from the File menu or click the control button in the upper right corner.

Add a New Field to a Group Field

1. Required: Right-click the group field to which you want to add a new field and select **Add**.

2. Required: Select **Column** from the Add submenu.

    A field is added to the group and its attributes and values appear on the right.

3. Supply the required information for the group field. For more information about field attributes, see Viewing and Editing Synonym Attributes.

Add an Existing Field to a Group Field

1. Click the field you want to add to the group field.
2. While holding the left mouse button down, drag the field and drop it on the group field name.

   The field is added to the group field.

Delete a Group Field From a Segment

1. Required: Right-click the group and select **Delete**.

   A confirmation appears stating that all fields \ columns within the group will be deleted.

2. Required: Click **Yes** to delete the group and move the fields (within the group) under the root segment of the synonym.

   Click **No** to delete the group and all of the fields within the group.

   Click **Cancel** to close the Confirmation Delete dialog box and return to the Synonym Editor.

Delete a Field From a Group Field

Right-click the field, then select **Delete**.

Group Field Attributes

Group fields in a synonym can have the following attributes:

General

> **GROUP**
>
> > Is the name of the group.
>
> **ALIAS**
>
> > Assigns an alternative name for a group.
> >
> > If you create a report, the group name appears as a column heading unless you have specified an alternate title for the group. Aliases cannot be used as column titles.
>
> **TITLE**
>
> > Supplies a title to replace the group name that is normally used in reports and enables you to specify multiple language titles for the group.
>
> **USAGE**
>
> > Contains the format for the group field. Since the group field is made by concatenating together several other fields, the Synonym

Editor determines what this format needs to be. For example, if the group field has two alphanumeric fields in it, each 20 characters long (A20), then the group field must be alphanumeric and 40 characters long (A40). The group field is always alphanumeric, regardless of what the fields that make it up are.

Miscellaneous

DESCRIPTION

Contains a description or comments about the group. The description displays in Field lists and on the status bar.

Field descriptions also appear as bubble help in OLAP-enabled reports. If you do not include a description, bubble help shows the field name (column title).

FIELDTYPE

Identifies an indexed group. You can index the values of a field to enhance data retrieval performance. To do so, select the Index check box when you add a field and before you add the data. An index is an internally stored and maintained table of data values and locations that enhance the performance of data retrieval. A Master File can have several associated indexes, but the combined total of indices and segments cannot exceed 64.

Note: FIELDTYPE=R indicates a read-only column. This setting is useful for columns are that automatically assigned a value by the RDBMS.

Tip: You can turn on the index after adding data to a field, however, you will have to use the Rebuild Index option to create the index.

ACCESS_PROPERTY

Specifies access options for the column's data.

INTERNAL defines a column that does not appear in sample data or in the list of available columns. Restricts the field from showing in any of the Field Lists in the reporting tools.

NEED_VALUE defines a column that requires a value to access the data. Indicates that a selection is needed in the Report Request (WHERE condition).

Select By defines a column by value, range, or multivalues.
- If Value is checked, only one value should be defined for selection in the Report request.
- If Range is checked, a range selection should be defined in the Report request.
- If Multivalues is checked, multiple values are allowed for selection in the Report request.

Note: The attributes available depend on the type of synonym.

Applying Database Administrator Security

You can secure Master Files on a file-by-file basis. For each data source, security can be maintained at two different levels.

- **Database Administrator Level.** You specify the Database Administrator (DBA) password for the data source. The DBA has unlimited access to the Master File and data source and can set up or change security restrictions for individual users. Only the Database Administrator can encrypt (scramble) or decrypt (unscramble) a data source. For more information, see Encrypting and Decrypting a Master File.
- **User Level.** You specify the DBA and user passwords for the data source. The user password represents a user who has access to that data source. When you specify a user password, you must also set at least the type of file access: read, write, read/write, update. Each user's security can be further limited by restricting access to segments, fields, or field values. For more information, see Restricting Access to Segments, Fields, and Field Values. Once a user password has been established, you can apply the same restrictions to multiple users. For more information, see Applying Security Restrictions for Multiple Users.

Note: You cannot specify a Database Administrator (DBA) password during the create synonym process. You must use the Synonym Editor.

When security is specified, the Database Administrator, or user, must enter a password to get access to the data source. When the DBA or user no longer has access to the data source, you can delete their security.

Before adding any type of security to a data source, the Database Administrator must be aware of certain DBA guidelines. See DBA Guidelines.

Set Up Security for the Database Administrator

1. Required: In the Synonym Editor, click **DBA** from the Synonym menu or click

   the **DBA** button from the Synonym toolbar.

   The DBA Properties dialog box opens.

2. Type the DBA password in the DBA Password box.

   Note: When the password is created and the cursor is in that field, you can right-click and use the edit options to undo, select all, cut, copy, paste, or delete the password.

3. Click **OK** to save the Master File with the DBA password.

Set Up Security for the User

1. Required: In the DBA Properties dialog box, click **Add Users**.

   Note: The Add Users button is not active until you enter a DBA password.

   The User in File, File Access, and Access Restrictions options are activated.

2. Select the type of file access from the File Access group.

   Note: When the password is created and the cursor is in that field, you can right-click and use the edit options to undo, select all, cut, copy, paste, or delete the password.

3. Select the type of restriction—segment, field, and/or field value—from the Access Restrictions group, then select the type of access for each. For details, see Restricting Access to Segments, Fields, and Field Values.

4. To apply the same security restrictions as another user, select the Same Restriction check box and select another user from the drop-down list.

   Note: The Same Restriction option is activated when there are multiple users.

5. You may select the **User in File** browse button to select a Master File to which the user security will be applied.

   Note: The User in File option is activated when a user is selected.

6. Click **OK** to save the Master File with the user password and restrictions.

DBA Guidelines

You can ensure that the security restrictions you place on Master Files are correct by adhering to these guidelines.

- Every file with access limits must have a DBA password.
- No segment, field, or field value restrictions may be specified at the Database Administrator level. The Database Administrator should have unlimited access to the data source and all cross-referenced data sources.
- Once security restrictions have been applied, the Database Administrator should conduct thorough testing of every restriction before the data source is used. It is particularly important to check field values to make sure they do not contain errors. If they are in error, user access to the field data will be unnecessarily restricted.
- All groups of cross-referenced data sources must have the same security restrictions.
- You must have a DBA password to encrypt and decrypt or restrict existing data sources.
- The Database Administrator can change any type of security restriction.
- Access levels effect what fields users can access. The Database Administrator must consider what commands each user will need. If a user does not have access rights, that user will receive an error message.

DBA Properties Dialog Box

The following options are available from the DBA Properties dialog box.

DBA Password

Enter your DBA password of up to 8 characters. This is the password of the DBA who will be creating and maintaining the current data source. The DBA has full access to the data source and the corresponding Master File, controls the access rights of other users, and has encryption privileges. See Encrypting and Decrypting a Master File.

DBA File

Select the name of the Master File that contains your DBA security restrictions. Other Master Files can use the DBA security restrictions in this Master File.

User in File

Select the name of the Master File to which a user security will be applied. This option is used to add data source-specific restrictions to the current data source. It includes a FILENAME attribute for the selected Master File. The FILENAME attribute in the referenced Master File must be the same as the FILENAME attribute in the DBA section of the current data source.

Users

Enter the names (up to eight characters) of users to whose access rights will be granted for the current data source.

Same Restriction: User Same as

If multiple users require the same access rights, indicate the user whose access profile you wish to apply and the new user to whom you wish to apply it. See Applying Security Restrictions for Multiple Users.

File access

Choose **Read access** for full viewing rights.

Choose **Write access** to permit additions/changes to the data source.

Choose **Read/Write** for both of the above.

Choose **Update access** to make changes to field values.

Access Restrictions

Name - Name of the Master File component selected (for example, the segment or field name).

Access - Type of access restriction.

Value - Value to restrict access to.

Segment, Field, Value

Choose **Segment** to grant access to all or individual segments.

Choose **Field** to grant access to all or individual fields.

Choose **Value** to limit access to values that meet a test condition. See Restricting Access to Segments, Fields, and Field Values.

Encrypting and Decrypting a Master File

You may use the Encrypt and Decrypt attributes from the Synonym Editor to scramble and unscramble some or all of the contents of a data source. When you encrypt Master Files, they are secure from unauthorized examination.

Encryption at the data source level scrambles the entire contents of that Master File so it is unreadable. When you encrypt a Master File, you can decrypt it. Decrypting unscrambles the contents to its readable state.

Before you can encrypt or decrypt any Master File, you must specify the DBA password. If you do not specify a DBA password, you will not be able to encrypt or decrypt.

Encrypt a Master File

1. In the Synonym Editor, click **DBA** from the Synonym menu or click the **DBA**

   ![button] button from the Synonym toolbar.

   The DBA Properties dialog box opens.

2. Create and save the Master File with the DBA password.

3. From the Synonym Editor Tree View tab, select a segment from the Master File hierarchy (left pane).

   The values for the selected segment appear in the right pane.

4. Select the **Encrypt** check box.

5. Click **Save** from the File menu to encrypt the Master File.

Decrypt a Master File

1. At the encrypted segment level in the Master File hierarchy (left pane), click the **Encrypt** attribute.

2. De-select the **Encrypted** check box.

3. Click **Save** from the File menu to decrypt the Master File.

Selecting the Type of Access

When you assign a user password, the *type of file access* and *access restrictions* options are available. You must specify at least the type of access the user is permitted to have for the data source. The type of file access can be specified in the File Access group on the DBA Properties dialog box. In this group, there are four file access options:

- **Read.** Allows the user only to read (to view) the data source.
- **Write.** Allows the user only to write (to add or to make changes) to the data source.
- **Read/Write.** Allows the user to read and write to the data source.
- **Update.** Allows the user to update (to make changes to) existing field values.

The type of file access determines what a user can do to the entire data source:

- If you specify only the type of file access, the user will have the specified access to the entire data source.
- If you want to impose additional limitations you can restrict access to segments, fields, and/or field values. See Restricting Access to Segments, Fields, and Field Values.

Restricting Access to Segments, Fields, and Field Values

You can restrict access to segments, fields, and field values in a Master File by specifying Access Restrictions for a user. When you specify what is to be restricted—segment, field, and/or value—you can then specify the type of access that will be restricted. For fields, you can also specify whether or not you want the field to be displayed. For field values, you are required to enter a test condition.

Select the Segment/Field/Value button from the Access Restrictions area in the DBA Properties dialog box and specify the restriction.

- **Segments.** You specify the type of access for individual segments or all segments.

- **Fields.** You specify the type of access for individual fields or all fields. You can also specify not to display the data in that field using NoPrint. If you specify NoPrint for a field, the data will appear as blanks for alphanumeric format or zeros for numeric format whenever the user tries to retrieve it.

- **Values.** You specify the type of access (read or write) and the test condition. The user is restricted to using only those values that satisfy the test condition.

Applying Security Restrictions for Multiple Users

You can specify restrictions for one user and apply the same restrictions to other users. This helps when you want to set the same restrictions for a group of users.

Apply Previously Defined Restrictions to Another User

1. In the DBA Properties dialog box, click **Add Users**.

   Note: The Add Users button is not active until you enter a DBA password.

   The Same Restrictions group is activated.

   Note: The Same Restriction option is activated when there are multiple users.

2. In the Same Restriction group, click the **User Same as** check box.

3. Required: Click the arrow on the drop-down combo box, then select the user with the security restrictions that would apply to the new user. Security restrictions from the user in the User Same as box are applied to the new user. You can apply the security restrictions to other users by repeating steps 1 to 3.

   Note: You must have created at least one user security restriction to apply security restrictions to multiple users.

Deleting a DBA or User's Password

You can delete a DBA or user's security when it is no longer needed.

Delete a User's Password

1. On the DBA Properties dialog box, select the user name in the Add Users box.

2. Right-click and select **Delete** or press **Delete** on the keyboard. A confirmation message appears asking if you want to delete the security information for the selected user.

3. Select **Yes**.

If you delete the user based upon whom you have assigned security restrictions for other users, you must reset security restrictions for all users attached to the user you deleted.

Delete a DBA Password

Note: Deleting a DBA's security will delete all users' security for that data source.

1. From the DBA Password box, right-click and select **Delete** or press **Delete** on the keyboard. A confirmation message appears stating that no DBA password is defined.
2. Select **Yes**.

   All security information is removed.

Chapter 14. Analyzing Metadata and Procedures

Describes how to analyze procedures using Impact Analysis, and how to view Data Profiling for the columns in a synonym.

Describes how to analyze procedures using Impact Analysis, and how to view Data Profiling for the columns in a synonym.

Note: Impact Analysis is accessible only through the DB2 Web Query Developer Workbench.

Analyzing Procedures With the Impact Analysis Tool

You can use the Impact Analysis tool to generate a report that identifies the procedures that access a specific Master File or field within a Master File. This tool helps you analyze the potential impact of modifying or deleting Master Files or fields. The Impact Analysis tool enables you to analyze data, control search criteria, save reports, and interactively open and edit procedures based on search results.

Impact Analysis searches Business Views in addition to FOCUS procedures. This enables you to see if changes in the original Master File will impact fields used in the Business View. For more information about Business Views, see Creating Business Views in Developer Studio.

The Impact Analysis tool is accessible from Developer Workbench or from within the tools in the Synonym Editor and Business Views. When Impact Analysis is launched from the Synonym Editor or Business Views, it searches files based on the application path of the reporting server. From the interface, it enables you to select applications/domains to be searched.

View Impact Analysis Results from the Synonym Editor

When Impact Analysis is launched from within the Synonym Editor, it searches files based on the application path of the reporting server.

1. From the Projects or Data Servers area, double-click the Master File or select **Edit in Synonym Editor** from the File menu.

   The Master File opens to the Tree View tab in the Synonym Editor.

2. Select the Synonym File name, or a column field, right-click and select **Impact Analysis** from the context menu.

   The following image shows the context menu used to launch the Impact Analysis tool.

> **Note:** Impact Analysis is also available from the Business View tab.

> The Impact Analysis results are displayed in a report spreadsheet.

3. You may use the results toolbar to view server messages, print the report, copy data as text, and export the report.

4. Click **Save** from the File menu to save the Impact Analysis results.

5. Click **Close** from the File menu to close the Impact Analysis results window and return to the Synonym Editor.

Use the Impact Analysis Tool From the Interface

1. From the Projects or Data Servers area, highlight a Master File and select **Impact Analysis** from the File menu.

   Note: You may also select a **Impact Analysis** from the right-click context menu of a Master File. This interface enables you to select applications or domains to search.

   The Impact Analysis tool opens with the New Report tab displaying the selected (Master) File Name and default Search Paths.

2. To search for all procedures that access a specific Master File or field, perform one of the following:

   • **For the Master File you selected when opening the tool,** it will be searched by default. (Go to the next numbered step.)

- **For a different Master File,** click the ellipsis button to the right of the File Name search field and select a different Master File in the Open dialog box that opens.
- **For a single field within a Master File,** after you select the desired Master File, click the ellipsis button to the right of the Field Name search field and double-click a field name in the Master File pop-up box.

3. Optionally, to search for procedures in directory paths not listed by default in the Search Paths pane, add more search paths by clicking the folder icon above the Search Paths area and selecting one or more folders in the Browse for Folder dialog box that opens.

   Note: You can also delete search paths by highlighting a search path and clicking the **Delete** icon above the Search Paths area.

4. Click **Analyze** to display a report in the Impact Analysis Results pane.

   The following image shows the New Report tab of the Impact Analysis dialog box populated with File Name search criteria, multiple Search Paths, and a report displayed in the Impact Analysis Result pane.

You have options to edit procedures, print the report, delete an item in the report, and export a report.

Exported reports are XML formatted, have an .IAR extension, and are saved in the following default directory (unless you specify a different location):

drive:\ibi\DevStudio*releasenumber*\bin

5. Click the **Saved Reports** tab to access all previously created reports.

All Impact Analysis reports are automatically saved in the following XML formatted file (unless you manually delete a report):

drive:\ibi\DevStudio*releasenumber*\bin\IARepository.dita

Information is appended to this file as new analysis reports are performed. You have options to view reports, import previously exported reports, and delete reports.

Viewing Data Profiling Characteristics

Data Profiling provides data characteristics for the columns in a synonym. You can display the characteristics for all the columns in a synonym or segment, or for an individual column.

Note: Data Profiling is not available if your adapter is not configured correctly.

For alphanumeric columns, Data Profiling provides the segment, format, count of distinct values, total count, patterns count, maximum, minimum, and average length, minimum and maximum values, and number of nulls. Patterns count shows the number of patterns found in each alphanumeric column.

For numeric columns, Data Profiling provides the segment, format, count of distinct values, total count, maximum, minimum, and average value, and number of nulls.

Data Profiling for an individual column provides access to Statistics, Patterns, Values, and Outliers reports.

Data Profiling a Synonym or Segment

Data Profiling provides information on all the columns in a synonym or segment. You can also drill down to the Values or Patterns reports for an individual column from a synonym or segment's Data Profiling report.

View Data Profiling for a Synonym or Segment

To view the data profiling information for a synonym or segment's columns:

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab.

2. Right-click the synonym or segment name and, select **Data Profiling**.

The Data Profiling information displays in the workspace.

You may use the data profiling results toolbar to view server messages, print the report, copy data as text, and export the report.

3. Optionally, you can click a column name or patterns count (for alphanumeric columns) to drill down to the Values or Patterns reports, respectively.

This is a partial Values report produced by clicking a column name.

This is a Patterns report produced by clicking a Patterns Count value. The image below is an example of an address column.

For pattern analysis, a "9" represents a digit, an "A" represents any upper case letter, and an "a" represent any lower case letter. All printable special characters are represented by themselves, and unprintable characters are represented by an "X".

Data Profiling a Single Column

Data Profiling for an individual column provides access to four reports:

- **Statistics** shows the same information as a Data Profile report for a synonym or segment.

  For alphanumeric columns, the Statistics report provides the segment, format, count of distinct values, total count, patterns count, maximum, minimum, and average length, minimum and maximum values, and number of nulls.

For numeric columns, the Statistics report provides the segment, format, count of distinct values, total count, maximum, minimum, and average value, and number of nulls.

- **Patterns**, which is only available for alphanumeric columns, shows patterns of letters, digits, and special characters, as well as counts and their percent.
- **Values** shows unique values and their percents.
- **Outliers** shows the ten highest and lowest distinct values and their counts.

These reports are available by right-clicking a column in the Synonym Editor and selecting **Data Profiling**.

The Patterns report shows the number of patterns found for each alphanumeric column.

	Segment	Name	Format	Distinct Count	Count	Patterns Count	Minimum Length	Maxim
1	STORES01	STORE_CODE	A05	12	12	1	5	
2	STORES01	STORE_NAME	A23	12	12	1	19	
3	STORES01	ADDRESS1	A19	12	12	10	8	
4	STORES01	ADDRESS2	A31	12	12	11	13	
5	STORES01	CITY	A22	12	12	7	6	
6	STORES01	STATE	A02	11	12	1	2	
7	STORES01	ZIP	A06	12	12	1	5	

Clicking on a patterns count displays the actual patterns.

The image below is an example of an address column.

	Pattern	Count	Percent
1	99 AAAAAA AAAA	1	8.33
2	99 AAAAAA AAAAAAA	1	8.33
3	99 AAAAAAA AAAAA	1	8.33
4	99 AAAAAAA AAAAAAAA AAAA	1	8.33
5	99 AAAAAAAA AAAA	2	16.67
6	99 AAAAAAAA AAAAAA	1	8.33
7	9999 AAA AAAA	1	8.33
8	9999 AAA AAAAA AAAA	1	8.33
9	9999 AAA AAAAAA AAAA	1	8.33

For pattern analysis, a "9" represents a digit, an "A" represents any upper case letter, and an "a" represent any lower case letter. All printable special characters are represented by themselves, and unprintable characters are represented by an "X".

View Data Profile Statistics

To view the statistical data profiling information for a single column:

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab.

2. Right-click a column and, select **Statistics** from the Data Profiling submenu.

The Statistical Data Profiling information displays in the workspace.

3. Optionally, you can click a column name or patterns count (for alphanumeric columns) to drill down to the Values or Patterns reports, respectively.

	NAME	COUNT	PERCENT
1	default	1	33.33
2	logsegment	1	33.33
3	system	1	33.33

View Data Profile Patterns

Data Profile Patterns shows patterns of letters, digits, and special characters, as well as counts. This is only available for alphanumeric columns.

To view the patterns data profiling information for a single column:

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab.

2. Right-click a column and, select **Patterns** from the Data Profiling submenu.

The Patterns Data Profiling information displays.

For pattern analysis, a "9" represents a digit, an "A" represents any upper case letter, and an "a" represent any lower case letter. All printable special characters are represented by themselves, and unprintable characters are represented by an "X".

View Data Profile Values

Data Profile Values shows unique values.

To view the values data profiling information for a single column:

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab.

2. Right-click a column and, select **Values** from the Data Profiling submenu.

The Values Data Profiling information displays.

View Data Profile Outliers

Data Profile Outliers shows the 10 highest and lowest distinct values.

To view the outliers data profiling information for a single column:

1. From the Projects or Data Servers area, open a synonym by double-clicking a Master File from the Master Files folder.

   The Synonym Editor opens to the Tree View tab.

2. Right-click a column and, select **Outliers** from the Data Profiling submenu.

The Outliers Data Profiling information displays.

Note: Outliers produce a maximum of 10 highest and lowest distinct values, if they exist.

Appendix. Running Web Query Reports Using the Java Batch Run Utility

Describes how to run Web Query Reports using the Java™ Batch Run Utility.

The Java Batch Run utility enables you to run one or more Web Query reports from the command line so that the request(s) can be submitted to a batch queue, without having to physically log on to DB2 Web Query. The utility accepts a single report procedure (FOCEXEC), or multiple FOCEXECs that are in the DB2 Web Query installation and executes the FOCEXECs via a Java program.

Java Batch Run Utility Prerequisites

The following are prerequisites for running the utility:
- DB2 Web Query must be installed and running on the system where the reporting and application servers are running.
- One or more FOCEXECs which exist in the DB2 Web Query environment.
- An available user ID that is licensed for DB2 Web Query.

Invoke the Java Batch Run

To invoke the utility from the command line, type the following syntax:

```
java classpath  com.ibi.as400.IBIMRBatchJob client_root mr_domain mr_folder mr_fex_name [outfilename]
```

where:

classpath

Is the fully qualified path to the Java class you want to use.

client_root

Is the file system path to the client configuration. For example, /qibm/userdata/webquery/ibi/webfocus76/client/wfc.

mr_domain

Is the MR Domain name. For example, untitled. The Domain name must be exactly 8 characters. This allows you to use the Domain name instead of the HREF.

mr_folder

Is the MR folder name. For example, gr1q35pvuaeh. The report folder name must be exactly 12 characters. This allows you to use the folder name instead of the HREF .

mr_fex_name

Is the MR procedure name. For example, report.fex.

outfilename

Optional. Is the fully qualified path of the output file. For example, on a Windows system, c:\temp\output.html.

Breakdown of the Java Command

Java Command	Type/Purpose of Command
`java -cp`	Call Java and set classpath.
`/qibm/proddata/WebQuery/ibi/webfocus76` `/ibi_html/javaassist/WFAPI.jar:/qibm` `/userdata/webquery/ibi/webfocus76/LWI` `/apps/eclipse/plugins/webquery` `/WEB-INF/lib/com_ibi_as400.jar:` `/qibm/userdata/webquery/ibi` `/webfocus76/LWI/apps/eclipse` `/plugins/webquery/WEB-INF/lib` `/uas.jar:/qibm/proddata/java400` `/jt400ntv.jar`	Classpath.
`com.ibi.as400.IBIMRBatchJob`	Class to run.
`client_root`	Location of the Web Query installation. `/qibm/userdata/webquery/ibi` `/webfocus76/client/wfc`
`mr_domain`	Domain name containing the FOCEXEC. (Depends on the location.)
`mr_folder`	Folder name in the domain containing the FOCEXEC. (Depends on the location.)
`mr_fex_name`	FOCEXEC name. (Depends on the location.)

Submitting a Job

Using SBMJOB, Java commands can be sent to an iSeries® batch queue and also run the process with another user ID. If you want to submit the job to run with another user ID, you need access to the profile of the user ID.

Submitting a Job Using SBMJOB

In the following example, HREFs are used because the original domain name (test) is less than 8 characters and the original domain folder name (tst) is less than 12 characters. The JOB name, JOBQ, and USER are defined to run this job:

```
SBMJOB      CMD(QSH CMD('java -cp +
                /qibm/proddata/WebQuery/ibi/webfocus76/ibi_+
                html/javaassist/WFAPI.jar:/qibm/userdata/we+
                bquery/ibi/webfocus76/LWI/apps/eclipse/plug+
                ins/webquery/WEB-INF/lib/com_ibi_as400.jar:+
                /qibm/userdata/webquery/ibi/webfocus76/LWI/+
                apps/eclipse/plugins/webquery/WEB-INF/lib/u+
                as.jar:/qibm/proddata/java400/jt400ntv.jar+
                com.ibi.as400.IBIMRBatchJob+
                /qibm/userdata/webquery/ibi/webfocus76/clie+
                nt/wfc testk2de tsti03hsoob1+
                mr_fex_name=tstcar2'))+
                JOB(JAVABATCH) JOBQ(QBATCH) USER(OSDADMIN)+
                CPYENVVAR(*YES)
```

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