

IBM Cognos Express Reporter
Version 10.1.0

Business Insight Advanced User Guide



Note

Before using this information and the product it supports, read the information in "Notices" on page 225.

Product Information

This document applies to IBM Cognos Express Version 10.1.0 and may also apply to subsequent releases. To check for newer versions of this document, visit the IBM Cognos Information Centers (<http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp>).

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Introduction

This document is intended for use with IBM® Cognos® Business Insight Advanced. Business Insight Advanced is a Web-based tool used to author reports and analyze data. The user interface is designed for business users to get insight into their business.

Audience

To use this guide, you should have

- knowledge of your business requirements
- experience using a Web browser and writing reports

Finding information

To find IBM Cognos product documentation on the web, including all translated documentation, access one of the IBM Cognos Information Centers. Release Notes are published directly to Information Centers, and include links to the latest technotes and APARs.

You can also read PDF versions of the product release notes and installation guides directly from IBM Cognos product disks.

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. Business Insight Advanced has accessibility features. For information on these features, see the accessibility section in this document.

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

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Chapter 1. What's New?

This section contains a list of new, changed, deprecated, and removed features for this release. It also contains a cumulative list of similar information for previous releases.

It will help you plan your upgrade and application deployment strategies and the training requirements for your users.

For information about upgrading, see the IBM Cognos Business Intelligence *Installation and Configuration Guide* for your product.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit <http://www.ibm.com/>.

For an overview of new features for this release, see the IBM Cognos Business Intelligence *New Features Guide*.

New features in version 10.1.1

Listed below are new features since the last release.

Custom groups

You can create custom groups of existing data items based on elements that you define and that are meaningful to you.

For example, you can create custom groups for product names based on their alphabetical order. You might create groups for products that start with the letters A to C, D to F, G to H, and so on.

Related tasks:

“Creating relational custom groups” on page 103

Create custom groups to classify existing data items into groups that are meaningful to you.

“Creating dimensional custom groups” on page 124

Create custom groups to classify existing data items into groups that are meaningful to you.

Creating sections

You can now create sections to show a separate list, chart, or crosstab for a data item.

To create sections, use the section/unsection icon  on the toolbar.

Related tasks:

“Divide data into sections” on page 146

Create sections in a report to show a separate list, chart, or crosstab for a data item.

Filtering directly from the data tree

When using IBM Cognos Business Insight Advanced with relational data sources , you can now filter using measures  and query items  in the source tree. This allows you to create a filter based on a data item that is not included in your report.

Related tasks:

“Filtering based on data items not in the report” on page 105

You can create a filter using a data item in the source tree that is not included in your report.

Names for lists, crosstab, and chart objects

A new Name property for lists, crosstabs, and charts allows you to give these report objects a meaningful business name. These names allow business users to easily recognize the lists, crosstabs, or charts when they add them into an IBM Cognos Business Insight workspace.

Related tasks:

“Naming report objects for Business Insight workspaces” on page 35

Provide a name for list, crosstab, and chart report objects so that they can easily be identified when added in an IBM Cognos Business Insight workspace.

New startup options

A new **Start page view** option allows you to specify whether Business Insight Advanced opens in **Page Design** or **Page Preview** view (**Tools > Options > View**). By default, Business Insight Advanced opens in **Page Preview** view.

Related concepts:

“Options” on page 21

You can set various options that control the appearance and behaviors of IBM Cognos Business Insight Advanced (**Tools, Options**).

Visual aid to select lists and crosstabs

A new visual aid allows you to select all the objects in a list or crosstab.

When you enable the **Show Container Selectors** visual aid, a selector (three orange dots) appears in the top-left corner of lists and crosstabs. You can use this selector to easily access and set properties for all objects in the list or crosstab with one mouse gesture.

Related tasks:

“Using visual aids to design your report layout” on page 21

Visual aids in the work area help you when you are designing your report layout.

Keyboard shortcuts for accessibility

To make the report authoring experience more accessible to people who have a physical disability, such as restricted mobility or limited vision, Business Insight Advanced now includes new keyboard shortcuts to allow navigating the user interface with a keyboard.

Related concepts:

“Keyboard Shortcuts” on page 221

This product uses some standard Microsoft Windows and accessibility shortcut keys.

Showing content when no data is available

In IBM Cognos Business Insight Advanced, you can now specify what to show in a data container when no data is available in the database.

You can show an empty data container, such as a list, crosstab, or chart; alternate content; or text. By default, the text **No Data Available** appears.

Related tasks:

“Specify what appears for data containers that contain no data” on page 154

You can specify what appears in a data container when no data is available from the database.

Larger worksheet sizes for Microsoft Excel 2007 report outputs

IBM Cognos Business Intelligence now supports a larger worksheet size for report outputs exported in Microsoft Excel 2007 format.

In previous versions of IBM Cognos Business Intelligence, report output in Microsoft Excel format was limited to a maximum of 256 columns by 65,000 rows. Although this remains as the default worksheet size, administrators can now enable larger worksheets and change the maximum number of rows in a worksheet - up to a maximum of 16,384 columns by 1,048,576 rows - by using advanced server properties. This number matches the Microsoft Excel 2007 worksheet size limitations.

For more information, see the *IBM Cognos Business Intelligence Administration and Security Guide*.

For an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit <http://www.ibm.com/>.

Related concepts:

“Producing a Report in Microsoft Excel Format” on page 33

You can export your report output to Microsoft Excel spreadsheet software format (.xls).

Microsoft Excel 2007 supported as an external data source

IBM Cognos Business Intelligence now supports external data sources from Microsoft Excel up to version Microsoft Excel 2007.

For an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit <http://www.ibm.com/>.

Related concepts:

“Use Your Own External Data” on page 6

You can now supplement your enterprise data with your own external data file.

What's new in version 10.1.0

This section contains a list of new and removed features for past releases.

Knowing this information will help you plan your upgrade and application deployment strategies and the training requirements for your users.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit <http://www.ibm.com/>.

For information about upgrading, see the IBM Cognos Business Intelligence *Installation and Configuration Guide* for your product.

For an overview of new features for this release, see the IBM Cognos Business Intelligence *New Features Guide*.

New Features in Version 10.1.0

Listed below are new features since the last release. Links to directly-related topics are included.

Business Insight Advanced

IBM Cognos Business Insight Advanced is part of a new report consumption experience that provides an integrated business intelligence experience for business users.

You use IBM Cognos Business Insight to create sophisticated interactive workspaces and explore your content in a predefined way. In a Business Insight workspace, you work with existing content and perform basic analysis, data exploration, and collaborative decision making. When you want to perform deeper analysis and report authoring, you graduate to Business Insight Advanced, where you can perform more advanced data exploration, such as adding additional measures, conditional formatting, and advanced calculations.

Business Insight Advanced is both an extension of and a replacement for the IBM Cognos Report Studio Express authoring mode, which met the needs of financial analysts to create statement-style reports. Business Insight Advanced offers much greater capability, such as full support for list reports, charts, and relational data sources, and offers an entirely different user experience.

The Business Insight Advanced user interface concentrates on exploring data. As a result, the default behavior of some actions has changed. For example, double-clicking an item now drills down, and when inserting members, you now insert sets by default.

You can open Business Insight Advanced two different ways:

- from a Business Insight workspace to perform advanced editing of a report (**Do More**)
- from either the **Launch** menu in IBM Cognos Connection or from the Welcome page (**Author Business Reports**)

If you prefer to use the defaults from version 8.4, you can configure Business Insight Advanced to behave like the Report Studio Express authoring mode (**Tools, Options**).

Related concepts:

“Tips for Report Studio Express Authoring Users” on page 173

IBM Cognos Business Insight Advanced is both an extension of and a replacement for IBM Cognos Report Studio Express authoring mode, which allowed financial analysts to create statement-style reports. The Report Studio Express authoring mode allowed you to create only crosstabs with dimensional data sources, with no relational or charting support.

Enhancements to the User Interface:

Business Insight Advanced features an enhanced user interface, including a new modern skin.

Full and Dimensional-only Views of Data Tree:

When working with dimensional and mixed model data sources, you can switch between viewing the full data tree and the dimensional-only data tree by clicking

the view package tree button  and the view members tree button .

These same buttons are available when you build a calculation.

Related concepts:

Chapter 8, “Exploring Dimensional Data,” on page 109

Dimensional data sources include OLAP and dimensionally-modeled relational

(DMR) data sources. The **Source** tab  in the content pane shows a member-oriented view of the data.

Properties Pane:

A new **Properties** pane lists the formatting properties that you can set for an object in a report.

Related concepts:

Chapter 9, “Formatting Reports,” on page 139

Format your report to make it more readable and to reflect company standards.

When you format a report in IBM Cognos Business Insight Advanced, the formatting is stored in a layout.

Moving the content and properties panes:

By default, the content and properties panes appear to the right of the work area. You can move them to the left.

Related concepts:

“Options” on page 21

You can set various options that control the appearance and behaviors of IBM Cognos Business Insight Advanced (**Tools, Options**).

Inserting Members Buttons Moved:

The insert individual members button  and the insert member with children button  have moved to the top of the content pane.

These buttons have the same function as they did in the previous release.

Related tasks:

“Insert a Member” on page 111

By default, when you insert members from the source tree into your report with IBM Cognos Business Insight Advanced, members are inserted with their children and are inserted as sets. You can change how members are inserted. For example, you may want to insert a member without its children or insert only the member's children.

Expanded Tooltips:

Business Insight Advanced now features expanded tooltips for toolbar buttons.

The expanded tooltips include a title for the button and a description of what the button does. To see a tooltip, pause the pointer over a button in the toolbar.

Sorting Buttons Combined:

You can now access all the sorting options from the same sort button .

The options that appear when you click this button depend on your data source.

Related tasks:

“Sorting relational data” on page 99

You can sort items to view them in your preferred order.

“Sort Dimensional Data” on page 117

You can sort items to view them in your preferred order. For example, if your bar chart shows revenue for each product line by sales region, you can display product lines from the most revenue to the least across the x-axis.

New Report Style:

Business Insight Advanced includes a new report style with updated colors and gradients.

By default, new reports appear in the new report style.

Related concepts:

“Modifying Report and Object Styles” on page 155

Objects in reports are assigned a Cascading Style Sheet (CSS) class that provides a default style for the object. For example, when you create a new report, the report title has the class property **Report title text** assigned to it. In addition, objects inherit the classes set on their parent objects.

Use Your Own External Data

You can now supplement your enterprise data with your own external data file.

You can import an .xls, .txt, .csv, or .xml file into IBM Cognos and create reports that contain your own data. This allows you to leverage the IBM Cognos platform, including the security, data integrity, and full range of reporting functionality.

You can perform self-service reporting without the need to ask your IT department or administrator to set up a data source connection to your file. You import your own data file and start reporting on it right away.

After importing, your external data file is protected by the same IBM Cognos security as your enterprise data, thus allowing you to report on your data in a secure environment.

Related concepts:

Chapter 11, “Working With Your External Data,” on page 163

You can supplement your enterprise data with your own external or personal data file.

Charts

You can now create charts in Business Insight Advanced.

You can insert a specific chart type from any report with the insert chart button



on the toolbar or by dragging a chart object from the **Toolbox** tab. When you insert a chart into a report that already contains a list, the list data is added to the chart automatically.

The current default charts use many properties that allow you to customize most aspects of the chart. If you work with Report Studio reports that use the legacy chart type, you can set the **Use legacy chart authoring** option in Business Insight Advanced to continue working with the legacy chart type.

Related concepts:

Chapter 5, “Charts,” on page 43

You can use IBM Cognos Business Insight Advanced to create many chart types, such as column, bar, area, and line charts.

Mozilla Firefox Support

Versions 3.5 and 3.6 of the Mozilla Firefox Web browser are now supported for Business Insight Advanced.

For a full list of supported software environments, see <http://www.ibm.com/>.

Working with Relational Data Sources

You can now work with relational data sources and create list reports, or tabular reports, in Business Insight Advanced.

Related concepts:

Chapter 7, “Exploring Relational Data,” on page 93

Relational data is best represented by lists. This data is organized in IBM Cognos Business Insight Advanced by query items.

Chapter 6, “Lists,” on page 91

Use list reports to show detailed information from your database, such as product lists and customer lists.

Working with Dimensional Data Sources

The user interface of Business Insight Advanced is now geared toward data exploration, including drilling, excluding, moving, replacing, duplicating, expanding, filtering, and joining members.

When working with dimensional data sources, you can do the following by right-clicking a member in a set, using the **Explore** option on the **Data** menu, or

clicking the explore button :

- Drill up and down on members and sets.
- Exclude members from the initial set or from the set as it is currently shown.
- Move members to the top or bottom of the set.
- Replace members or sets with child members, with level members, with a set of selected members, with individual members, or with an intersection.
- Create duplicates of individual members, add members from the next level down, or create an intersection.
- Expand and collapse members to add its child members below it as new rows.
- Filter the members in a set.
- Join two sets to create a new, larger set.

Related concepts:

Chapter 8, “Exploring Dimensional Data,” on page 109

Dimensional data sources include OLAP and dimensionally-modeled relational

(DMR) data sources. The **Source** tab  in the content pane shows a member-oriented view of the data.

Default Behaviors for Members in Dimensional Data Sources:

Business Insight Advanced includes new default behaviors for members when working with dimensional data sources.

The default behavior for inserting members from the source tree into your report is now to insert members with their children and to create sets.

The default behavior for double-clicking a member is now to drill up or down on that member.

The default behavior for replacing a member is now to replace the entire edge rather than just one node.

Related tasks:

“Insert a Member” on page 111

By default, when you insert members from the source tree into your report with IBM Cognos Business Insight Advanced, members are inserted with their children and are inserted as sets. You can change how members are inserted. For example, you may want to insert a member without its children or insert only the member's children.

Drill-up and Drill-down Links:

You can drill up and down in a report by selecting and then clicking data items if you have enabled drill-up and drill-down links for all reports.

Related concepts:

“Options” on page 21

You can set various options that control the appearance and behaviors of IBM Cognos Business Insight Advanced (**Tools, Options**).

Report Name Used for the Exported Output File Name

When you run a report in an export format such as PDF, delimited text (CSV), Microsoft Excel spreadsheet software (XLS), the IBM Cognos report name is now used as the exported file name.

This allows you to save the report output using the same name as the original report.

Related tasks:

“Run a Report” on page 30

Run your report to see how the report will appear to report consumers.

Accessibility Features

Business Insight Advanced includes features to help you create reports that are more accessible to people who have a physical disability, such as restricted mobility or limited vision.

You can

- add alternative text for non-text objects, such as images and charts.
- add summary text for crosstabs, lists, and tables.
- specify whether table cells are table headers.

In addition, the documentation now includes alternate text for all graphics so that screen readers can interpret them.

Related concepts:

“Keyboard Shortcuts” on page 221

This product uses some standard Microsoft Windows and accessibility shortcut keys.

Appendix D, “Accessibility Features,” on page 221

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

Summarizing Data

You can now easily add summaries to your reports.

These summaries include the following:

- automatic summary
- total
- count
- average
- minimum
- maximum

Related tasks:

“Summarize Relational Data” on page 98

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

“Summarize Dimensional Data” on page 123

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

Filtering to Limit Data

In addition to context filters, you can now add filters in your report to exclude data based on a condition.

For example, you can select a value in your report, and filter out all values that are less than the one you selected. You can also combine filters to create more complex conditions.

In addition, you can filter sets of members to show only the top or bottom values. For example, if you have a crosstab showing revenue for each product line for all years, you can filter the product lines to show only the top three product lines by revenue.

Related tasks:

“Filtering relational data” on page 102

Use filters to remove unwanted data from reports. Data is displayed in the report only if it meets the filter criteria. When working with relational data sources, the available filtering options are determined by the data that you select.

“Filtering dimensional data” on page 132

Use filters to remove unwanted data from reports. Data is shown in the report only if it meets the filter criteria.

“Limiting data to top or bottom values” on page 134

You want to focus your report on the items of greatest significance to your business question. For example, you want to identify your top 100 customers and what that group of customers is worth.

Preview Reports when Opening and Saving

You can now see a preview of the report when you open or save it.

To preview a report, click **Tools, Options, Display report preview**.

Related concepts:

“Options” on page 21

You can set various options that control the appearance and behaviors of IBM Cognos Business Insight Advanced (**Tools, Options**).

Lay Out Report Pages

You can divide your report pages into various layouts, including two columns, two rows, and four quarters. Your report objects then fit into the report sections.

Related tasks:

“Lay Out Report Pages” on page 145

You can divide your report pages into various layouts, including two columns, two rows, and four quarters. You can then drag report objects to the report sections.

Curly Brackets and Parentheses are Breakable

When you run a report in PDF format, curly brackets {} and parentheses () no longer stay on the same line as the text before them.

For example, **Products(2004)** may now break to a new line between **Products** and **(2004)**.

Changed Features in Version 10.1.0

Listed below are changes to features since the last release.

Line break rules in PDFs have changed

Line break rules for word wrapping in PDFs have changed slightly from the last release. Brackets and parenthesis such as { } and () are now treated as breakable. For example, in past releases, the following string would be treated as a single non-breaking string.

Boilers(Steam)

In this release, "Boilers" and "(Steam)" are treated as separate strings which might result in the following when the string occurs at the end of a line.

Boilers

(Steam)

Removed Features in Version 10.1.0

Listed below are features that are removed since the last release.

Analyze with Analysis Studio

The ability to open a report with IBM Cognos Analysis Studio from within IBM Cognos Business Insight Advanced (**Tools** or right-click, **Analyze**) was removed in this release.

Excel 2000 and Excel 2000 Single Sheet Report Outputs

The Microsoft Excel 2000 spreadsheet software and Excel 2000 Single Sheet spreadsheet software report outputs are no longer supported in this release.

What's new in version 8.4

Listed below are new features since the last release. Links to directly-related topics are included.

Extended Suppression Capabilities

You can now suppress rows, columns, or rows and columns based on zero, null, divide by zero, and overflow values in reports created with relational, dimensionally-modeled relational, and OLAP data sources.

Related tasks:

"Suppress Empty Cells in Relational Reporting" on page 106

Sparse data may result in crosstabs showing empty cells. For example, a crosstab showings employees and products with a measure of revenue results in empty cells when the employee does not sell the product.

Crosstab Measures Can be Formatted Based on Other Crosstab Measures

You can apply conditional styles to crosstab cells based on an adjacent value in the crosstab.

For example, you can conditionally color the bubbles in a bubble chart based on any combination of the measures, and you can conditionally color an entire row of the crosstab based on any measure in the columns.

Related concepts:

“Highlight Data Using a Conditional Style” on page 151

Add conditional styles to your report to better identify exceptional or unexpected results. A conditional style is a format, such as cell shading or font color, that is applied to objects if a specified condition is true.

Lineage Information for Data

You can now view lineage information of a data item to see what the item represents before you add it to a report.

A data item's lineage information traces the item's metadata back through the package and the package's data sources. Viewing lineage information ensures that you add the correct data items to a report. For example, you can view the lineage information of a model calculation to see how it was created.

You can view this information from IBM Cognos Report Studio, IBM Cognos Query Studio, IBM Cognos Analysis Studio, and IBM Cognos Viewer.

Related tasks:

“View Lineage Information for a Data Item” on page 36

View lineage information of a data item to see what the item represents before you add it to a report.

Extended Support for Dimensionally-modeled Relational Data Sources

There is now support for multiple hierarchies of a single dimension for dimensionally-modeled relational data sources.

In addition, the sorting of data by member is enhanced. A member can appear sorted in the metadata tree and on the report without slowing performance. Also, members of a level are sorted in the context of their ancestor levels. This means that the hierarchical relationship of a level is considered when member sorting is applied.

Support for Multiple Hierarchies per Dimension for IBM Cognos and SSAS Cubes

If you use IBM Cognos PowerCubes or Microsoft SQL Server Analysis Services (SSAS) 2005 cubes, you can now insert multiple hierarchies from a single dimension in the same query in your report.

In previous releases, if a query contained multiple hierarchies from the same dimension, you encountered errors or no data appeared in your report.

Related tasks:

“Insert a Hierarchy” on page 113

You can quickly insert entire hierarchies in a report.

Intersections (Tuples) Can Include Calculated Members and Measures

You can now insert calculated members and measures in an intersection (tuple). This allows you to sort using calculated members and measures.

Related tasks:

“Create an Intersection (Tuple)” on page 131

When working with dimensional data, an intersection, also known as a tuple, is useful for obtaining a value from the combination of two or more members that you specify. Each member must be from a different hierarchy. The intersection can include only one measure.

Chapter 2. Understanding Business Insight Advanced

IBM Cognos Business Insight Advanced is a Web-based tool used to author reports and analyze data. The user interface allows business users to gain insight into their business.

Business Insight Advanced allows you to create reports with relational or dimensional data sources, and show data in lists, crosstabs, and charts. You can also use your own external data source.

You can open Business Insight Advanced two different ways:

- from a Business Insight workspace to perform advanced editing or to create a new report (**Do More**)
- from either the **Launch** menu in IBM Cognos Connection or from the Welcome page (**Author Business Reports**) to create new reports or edit existing reports.

Relational and dimensional reporting styles

You can create reports in IBM Cognos Business Insight Advanced using either a relational reporting style or a dimensional reporting style depending on the type of data source you use.

The Business Insight Advanced tools and query language are the same for both reporting styles. However, it is important to choose a reporting style to ensure that you are making the most of your data and to avoid mixing dimensional and relational concepts.

How to choose a reporting style

When authoring a report, first choose your preferred reporting style for working with data: relational or dimensional. You can choose a reporting style from your viewpoint:

- If you think about your data as tables and columns, you have a relational viewpoint and should use a relational reporting style.
- If you think about your data as a number of dimensions intersecting at cells, you have a dimensional viewpoint and should use a dimensional reporting style.

The type of data source that you use might also help you choose a reporting style. If the data tree shows members and dimensions, the data is dimensional. If it shows tabular query subjects, the data is relational. For more information, see “Data Source Icons” on page 29. Relational data requires using the relational reporting style. Dimensional data can be queried with either reporting style.

Relational reporting style

The relational reporting style consists of lists. You focus the data with filters and summarize with header and footer summaries.

- If your data is purely relational, then only query subjects and query items appear in the **Source** tab  tab of the content pane, and you must use the relational reporting style.

- If your data is dimensional, then dimensions appear in the **Source** tab  of the content pane, and you can still use a relational reporting style, but instead of query items (columns) and query subjects (tables), you use measures, levels, and level properties.

To see an example of relational style reporting with dimensional data, see the Manager Profile sample report in the GO Data Warehouse (analysis) package.

The relational reporting style is similar to report authoring in IBM Cognos Query Studio.

Dimensional reporting style

The dimensional reporting style consists of measures and members from different hierarchies arranged in a crosstab with cell values at the intersections. You focus the data with set expressions that navigate from specific members in the hierarchy and summarize with set summaries.

To see an example of dimensional style reporting with dimensional data, see the GO Balance Sheet as at Dec 31, 2006 sample report in the GO Data Warehouse (analysis) package.

The dimensional reporting style is similar to report authoring in IBM Cognos Analysis Studio.

Guidelines for each reporting style

This user guide is divided into relational and dimensional reporting sections so that you can follow the best practices for using this product with the reporting style that you have chosen. The following table outlines the best practices for both reporting styles.

Item	Relational reporting	Dimensional reporting
Report type	Lists Crosstabs pivoted from lists Charts created from lists	Crosstabs Charts created from scratch or from crosstabs
Data tree	The view will include the following: package folder namespace query subject query item measure level	The view will include the following: package - folder - namespace - fact - measure - dimension - hierarchy - level - level attribute - member

Item	Relational reporting	Dimensional reporting
Data items	Data items using relational and common constructs.	Data items using dimensional and common constructs. Extended data items.
Inserting data	Business Insight Advanced groups data automatically by query item. For example, when you add the Product type query item to a list, all product types appear when you run the report.	Business Insight Advanced groups data automatically by level. For example, when you add the Product type level to a crosstab, all product types appear when you run the report. You can also create sets of members from different levels within the same hierarchy. For example, you can create a set of members that includes only Cooking Gear and Lanterns and then add that data to a crosstab. You can also choose to insert just the member, just the children of the member, or the member and its children.
Focusing or filtering data	Use the filtering options available from the filter icon  on the toolbar. For example, add the Quarter query item to a list and filter to show only Q3. If you are using the relational reporting style with relational data, use only the techniques in “Filtering relational data” on page 102.	Add only the relevant members to an edge of the crosstab or to the context filter. For example, only add the Q3 member to your report. If you are using the dimensional reporting style, use only the following techniques: <ul style="list-style-type: none"> • “Creating a context filter” on page 133 • “Limiting data to top or bottom values” on page 134 • “Filtering the members within a set” on page 135
Drilling	Drilling through by value	Drilling through by member Drilling up and down
Alternative Studios	Query Studio	Analysis Studio

Related concepts:

Chapter 7, "Exploring Relational Data," on page 93

Relational data is best represented by lists. This data is organized in IBM Cognos Business Insight Advanced by query items.

Chapter 8, "Exploring Dimensional Data," on page 109

Dimensional data sources include OLAP and dimensionally-modeled relational

(DMR) data sources. The **Source** tab  in the content pane shows a member-oriented view of the data.

Working in Business Insight Advanced

To create reports in IBM Cognos Business Insight Advanced, you must become familiar with the Business Insight Advanced environment, including the user interface, the basic report layout, and setting options.

The User Interface

The Business Insight Advanced user interface has a work area, content and properties panes, a page layers area, and a context filter area to help you create reports.

The following shows the Business Insight Advanced user interface.

The screenshot displays the IBM Cognos Business Insight Advanced user interface. At the top, there is a menu bar (Edit, View, Structure, Data, Style, Run, Tools) and a toolbar. Below the toolbar is a font settings area. The main workspace is divided into several sections:

- Page layers area:** Located at the top left, it contains a "Drop members here to create page layers" instruction.
- Context filter area:** Located at the top center, it contains a "Drop members here to create a context filter (slider)" instruction.
- Content pane:** Located on the right side, it shows a tree view of "Insertable Objects" under "GO Data Warehouse (analysis)".
- Properties pane:** Located at the bottom right, it shows properties for a "Crosstab Node Member", including "Data format", "Border", "Padding", "Background color", "Foreground color", and "Font".

The central report area displays a bar chart titled "Revenue by product line by year" and a corresponding data table. The chart shows revenue for five product lines from 2004 to 2007. The data table below the chart provides the following values:

Revenue	2004	2005	2006	2007	Time
Camping Equipment	332,986,338.06	402,757,573.17	500,382,422.83	352,910,329.97	1,589,036,664.03
Outdoor Protection	36,165,521.07	25,008,574.08	10,349,175.84	4,471,025.26	75,994,296.25
Personal Accessories	391,647,093.61	456,323,355.9	594,009,408.42	443,693,449.85	1,885,673,307.78
Golf Equipment	153,553,850.98	168,006,427.07	230,110,270.55	174,740,819.29	726,411,367.89
Mountaineering Equipment		107,099,659.94	161,039,823.26	141,520,649.7	409,660,132.9
Products	914,352,803.72	1,159,195,590.16	1,495,891,100.9	1,117,336,274.07	4,686,775,768.85

At the bottom of the interface, there is a "Page navigation" area with "Top", "Page up", "Page down", and "Bottom" buttons, and a "Work area" label. The status bar at the very bottom shows the date "19-May-10", page number "1", and time "9:00:59 AM".

We recommend that you use a screen resolution of at least 1024 by 768 pixels.

The Work Area

The work area contains the crosstab that you use to create your report.

By default, you see live data as you create your report. You can switch to design mode where you see only placeholder data. For more information, see “Work in Preview or Design Mode” on page 20.

Content Pane

The content pane contains objects that you can add to a report. You add objects to a report by dragging them to the work area.

Note: You can reposition the content pane to the left of the screen (**Tools, Options, View** tab).

You cannot reposition the pane when you have opened a widget from a IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Source tab

The **Source** tab  of the content pane contains items from the package selected for your report, such as data items and calculations. The source tree presents a dimensional view of your data, organized into dimensions, hierarchies, levels, and measures. For more information, see Chapter 8, “Exploring Dimensional Data,” on page 109.

By default, the maximum number of items shown in the source tree is 50. Your administrator may set a different value for optimum performance, depending on the size of the data source.

For more information about inserting items from the source tree into your report, see “Add Data to a Report” on page 28.

Toolbox Tab

The **Toolbox** tab  of the content pane contains a variety of objects, such as text and graphics, that you can add to your report.

For more information about inserting objects from the **Toolbox** tab into your report, see “Insert Other Objects” on page 143.

Search Tab

The **Search** tab  of the content pane contains the results when you perform a search for members. You can insert the members found in a search directly into a report.

Note: the **Search** tab only appears after a search for a member has been run.

For more information, see “Search for a Member” on page 111.

Properties Pane

The **Properties** pane shows the formatting for an object in a report. You can change the formatting properties by using either the toolbar or the **Properties** pane. If you prefer using the **Properties** pane, you can click **Hide Style Toolbar** to hide the toolbar buttons that control object formatting.

Note: You can reposition the **Properties** pane to the left of the screen (**Tools, Options, View** tab).

You cannot reposition the pane when you have opened a widget from a Business Insight workspace to edit it in Business Insight Advanced.

Page Layers Area

Use the **Page layers** area to create sections, or page breaks, in a report to show values for each member on a separate page. For example, you can drag **Northern**

Europe sales territory from the **Source** tab  to the **Page layers** area. The report is broken into a separate page for each territory within northern Europe. Each page's context appears in the report header.

For more information, see “Create Page Layers” on page 117.

Context Filter Area

Use the **Context filter** area to filter your report to show values, or context, only for a specific data item. This technique is also known as a slicer filter. For example,

you can drag **Sales Territory** from the **Source** tab  to the **Context filter** area. When you click a specific territory from the list, the values in the crosstab change to represent data for that territory.

For more information, see “Creating a context filter” on page 133.

Work in Preview or Design Mode

By default, you see live data as you create your report. However, to see data, you must add enough information in your report to resolve the multi-dimensional query. You can also switch to only see placeholder data, using the **Page Design** mode.

You cannot work in **Page Design** mode when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure

1. From the **View** menu, click **Page Design** or **Page Preview**.
2. If you want to specify how many rows of data to show per page when working in **Page Preview** mode, from the **View** menu, click **Preview Options** and type a new value.

Basic Report Layout

A layout is a set of pages that defines the appearance and formatting of a report. When you design the layout of a report, you

- present the data in a meaningful way

- design the report by adding formatting, such as borders, color, and page numbers
- specify how the data flows from one page to the next

Pages

Pages are containers for the layout objects that you use to build a report. A page is made up of the following mandatory and optional components:

- page header (optional)
- page body (mandatory)
- page footer (optional)

When you run a report, the amount of data queried often exceeds one page. As a result, pages are added until all the data is shown. You have control over how data flows from one page to the next.

Objects

You add layout objects to a page when you create a report. The most commonly used objects are text, blocks and tables. Blocks are often used to lay out horizontal bands of information. Use blocks to hold text or other information.

Related tasks:

“Insert Other Objects” on page 143

In addition to text and images, the **Toolbox** tab contains other objects that you can add to the report layout.

Using visual aids to design your report layout

Visual aids in the work area help you when you are designing your report layout.

Procedure

1. Click **View > Visual Aids**.
2. Select the options that you want to make visible.

Option	Description
Show Boundary Lines	Overrides all boundary line settings by replacing them with default (dotted line) lines. For example, if you set the Border property for an object, the border lines are replaced with dotted lines.
Show Page Header & Footer	Shows the page header and page footer.
Show Drag & Drop Padding	Shows a drag-and-drop zone when the Padding property for an object is set to 0 . If the Padding property is set to a value that is greater than the minimum padding that Business Insight Advanced uses to show drag-and-drop zones, only the minimum padding is shown.
Show Container Selectors	Shows a small selector (three orange dots) in the top left corner of list and crosstabs that allows you to select all the objects in the list or crosstab.

Options

You can set various options that control the appearance and behaviors of IBM Cognos Business Insight Advanced (**Tools, Options**).

Note: You cannot set Business Insight Advanced options when you have opened a widget from a Business Insight workspace to edit it in Business Insight Advanced.

View Options

Option	Description
Show startup dialog	Shows the Welcome dialog box at startup.
Reuse Cognos Viewer window	Reuses the same IBM Cognos Viewer window when you rerun a report without first closing the window.
Resize Cognos Viewer window	Maximizes the IBM Cognos Viewer window when you run a report.
Enable animation	Animates the appearance of dialog boxes, menus, and panes.
Window startup size	Specifies the size of the Business Insight Advanced window at startup.
Position pane on the right (requires restart)	Moves the content and Properties panes to the right of the work area. This check box is selected by default. For the change to take effect, you must close and then restart Business Insight Advanced.
Show rich tooltips (requires restart)	Specifies whether to show descriptive tooltips when you hover over a button in the toolbar. This check box is selected by default. For the change to take effect, you must close and then restart Business Insight Advanced.
Display report preview	Shows a preview of the report when you open or save a report, within the Open , Save , and Save As dialog boxes.
Start page view	Enables you to start Business Insight Advanced in Page Design or Page Preview view. For the change to take effect, you must close and then restart Business Insight Advanced.

Edit Options

Option	Description
Automatically populate values lists	When building expressions in the expression editor, automatically shows values when you browse the data of a data item.

Option	Description
Enable drill-up or drill-down links	<p>For data items where drill-up or drill-down is possible, enables drill-up or drill-down links. When you select a data item, it becomes a link that you can click to drill up or down. Also, you can still double-click data items to drill up and down.</p> <p>By default, this option is enabled.</p>
Use chart flyouts in Design View	<p>When in Page Design view, shows the chart drop zones as flyouts that appear only when you hover your mouse over the chart. When cleared, the chart drop zones are always displayed.</p> <p>By default, this option is enabled.</p> <p>For more information, see “Creating Charts” on page 43.</p>
Drop replace on crosstab and chart nodes	<p>Specifies what the existing members are replaced with when you drag a new member onto a report.</p>
Double click on member action	<p>When working with dimensional data, specifies what happens when you double-click a member data item.</p> <p>By default, you drill down or up on the item that you double-click.</p>

Report Options

Option	Description
Limit on inserted individual members	<p>When working with a dimensional data source, limits the number of child members that are inserted. For example, you specify 3</p> <p>for this option and in the Source tab  you specify the option to insert children when you drag a member to a data container. You then drag the Camping Equipment member to the rows of a crosstab. What you see as rows are the child members Cooking Gear, Tents, and Sleeping Bags, and a row named Others (Camping Equipment) for the remaining child members of Camping Equipment.</p>

Advanced Options

Option	Description
Use operating system clipboard	If Business Insight Advanced is running in the Microsoft Internet Explorer Web browser, uses the Microsoft Windows operating system's clipboard instead of the internal application clipboard. Tip: If Business Insight Advanced is running in the Mozilla Firefox Web browser, the internal application clipboard is always used.
Allow local file access	Enables the opening and saving of reports on your computer.
Use legacy chart authoring	Enables you to create new reports using the legacy Report Studio charts instead of the default Business Insight Advanced charts.
Disable chart preview in design view	When in Page Design view, displays a static image for a chart instead of updating the chart with new data.
Override 10.x styles with 8.x styles on new reports	Specifies whether to use the version 8.x report styles by default when creating new reports. For more information about report styles, see "Modifying Report and Object Styles" on page 155.
Member display count limit (in source tree)	When working with dimensional data, specifies the maximum number of members that can appear in the Source tab  pane before you need to perform a search.

Web Browser Settings

Business Insight Advanced can be used in the Microsoft Internet Explorer and Mozilla Firefox Web browsers.

For a full list of supported software environments, see <http://www.ibm.com/>.

IBM Cognos Business Intelligence uses the default browser configurations provided by the Microsoft Internet Explorer and Mozilla Firefox Web browsers. Additional required settings are specific to the browser.

For the Microsoft Internet Explorer Web browser, the following settings are required:

- Allow Cookies
- Active Scripting
- Allow META REFRESH

- Run ActiveX controls and plug-ins
- Script ActiveX controls marked safe for scripting
- Binary and Script Behaviors
- Allow programmatic clipboard access
- Enable pop-ups for the IBM Cognos BI server

For the Firefox Web browser, the following settings are required:

- Enable JavaScript
- Accept Cookies
- Allow Scripts to disable or replace context menus
- Enable pop-ups for the IBM Cognos BI server

For more information about the Web browser configuration and cookies used by IBM Cognos BI, see the IBM Cognos Business Intelligence *Installation and Configuration Guide*.

Chapter 3. Creating Reports

When you create a report, you are actually creating a report specification. The report specification defines the queries and prompts that are used to retrieve data, as well as the layouts and styles used to present the data. For simplicity, the report specification is named the report.

Specify the Package

Specify the package that will provide items for the report.

A package contains a set of related objects, such as members, dimensions, filters, and calculations. When you open a package in IBM Cognos Business Intelligence, these objects are visible in the **Source** tab .

Note: You cannot specify the package when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced. In this case, the widget already has a package.

Before you begin

The package must be previously created and published to the IBM Cognos Connection portal. For more information, see the *IBM Cognos Framework Manager User Guide*.

Procedure

1. In the portal, from the **Launch** menu, click **Business Insight Advanced**.

Note: If there is more than one package available, the **Select a package** page appears. Otherwise, Business Insight Advanced starts.

2. If more than one package exists, click the one you want to use.
3. In the **Welcome** dialog box, choose whether to open a new or existing report or template:
 - To create a new report, click **Create a new report** and choose a basic report layout.
 - To open an existing report or template, click **Open an existing report** and select a report.

Refresh the Package

If the package that a report is using has changed, refresh it to ensure that you are working with the latest version.

Procedure

In the **Source** tab , click the refresh button .

Tip: You can also close and reopen the report to upgrade it to the latest version of the package.

Choose a Basic Report Layout

IBM Cognos Business Insight Advanced includes several basic report layouts that include report objects, such as lists, crosstabs, and charts. You can also choose to start with a blank report or open an existing report.

Note: You cannot choose a basic report layout when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced. In this case, the widget already has a basic report layout.

Procedure

1. From the report actions button , click **New** .
2. If you want to change the package, click the ellipsis (...) button and click a different package.
3. Choose a basic report layout:
 - To create a report using one of the predefined report layouts, double-click the layout.
 - To create a new report using another report, double-click **Existing**, locate the report, and click **Open**.

Tip: Click the **Type** box and then click **Report templates** to see only existing templates.

Add Data to a Report

Select the data items that you want to appear in the report.

The data tree in the **Source** tab  is members-orientated. It allows you to add dimension members, values, and hierarchies directly to your report. You can add a single member, only the member's children, or both the member and its children.

If you frequently use items from different query subjects or dimensions in the same reports, ask your modeler to organize these items into a folder or model query subject and then to republish the relevant package. For example, if you use the product code item in sales reports, the modeler can create a folder that contains the product code item and the sales items you need.

Procedure

From the **Source** tab , drag each data item to the work area location where you want it to appear.

Note: A flashing black bar indicates where you can drop an item. Another way to insert a data item is to right-click each item and click **Insert**.

Results

Tip: For more information about a data item, select the data item and, from the **Data** menu, click **Data Properties**. If you want to remove a data item from the report, select it and click the delete button.

Related tasks:

“Insert a Member” on page 111

By default, when you insert members from the source tree into your report with IBM Cognos Business Insight Advanced, members are inserted with their children and are inserted as sets. You can change how members are inserted. For example, you may want to insert a member without its children or insert only the member's children.

Data Source Icons

Each object in the data source has a representative icon. You can insert all of the following objects in a report, except for packages and dimensions.

Icon	Object
	Package, which contains the objects you can insert in a report.
	Namespace, used to organize objects.
	Query subject, which represents a table in the database.
	In relational data sources, query item, which represents a column of qualitative data in the database, such as product name or country or region. In dimensional data sources, level attribute, which represents a property of a level.
	A member is a unique item within a hierarchy. For example, Camping Equipment and 4 Man tent are members of the Products Hierarchy.
	Dimension, which represents a broad grouping of descriptive data about a major aspect of a business, such as products, dates, or markets.
	Hierarchy, which represents a collection of dimensional members organized into a tree structure.
	Level, which is a set of members that have common attributes. For example, a geographical dimension might contain levels for country or region or city. Multiple levels can exist within a level hierarchy, beginning with the root level. The root level is the parent and rollup of all members in the first level. It is used to obtain a rollup of all values across the hierarchy and to provide a convenient point to start drilling. For example, a Years level hierarchy may contain the following levels: <ul style="list-style-type: none">• Root level Years• First level Year• Second level Quarter• Third level Month

Icon	Object
	Measure or fact, a query item that represents a column of quantitative data in the database, such as revenue or quantity.
	Measures folder, which contains hierarchical measures.
	Model filter.
	Model calculation.
	Folder, used to organize data items. You cannot import a folder into your report.

Save a Report

Save your report to preserve the modifications you made.

Reports are saved to the IBM Cognos Business Intelligence server. You can also save your report on your computer.

Note: You cannot save a report when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced. In this case, you can click **Done** to finish editing the widget and return to Business Insight.

Procedure

1. From the report actions button , click **Save**, or click **Save As** to save a copy of the report under a different name.
2. If you are saving the report for the first time, specify where to save the report and type a file name.
For information about setting up folders in IBM Cognos Connection for your reports, see the IBM Cognos Connection *User Guide*.
3. Click **Save**.

Run a Report

Run your report to see how the report will appear to report consumers.

You can also run a report or a group of reports in IBM Cognos Connection. For more information, see the IBM Cognos Connection *User Guide*.

When you run a report in an export format such as PDF, delimited text (CSV), Microsoft Excel spreadsheet software format (XLS), the IBM Cognos report name is used as the exported file name.

Note: You cannot run a report when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced. In this case, you can click **Done** to finish editing the widget and return to Business Insight.

Procedure

1. Open the report that you want.
2. If you want to set run options, from the **Run** menu, click **Run Options**.
The default value is the value of the selected corresponding run option in IBM Cognos Connection.

Note: The run options you set apply only to the current session. When you close Business Insight Advanced, the options return to the default settings.

3. Change any values you want for the current session.

Option	Description
Format	None.
Paper size	Specify only if the output format is PDF.
Paper orientation	Specify only if the output format is PDF.
Data mode	Specify how much data is returned. All Data returns all data. Limited Data limits the amount of data returned based on design mode filters defined in the package. No Data returns artificial data instead of actual data from the data source. For more information about design mode filters, see the IBM Cognos Framework Manager <i>User Guide</i> .
Language	The content language sets the preferred language for the data, IBM Cognos Viewer, dates, and so on.
Rows per page	Specifies the number of rows to appear on each page.
Prompt	Select to be prompted for each prompt defined, unless the prompt is defined in a report page. If you clear the check box, you are prompted only if the report cannot run without user intervention. For example, if a report has a single parameterized filter that is optional, you are not prompted when you run the report.

Option	Description
Include accessibility features	<p>Specifies whether accessibility features, such as alternate text on images and charts and summary text in tables, are included in the report output.</p> <p>For more information about how to create accessible reports, see “Considerations to Improve Report Accessibility” on page 221.</p>

4. From the **Run**  menu, click one of the options to produce the report in the format you want.
- You can produce a report in HTML, PDF, CSV, various Microsoft Excel formats, and XML.

Results

The report runs in IBM Cognos Viewer. Once the report has finished running, you can run the report again in the same format or in a different format. If you run the report again in CSV or XLS format, the report appears in a new browser window or tab.

The options available in IBM Cognos Viewer depend on the capabilities set by the administrator for each user. For more information, see the IBM Cognos Business Intelligence *Administration and Security Guide*, or contact your administrator.

Running a Report Against a Dimensional Data Source

You can cancel a report that is running against Microsoft SQL Server Analysis Services only during the initial portion of its execution. After this time, the report runs to completion.

Units of Measure Notation

If you see an asterisk character (*), one of the following was detected:

- an unknown currency
- a value with an unknown or questionable unit of measure, such as a mixed currency calculation or rollup

Mixed currency values occur when you calculate values with different currencies.

This behavior occurs when you are using an IBM Cognos cube as a data source.

Producing a Report in CSV Format

IBM Cognos Business Intelligence can produce reports in CSV format so you can open them in other applications, such as Microsoft Excel spreadsheet software. Reports saved in CSV format

- are designed to support Unicode data across many client operating systems
- are UTF-16 Little Endian data encoded
- include a BOM (Byte Order Mark) at the beginning of the file
- are tab-delimited

- do not enclose strings in quotation marks
- use a new line character to delimit rows

You can open reports saved in CSV format using Microsoft Excel, Microsoft Windows Wordpad, and Oracle StarOffice software. By default, reports produced in CSV format will appear in the application associated with the .csv file type.

In IBM Cognos Connection, you can configure the CSV output to suit your environment. For example, you can specify the character used to delimit fields. For more information, see the *Administration and Security Guide*, or contact your administrator.

Producing a Report in Microsoft Excel Format

You can export your report output to Microsoft Excel spreadsheet software format (.xls).

Excel 2007 produces reports that you can view in Microsoft Excel version 2007. Excel 2007 format renders report output in native Excel XML format, also known as XLSX. This format provides a fast way to deliver native Excel spreadsheets to Microsoft Excel 2002, Microsoft Excel 2003, and Microsoft Excel 2007. Users of Microsoft Excel 2002 and Microsoft Excel 2003 must install the Microsoft Office Compatibility Pack, which provides file open and save capabilities for the new format. The output is similar to other Excel formats, with the following exceptions:

- Charts are rendered as static images.
- Row height can change in the rendered report to achieve greater fidelity.
- Column width that are explicitly specified in reports are ignored in Microsoft Excel 2007.
- Merged cells are used to improve the appearance of reports.
- The default size of worksheets is 65 536 rows by 256 columns.

Your IBM Cognos administrator can enable larger worksheets and change the maximum number of rows in a worksheet - up to a maximum of 16 384 columns by 1 048 576 rows - by using advanced server properties. For more information, see the *IBM Cognos Business Intelligence Administration and Security Guide*.

Excel 2002 produces reports that you can view in Microsoft Excel versions earlier than 2007. Excel 2002 format also offers the following benefits:

- Works with SSL protocol.
- Works with a single signon.

Secure reports can be accessed without subsequent signons because the system automatically identifies users and provides security information.

- Works with Netscape 7.01.
- Spreadsheets are contained in a single file for reliable spreadsheet navigation.
- The maximum size of worksheets is 65 536 rows by 256 columns.

Related concepts:

“Larger worksheet sizes for Microsoft Excel 2007 report outputs” on page 3
IBM Cognos Business Intelligence now supports a larger worksheet size for report outputs exported in Microsoft Excel 2007 format.

Appendix B, “Limitations When Producing Reports in Microsoft Excel Format,” on page 187

There are limitations when producing reports in Microsoft Excel format.

Producing a Report in XML Format

XML report outputs save the report data in a format that conforms to an internal schema, `xmldata.xsd`.

You can find this schema file in `c10_location/bin`.

This format consists of a dataset element, which contains a metadata element and a data element. The metadata element contains the data item information in item elements. The data element contains all the row and value elements.

You can create models from reports and other data that conform to the `xmldata.xsd` schema. This is useful if you want to use a report as a data source for another report, or if you use a database that cannot be read by IBM Cognos Framework Manager. In this case, export the data from the data source to an XML file, in conformance with the `xmldata` schema, and then open the XML file in Framework Manager.

For more information, see the Framework Manager *User Guide*.

You cannot produce the following in XML format:

- maps
- charts that do not have at least one category or series
- reports that have more than one query defined in the report, unless the additional queries are used for prompts

If a report contains more than one data container, such as a crosstab and a list, and both containers use the same query, only the output for the list is produced. If a report contains multiple lists, only the output for the first list is produced. If a report contains multiple crosstabs and multiple lists, only the output for the first list is produced.

Set PDF Page Options

Set PDF page options to control how report pages appear in PDF.

You can also set PDF page options in IBM Cognos Connection. For more information, see the IBM Cognos Connection *User Guide*.

Note: You cannot set PDF page options when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure



From the report actions button , click **PDF Page Setup**, set the page options that you want, and then click **OK**.

Naming report objects for Business Insight workspaces

Provide a name for list, crosstab, and chart report objects so that they can easily be identified when added in an IBM Cognos Business Insight workspace.

When building a workspace in IBM Cognos Business Insight, business users can insert an entire IBM Cognos Business Insight Advanced report or only insert an individual list, crosstab, or chart from a report.

By default, Business Insight Advanced gives each list, crosstab, or chart in a report a default name such as List 1, Crosstab1, Chart1, and so on. In Business Insight, these names appear in the **Content** tree. To help business users recognize the report objects, rename them to something more meaningful.

Procedure

1. Select the list, crosstab, or report.
2. In the **Properties** pane, double-click the **Name** property.
3. Type a name that describes the report object.

Recommendation - Creating Financial Reports

When creating a statement-style or financial report, we recommend that you follow these steps:

- Open the Financial report template.
This template offers a simple crosstab report, with a header and a footer that includes the date, page number, and time. You can edit the content of the report by adding and removing objects.
- Insert data to the rows.
A typical statement-style report includes accounts in the rows.
- Insert data to the columns.
A typical statement-style report includes a time dimension in the columns.
- Insert a measure.
- Insert calculations and format data.
- Add page layers or context filters to focus your report.
- Apply formatting.
You can add colors, lines, images, conditional formatting, blank rows or columns, headings, and so on to improve the appearance of your report.

The IBM Cognos Business Intelligence Software Development Kit

When you create a report, you are creating a report specification. A report specification is an XML file that you can view (**Tools, Show Specification** ). In addition, you can view the specification for a selected object with the **Show Specification (Selection)** menu option.

When you are viewing the report specification, you cannot modify or copy parts of it.

You can also programmatically create or modify reports by using an editing tool to work with report specifications. You then use the IBM Cognos Software Development Kit to implement the reports in your IBM Cognos BI environment.

This is useful if, for example, you must make the same modification in many reports. Rather than opening each report and making the change, you can automate the process using the Software Development Kit, thereby saving you time. For more information about the IBM Cognos Software Development Kit, contact your local sales office.

You can also modify the XML code in a report specification by saving the report specification on your computer.

View Lineage Information for a Data Item

View lineage information of a data item to see what the item represents before you add it to a report.

Lineage information traces the metadata of an item back through the package and the data sources used by the package. Lineage also displays any data item filters that were added by the report author or that were defined in the data model. Viewing lineage information ensures that you add the correct data items to a report. For example, you can view the lineage information of a model calculation to see how it was created.

Note: Lineage is available only after your administrator has configured it. For more information, see the *IBM Cognos Business Intelligence Administration and Security Guide*. In addition, lineage is not supported in reports that are not linked to packages.

You can use the lineage tool that comes with IBM Cognos Business Intelligence, or you can use another lineage tool by specifying the URL to the tool in IBM Cognos Administration. Note that if the URL source is secured, the source must be able to prompt users for a password because IBM Cognos BI does not pass security information. IBM Cognos BI also supports the IBM Metadata Workbench as a lineage tool. For more information about configuring other lineage tools, see the *IBM Cognos Business Intelligence Administration and Security Guide*.

You cannot use lineage information to troubleshoot queries. For example, lineage information will not explain why a data item is double counted. Also, you cannot view lineage information when running a report from a mobile device.

Before you begin

Before you can access lineage information for a report, your administrator must configure lineage in IBM Cognos Administration. Also, the administrator must enable the lineage capability and grant read permission for you on the report.

Note: The IBM Cognos BI lineage tool shows lineage on a report at its highest level. The lineage does not change after you drill down on a report. Because the selection context used to launch lineage can be affected by drill-down operations, we recommend that you always launch lineage at the highest report level before drilling down on the report. Otherwise, the lineage may not start properly.

Procedure

From the **Source** tab , right-click the data item and click **Lineage**.

Tip: You can view lineage information for multiple data items at the same time by first Ctrl+clicking the items. The IBM Metadata Workbench does not support viewing lineage for multiple data items at once.

Results

The lineage tool opens showing the lineage information of the selected data item.

The IBM Cognos Business Intelligence Lineage Tool

The IBM Cognos Business Intelligence lineage tool includes two views: the business view and the technical view.

The business view displays high-level textual information that describes the data item and the package from which it comes. This information is taken from IBM Cognos Connection and the IBM Cognos Framework Manager model.

The technical view is a graphical representation of the lineage of the selected data item. The lineage traces the data item from the package to the data sources used by the package.

When you click an item, its properties appear below it. If you click an item in the **Package** area, you see the model properties of the item. If you click an item in the **Data Sources** area, you see the data source properties of the item.

Business View Technical View

Package Data Sources

The diagram illustrates the data lineage for a calculation object named 'Order value'. It starts with a 'Package' containing a 'Data Sources' area. The lineage begins with a 'Sales' object, which is connected to two data sources: 'ORDER_DETAILS' (containing 'QUANTITY' and 'UNIT_SALE_PRICE') and 'ORDER_HEADER' (containing 'ORDER_NUMBER'). The 'Sales' object is then connected to a 'gosales' data source. Finally, the 'Order value' calculation object is connected to the 'Sales' object.

Properties for Order value

Property	Value
objectId	[Filters and calculations].[Order value]
objectName	Order value
objectType	Calculation
expression	total ([gosales].[Sales].[Quantity] * [gosales].[Sales].[Unit sale price] for [gosales].[Sales].[Order number])
datatype	Decimal
precision	77
scale	2
size	39
regularAggregate	Automatic
semiAggregate	Automatic

You can also view lineage information in IBM Cognos Viewer after you run a report. For example, you can click a cell in a crosstab to see how the cell value was calculated. To view lineage information in IBM Cognos Viewer, right-click an item in the report and then click **Lineage**. If you or an administrator runs a saved report with the IBM Cognos BI lineage tool, both the business view and the technical view are visible. Report consumers can see only the business view. In addition to the **Package** and **Data Sources** areas, a **Report** area exists when looking at the technical view.

Chapter 4. Crosstabs

Use crosstab reports, also known as matrix reports, to show the relationships between three or more query items. Crosstab reports show data in rows and columns with information summarized at the intersection points.

For example, the crosstab below shows the gross profit and revenue by product line for each year.

		2007			2006	
		Gross profit	Revenue	<i>Cost of Goods Sold</i>	Gross profit	Revenue
Personal Accessories	Glacier Deluxe	1,741,826.22	3,928,757.22	<i>2,186,931</i>	1,669,390.15	3,958
	Glacier GPS Extreme	5,639,265.95	12,034,715.22	<i>6,395,449.27</i>	5,921,887.95	12,249
	TX	8,306,303.78	18,172,476.5	<i>9,866,172.72</i>	14,701,866.32	32,35
	Pocket Gizmo	2,675,373.35	4,380,582	<i>1,705,208.65</i>	3,454,153.34	5,68
	Seeker 35	2,235,849.84	7,754,925.78	<i>5,519,075.94</i>	2,574,835.2	8,93
	Zone	9,434,315.06	28,021,707.95	<i>18,587,392.89</i>	16,263,229.54	49,62
	Mountain Man Deluxe	2,269,799.48	4,563,194.48	<i>2,293,395</i>	2,493,495.99	4,972
	Polar Extreme	347,639.66	701,512.16	<i>353,872.5</i>	499,545.53	998
	Ranger Vision	5,622,674.4	10,525,086.6	<i>4,902,412.2</i>	5,891,875.71	11,71

Working with Crosstab Reports

When you add data items to a crosstab, you create crosstab nodes and crosstab node members. These objects allow you to easily create crosstabs, using drag-and-drop operations.

Crosstabs are dimensional objects that have row edges and column edges. Each edge is composed of a set of crosstab nodes. Each crosstab node contains the following:

- One or more crosstab node members.
- Zero or one nested crosstab node, which contains one or more crosstab node members or nested crosstab nodes.

Each crosstab node member refers to a data item that contains an expression that defines the members that appear in the crosstab.

The following crosstab contains four crosstab nodes.

(4)

Revenue		<#Order year#>	<#Order year#>	<#Order year#>	<#Order year#>
		<#Order month#>	<#Total(Order month)#>	<#Order month#>	<#Total(Order month)#>
(1)	<#Total(Product line)#>	<#1234#>	<#1234#>	<#1234#>	<#1234#>
(2)	<#Product line#>	<#1234#>	<#1234#>	<#1234#>	<#1234#>
	<#Product type#>	<#1234#>	<#1234#>	<#1234#>	<#1234#>
(3)	<#Average(Product line)#>	<#1234#>	<#1234#>	<#1234#>	<#1234#>

Crosstab node 1 contains a single node member for the total. This node refers to the data item **Total(Product line)**.

Crosstab node 2 contains a crosstab node member that refers to the data item **Product line**. This member has a nested crosstab node containing a crosstab node member that refers to the data item **Product type**.

Crosstab node 3 contains a single node member for the average. This node refers to the data item **Average(Product line)**.

Crosstab node 4 contains a crosstab node member that refers to the data item **Order year**. This member has two nested crosstab nodes. The first node contains a crosstab node member that refers to the data item **Order month**. The second node contains a crosstab node member for the total. This node refers to the data item **Total(Order month)**.

Crosstab nodes can be placed anywhere in the crosstab. For example, in the previous diagram, you can drag **Order month** under **Average(Product line)** to create a row edge.

Create a Nested Crosstab

Nest data in a crosstab report to compare information by using more than one data item in a column or row. For example, a report shows the number of sales by product line for the past fiscal year. You decide to add a data item to further break down the number of sales by quarter.

When nesting columns in a crosstab report, there are four distinct drop zones where you can insert a new data item. The drop zone you choose will define the relationship between the data item and the column.

The following relationships are created when you insert a data item as a row:

- Inserting a data item to the left or right of a column creates a parent-child relationship between them.
When you insert a data item to the left of a column, the data item becomes a parent to the column. When you insert a data item to the right of a column, the data item becomes a child of the column.
- Inserting a data item above or below a column creates a union relationship between them.

The following relationships are created when you insert a data item as a column:

- Inserting a data item to the left or right of a column creates a union relationship between them.
- Inserting a data item above or below a column creates a parent-child relationship between them.

When you insert a data item above a column, the data item becomes a parent to the column. When you insert a data item below a column, the data item becomes a child of the column.

For example, you have a crosstab with Product line as rows and Quantity and Revenue as nested rows. For columns, you have Order method with Country or Region as a nested column. In this crosstab,

- Product line is a parent to Quantity and Revenue.
- Quantity and Revenue are peers.
- Order method is a parent to Country or Region.

Procedure

1. From the **Source** tab , click the data item to add.
2. Drag the data item to the report as a nested column or nested row.
A black bar indicates where you can drop the data item.
3. Repeat steps 1 to 2 to add other nested columns or rows.

Tip: If you add more than one measure to a crosstab, all measures appear as columns. You cannot have one measure appear as a row and another as a column. To make all measures appear as rows, swap columns and rows.

Create a Single-Edge Crosstab

Create a single-edge crosstab report to show data in a list-like form. For example, to show the quantity of products sold for each year and for each order method, you could create a crosstab with **Order Year** and **Order Method** as rows and **Quantity** as the measure.

Procedure

1. From the **Toolbox** tab , insert a crosstab object to the work area.
2. From the **Source** tab , drag data items to the **Rows** or **Columns** drop zone.
A black bar indicates where you can drop the data item.
3. Repeat step 2 to insert additional data items:
 - If you dragged the data item in step 2 to the **Rows** drop zone, drag the additional items above or below the first item.
 - If you dragged the data item in step 2 to the **Columns** drop zone, drag the additional items to the left or right of the first item.
4. To add measures to the crosstab, drag the measures to the **Measures** drop zone.

Results

When you run the report, a crosstab is produced that has only one edge.

Swap Columns and Rows

Swap columns and rows to look at information from a different perspective. This may help you discover high and low points in the data that you hadn't previously noted.

You can only swap columns and rows in a crosstab or chart. In a chart, you swap the x- and y-axes.

Procedure

From the toolbar, click the swap rows and columns button  .

Results

In the report, the rows become the columns and the columns become the rows.

Change a List into a Crosstab

Change a list into a crosstab to view your data from a different perspective.

Procedure

1. Click the columns to appear as columns or nested columns in the crosstab.
2. From the **Structure** menu, click **Pivot List to Crosstab**.

Results

The list becomes a crosstab with the columns you selected in step 2 appearing as columns and nested columns. The unselected columns, except for measures, appear as rows and nested rows. If you have one measure, it becomes the cells of the crosstab. If you have more than one measure, they appear as columns.

Tip: To make all measures appear as rows, swap columns and rows.

Chapter 5. Charts

You can use IBM Cognos Business Insight Advanced to create many chart types, such as column, bar, area, and line charts.

Tip: To view the available chart types, from the toolbar, click the insert chart button  and click **More**. You can also view the available chart types by adding a **Chart** object from the **Toolbox** tab  to an existing report.

Using Legacy Report Studio Charts

IBM Cognos Business Insight Advanced includes a default chart technology that is different than the legacy chart technology used in Report Studio as of version 10.1.0.

You can continue to work in Business Insight Advanced with IBM Cognos Report Studio reports that use the legacy chart technology if you set the **Use legacy chart authoring** option. You can also convert a legacy chart to a new default chart.

Related tasks:

“Convert Charts From One Type to Another” on page 65

This procedure applies to converting charts from one type (for example, a bar chart) to another type (for example, a line chart). It also applies to converting charts from the legacy Report Studio charts to the current default charts.

Creating Charts

Before creating charts, review the available chart types to select the best chart for your needs. Also review the chart elements that make up charts.

Tip: To view the available chart types, from the **File** menu, click **New**, and then double-click the chart icon . You can also view the available chart types by adding a **Chart** object from the **Toolbox** tab  to an existing report.

To create charts, drag data items from the **Source** tab  to the measures, data series, and categories drop zones.

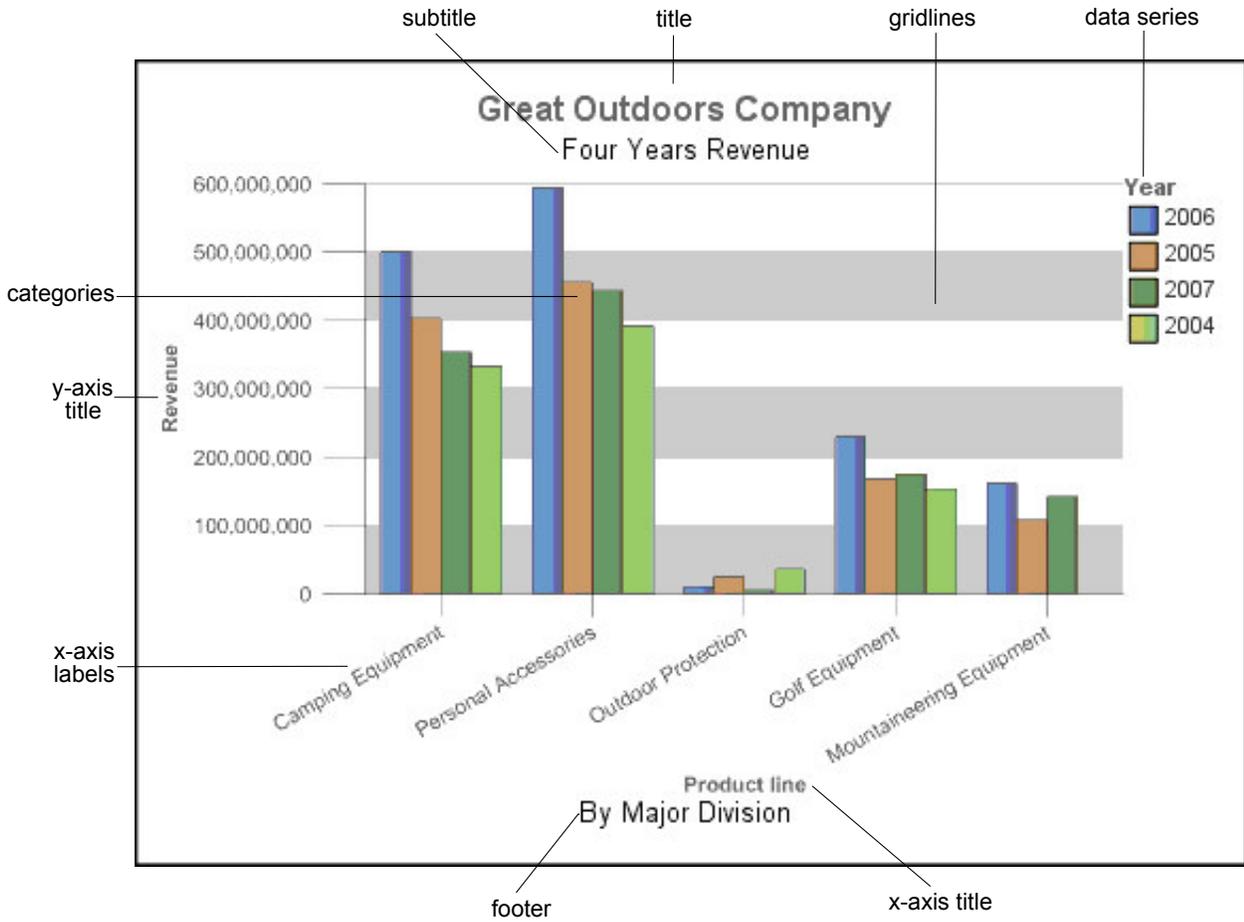
To help you when creating charts, you can do the following:

- Resize your charts.
- Move the chart drop zones into flyouts so that they appear only when you pause your pointer over the chart.

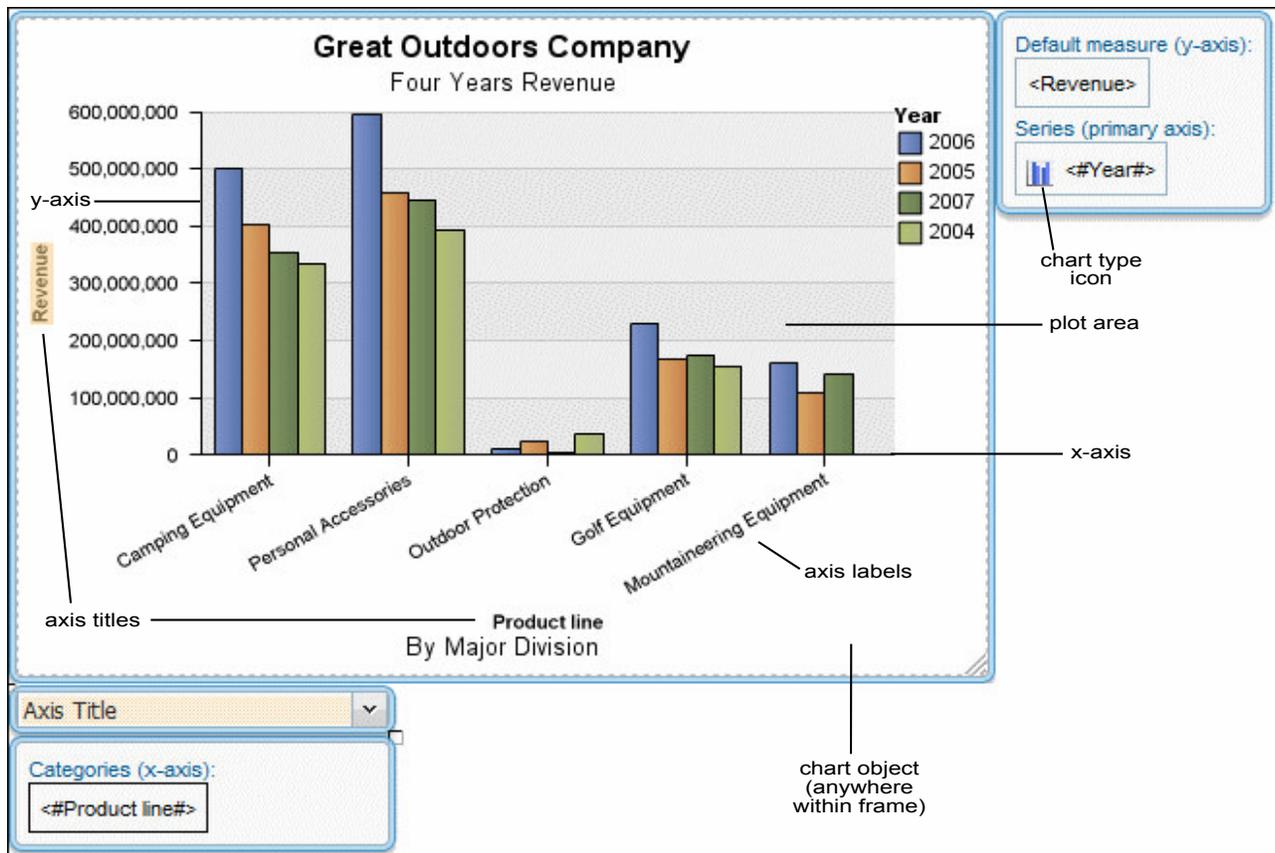
After you create a basic chart, modify the various chart objects to customize your chart.

Chart Objects

The following shows the most common chart objects as they appear in your report output in IBM Cognos Viewer.



The following shows the same chart as it appears in the IBM Cognos Business Insight Advanced user interface. The Y-axis title is selected.



Data Series

A data series is a group of related data points that are plotted in a chart. Each series has a unique color or pattern and is described in the legend. You can plot one or more data series in a chart; pie charts have only one data series.

In the example chart, the data series are order years 2004, 2005, 2006, and 2007.

Categories

Categories are groups of related data from the data series that are plotted on the X-axis. Categories of multiple data series are shown together using clustered and stacked data markers.

In the example chart, the categories are the product lines of The Sample Outdoors Company in clustered columns.

Axes

Axes are lines that provide references for measurement or comparison.

The primary axis (or Y-axis) refers to measures of quantitative data, such as sales figures or quantities. Charts can have more than one primary axis.

The category axis (X-axis or ordinal axis) plots qualitative data, such as products or regions. It runs horizontally, except in bar charts.

The z-axis is the vertical axis in a 3-D chart.

Major gridlines extend from the tick marks on an axis and run behind the data markers.

Legend

A legend is a key to the patterns or colors assigned to the data series or categories in a chart.

Columns, Lines, and Areas

Charts use graphical elements such as columns, horizontal bars, points, bubbles, lines, and areas as visual representations of data points.

Choosing a Chart Type and Configuration

To choose a chart type, consider what you want the chart to illustrate. Different chart types and configurations emphasize different things.

Purpose	Chart type or configuration
Show contributions of parts to a whole	Bar Charts Pie Charts Stacked Charts, when you want to display measures of the whole, as well as the parts 100 Percent Stacked Charts
Show trends in time or contrast values across different categories	Line Charts Area Charts Bar Charts Column Charts Always place time in the horizontal axis.
Compare groups of related information against actual values	Bar Charts Radar Charts
Compare different kinds of quantitative information	Combination Charts
Rank values in descending or ascending order	Bar Charts Column Charts
Show correlation between two sets of measures	Point Charts
Show key performance indicators in an executive dashboard	Gauge Charts Bullet Charts

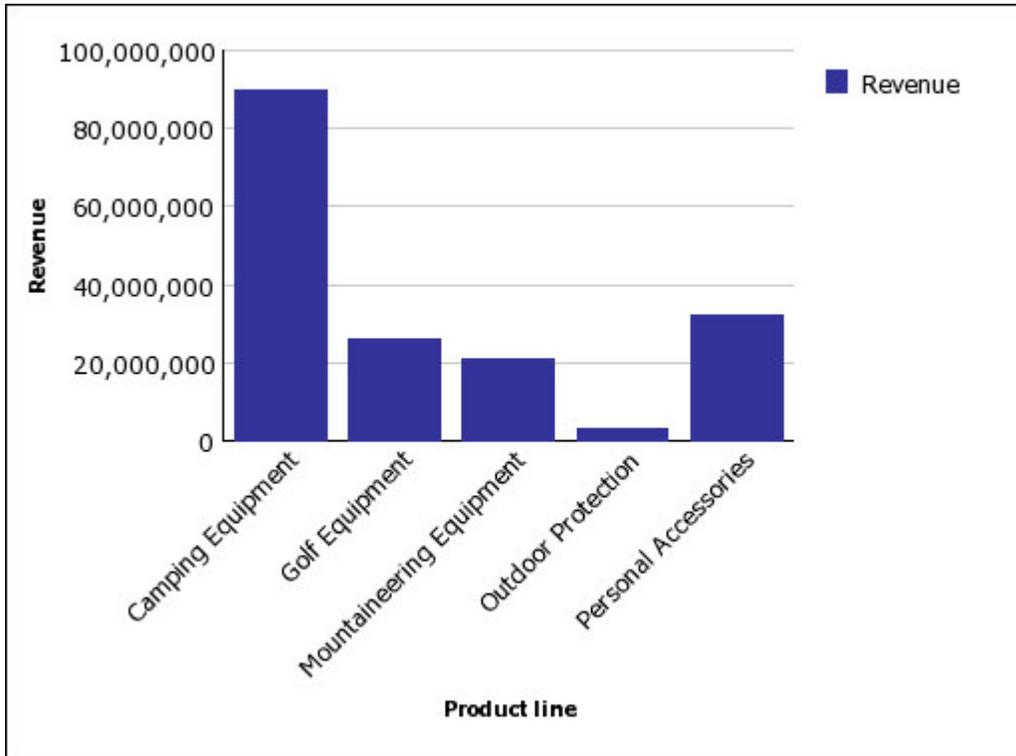
Chart Types

IBM Cognos Business Insight Advanced includes a number of chart types, such as column, bar, area, and line charts.

Column Charts

Column charts use vertical data markers to compare individual values.

Column charts are useful for comparing discrete data or showing trends over time. For example, the following example shows the revenue for each product line.



Column charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

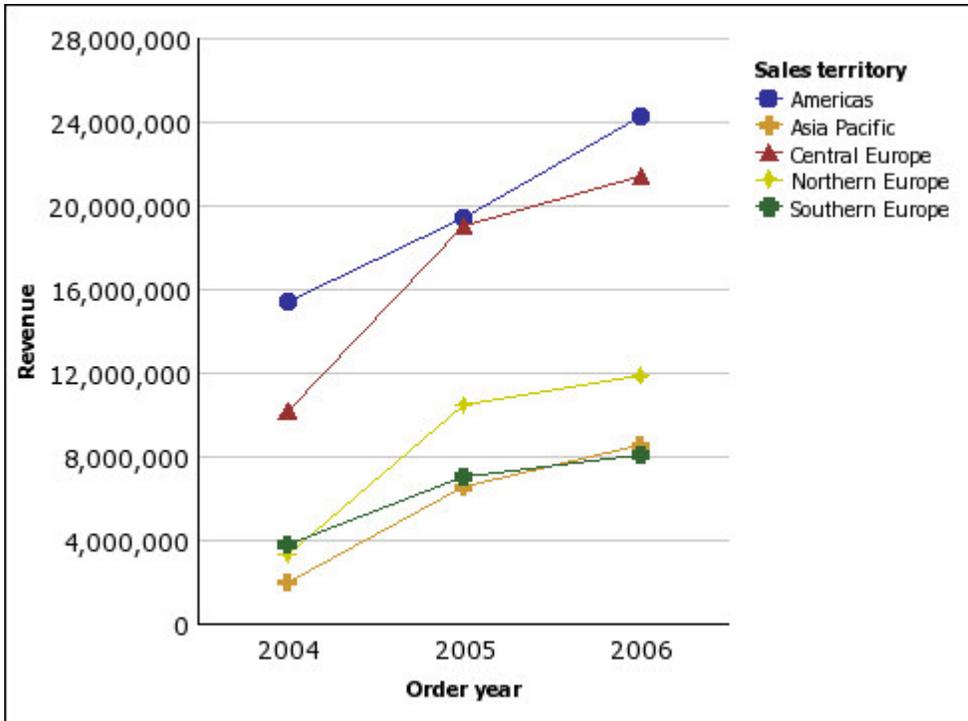
Line Charts

Line charts are useful for showing trends over time and comparing many data series.

Line charts plot data at regular points connected by lines.

It is best not to use stacked line charts because they are difficult to distinguish from unstacked line charts when there are multiple data series.

The following example shows a rising revenue trend in every territory.



Line charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

Pie Charts

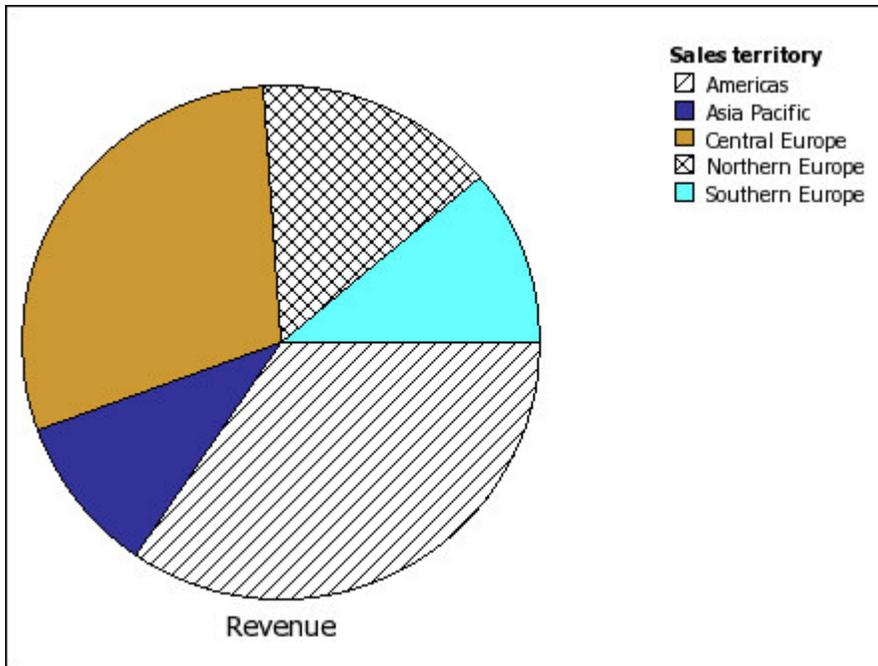
Pie charts are useful for highlighting proportions.

They use segments of a circle to show the relationship of parts to the whole. To highlight actual values, use another chart type, such as a stacked chart.

Pie charts plot a single data series. If you need to plot multiple data series, use a 100 percent stacked chart.

Reports in PDF or HTML format show a maximum of 16 pie or gauge charts. If you need to see more, run the report in Microsoft Excel spreadsheet software Single Sheet format and they all appear in the report.

The following example shows that the largest proportion of revenue comes from the Americas, followed closely by the Central Europe region.



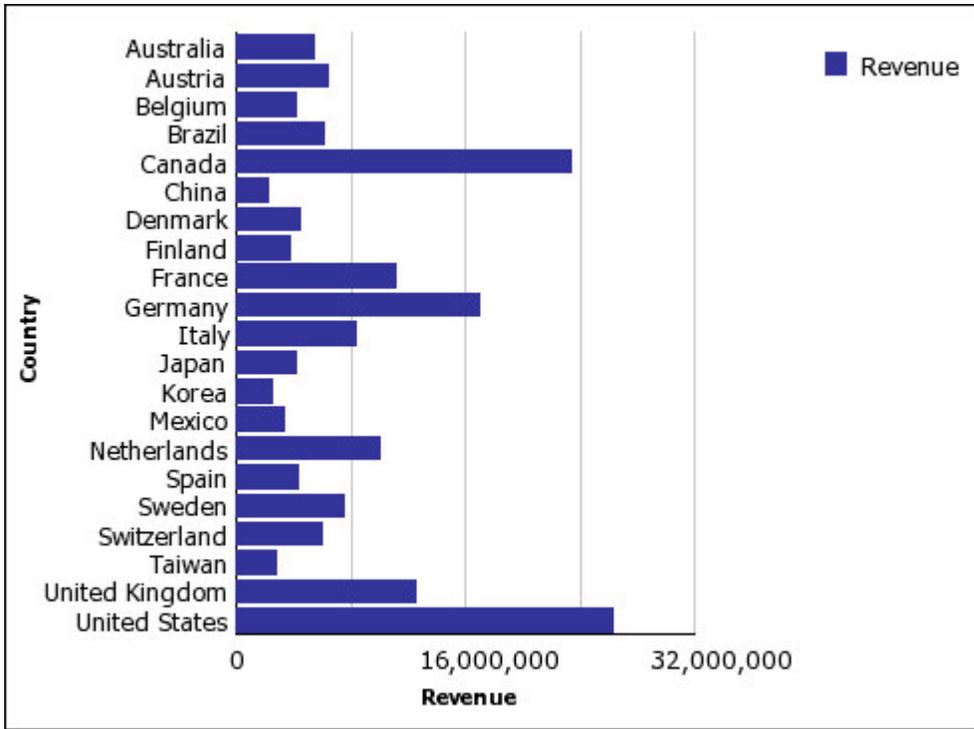
Pie charts can plot data using standard, 100 percent, and three-dimensional configurations.

Bar Charts

Bar charts are useful for showing trends over time and for plotting many data series.

Bar charts use horizontal data markers to compare individual values.

The following example shows revenue for every country or region.



Bar charts can plot data using standard, stacked, and 100 percent stacked configurations.

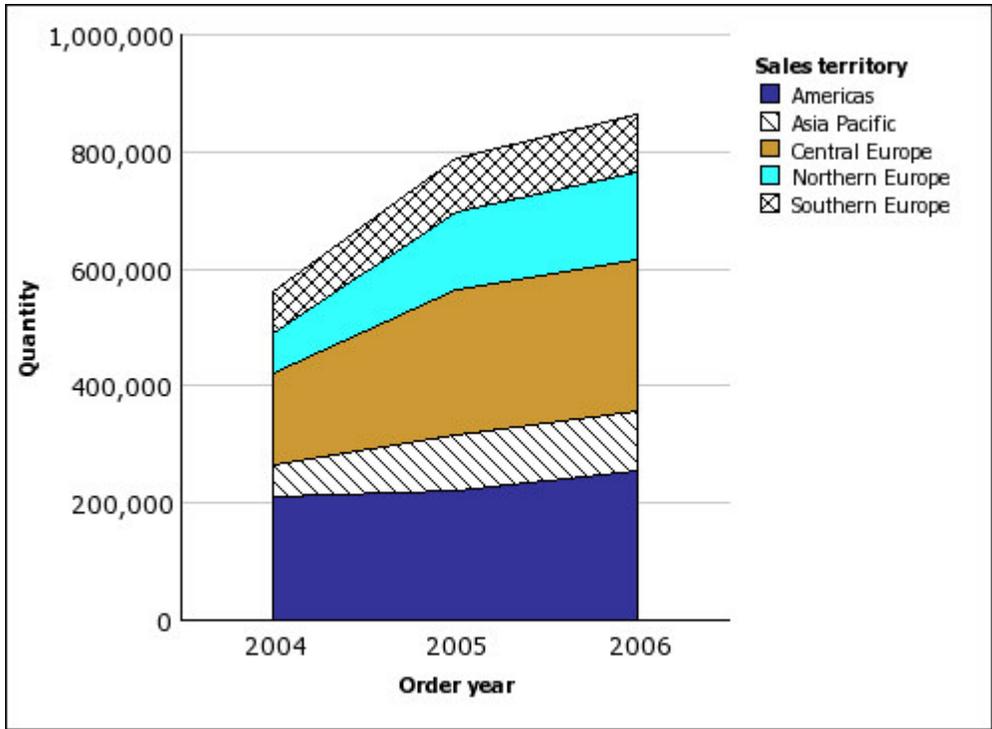
Area Charts

Area charts are useful for emphasizing the magnitude of change over time. Stacked area charts are also used to show the relationship of parts to the whole.

Area charts are like line charts, but the areas below the lines are filled with colors or patterns.

Do not use standard area charts to show multiple data series because it is possible for areas with lower values to be covered by others. For multiple data series, use a stacked area chart.

The following example is a stacked area chart showing the quantity of products sold over a two-year period in multiple territories.



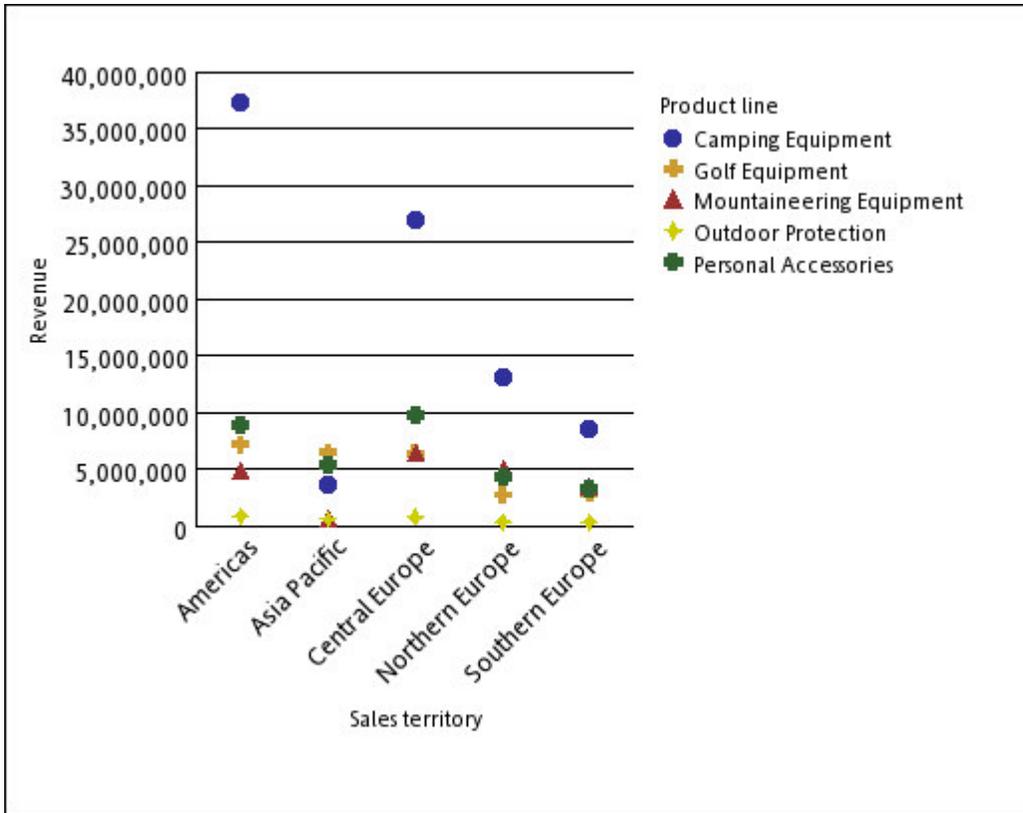
Area charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

Point Charts

Point charts are useful for showing quantitative data in an uncluttered fashion.

Point charts use multiple points to plot data along an ordinal axis. A point chart the same as a line chart without the lines. Only the data points are shown.

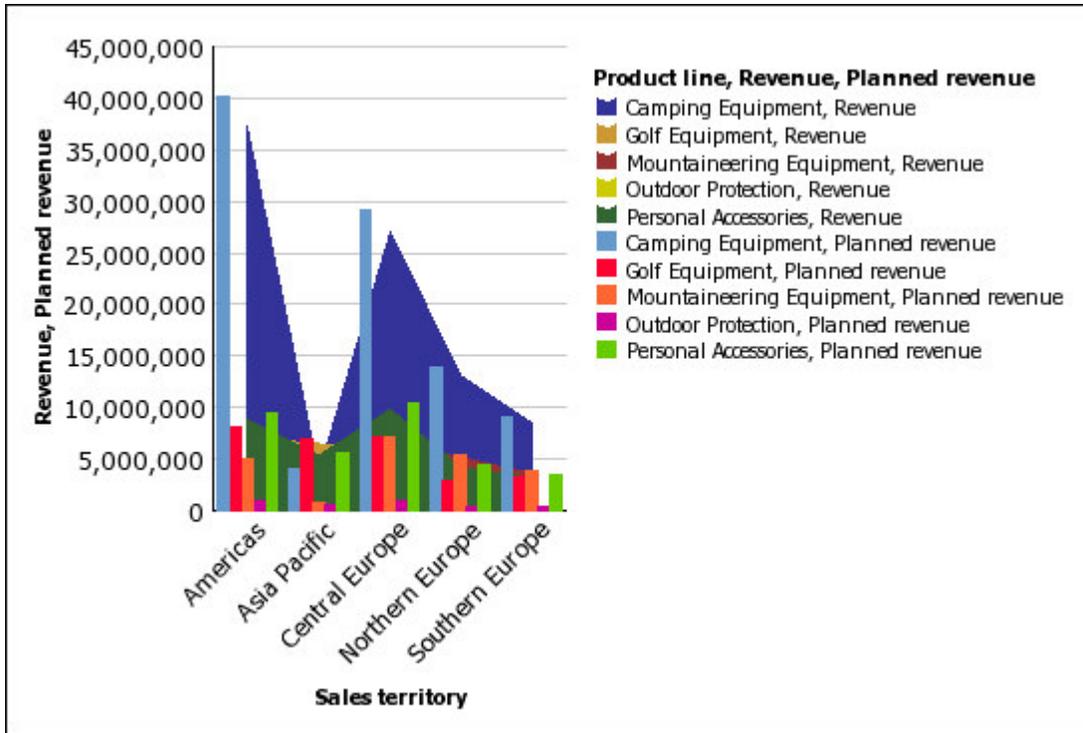
The following example shows the revenue for each product line.



Combination Charts

Combination charts plot multiple data series by using combinations of columns, areas, and lines within one chart. They are useful for highlighting relationships between the various data series.

The following example shows a combination chart that includes planned revenue as a column chart and actual revenue as an area chart.



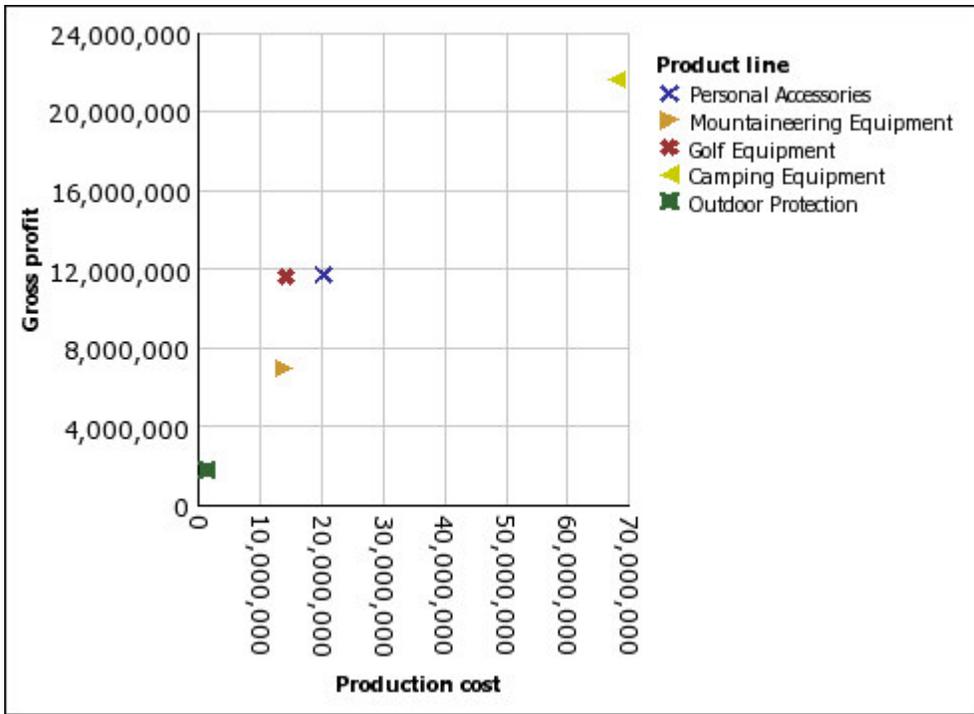
Combination charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

Scatter Charts

Scatter charts use data points to plot two measures anywhere along a scale, not only at regular tick marks.

Scatter charts are useful for exploring correlations between different sets of data.

The following example shows the correlation between production cost and gross profit for each product line.

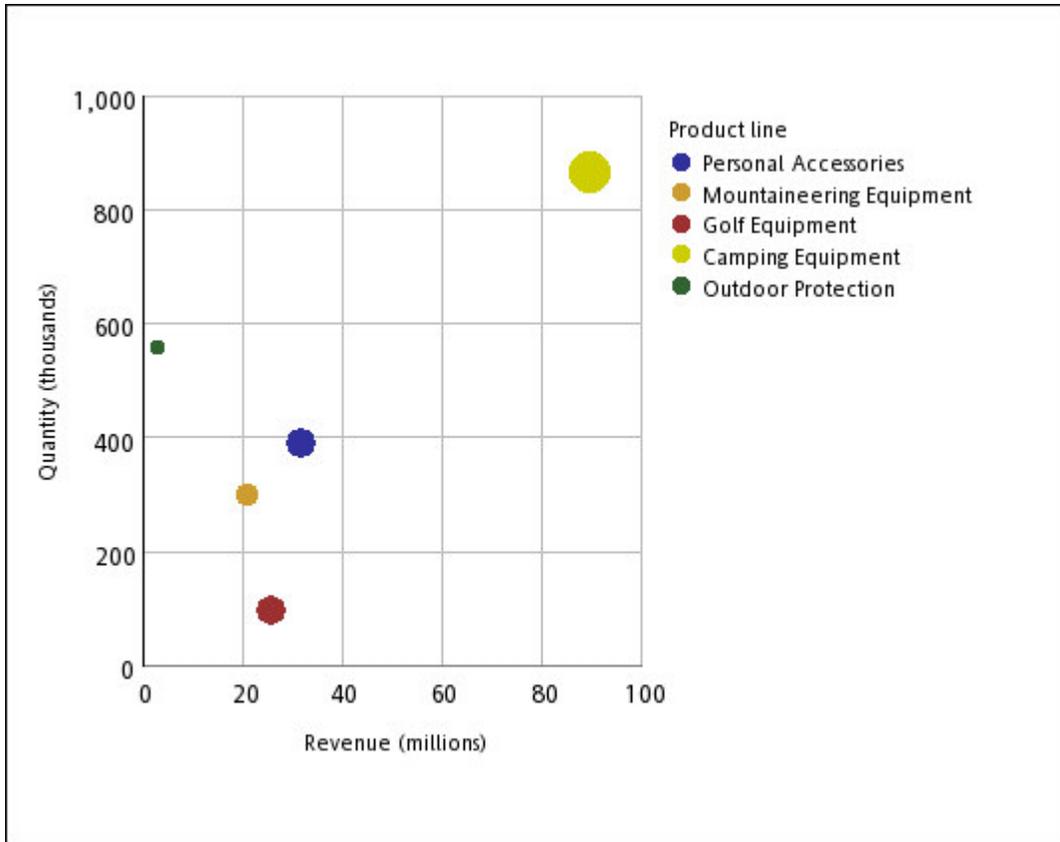


Bubble Charts

Bubble charts, like scatter charts, use data points and bubbles to plot measures anywhere along a scale. The size of the bubble represents a third measure.

Bubble charts are useful for representing financial data. These charts are not supported for Microsoft Excel output.

The following example plots quantity and revenue by product line. The size of the bubble represents gross profit.



Bullet Charts

Bullet charts are a variation of bar charts. They compare a featured measure (the bullet) to a targeted measure (the target). They also relate the compared measures against colored regions in the background that provide additional qualitative measurements, such as good, satisfactory, and poor.

Bullet charts are often used instead of gauge charts in executive dashboards. Bullet charts can be horizontal or vertical.

Note: This chart type applies only to the current default charts, and does not apply to the legacy charts.

A bullet chart contains the following components:

- A bullet measure.
The bullet measure, Revenue, appears as the blue bar in the chart below.
- A target measure.
The target measure, Planned revenue, appears as the black indicator in the chart below.
- From zero to five colored regions along the numeric scale to provide information about the featured measures' qualitative state.
The chart below includes three colored regions: 0-50%, 50-75%, and 75-100%.
- A label that identifies the measures.
- A numeric scale.



Gauge Charts

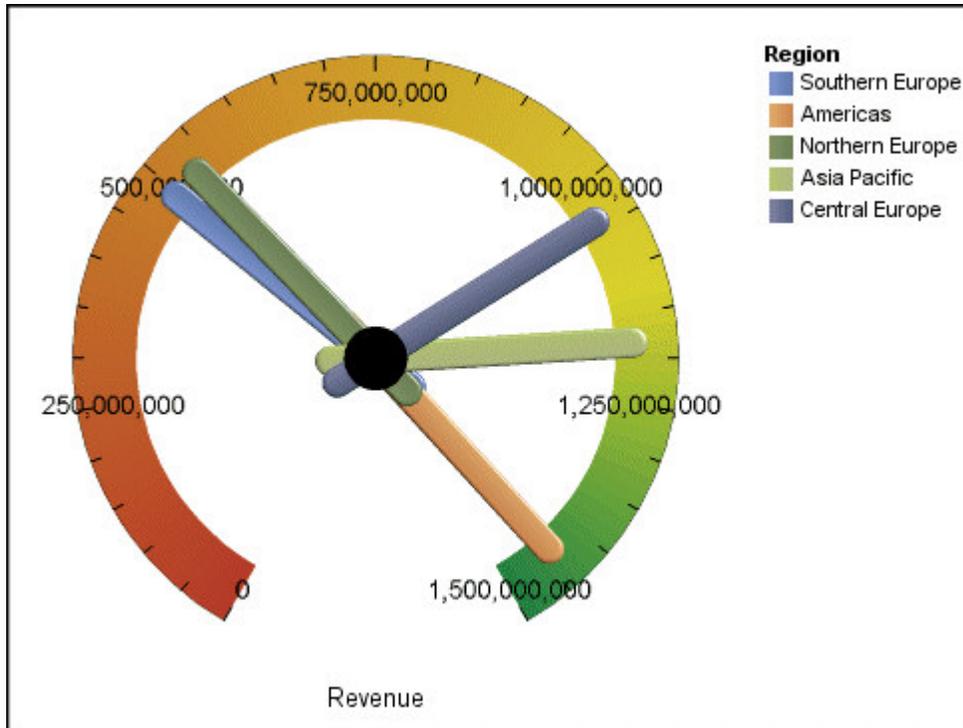
Gauge charts, also known as dial charts or speedometer charts, use needles to show information as a reading on a dial.

On a gauge chart, the value for each needle is read against the colored data range or chart axis. This chart type is often used in executive dashboard reports to show key business indicators.

Gauge charts are useful for comparing values between a small number of variables either by using multiple needles on the same gauge or by using multiple gauges.

Reports in PDF or HTML format are limited to show a maximum of 16 pies or gauges per chart. These charts are not supported for Microsoft Excel output.

A gauge chart consists of a gauge axis (which contains the data range, color ranges, and intervals markers), needles, and a center pivot point. The following example shows a basic gauge chart with default attributes. It is a degree dial chart with two axes.



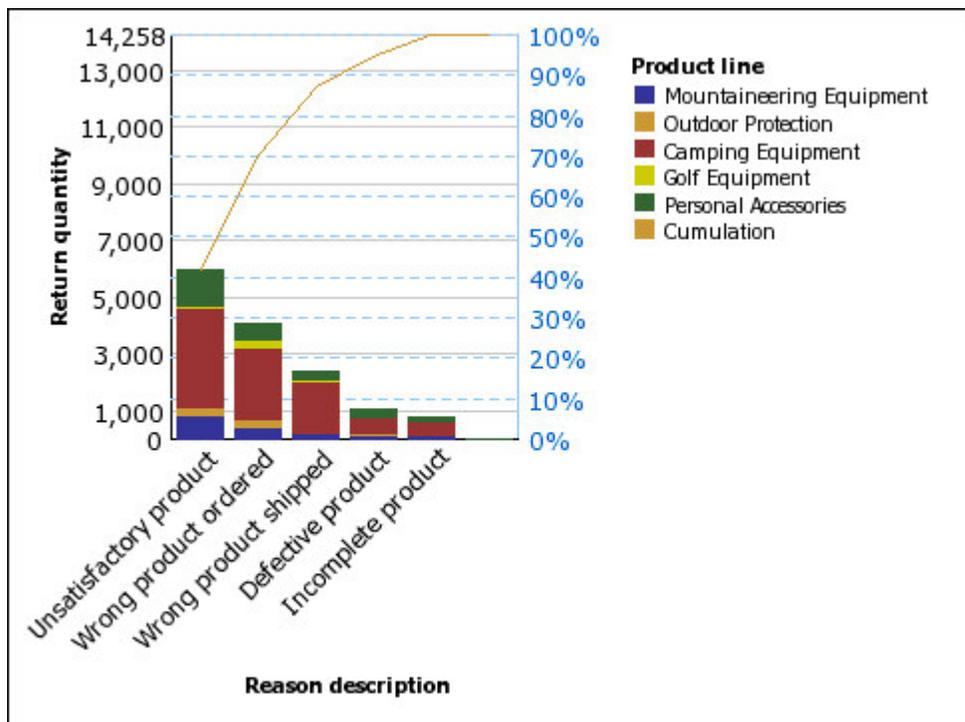
Pareto Charts

Pareto charts help you to improve processes by identifying the primary causes of an event. They rank categories from the most frequent to the least frequent. These charts are frequently used for quality control data, so that you can identify and reduce the primary cause of problems.

Pareto charts include a cumulation line, which shows the percentage of the accumulated total of all the columns or bars.

You can create before and after comparisons of Pareto charts to show the impact of corrective actions. These charts are not supported for Microsoft Excel output.

The following example shows that the most frequent reason for product returns is unsatisfactory product.



You can also create Pareto charts using horizontal bars.

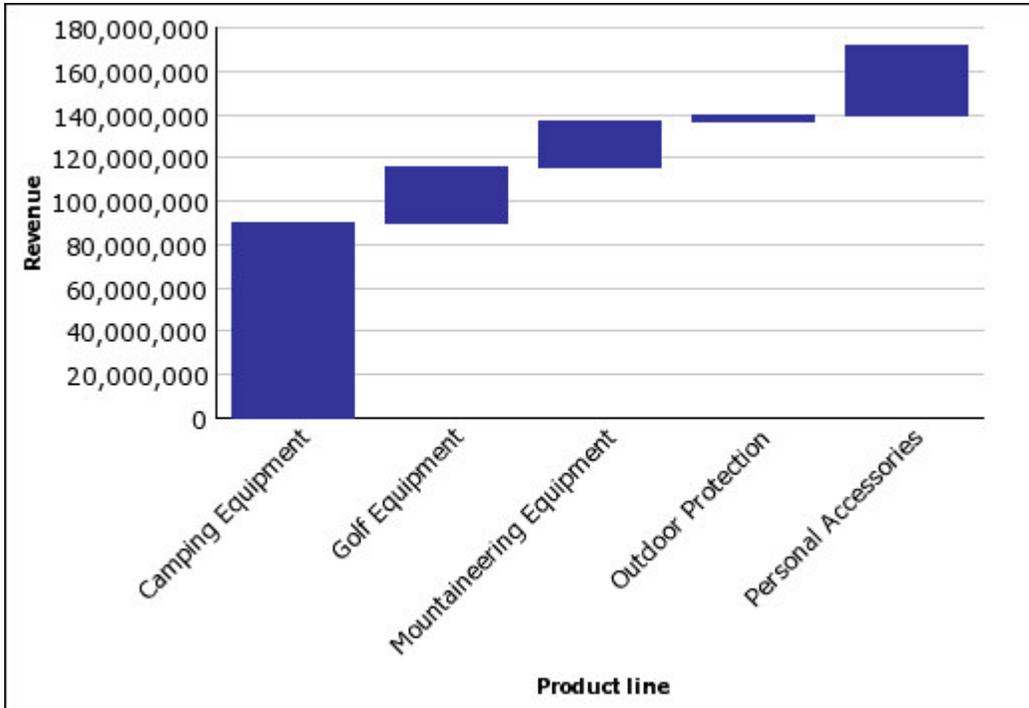
Progressive Column Charts

Progressive column charts, also known as waterfall charts, are like stacked charts with each segment of a single stack displaced vertically from the next segment.

Progressive column charts are useful for emphasizing the contribution of the individual segments to the whole.

These charts are not supported for Microsoft Excel output.

The following example analyzes the contribution of each product line to revenue.



Quadrant Charts

Quadrant charts are bubble charts with a background that is divided into four equal sections. Quadrant charts are useful for plotting data that contains three measures using an X-axis, a Y-axis, and a bubble size that represents the value of the third measure.

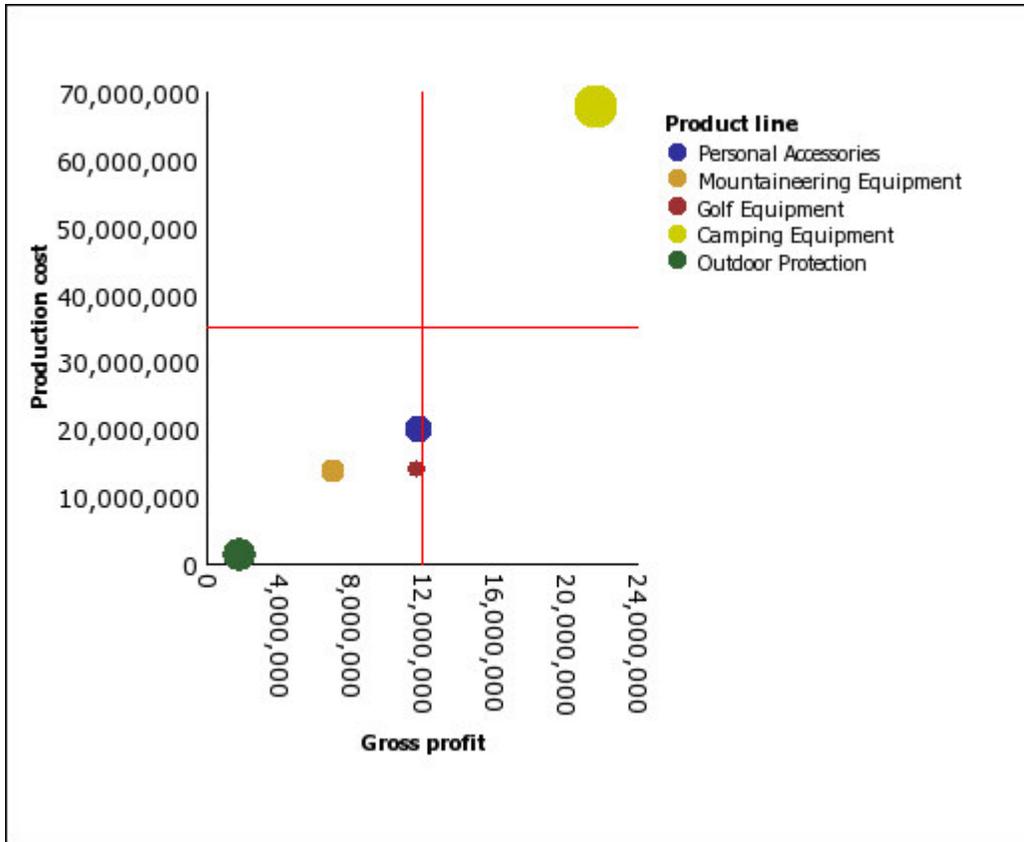
You can also specify a default measure. For example, you might need to specify a default measure to give context to a calculated measure in the chart.

Legacy quadrant charts use baselines to create the quadrants. Current default charts use colored regions. You can change the size of the quadrants.

For more information about the legacy and current default chart technologies, see “Using Legacy Report Studio Charts” on page 43.

Use a quadrant chart to present data that can be categorized into quadrants, such as a SWOT (strengths, weaknesses, opportunities, and threats) analysis.

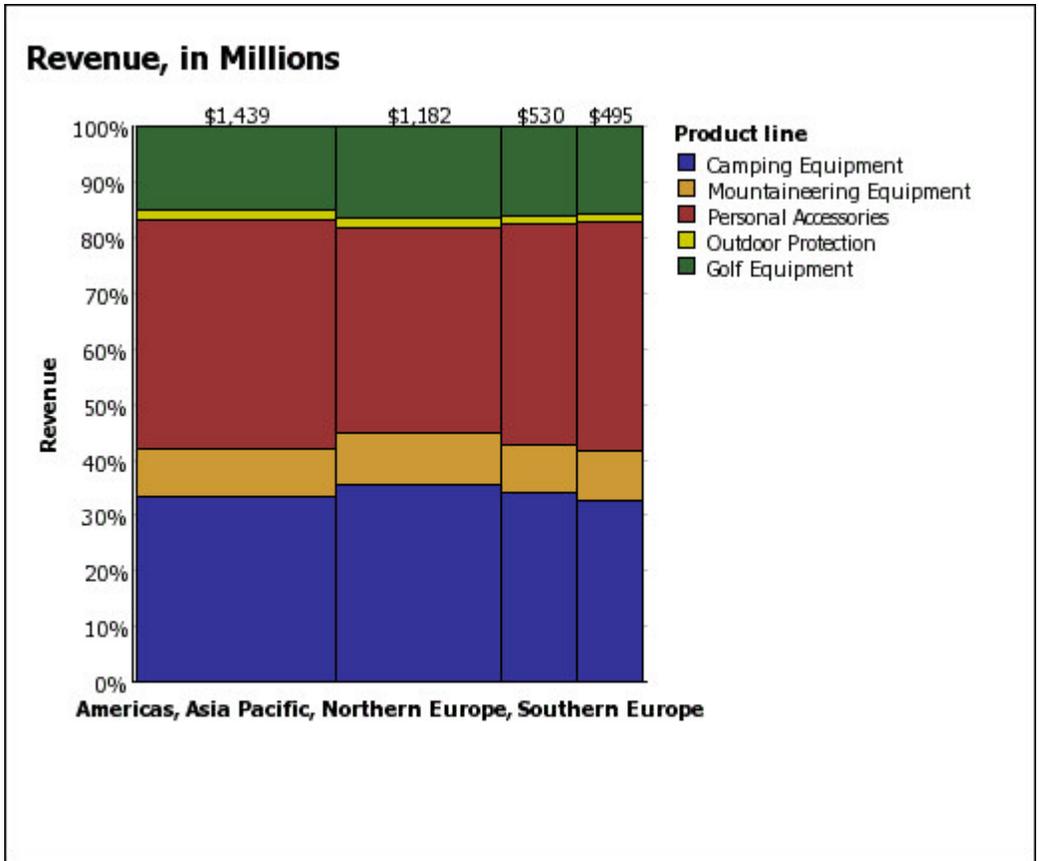
The following example shows the relationship between production cost and gross profit. The size of the bubble represents quantity.



Marimekko Charts

Marimekko charts are 100 percent stacked charts in which the width of a column is proportional to the total of the column's values. Individual segment height is a percentage of the respective column total value.

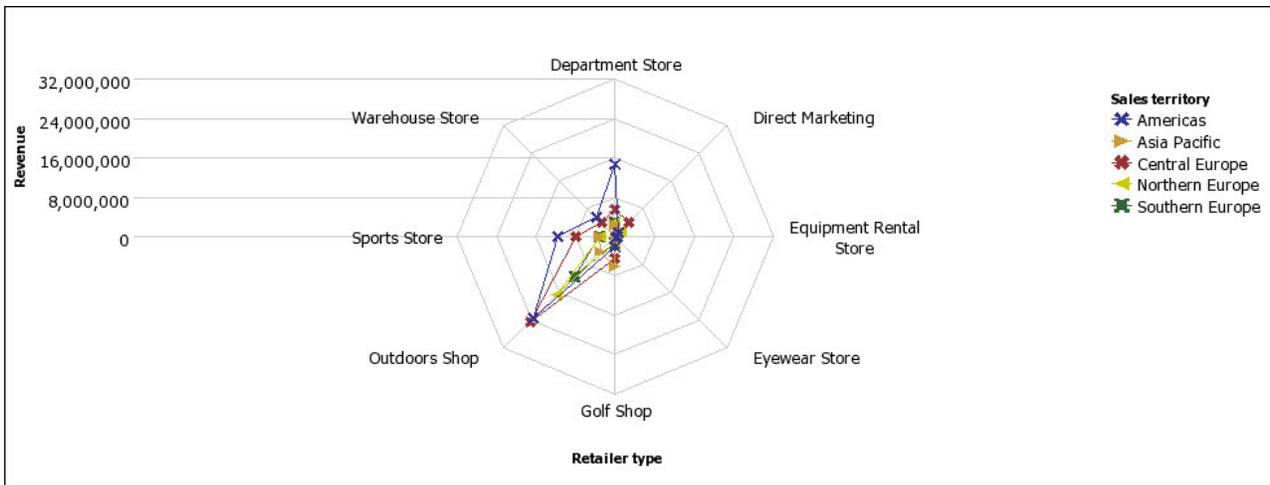
The following example shows the contribution of revenues for product lines in different regions.



Radar Charts

Radar charts integrate multiple axes into a single radial figure. For each figure, data is plotted along a separate axis that starts at the center of the chart.

The following example shows the revenue from multiple retailer types in multiple territories.



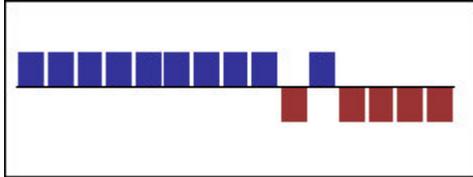
Radar charts can plot data using standard and stacked configurations.

Win-loss Charts

Win-loss charts are microcharts in which the value of each column is either 1 or -1, often denoting a win or loss.

Win-loss charts use two measures (the default and the win-loss measure) and no series. The win-loss measure is the measure or calculation that you define.

The following example shows the quarters that have a margin of less than 10,000 in red.



Polar Charts

Polar charts are circular charts that use values and angles to show information as polar coordinates.

Polar charts are useful for showing scientific data.

You can specify a default measure. For example, you might need to specify a default measure to give context to a calculated measure in the chart.

The following example shows the revenue and quantity for each product line. The distance along the radial axis represents quantity, and the angle around the polar axis represents revenue.

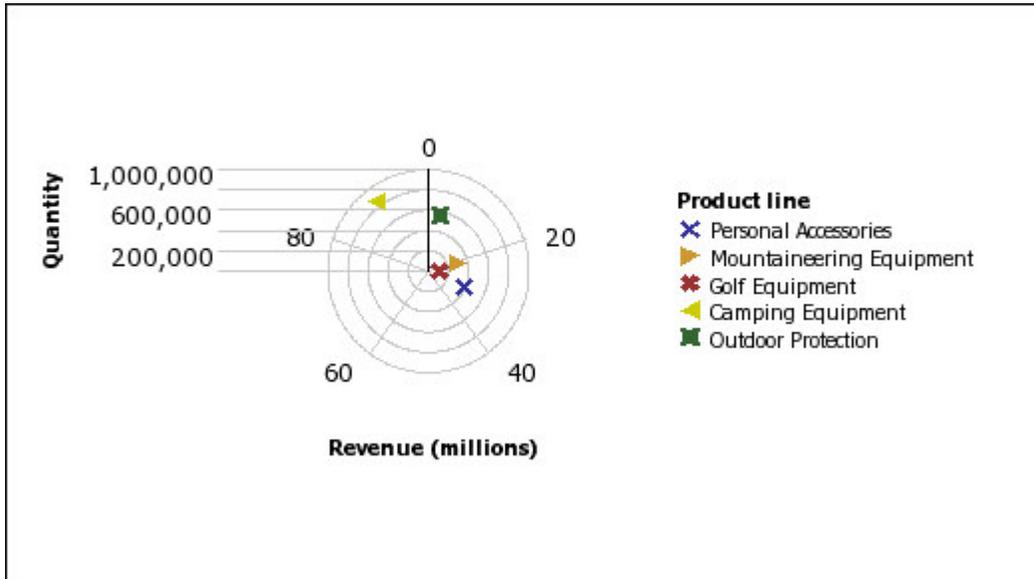


Chart Configurations

Chart configurations specify the grouping type of the columns, bars, lines, and areas in a chart. Some examples are standard, stacked, and 100 percent stacked charts.

Standard Charts

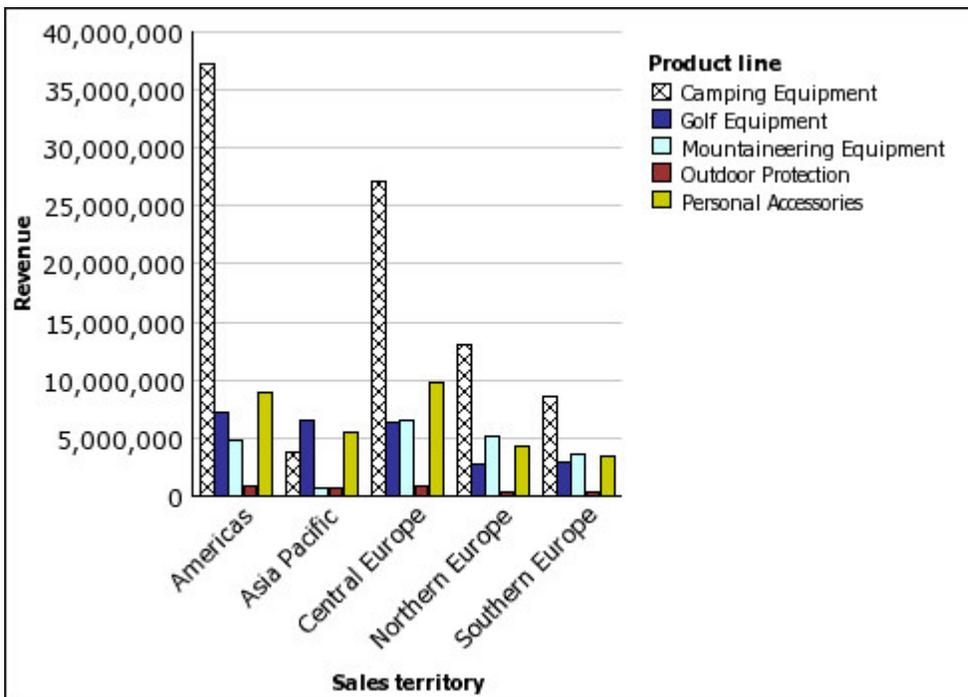
Standard or absolute charts are useful for comparing specific values and for representing discrete data, such as data for different regions or individual employees. For example, a standard column chart that plots regional sales emphasizes the actual value that each region achieves in sales.

Standard charts plot the actual value of each data series from a common axis.

When you create charts using multiple data series, you can distinguish each series by the color or pattern of its data marker. Related data series are shown together in clusters for easy comparison.

In standard area and radar charts that have multiple data series, the colored areas that represent lower values might be covered by the larger colored areas that represent higher values. Use the stacked configuration for area and radar charts with multiple data series.

The following example shows the revenue values for each product line within each territory.



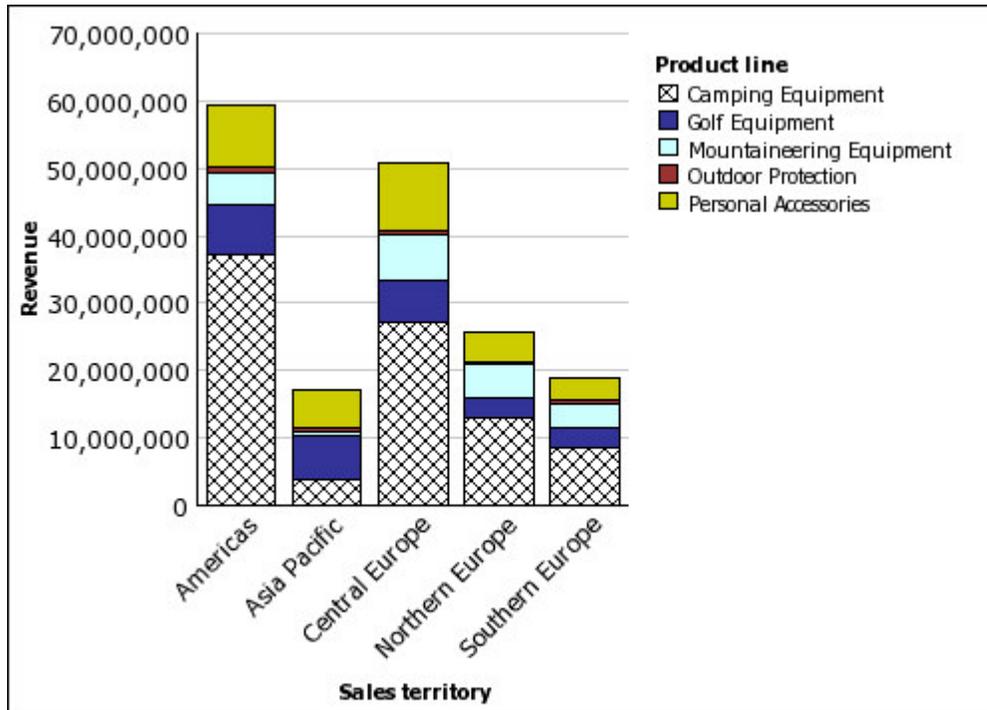
Stacked Charts

Stacked charts are useful for comparing proportional contributions within a category. They plot the relative value that each data series contributes to the total. For example, a stacked column chart that plots product line sales will emphasize the proportion that each product line contributes to the total in each territory.

You can distinguish each data series by the color or pattern of its section in the stack. The top of each stack represents the accumulated totals for each category.

Do not use the stacked configuration in line charts that have multiple data series because it is difficult to distinguish between unstacked and stacked configurations, and your chart consumers might misunderstand your data.

The following example shows that camping equipment contributed a large proportion of the actual revenue in most sales territories.



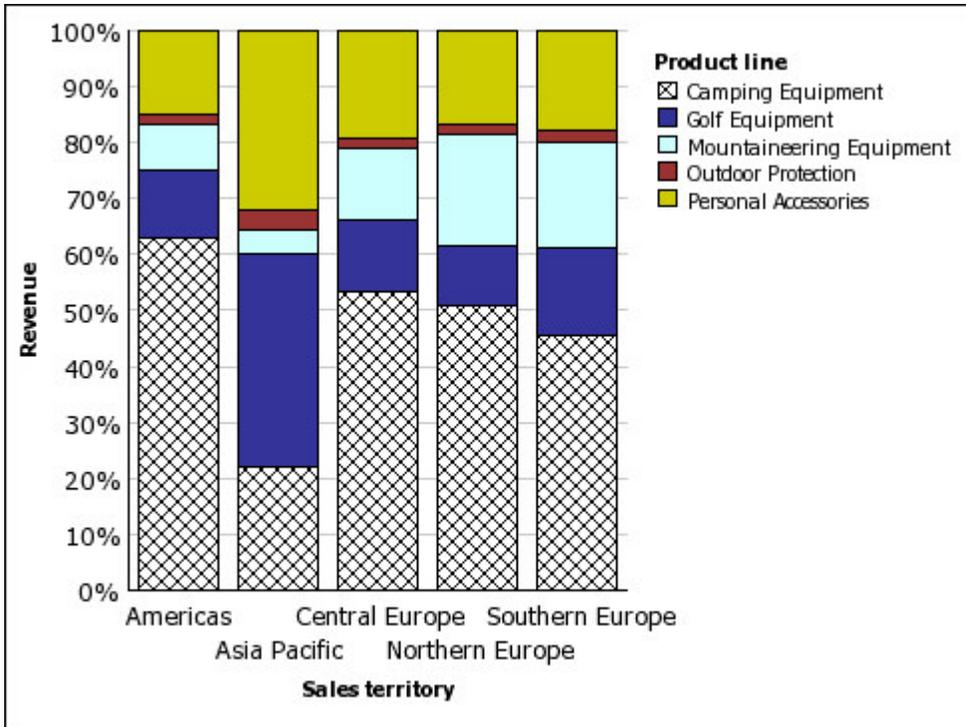
100 Percent Stacked Charts

100 percent stacked charts are useful for comparing proportional contributions across all categories. They plot the relative contribution of each data series to the total as a percentage. For example, a 100 percent stacked column chart that plots product line sales emphasizes the percentage within each region without referring to actual values.

You can distinguish each data series by the color or pattern of its section in the stack. Each stack represents 100 percent.

100 percent stacked charts highlight proportions. When actual values are important, use another chart configuration.

The following example shows the percentage of sales for each product line in each region.



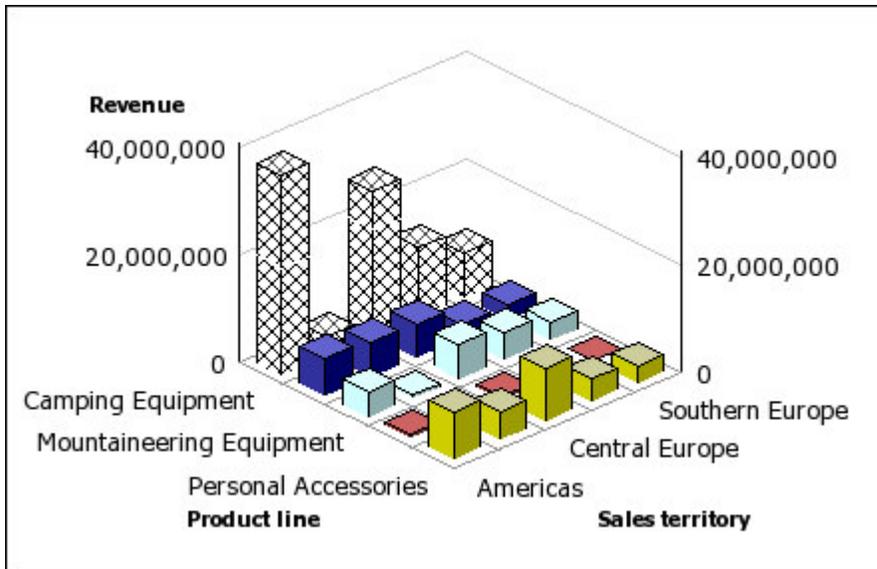
Three-dimensional Charts

Three-dimensional charts provide a visually effective display that is suitable for presentations.

Three-dimensional column, bar, line, and area charts plot data by using three axes.

Three-dimensional pie charts have a three-dimensional visual effect.

Do not use three-dimensional charts when you need to show exact values, such as for control or monitoring purposes. The distortion in three-dimensional charts can make them difficult to read accurately. For example, the following chart shows actual revenue for each product line in each territory, but some data labels are omitted because there is not enough room to display them all.



Convert Charts From One Type to Another

This procedure applies to converting charts from one type (for example, a bar chart) to another type (for example, a line chart). It also applies to converting charts from the legacy Report Studio charts to the current default charts.

When you convert a chart to a new chart type, IBM Cognos Business Insight Advanced keeps the properties from the existing chart if they exist in the new chart type. For example, if you convert a donut chart to a bar chart, Business Insight Advanced maps your chart palette to the new chart, but does not map the hole size, because the hole size property does not exist in a bar chart.

Note: Business Insight Advanced converts legacy charts to the current default chart technology unless you select the **Use legacy chart authoring** option.

Procedure

1. Right-click a chart and click **Convert Chart**.
2. Select a new chart type, and click **OK**.

Related concepts:

“Using Legacy Report Studio Charts” on page 43

IBM Cognos Business Insight Advanced includes a default chart technology that is different than the legacy chart technology used in Report Studio as of version 10.1.0.

Customizing Charts

After you create a chart, you can customize it by changing its properties.

For example, you might want to change how chart axes are displayed, add titles and data labels, change the colors used, move or hide the legend, or add additional chart objects such as notes, trendlines, and baselines.

You can make these and many other changes by changing the default properties of a chart or a chart object. Some properties are dependent on the existence of other properties.

The following table shows some of the properties you can change in charts. These properties are available when you select the chart object unless specified otherwise in the **Action to perform in the Properties pane** column.

Goal	Action to perform
Hide or show the chart, legend or axes titles	<p>Select the chart and in the Properties pane, click Title.</p> <p>For more information, see “Add Titles to a Chart” on page 68.</p>
Hide or show the legend	<p>Select the chart and in the Properties pane, click Legend.</p> <p>For more information, see “Customize the Legend of a Chart” on page 76.</p>
Hide or show baselines	<p>Select the chart and in the Properties pane, click Numeric baselines.</p> <p>For more information, see “Adding a Baseline to a Chart” on page 78.</p>
Hide or show trendlines	<p>Select the chart and in the Properties pane, click Trendlines.</p> <p>For more information, see “Display Trendlines in Current® Default Charts” on page 79.</p>
Hide or show notes	<p>Select the chart and in the Properties pane, click Notes.</p> <p>For more information, see “Adding a Note to a Chart” on page 77.</p>
Hide, show, or change the axis line	<p>Select the Primary Axis or Category Axis chart object. In the Properties pane, click Axis line.</p> <p>For more information, see “Change the Axis Scale of a Chart” on page 75.</p>
Add data labels, such as values on bars, slices, columns, and so on	<p>Select the chart and in the Properties pane, select the Axis label check box.</p> <p>For more information, see “Customizing the Axes in a Chart” on page 75.</p>

Goal	Action to perform
Hide or show an axis label	<p>Select the Primary Axis or Category Axis chart object. In the Properties pane, select the Axis label check box.</p> <p>For more information, see “Customizing the Axes in a Chart” on page 75.</p>
Change axis properties, such as range, scale interval, and so on	<p>Select the axis and in the Properties pane, click Axis range.</p> <p>For more information, see “Change the Axis Scale of a Chart” on page 75.</p>
Hide or show the border around a chart or chart object	<p>Select the chart or chart object and from the toolbar, click the background effects presets  button.</p> <p>For more information, see “Add Background Effects to a Chart Object” on page 72.</p>
Hide or show the tooltips in a chart	<p>Select the chart and in the Properties pane, click Tooltips and select an option.</p> <p>When you pause your pointer over a data marker in the report output, the corresponding absolute or cumulative value appears in a tooltip.</p> <p>Tooltips are not supported in PDF output.</p>
Change the white space around the chart	<p>Select the chart and in the Properties pane, click Padding.</p> <p>For more information, see “Apply Padding to an Object” on page 147.</p>
Change the chart orientation	<p>In the Properties pane, under Chart Orientation, select Vertical or Horizontal.</p>
Apply a preset palette to a chart or chart object	<p>Select the chart or chart object and from the toolbar, click the chart palette presets button .</p> <p>For more information, see “Customizing the Color Palette of a Chart” on page 69.</p>
Apply a conditional palette to a chart or chart object	<p>Select the chart and in the Properties pane, click Conditional palette.</p> <p>For more information, see “Creating a Conditional Palette in a Chart” on page 71.</p>
Change the default color or font for all chart objects	<p>Select the chart and in the Properties pane, click Foreground color and Font.</p>

Goal	Action to perform
Change the three-dimensional appearance of a chart	Select the chart and in the Properties pane, click Depth .
Insert a background image, background gradient, or watermark in the chart object	Select the chart or chart object and from the toolbar, click the background effects presets  button. For more information, see “Add Background Effects to a Chart Object” on page 72.
Enable drilling up and down in a chart, when working with dimensional data sources	From the Data menu, click Drill Options . Drilling up and down allows you to view more general or more detailed information on your data within a predefined dimensional hierarchy. For more information, see “Create a Drill-up and Drill-down Report” on page 138.

Procedure

1. Select the chart object.
2. To change specific chart objects, such as a title or axis, select the object itself from the **Select a chart object** menu below the chart.
3. In the **Properties** pane, set the property value.
An ellipsis (...) button indicates that a dialog box provides further options.

Note: You might have to scroll to see all the properties.

Resize a Chart

You can change the size of a chart by changing its height and width in the Properties pane, or by dragging the resize handle in the lower right corner of the chart.

Procedure

1. Select the chart object.
2. Click the resize handle in the lower right corner of the chart  and drag it to the desired size.
Use Shift+drag to maintain the aspect ratio of the chart.
3. To cancel the resize, press the Esc key.

Add Titles to a Chart

You can add or change the titles for the chart, legend, and axes.

You can add text titles that are descriptive, such as **Revenue by product line in 2005**. You can use data items as titles. For example, if you have several charts showing revenue by product line for each year, you can drag the year data item to the chart title for each chart.

Procedure

1. To add a chart title, do the following:
 - a. Select the chart object.
 - b. In the **Properties** pane, click **Title**, and type a chart title.
 - c. To add a data item in the chart title, change to the **Page Design** view and drag a data item to the report title area on the chart.
2. To add a legend title, do the following:
 - a. Select the legend chart object.
 - b. In the **Properties** pane, click **Legend title** and specify the title. The default title is the name of the data item.
 - c. To add a data item in the legend title, change to the **Page Design** view and drag a data item to the legend title area on the chart.

Note: If you add a data item to your legend title, when you are in **Page Preview** view, you cannot edit the data item. To edit the chart title, you must switch to the **Page Design** view.

3. To add an axis title, do the following:
 - a. Select the axis chart object.
 - b. In the **Properties** pane, click **Axis title** and specify the title. The default title is the name of the data item.
 - c. To add a data item as an axis title, change to the **Page Design** view and drag a data item to the axis title area on the chart.

Customizing the Color Palette of a Chart

You can use the chart palette to control the colors or patterns used in the columns, lines, data markers, or areas in a chart.

For example, if "Telephone" is the first in a data series of order methods, and you want it to appear in blue, use the palette to make the first item in the series blue.

You can also apply background effects to chart objects or change the colors of specific objects.

If specified, the default color is used for outputs that do not support the palette definition. For example, if the palette is defined to use a radial rectangle gradient and you run the report as PDF output, the default color is used because radial rectangle gradients are not supported in PDF output.

Note: Progressive charts have a separate set of steps.

Procedure

1. Select the chart object. For combination charts, select the bar, line, or area objects.
2. To choose a preset color palette, on the style toolbar, click the chart palette presets button , and then click a palette.
3. To change the existing color palette, do the following:
 - a. In the **Properties** pane, click **Palette**.
 - b. On the **Entries** tab, click the palette entry that you want to change.
 - c. Under **Fill**, select fill type, color, transparency, and other fill settings. The options in the **Fill type** list depend on the chart type you are using.

Linear Gradient displays a gradient that changes color horizontally. You can specify the position of each color in the gradient and add or remove colors from the gradient.

Radial Line Gradient displays a gradient that changes color outwards from a central point, or focus. You can specify the position of each color in the gradient and the size and position of the focus. You can also add or remove colors from the gradient.

Radial Rectangle Gradient displays a gradient that changes color outwards from a rectangle. You can specify the position of each color in the gradient and the size of the rectangle. You can also add or remove colors from the gradient.

Pattern displays a colored pattern that you choose from a preset list. You can specify the foreground and background colors.

Color displays a solid color. You can specify the transparency.

Image displays an image. You can specify the image to use.

4. Under **Style**, depending on the chart type you are customizing and the fill type you chose in step 2, you can change the marker shape, line style, default color, and line weight.

5. To add a new palette entry, click the new button  and specify the new palette settings.

6. To customize the data markers, on the **Properties** tab, depending on the chart type you are customizing and the fill type you chose in step 2, you can specify whether data markers are shown and change their color and size.

7. To change the order in which the colors, gradients, or patterns appear in the chart, use the arrow buttons under the **Palette** box to change their position.

8. To copy and paste a palette in the Microsoft Internet Explorer Web browser,

click the copy button  to copy the palette definition to the clipboard. Close the palette dialog box. Select another chart, open the palette dialog box,

and click the paste button  to paste the palette definition from the clipboard.

Customizing the Color Palette of a Progressive Chart

You can use the chart palette to control the colors or patterns used in the columns, lines, data markers, or areas in a chart.

For example, if "Telephone" is the first in a data series of order methods, and you want it to appear in blue, use the palette to make the first item in the series blue.

You can also apply background effects to chart objects or change the colors of specific objects.

If specified, the default color is used for outputs that do not support the palette definition. For example, if the palette is defined to use a radial rectangle gradient and you run the report as PDF output, the default color is used because radial rectangle gradients are not supported in PDF output.

Procedure

1. Select the progressive chart object.

2. To choose a preset color palette, click the chart palette presets button  on the style toolbar, and then click a palette.
3. In the **Properties** pane, click **Progressive palette**.
You can specify the following:
 - **Positive value fill** defines the appearance of the positive bars or columns on the chart.
 - **Negative value fill** defines the appearance of the negative bars or columns on the chart.
 - **First value fill** defines the appearance of the first bar or column on the chart.
 - **Total value fill** defines the appearance of the total bar or column on the chart, if a total bar or column is present.
4. To change the appearance of a fill, do the following:
 - a. Click the colored box beside the fill name.
 - b. Click a fill type from the **Fill type** list.
 - Linear Gradient** displays a gradient that changes color horizontally. You can specify the position of each color in the gradient and add or remove colors from the gradient.
 - Radial Line Gradient** displays a gradient that changes color outwards from a central point, or focus. You can specify the position of each color in the gradient and the size and position of the focus. You can also add or remove colors from the gradient.
 - Radial Rectangle Gradient** displays a gradient that changes color outwards from a rectangle. You can specify the position of each color in the gradient and the size of the rectangle. You can also add or remove colors from the gradient.
 - Pattern** displays a colored pattern that you choose from a preset list. You can specify the foreground and background colors.
 - Color** displays a solid color. You can specify the transparency.
 - Image** displays an image. You can specify the image to use.
 - c. To change the color of this fill, click the color in the **Colors** list, click **Color**, specify the color properties, and click **OK**.
5. To change the text of the label that appears next to a bar, double-click the text box beside the fill name and specify the text.

Creating a Conditional Palette in a Chart

You can create a conditional palette to color data items in different ways depending on a condition.

For example, in a column chart that shows revenue per month, you want to make the columns for the months that have a revenue greater than \$1000000 green.

You can also conditional styles to highlight exceptional data and use conditions to control the layout of your report.

Procedure

1. Select the chart series to which you want to apply the conditional palette.
2. In the **Properties** pane, click **Conditional palette**.
3. Click the add button  and click **New Condition**.

4. If you want to create a conditional palette based on a string data item, do the following:
 - Select the string data item to determine the condition and click **OK**.
 - Click the new button and select how to define the condition.
 - To select more than one individual value, click **Select Multiple Values** and click the values.
 - To type specific values, click **Enter Values** and type the values.
 - To specify your own criteria, such as values that begin with the letter A, click **Enter String Criteria** and specify the condition.
 - Under **Palette Entry**, click the edit button  beside the new condition.
 - Define the palette entry fill type, colors, and angle, and click **OK**.
5. If you want to create a conditional palette based on a numeric data item, do the following:
 - Select a numeric data item to determine the condition and click **OK**.
 - Click the new button  and type a value to define a threshold.
The value appears in the **Range** column, and two ranges are created.
 - For each range, under **Style**, click the edit button  to define the palette entry fill type, colors, and angle, and then click **OK**.
 - Repeat the steps above to add other conditions.

Tip: Under **Style**, pause the pointer over each range  to see the condition produced for that range.

- To move a value above or below a threshold, click the arrow button  next to the value.
For example, you insert a threshold value of five million. By default, the ranges are less than or equal to five million and greater than five million. Moving the five million value above the threshold changes the ranges to less than five million and greater than or equal to five million.
6. To customize the label for a conditional palette, do the following:
 - Click **Label** beside the palette entry.
 - In the **Conditional Palette Entry Label** dialog box, click **Specified text** and click the ellipsis (...) button.
 - Type the default label text in the **Label** text box.
 - To add customized labels for other languages, click the add button , select the other languages, and click the language to define the customized label for that language.
 7. Specify the order in which to evaluate the conditions by clicking a condition and then clicking the move up or move down arrow.
Conditions are evaluated from top to bottom, and the first condition that is met is applied.

Add Background Effects to a Chart Object

You can change the look of certain charts and chart objects by applying visual effects such as drop shadows, borders, fills, texture effects, and bevel effects.

Procedure

1. Select the chart object.
2. To apply a preset background fill effect, from the toolbar, click the background effects presets  button.
3. To add a custom fill effect and border, do the following:
 - In the **Properties** pane, click **Background effects**.
 - Click **Border** and specify settings for border style, width, color, corner radius for rounded rectangles, and transparency.
If the chart object also includes a fill with a transparency setting, select the **Allow transparent bleed** check box to apply the same transparency to the border.
 - Click **Fill** and specify the settings.
The fill effect can either be a solid color, a gradient, or a pattern. You can define a gradient fill effect as a linear, radial line, or radial rectangle gradient.
4. To add a texture effect, in the **Properties** pane, under **Material effects**, click an effect.
5. To add a drop shadow, do the following:
 - In the **Properties** pane, click **Drop Shadow**.
 - Select the **Drop shadow** check box.
 - From the **Shadow color** list, click a color.
 - Under **Blur**, click an intensity to set the drop shadow's blur.
 - Under **Offset**, enter a value and a unit to define the width and height of the drop shadow.
 - Under **Transparency**, type a percentage to determine the transparency of the shadow.
6. To add a bevel, in the **Properties** pane, under **Bevel**, click a bevel effect.

Related tasks:

"Add Color to an Object" on page 140

You can add background and foreground color to objects in the report.

Add Colored Regions to a Chart

You can define colored regions in the body of a chart.

For example, you can divide the background of a scatter chart into quadrants and color each quadrant.

You can add colored regions to bubble, bullet, combination, Pareto, progressive column, and scatter charts.

In bullet charts, colored regions are automatically added.

You can use the following criteria to position the colored regions.

Option	Position
Percent on Axis (%)	Uses a percentage of the full range of the axis. For example, if the axis range is -500 to 1100, a Percent on Axis value of 25% puts the baseline at -100 (25% of the range, 1600).

Option	Position
Numeric Value	Uses a static numeric value.
Mean	Uses the statistical mean plus or minus a number of standard deviations based on all charted data values on the specified axis.
Percentile (%)	Uses a specified percentile.
Statistical Maximum	<p>Uses the following expression:</p> $25\text{th percentile value} - 1.5 * (75\text{th percentile value} - 25\text{th percentile value})$ <p>For example, if 2.5 is the 25th percentile and 7.5 is the 75th percentile, the statistical minimum is -5 [2.5 -1.5(5) = -5].</p>
Statistical Minimum	<p>Uses the following expression:</p> $75\text{th percentile value} + 1.5 * (75\text{th percentile value} - 25\text{th percentile value})$ <p>For example, if 2.5 is the 25th percentile and 7.5 is the 75th percentile, the statistical maximum is 15 [7.5 +1.5(5) = 15].</p>
Query Calculation	Uses a query calculation from the same query or from a different query. For more information, see “Inserting a Query Calculation” on page 96.
Layout Calculation	Uses a layout calculation.
Category Index	<p>Specifies a position based on the index value of the data item in the categories axis. The value must be between 0 and 100.</p> <p>For example, a Category index value of 1 indicates that the position is located at the first data item. This is the default.</p>

You can also combine colored regions with gridlines.

Note: This procedure applies only to the current default charts, and does not apply to the legacy charts.

Procedure

1. Select the chart object.
2. In the **Properties** pane, click **Colored regions**.
3. Click the new button ,
4. Under **Region label**, type a name for the region.
5. Under **Label location**, specify whether the label should appear in the legend or in the chart.
6. If your chart includes multiple charts, such as in a combination chart, under **Based on**, select the data item for which you want to specify a colored region.
7. Under **Region fill**, click the color box to specify the color and fill effects.
8. Specify each of the top, bottom, left, and right positions.
9. If you want to add more colored regions, repeat steps 3 to 8.

10. If you add more than one colored region, specify their order using the up and down arrows.

The regions are drawn in the same order that they appear in this list. The first region is drawn first, on the bottom, and the last region is drawn on top of the other regions.

Tip: To delete a colored region, click the colored region icon and text and click the delete button .

Results

The new region appears in the **Colored regions** box.

Customizing the Axes in a Chart

Chart axes are lines that border the chart area and provide a reference for measurements. They act as a vehicle for tick marks and scales and form a frame around the chart. The Y-axis is usually the vertical axis and contains data. The X-/axis is usually the horizontal axis and contains categories.

To make your chart data easier to understand, you can do the following to customize each axis:

- customize the title for the axis
- show or hide the axis labels (data values)
- show or hide the axis line
- change the color, style, and weight of the axis line
- show or hide major and minor tick marks and specify where to display them

Procedure

1. Select the axis chart object.
2. To show or hide the axis labels, in the **Properties** pane, select or clear the **Axis label** check box.
3. To show or hide axis lines, in the **Properties** pane, click **Axis lines**, and select or clear the **Axis line** check box.
4. To change the color, style, and weight of the axis line, in the **Properties** pane, click **Axis lines**.
5. To show or hide minor and major tick marks and specify their location, in the **Properties** pane, click **Axis lines**.

Change the Axis Scale of a Chart

By default, IBM Cognos Business Insight Advanced automatically determines the minimum and maximum scale values for the axes in a chart.

For example, a Y-axis showing revenue values might have an axis range of zero dollars to one million dollars. You can customize the axis scale, or range, to make your chart easier to understand. You can specify the following for each axis:

- the maximum and minimum values of the range
- how often major and minor gridlines appear

Procedure

1. Select the axis chart object.
2. In the **Properties** pane, click **Axis range**.

3. To set a maximum value for this axis, under **Maximum**, click **Manual**, and then type a maximum value in the **Manual** box.

Note: You can use either a positive or negative value as the maximum value.

4. To set a minimum value for this axis, under **Minimum**, click **Manual**, and then type a minimum value in the **Manual** box.

Note: You can use either a positive or negative value as the minimum value.

5. To set the position of major gridlines and tick marks, under **Major interval**, click **Manual**, and then type the distance between major gridlines and tick marks in the **Manual** box.

The distance between major gridlines and tick marks is measured in the units of that axis. For example, if the axis is revenue in dollars, type the dollar value in the **Manual** box.

6. To add minor gridlines, type the number of minor gridlines that you want to see between each major gridline in the **Number of minor intervals** box.

Show Gridlines in a Chart

To make the data in a chart that includes axes easier to read, you can show horizontal and vertical gridlines. You can show gridlines for the major or minor intervals on the axes.

You can also show alternating bands of color in the chart background that correspond to your axis gridlines.

You cannot show gridlines for chart types that do not display axes, such as pie and donut charts.

Procedure

1. Select the axis chart object.
2. To show alternating bands of color as your chart background, do the following:
 - In the **Properties** pane, click **Gridlines**.
 - Select the **Show alternating color bands** check box.
 - Set the color and transparency of the first and second colors.
3. To show major gridlines as your chart background, do the following:
 - In the **Properties** pane, click **Gridlines**.
 - Select the **Show major gridlines** check box.
 - Set the color, style, and weight of the major gridlines.
 - If you are working with a gauge chart, specify the length of the gridline.
4. To show minor gridlines as your chart background, do the following:
 - In the **Properties** pane, click **Minor gridlines**.
 - Select the **Show minor gridlines** check box.
 - Set the color, style, and weight of the minor gridlines.
 - If you are working with a gauge chart, specify the length of the gridline.

Customize the Legend of a Chart

You can customize the legend and its elements, including its title, position, and items.

You can hide or show the legend and change its position relative to the chart object, chart area, or using a specific report expression. For example, in a bar chart

showing revenue for each product line by country or region, you could use the expression [Country or Region] = 'Canada' to position the legend relative to the Canada bar.

You can change the title that appears above the legend.

If your legend includes items that are too long, you can truncate long legend items at a specific number of characters.

For example, if you want an ellipsis (...) to appear at the end of each truncated legend item, type ... in the **Truncation text** box.

Procedure

1. Select the chart object.
2. In the **Properties** pane, click **Legend**.
3. To show the legend on the chart, select the **Show legend** check box.
4. To choose a preset legend position, click **Preset** and click a position from the diagram.

Note: When you choose a preset legend position, that position appears inside any padding that you have added to the chart object. Customized legend positions do not include any chart padding.

5. To choose a customized legend position, do the following:
 - Click **Advanced** and click the ellipsis (...) button.
 - To display the legend at a set distance from the sides of the chart area, from the **Anchor** list, click **Relative to Chart**.
 - To display the legend at a set distance from the sides of the chart body, from the **Anchor** list, click **Relative to Chart Body**.
 - To display the legend at a set distance from a report expression, from the **Anchor** list, click **Report Expression**, click the ellipsis (...) button beside **Expression**, and enter an expression in the **Report Expression** dialog box.
 - Set the horizontal and vertical distances from the anchor.
6. To change the text that appears as the legend title, select the legend object, and in the **Properties** pane, click **Legend title** and specify the title.
7. To truncate the items in the legend, do the following:
 - Select the legend object.
 - In the **Properties** pane, click **Text truncation**.
 - To specify the number of characters at which the legend items are truncated, click **Manual** and type the number of characters in the **Maximum characters** box.
 - To shrink the font of the legend item text until all the text fits in the legend, select the **Shrink font as needed** check box.
 - To specify some text to appear at the end of truncated legend items, type the text in the **Truncation text** box.

Adding a Note to a Chart

Add a note to a chart to provide additional detail. Notes appear as text in a chart.

By default, notes are aligned with the upper left corner of the chart object. You can change the position of a note relative to the chart object, or chart area, or by using a report expression. For example, in a bar chart showing revenue for each product

line by country or region, you could type [Country or Region] = 'Canada' to position the note relative to the Canada bar.

Notes overwrite whatever is under them so you must position them properly.

If you apply more than one note, ensure that each note has a different position in the report so that they do not overwrite each other. You can also specify the order that they should be drawn in when the report runs. If you have two notes with the same coordinates, the first one in the list is drawn first and the next one is drawn on top of the first.

Procedure

1. Click the chart object.
2. In the **Properties** pane, click **Notes**.
3. Click the new button .
4. Type the note text in the **Text** box and click **OK**.
5. To position the note, do the following:
 - Select the note object  in the chart.
 - In the **Properties** pane, click **Position**.
 - To align the note horizontally, click the left, center, or right alignment button.
 - To align the note vertically, click the top, middle, or bottom alignment button.
 - To set the margins around the chart body, type the desired margin values, and choose margin units.
 - To display the note at a set distance from the sides of the chart area, from the **Anchor** list, click **Relative to Chart**.
 - To display the note at a set distance from the sides of the chart body, from the **Anchor** list, click **Relative to Chart Body**.
 - To display the note at a set distance from a report expression, from the **Anchor** list, click **Report Expression**, click the ellipsis (...) button beside **Expression**, and enter an expression in the **Report Expression** dialog box.
6. To edit the text, double-click the text next to the note object  in the chart.
If the note contains non-text items, such as calculations or measures, you must first switch to the **Page Design** view (**View, Page Design**).

Adding a Baseline to a Chart

Baselines are horizontal or vertical lines that cut through the chart to indicate major divisions in the data.

For example, you can add a baseline to show a sales quota or break-even point.

Each baseline represents a value on an axis.

Depending on the type of chart, you can use the following options to position the baseline.

Option	Description
Numeric Value	Uses a static numeric value.

Option	Description
Mean	Uses the statistical mean plus or minus a number of standard deviations based on all charted data values on the specified axis.
Percentile (%)	Uses a specified percentile.
Percent on Axis (%)	Uses a percentage of the full range of the axis. For example, if the axis range is -500 to 1100, a Percent along axis (%) value of 25 puts the baseline at -100 (25% of the range, 1600).

If you apply more than one baseline, you can specify in which order they should be drawn when the report runs. They are drawn from top to bottom. If you have two baselines with the same coordinates, the first one in the list is drawn first and the next one is drawn on top of the first one.

By default, the baseline and its label appear in the legend.

Baselines do not support color transparency.

Procedure

1. Select the chart object.
2. Depending on your chart and the type of baseline you want to add, in the **Properties** pane, click **Numeric baselines** or **Category baselines**.
3. Click the new button  and choose the type of baseline from the list.
4. Specify the necessary criteria for the baseline position.
5. Under **Baseline Properties**, type a label for the baseline and specify the line style.
Tip: To remove the baseline from the legend, delete the label.
6. If you add more than one baseline, specify their order using the up and down arrows.

Tip: To delete a baseline, click the delete button .
7. To edit a baseline, select the baseline in the chart, and in the **Properties** pane, edit the properties.

Display Trendlines in Current® Default Charts

Trendlines, also known as lines of best fit or regression lines, graphically illustrate trends in data series and are commonly used when charting predictions. A trendline is typically a line or curve that connects or passes through two or more points in the series, displaying a trend.

You can display trendlines in the current default bar, line, area, bubble, and scatter charts.

You can specify the following types of trendlines:

- **Linear**

Use a linear trendline when your data values increase or decrease along a straight line at a constant rate. For example, if your chart displays a steady increase in revenue by product line over time, a linear trendline might be appropriate.

- **Polynomial**

Use a polynomial trendline when your data values both increase and decrease. For example, if your chart displays both increases and decreases in revenue by product line over time, a polynomial fit trendline might be appropriate.

- **Logarithm**

Use a logarithmic trendline when your data values increase or decrease rapidly and then levels out. For example, if your chart displays a rapid decrease in revenue by product line over time and then a plateau, a logarithmic trendline might be appropriate.

- **Moving Average**

Use a moving average trendline when your data values fluctuate and you want to smooth out the exceptions to see trends. For example, if your chart displays large fluctuations in revenue by product line over time, but you know that some data points are exceptions, a moving average trendline might be appropriate.

If you are not sure which trendline type to use, try each type to see which one best fits most of your data points. For example, a linear trendline will not fit most points on a scatter chart with widely spread data points.

Trendlines do not support color transparency.

Procedure

1. Select the chart object.
2. In the **Properties** pane, click **Trendlines**.
3. Click the new button  and click a trendline type.
4. Define the trendline by specifying the following options.

The options that are available depend on the type of trendline you chose.

- To set the order, or degree, of a polynomial trendline, in the **Order** box, type a value between 2 and 6.
- To set the number of prior periods to include when calculating the moving average trendline, type a value in the **Periods** box.
- If you have more than one series on your chart, in the **Based on** list, click the data you want to use for the trendline.
- To customize the style of this trendline, click **Line Styles** and customize the line color, weight, style, and transparency.
- To customize the trendline label in the legend, click **Label** and choose **None**, **Automatic**, or **Custom**.
- To display the trendline equation, click **Show equation**.
- To display the R-squared value of the trendline, click **Show R-squared value**.

Showing data values in bar, column, line, and area charts

You can show the data labels or data values within the chart so that the data values are more clear.

For example, you can display the data values above each column in a column chart to show the exact height of each column.

Procedure

1. In the chart, under **Series**, select the chart type icon.
2. In the **Properties** pane, double-click the **Show values** property.
3. To specify the data label format, in the **Values** list, select what values to display.
 - **None** does not display data values.
 - **Absolute** displays the absolute value of the data.
 - **Cumulative** displays the cumulative value of the data.
4. To show lines pointing from data labels to data marker they apply to, select the **Show leader lines** check box.
5. To specify how to display the labels if their positions on the chart overlap, in the **Collision Mode** list, click one of the following modes:
 - **None** specifies that labels appear in default positions and might overlap.
 - **Normal** (for pie and donut charts) specifies that labels are placed just above their corresponding data markers or chart objects. There is no collision detection, so labels can overlap.
 - **Coarse Stagger** specifies that labels are placed close to their data markers and staggered so that they do not overlap. This collision mode takes less time to render than **Fine Stagger** but might result in labels being farther away from their corresponding data markers.
 - **Fine Stagger** specifies that labels are staggered so that they do not overlap. The labels are as close to the data markers as possible without overlapping. This collision mode takes more time to render than **Coarse Stagger** but might result in labels being closer to their corresponding data markers.

Showing data values in pie and donut charts

You can show the data labels or data values within the chart so that the data values are more clear.

For example, in a pie chart, show the data values within each pie slice, so that you know the exact size of each pie slice.

Procedure

1. Select the chart.
2. In the **Properties** pane, double-click the **Show values** property.
3. To display data labels for each slice of the pie, under **Show**, select the **Slice names** check box.
4. To show lines pointing from data labels to the slices they apply to, select the **Show leader lines** check box.
5. To specify the data label format, in the **Values** list, select what values to display.
 - **Hide** does not display data values.
 - **Absolute** displays the absolute value of the data.
 - **Percentage** displays the slice's percentage of the whole pie.
 - **Absolute and Percentage** displays the slice's percentage of the whole pie as an absolute value.
6. In the **Position** list, select the placement of data labels.
7. To specify how to display the labels if their positions on the chart overlap, in the **Collision Mode** list, click one of the following modes:

- **None** specifies that labels appear in default positions and might overlap.
- **Normal** specifies that labels are placed just above their corresponding data markers or chart objects. There is no collision detection, so labels can overlap.
- **Coarse Stagger** specifies that labels are placed close to their data markers and staggered so that they do not overlap. This collision mode takes less time to render than **Fine Stagger** but might result in labels being farther away from their corresponding data markers.
- **Fine Stagger** specifies that labels are staggered so that they do not overlap. The labels are as close to the data markers as possible without overlapping. This collision mode takes more time to render than **Coarse Stagger** but might result in labels being closer to their corresponding data markers.

Showing data values in other charts

You can show the data labels or data values within the chart so that the data values are more clear.

For example, you can display the data values above each bubble in a bubble chart to show the exact value of each bubble.

You can show data values for the following chart types: Pareto, progressive, scatter, and bubble.

Procedure

1. Select the chart.
2. In the **Properties** pane, double-click the **Show values** property.
3. For each of the categories, series, and measures, select whether to show only values, values and labels, or neither.
4. To show lines pointing from data labels to the data marker they apply to, select the **Show leader lines** check box.
5. To specify how to display the labels if their positions on the chart overlap, in the **Collision Mode** list, click one of the following modes:
 - **None** specifies that labels appear in default positions and might overlap.
 - **Normal** (for pie and donut charts) specifies that labels are placed just above their corresponding data markers or chart objects. There is no collision detection, so labels can overlap.
 - **Coarse Stagger** specifies that labels are placed close to their data markers and staggered so that they do not overlap. This collision mode takes less time to render than **Fine Stagger** but might result in labels being farther away from their corresponding data markers.
 - **Fine Stagger** specifies that labels are staggered so that they do not overlap. The labels are as close to the data markers as possible without overlapping. This collision mode takes more time to render than **Coarse Stagger** but might result in labels being closer to their corresponding data markers.

Customizing Lines and Data Points in a Line Chart

You can customize the lines in a line chart to show only lines, only data points, or both.

Data points represent series values for each category on the Y-axis. You can show special data markers that represent statistically significant values, such as open, high, low, and close values.

You can also change the shape of the line that connects the data points to one of the following:

- **Point to Point** shows data points connected by straight lines.
- **Step at Point** shows data points connected by steps that start and end at the data points.
- **Step Between Points** shows data points connected by steps that start and end between the data points.
- **Smooth** shows data points connected by smooth curves.

You cannot show data points if the configuration of the line chart (**Series type**) is set to **Stacked** or **Stacked 100%**.

Procedure

1. Select the line object.
2. To select whether to show only the line, the line and data points, or only the data points, in the **Properties** pane, under **General**, select an option in the **Line display type** list.
3. To show special data markers, click **Value markers**. Select the check box for the special data markers that you want to add and for each marker, specify the color and shape.

The options you specify in **Value markers** overwrite the options for **Line display type**.

4. To change the shape of the line that connects data points, select an option from the **Line shape** list.
5. To change the color of the lines or data points, click **Palette**.

For more information, see “Customizing the Color Palette of a Chart” on page 69.

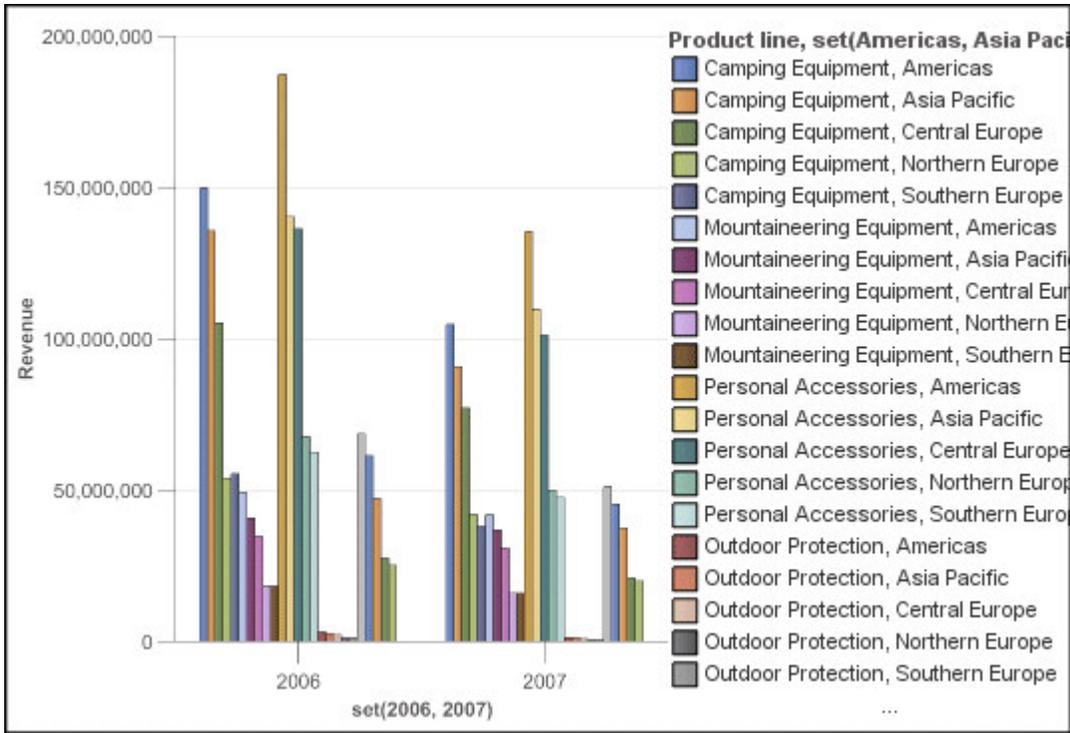
Create a Matrix of Charts

You can view a complex chart that includes nested series or categories into a matrix, or crosstab, that shows multiple small charts arranged in rows and columns.

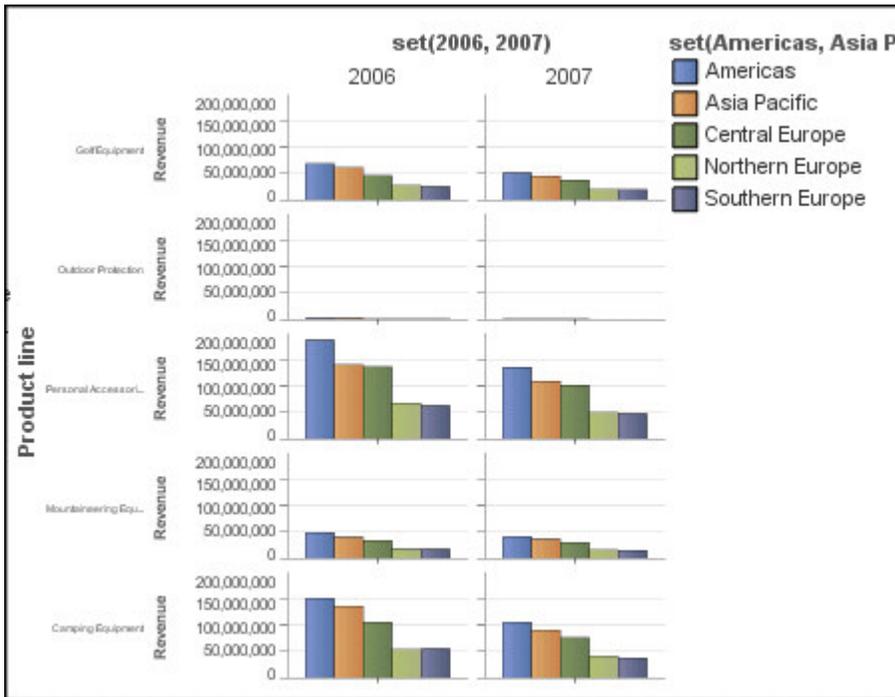
The charts in the rows represent the outer nested levels of the series and categories, and the charts in the columns represent the categories. Each data item in the outer nested levels of the series and categories becomes a separate chart. The numeric scale of all the charts is the same so that you can easily compare.

When working with pie, gauge, and bullet charts, if you include a data item in the categories, you automatically create a matrix of charts. One chart appears for each data item in the category. When working with progressive and bullet charts, if you include a data item in the series, you also automatically create a matrix of charts.

For example, the following column chart shows the revenue for each year (in the categories or x-axis) for all the regions and product lines (in the series or y-axis). This chart is very complex and difficult to understand.



The following chart contains the same series and categories. However, when converted to a matrix of charts, the information is much easier to analyze. The columns show charts for each year and the rows show charts for each the product lines. The bars represent the revenue for each region.



Procedure

1. Click the chart object.
2. In the **Properties** pane, click **Matrix rows and columns**.
3. Select the **Show outer nested series as matrix rows** or **Show outer nested categories as matrix columns** check boxes (or both).
4. In the **Matrix levels** box, select the number of nested levels to include in the matrix columns or rows.

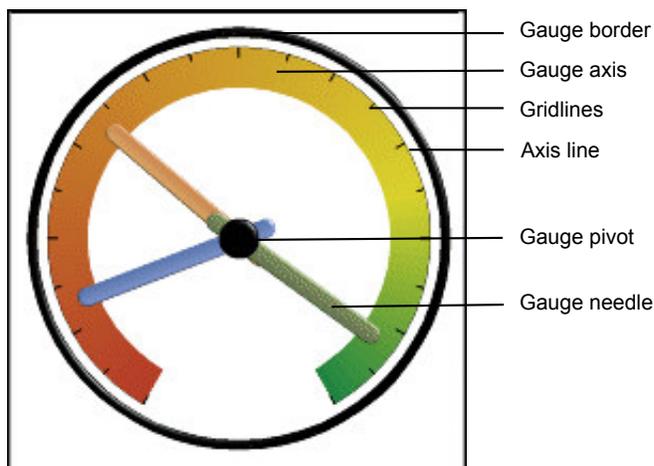
The remaining nested levels are represented in the chart bodies in the matrix if the chart supports additional categories. The pie, gauge, and bullet charts do not support additional categories. The bullet and progressive column charts do not support additional series.

For example, in the above chart, Regions are nested under Product Line. In the matrix chart, a **Matrix level** of 1 is specified. Therefore, Product Line appears as the matrix rows (series) and Regions appear within the chart bodies.

5. If you want labels for the matrix rows and columns to appear on each chart, select the **Show row labels** or **Show column labels** check box.
6. In the **Labels location** list, select where the nested labels should appear on each chart.
The default position is on the bottom for columns and on the left for rows.
7. If the labels are too long, click **Truncation** and specify where to truncate text or select the **Size fonts automatically** check box to resize the text to fit.
8. To change the font, color, and data format of the labels, click **Style**.
9. To show the title in the row or column axis, select the **Show row title** or **Show column title** check box.
10. If your matrix chart includes only rows or columns, and you want them to wrap, select the **Wrap rows or columns if possible** check box.

Customize a Gauge Chart

You can customize the gauge border, axes, lines, pivot, and needle to make the chart easier to read.



Unless indicated in the user interface, all sizes are a percentage of the maximum allowed.

If your gauge chart includes a border, long axis labels, such as 250,000,000, may overlap the gauge border and be difficult to read. To avoid this problem, customize the data format of your gauge chart measure and reduce the scale so that less zeros are displayed. Or change the gauge border color or size or remove the border.

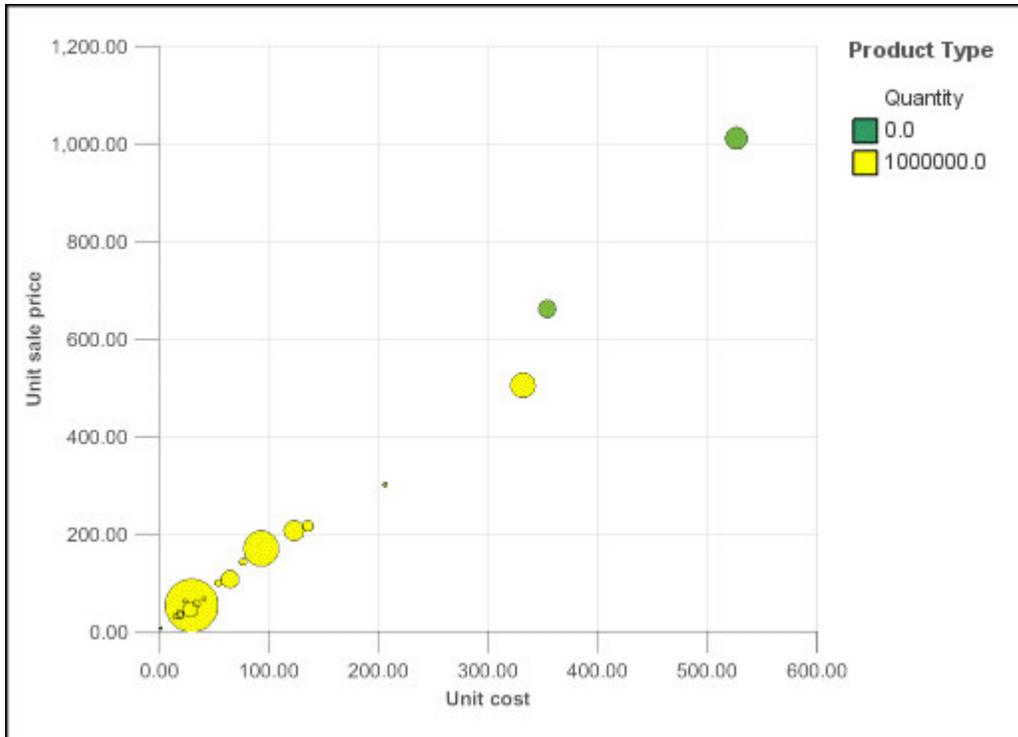
Procedure

1. Click the gauge chart object.
2. If you want to change the size, shape, and color of the center pivot point, in the **Properties** pane, click **Gauge pivot**, and specify the style.
3. If you want to customize the border around the gauge, in the **Properties** pane, click **Gauge border**.
4. If you want to change the indicators in the gauge axis, select the gauge axis object in the chart and do the following:
 - To customize the gauge needles, in the **Properties** pane, click **Gauge needle** and specify the style
 - To change, add, or remove color bands that indicate the data range positions, in the **Properties** pane, click **Gauge axis colors** and specify the color palette.
 - To change the gridlines, in the **Properties** pane, click **Gridlines** or **Minor gridlines** and specify the style.
 - To change the appearance of the gauge axis line, click **Axis line** and specify the style.

Define Color by Value in Scatter or Bubble Charts

In a scatter or bubble chart you can specify that data points or bubbles appear in different colors based on an additional measure or fact. The color of the points or bubbles helps you to see relationships in large amounts of data.

For example, the following bubble chart shows the relationship between the unit cost and unit sale price. The size of the bubbles shows the gross profit and the color of the bubbles shows whether the quantity sold is above (yellow) or below (green) 1,000,000 units.



Procedure

1. Drag a measure to the **Color** drop zone under **Measures** and then select the measure.
2. In the **Properties** pane, click **Color by value**.
3. To define the colors by percentages instead of actual values, select the **Percentage** check box.

For example, if the **Percentage** check box is selected and your values range from 25 (red) to 50 (green), then the bottom 25 percent of values will be red, the top 50 percent of values will be green, and the values between 25 and 50 percent will be an interpolated color, such as yellow.

4. If you want to use a preset color palette, click **Palette**, and select the palette that you want to use.
5. If you want to customize a palette color or boundary value, select the palette entry in the **Palette** box, specify the color and transparency, and type a new boundary value.
6. To change the color and transparency of the palette definition:
7. To add a new palette entry, select the palette entry below which you want to add the new entry, click the new palette entry button , and click **Color**.
8. If your chart has lines or markers, under **Style**, set the marker shape, line style, and line weight.
9. To choose a color and transparency for missing or null values, under **Missing Values**, click **Color** and type a value in the **Transparency** box.

Create a Donut Chart from a Pie Chart

You can add a hole to the middle of your pie chart to create a donut chart. You can then display something in the hole, such as a company logo, a calculation, or the legend.

Procedure

1. Select the pie chart object.
2. In the **Properties** pane, set the **Hole size (%)** property to the percentage of the pie that you want the hole to take up.

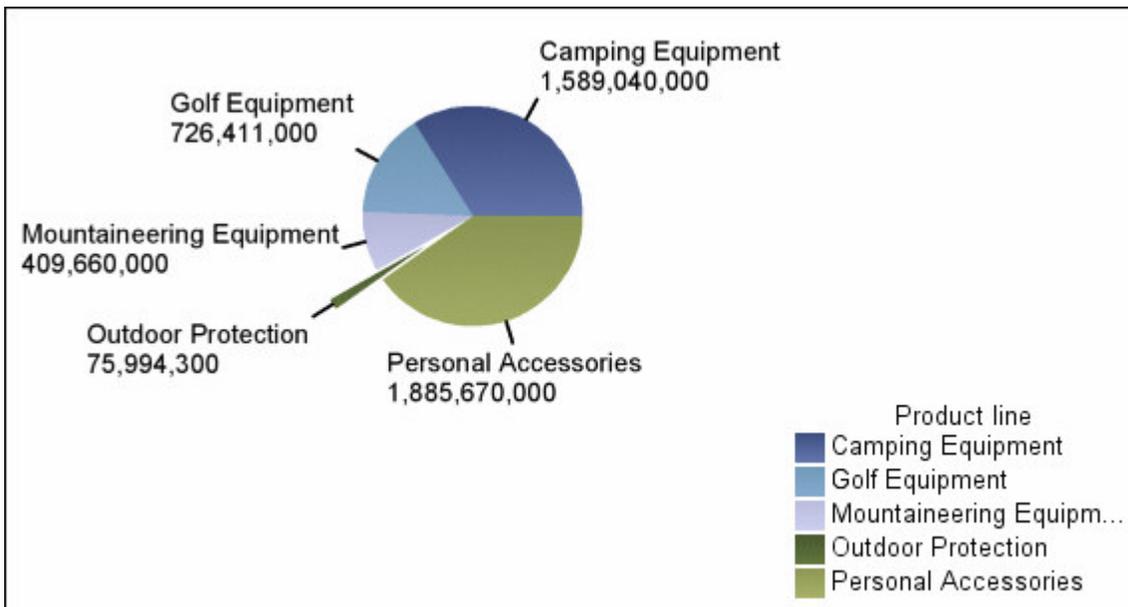
Tip: You can select a value from the **Hole size (%)** list or type a value that is not listed.

Pull Out Pie Slices in a Pie Chart

You can highlight pie slices by pulling them out from the rest of the pie.

Because the pie slices represent data items, if you replace or delete the data item, the slice is no longer pulled out and returns in the pie.

For example, the following chart shows revenue by product line with the Outdoor Protection slice pulled out.



Procedure

1. Right-click the pie slice that you want to pull out and click **Explode Slice**.
The slice is pulled away from the chart.
2. To return the pulled-out slice in the pie, right-click the pie chart object and click **Remove Exploded Slices**.

Customize a Bullet Chart

After you create a bullet chart, you can customize the shape, color, and size of the bullet and target indicators.

By default, the bullet chart includes three gray colored regions in the background. You can edit the colored regions (**Properties** pane, **Colored regions**).

Procedure

1. Select the bullet chart object.
2. To change the shape, color, and size of the bullet or target, do the following:
 - In the **Properties** pane, click **Bullet indicators**.
 - Under **Bullet**, specify how to show the bullet.

The **Bar width** setting specifies the width of the bullet bar as a percentage of the space available. For example, if you specify 50 percent, the bar uses half of the space available. If you specify 100 percent, the bar uses all the available space.
 - Under **Target**, specify how to show the target.
3. To change the chart orientation, in the **Properties** pane, under **Chart Orientation**, select **Vertical** or **Horizontal**.

Related tasks:

“Add Colored Regions to a Chart” on page 73
You can define colored regions in the body of a chart.

Chapter 6. Lists

Use list reports to show detailed information from your database, such as product lists and customer lists.

A list report is a report that shows data in rows and columns. Each column shows all the values for a data item in the database or a calculation based on data items in the database.

Product line	Quantity
Camping Equipment	27,301,149
Golf Equipment	5,113,701
Mountaineering Equipment	9,900,091
Outdoor Protection	12,014,445
Personal Accessories	34,907,705
Overall - Summary	89,237,091

List reports automatically include an overall summary in a footer row. The default summary is used.

Related tasks:

“Summarize Relational Data” on page 98

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

“Summarize Dimensional Data” on page 123

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

“Change a List into a Crosstab” on page 42

Change a list into a crosstab to view your data from a different perspective.

Group Data

Group data items in a list report to remove duplicate values. For example, you have a report that shows products purchased. For each product, the product type is also shown. You group the product type column to show only one instance of each product type in the list.

Grouping a column automatically moves it to the left as the first column. Grouping a subsequent column moves it to the left until it follows the last grouped column. When you ungroup a column, it moves to the right until it follows the last grouped column.

After a column is grouped, you can move it elsewhere in the report.

In addition to grouping, you can specify the sort order of data items. In lists, you can sort data items within groups as well as ungrouped items. In crosstabs, you can sort row and column items.

Procedure

1. Click the column on which to group.

You can click either the column heading or one of the column cells.

Tip: To perform multiple groupings at once, use Ctrl+click or Shift+click.

2. Click the group/ungroup button .

Related tasks:

“Sorting relational data” on page 99

You can sort items to view them in your preferred order.

“Divide data into sections” on page 146

Create sections in a report to show a separate list, chart, or crosstab for a data item.

Chapter 7. Exploring Relational Data

Relational data is best represented by lists. This data is organized in IBM Cognos Business Insight Advanced by query items.

In relational reporting, you summarize data by using headers and footers in lists, summary functions, member summaries, and within detail aggregation. You focus data in relational reporting with summary or detail filters.

IBM Cognos Query Studio is also available to work with relational data.

Using Relational Calculations

Inserting a calculation makes your report more meaningful by deriving additional information from the data source. For example, you create an invoice report, and you want to see the total sale amount for each product ordered. Create a calculated column that multiplies the product price by the quantity ordered.

You build calculations in the expression editor using functions.

If a calculation is used in multiple reports, or by different report authors, ask your modeler to create the calculation as a standalone object in the model and include it in the relevant package.

Calculation Solve Order

When calculations in the rows and columns of a report intersect, calculations are performed in the following order:

- addition or subtraction
- multiplication or division
- aggregation (rollup)
- remaining arithmetic functions: absolute, round, round down, average, minimum, maximum, medium, count
- percentage, % difference (growth) or % of total
- rank, quartile, quantile, or percentile

If both calculations have the same precedence, for example, if they are both business functions, then the row calculation takes precedence.

If you have the necessary permissions, you can open your report in IBM Cognos Report Studio and override the order of precedence by changing the solve order property. For more information, see the Report Studio *User Guide*.

Limitations of Calculations

Use only the expressions and functions that are available in Business Insight Advanced, and follow their syntax. For best results, do not build calculations or summaries over other calculations that were authored in Report Studio.

Minimal checking exists for calculations. If your calculation uses an invalid expression, your report results may contain unexpected values.

In addition, you should define member summaries as follows:

summary_function (*currentMeasure* within set *set_reference*)

where *set_reference* is a level or set inserted from the **Source** tab .

Unless otherwise required, use *summary_function* as the aggregate function. If you use an explicit summary function, you may encounter problems with measures and scenario or account dimension members (such as profit margin, distinct count, and so on) that have complex rollup rules, or members that do not roll up.

Know your data, and confirm with the owner of the cube where overriding the automatic aggregation is safe.

Because of the above limitations, summaries of calculations may not provide reliable values. For convenience, you may need to build reports where row summaries and calculated member columns intersect. In such reports, these intersections may contain unexpected values. In contrast, row calculations intersecting with column aggregates using the aggregate function are safe because the calculation is performed on the reliably summarized values.

If you need to create more complex expressions, use Report Studio.

Create a Simple Calculation

You can select items in your report and create simple calculations. In addition to simple arithmetic calculations, you can perform numeric, string, date and time, and interval calculations.

The following table defines the available numeric calculations.

Calculation	Description
- <i>data item</i>	When you select one numeric data item , inserts the negative of the current value.
Absolute	For numeric data items, inserts the absolute value.
Round	For numeric data items, inserts a number rounded to the nearest integer.
Round up	For numeric data items, inserts a number rounded to the nearest integer.
Round down	For numeric data items, inserts a number rounded to the integer closest to zero.
Rollup	Summarizes, or rolls up, all the values in a hierarchy.
%	Calculates the value of the first item selected as a percentage of the second item.

Calculation	Description
% Difference	Calculates the difference between two items as a percentage.
% of total	Calculates the value of the item as a percentage of the total for the report. Note: Expression definition: total(x) / total(total(x) for report)
% Of Base	Takes the first selected member from edge A and the second selected member from edge B. The calculation result of a percent of base compare all of the values for member A to the intersect value of members A and B. Note: This calculation is only available if you select two members from different hierarchies, each from a different edge.
Custom	Allows you to specify your own value when performing a simple arithmetic calculation. Also allows you to change the order of operands, or type a custom name for the new calculated row or column.

The following table defines the available string calculations.

Calculation	Description
Remove trailing spaces	For string data items, removes any extra spaces that appear after the last character in the string. Spaces between words are not removed. Extra spaces can sometimes cause unexpected results when you sort, filter, or search.
First ? characters	For string data items, truncates the text to show only the first number of characters that you specify.
Last ? characters	For string data items, truncates the text to show only the last number of characters that you specify.

The following table defines the available date and time calculations.

Calculation	Description
Add ? years Add ? months Add ? days	When selecting one date or time data item, adds the specified number of years, months, or days to the selected value.
Year, Month, Day, Hour, Minute, and Second	When selecting one date or time data item, shows the year, month number, day number, hour, minute, or second value.

The following table defines the available interval calculations.

Calculation	Description
Days	For interval data items, such as number of days between two dates

If you want to create a more advanced calculation that uses mathematical functions, create a query calculation.

Procedure

1. Select the items in your report to calculate.

Tip: Shift+click or Ctrl+click to select multiple items.

2. Click the insert calculation button  and select the calculation to perform.

Note: Only calculations that are applicable to the items that you have selected appear.

3. To change the order of the operands or the name of the calculated item added to the report, click **Custom**.

Results

The calculation appears as a new row or column in your report.

Inserting a Query Calculation

Insert a query calculation into your report to add a new row or column with values that are based on a calculation. For example, you create a query calculation named Euros that converts dollars to euros by multiplying an existing dollar measure by a conversion rate. Euros can then be displayed to end users in a separate row or column.

Quality of Service Indicators

Not all data sources support functions in the same way. The data modeler can set a quality of service indicator on functions to give a visual clue about the behavior of the functions. Report authors can use the quality of service indicators to determine which functions to use in a report. The quality of service indicators are as follows:

- not available (X)

This function is not available for any data source in the package.

- limited availability (!!)

The function is not available for some data sources in the package.

- limited support (!)

The function is available for all data sources in the package but is not naturally supported for that data source, which can result in poor performance and unexpected results.

- unconstrained (no symbol)

The function is available for all data sources.

Using Quotation Marks in Literal Strings

When inserting literal strings in an expression, you must enclose the string in single quotation marks. If the string contains a quotation mark, it must be modified. For example, if you want to insert the string ab'c, you must type 'ab"c'.

Insert a Query Calculation

When creating an expression for use in a double-byte environment, such as Japanese, the only special characters that work are ASCII-7 and ~ -- | | - \$ ¢ £ ¸.

Tips:

- To show or hide the **Available Components** pane, click the blue arrow to the right of the pane.
- To show or hide the **Information** pane, click the blue arrow above the pane.
- To copy and paste expression components in the **Expression Definition** pane,

you can use the copy button  and the paste button .

Procedure

1. From the **Toolbox** tab , drag **Query Calculation** to the report.
2. Type a meaningful name for your expression in the **Name** box.
For example, if you are calculating the difference between 2007 revenue and 2006 revenue, you could name your expression **2007 - 2006 Revenue**.
3. In the **Available Components** pane, define the calculation:
 - To add data items that are not shown in the report, on the source tab , double-click the data items.
 - To add data items that are in the report but not necessarily in the model, such as calculations, on the data items tab , double-click the data items.
 - To add functions, summaries, and operators, on the functions tab , double-click elements.

Tip: To filter the visible functions, summaries, and operators in the

Available Components pane, click the filter button  and filter by the function type, what the function returns, or what the function acts on.

Tip: You can also type the calculation directly in the **Expression Definition** box. When typing date values, ensure that the date format is correct for your database type.

4. Click the validate button .

Any validation errors appear on the **Errors** tab of the **Information** pane.

Summarize Relational Data

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

After you add summary rows or columns, you can move them by dragging them elsewhere in the report.

You can also use summary functions in custom calculations.

The following table defines the available summaries.

Summary	Description
Automatic Summary	Uses the default summary for the data item, as specified in the data source. For example, a data item that represents part numbers likely uses count as the default summary.
Total	Adds all values, excluding null and missing values.
Count	Counts all values, excluding null and missing values.
Average	Adds all values, and then divides by the count of values, excluding null and missing values.
Minimum	Selects the smallest value, excluding null and missing values.
Maximum	Selects the largest value, excluding null and missing values.

When adding summaries to crosstabs or charts, the default is to use detail summaries. A detail summary tries to summarize only data that is visible in the crosstab or chart structure. If it is not clear how to summarize the data, such as when a report includes ambiguous nesting, the report displays no value (--) or an error occurs.

Procedure

1. Click the row or column to summarize.
2. On the toolbar, click the summarize button , and select a summary type.
The summary appears as a new row or column.
3. To change the summary label, right-click the label and type a new name, such as **Total (February sales)**.

Tip: To remove a summary, select the summary label, and click the delete button .

Related concepts:

“Using Relational Calculations” on page 93

Inserting a calculation makes your report more meaningful by deriving additional information from the data source. For example, you create an invoice report, and you want to see the total sale amount for each product ordered. Create a calculated column that multiplies the product price by the quantity ordered.

Sorting relational data

You can sort items to view them in your preferred order.

By default, IBM Cognos Business Insight Advanced retrieves items in the order defined in the data source. Relational data sources may not always have a defined order. The data modeler defines the sorting options in the model. For more information about data modeling, see the *IBM Cognos Framework Manager User Guide*.

Procedure

1. Select the column or row to sort.
2. Click the sort icon .
3. Under **Sort in Layout**, click **Ascending** or **Descending**.

Tip: To remove a sort order, click **Don't Sort**.

Sorting multiple rows or columns and grouped columns

If you sort more than one row or column, you can change the order in which they are sorted. You can also sort grouped columns in a list.

Procedure

1. Select a column or row.
2. Click the sort icon  and click **Edit Layout Sorting**.
3. To sort a list column within a group, do the following:
 - a. In the **Groups** pane, under the **Groups** folder, expand the folder of the grouped column.
 - b. In the **Data Items** pane, drag the data items to sort to the **Sort List** folder. You can also drag data items from the **Detail Sort List** folder.
 - c. Click the sort order button  to specify ascending or descending order.
4. To change the sort order when multiple columns are sorted, in the **Groups** pane, change the order of columns in either the **Sort List** folder of a group or in the **Detail Sort List** folder.

Tip: Add items to the **Detail Sort List** folder to sort items that are not groups.

Related tasks:

“Group Data” on page 91

Group data items in a list report to remove duplicate values. For example, you have a report that shows products purchased. For each product, the product type is also shown. You group the product type column to show only one instance of each product type in the list.

Sorting lists based on a data item not in the report

You can sort columns in a list using a data item from the source tree to sort based on a data item that is not included in the list.

For example, a list shows all products in your product line. You want to sort them by production cost without having to add the production cost measure to the report.

For relational data sources, you can use measures  and query items  to sort.

For dimensional data sources, you can use measures  and levels  to sort.

Procedure

1. Select a column.
2. From the **Source** tab , right-click the measure, query item, or level and click **Sort for report**.
3. From the **Data items** column, move the data item to the **Detail Sort List** in the **Groups** column.
4. Click the sort order icon  to specify ascending or descending order.

Format Relational Data

Format data in a report to improve readability. For example, you can show all date values in the order year, month, and day. If you do not specify formatting, data is formatted according to the properties set in the model. If the properties were not set in the model, data is formatted according to the International Components for Unicode (ICU) formats.

You can also format data based on a condition.

Data formats are not applied in delimited text (CSV) and XML report outputs.

Procedure

1. In the work area, right-click a data item and click **Style, Data Format**.

Tip: You can also use the data format button  on the style toolbar.

2. In the **Format type** box, click a format type.
The properties that you can set for the selected format type appear in the **Properties** box.
3. Set the properties that you want.

For properties in which you type meta-characters that represent certain types of information, such as YYYY-MM-DD for dates, the meta-characters required depend on the authoring language specified for the report.

If you specify a value for the **Pattern** property, all other formatting properties are ignored, with the following exceptions:

- **Missing Value Characters**
- **Zero Value Characters**
- **Negative Pattern**

Be aware that some properties are locale-sensitive.

Results

The data formatting properties are applied. If a data item contains values in multiple currencies, but only a subset of those currencies have defined formats, the default format for the locale you are working in is applied to values for which no format is specified.

Specifying the Number of Decimals in Numbers

When specifying the number of decimals, IBM Cognos Business Intelligence uses the IEEE 754 default rounding mode known as half even. With half even rounding, numbers are rounded toward the nearest truncated value, unless both truncated values are equidistant, in which case the value ending in an even digit is chosen, as follows:

- If the digit immediately after the precision to be shown is greater than 5, the number is rounded up.
- If the digit immediately after the precision to be shown is less than 5, the number is rounded down.
- If the digit immediately after the precision is a 5, the number is rounded down when the preceding digit is even and rounded up when the preceding digit is odd.

For example, the number 78.5 is rounded to 78, while the number 73.5 is rounded to 74.

In addition, if the maximum number of decimals is lower than the actual number of decimals in the number, the number is rounded to the maximum number of decimals.

Locale-sensitive Properties

IBM Cognos Business Insight Advanced contains an extensive library of customized properties adapted to users from different regions who speak different languages. For example, if a modeler specifies that a given data item is a currency, you must specify only the proper currency symbol. When reports are created, Business Insight Advanced automatically adapts the format of the currency numbers to each user according to the content language specified in IBM Cognos Connection.

When modelers or report authors specify properties, these properties override user preferences and risk creating inconsistent formatting for users of other cultures. It is usually much easier and safer to let Business Insight Advanced do the formatting. For example, for the date format type, different regions use different characters to represent the date separator. If you specify a date separator, you may confuse users in other regions.

The following data formatting properties are locale-sensitive:

- **Currency Symbol Position**
- **Date Separator**
- **Date Ordering**
- **Calendar Type**
- **Time Separator**
- **Display AM/PM Symbols**
- **Clock**
- **Decimal Symbol**
- **Negative Sign Position**
- **Thousands Separator**
- **Group Size (digits)**
- **Secondary Group Size (digits)**
- **Missing Value Characters**
- **Zero Value Characters**
- **Pattern**
- **Negative Pattern**

Filtering relational data

Use filters to remove unwanted data from reports. Data is displayed in the report only if it meets the filter criteria. When working with relational data sources, the available filtering options are determined by the data that you select.

You can combine two or more filters into a complex filter, create a context filter, and create top or bottom filters.

If you filter values that are floating-point numbers, you may encounter imprecise filtering results due to rounding or data truncation. Floating-point numbers may appear differently in the report than how they are stored in the data source. To ensure accurate results, your filter criteria should account for any rounding issues.

By default, filters on measures are applied after automatic aggregation. You can change whether filters are applied before or after aggregation using the **Edit filters** option.

You can also use filters to suppress null cells in your reports. Using filters ensures that calculations take suppression into account. If you want to perform calculations before suppression is applied, use the **Suppress** option.

Procedure

1. Select the data item on which you want to filter.

Tip: If you select two or more items, you can filter using a range.

2. Click the filter icon .
3. Select a filter condition from the list.
4. Click **OK**.

By default, the values of any filters applied appear as an additional subtitle.

Related concepts:

“Relational and dimensional reporting styles” on page 15

You can create reports in IBM Cognos Business Insight Advanced using either a relational reporting style or a dimensional reporting style depending on the type of data source you use.

Related tasks:

“Suppress Empty Cells in Dimensional Reporting” on page 121

Sparse data may result in crosstabs showing empty cells. For example, a crosstab that matches employees with products results in many rows of empty values for the revenue measure if the employee does not sell those products.

Creating a custom filter

Create custom filters when the values you want to use in your filter conditions do not appear in your report.

You can use filters to create prompts in the report. Prompts provide questions that help users to customize the information in a report to suit their own needs. For example, you create a prompt so that users can select a region. Only data for the specified region is retrieved and displayed in the report.

Procedure

1. Select the data item on which you want to filter.

Tip: If you select two or more items, you can filter using a range.

2. On the toolbar, click the filter icon .
3. Click **Create Custom Filter**.
4. Under **Condition**, select the type of condition you want.
5. Under **Values**, select your values. If you filter numeric data, select the type of filter condition that you want to create: **Specific values**, **Comparison**, or **Range**.
6. If you want users to be prompted when they run the report, select the **Prompt for values when report is run in viewer** check box.
7. If you want the filter to include null values, select the **Include missing values (NULL)** check box.

Creating relational custom groups

Create custom groups to classify existing data items into groups that are meaningful to you.

You can use custom groups to convert numeric values into broader categories. For example, you can break down sales results into low, medium, and high categories. Or you can reduce the number of values into a smaller, more meaningful groups. For example, you can change a list of employees into separate teams or departments.

When you create custom groups in a list, a new column is added to the report, with the name *data item* (Custom). You can use this new column to group or sort the report. If you want to show only the new groups, you can delete the original column.

Procedure

1. Click the column that you want to group on and, from the **Edit Data** menu, click **Calculate > Define Custom Groups**.

Tip: You can click either the column heading or one of the column cells.

2. Click the **New Custom Group** icon  .
3. To group by values that you select, click **New Select Values Groups**, type a **New Group Name**, select the required values from the **Values** box, and move the values to the **Selected Values** box.
4. To group by a range of values, click **New Range Group**, type a **New Group Name**, and enter the **From** and **To** values.
5. If you do not want a group name to appear for remaining values, select **Do not show remaining values**. Clicking this option will produce empty cells for remaining values.
6. If you want the group name for remaining values to match each value, select **Use each remaining value as a group name**.
7. If you want to specify your own group name for all remaining values, select **Group remaining values into a single group** and type the name that you want.
8. If you are adding custom groups in a list, under **New data item name**, select either the default data item name or type a new data item name.

Combining filter conditions

You can combine two or more filter conditions to do more complex filtering. Combined filters allow you to create compound conditions that are grouped with AND or OR conditions.

For example, you want to filter the columns Product line and Year in a report. The specific data you want to retrieve is the quantity of Camping Equipment sold in 2010 and the quantity of Golf Equipment sold in 2009. To do this, you must create a complex filter that combines several filter conditions.

Procedure

1. On the toolbar, click the filter icon .
2. Click **Edit filters**.
3. Click the new button , select **Combined**, and click **OK**.
4. In the **Create Filter** window, select the data item on which you want to filter and click **OK**.
5. Under **Condition**, select the type of condition you want.
6. Under **Values**, select your values. If you filter numeric data, select the type of filter condition that you want to create: **Specific values**, **Comparison**, or **Range**.
7. If you want users to be prompted when they run the report, select the **Prompt for values when report is run in viewer** check box.
8. If you want the filter to include null values, select the **Include missing values (NULL)** check box.
9. Click the operator that appears between the filters and click **AND**, **OR**, or **NOT** to combine them.

10. Click the new condition button , and specify a second filter condition.
11. Click the operator that appears between the filters and click **AND**, **OR**, or **NOT** to combine them.

Filtering based on data items not in the report

You can create a filter using a data item in the source tree that is not included in your report.

For example, a crosstab shows the sales revenue of all your product line for each year. You want to filter the crosstab to show the revenue for only one country or region, which does not appear in the report.

For relational data sources, you can use measures  and query items  to filter.

Procedure

1. Select the data container (list, crosstab, or chart) or the data item within the container that you want to filter.
2. From the **Source** tab , right-click the measure, query item, or level and click **Filter for report**.
3. Under **Condition**, select the type of condition that you want.
4. Under **Values**, select your values. If you filter numeric data, select the type of filter condition that you want to create: **Specific values**, **Comparison**, or **Range**.

Tip: If you filter text data and want to use your own value, under **Selected Value**, click the new button  and specify your value.

5. If you want users to be prompted when they run the report, select the **Prompt for values when report is run in viewer** check box.
6. If you want the filter to include null values, select the **Include missing values (NULL)** check box.

Editing filters

You can specify whether filters are mandatory and whether to apply them before or after automatic aggregation.

Procedure

1. On the toolbar, click the filter button .
2. Click **Edit filters**.
3. To edit an existing filter, select the filter that you want to edit and click the edit button .

Tip: Click the new button  to add new filters.

4. To specify whether the filter is mandatory, in the **Usage** box, select an option.
5. To specify whether to apply filters before or after automatic aggregation, in the **Application** box, select an option.

Removing filters

You can remove a single filter or all filters for your report if they are no longer needed.

Procedure

1. On the toolbar, click the filter icon .
2. To remove all the filters in your report, click **Remove all filters**.
3. To remove a single filter, click **Edit filters**.
4. Select the filter that you want to remove and click the delete icon .

Suppress Empty Cells in Relational Reporting

Sparse data may result in crosstabs showing empty cells. For example, a crosstab showing employees and products with a measure of revenue results in empty cells when the employee does not sell the product.

You can suppress rows, columns, or rows and columns based on divide by zero, missing, and overflow values. Suppressing rows or columns without data gives you a more concise view of your report.

IBM Cognos Business Insight Advanced performs calculations before applying suppression. If you have multiple crosstabs or charts, you must select one to access suppression options.

Access to the suppression feature depends on the settings in your modeling component, IBM Cognos Transformer, Framework Manager, and IBM Cognos Administration.

Procedure

1. From the **Data** menu, click **Suppress**  and click **Suppression Options**.
2. Under **Suppress**, choose what sections to suppress.
3. Under **Suppress the following**, choose which values to suppress.

Limitations When Formatting Empty Cells in SAP BW Data Sources

When working with SAP BW data sources, if the SAP BW server administrator configured custom formatting for empty cells on the SAP BW server, this custom format does not appear in IBM Cognos Business Intelligence reports. Ask your administrator to configure the formatting of empty cells in IBM Cognos BI.

Example - Suppress Zeros in Rows and Columns in an Existing Report

You are a report writer at The Sample Outdoors Company, which sells sporting equipment. You have a report that compares current year data to previous year data. You want to suppress zeros in the report to make it more concise. You use the zero suppression tool to set the level of suppression.

Procedure

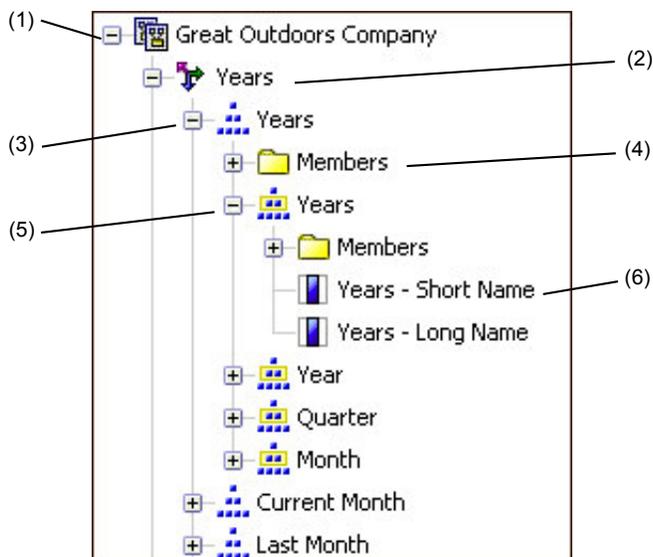
1. Open the Sample Outdoors Company Balance Sheet as at Dec. 31, 2006 report.
2. From the **Data** menu, click **Suppress**  and click **Suppression Options**.
3. Under **Suppress the following**, click **Rows and columns**.
4. Under **Suppress the following type of values**, select the **Zero values** check box.
5. Run the report.
Rows and columns containing zeros are hidden.

Year to date (USD \$ 000's)	2006 Actual results in USD	2005 Actual results in USD
	December	December
Assets (total)	\$4,353,363,798	\$3,804,483,176
Current assets (total)	\$2,336,392,807	\$2,139,066,575
Operating assets (total)	\$1,778,012,688	\$1,484,257,572
Other assets (total)	\$238,958,303	\$181,159,029
Liabilities (total)	(\$1,602,289,213)	(\$1,754,874,006)
Current liabilities (total)	(\$1,144,967,294)	(\$1,206,574,775)
Long-term and other liabilities (total)	(\$457,321,919)	(\$548,299,231)
Equity (total)	(\$2,751,074,586)	(\$2,049,609,170)
Common stock	(\$719,183,000)	(\$749,178,000)
Other capital	(\$69,921,200)	(\$183,898,457)
Retained earnings - net	(\$1,961,541,522)	(\$1,116,128,225)
Currency translation gain (or loss)	(\$428,864)	(\$404,488)

Chapter 8. Exploring Dimensional Data

Dimensional data sources include OLAP and dimensionally-modeled relational (DMR) data sources. The **Source** tab  in the content pane shows a member-oriented view of the data.

For dimensional and mixed model data sources, you can view the full data tree by clicking the view package tree button  in the **Source** tab  of the content pane. You can switch to the dimensional-only data tree by clicking the view members tree button .



Note: The names of levels and members in a dimension come from the model. It is the responsibility of the modeler to provide meaningful names.

1. Package

Packages are subsets of a model, containing items that you can insert in a report.

2. Dimension

Dimensions are broad groupings of descriptive data about a major aspect of a business, such as products, dates, or markets.

3. Level hierarchy

Level hierarchies are more specific groupings within a dimension. For example, for the **Years** dimension, data can be organized into smaller groups, such as **Years**, **Current Month**, and **Last Month**.

4. Members folder

Members folders contain the available members for a hierarchy or level. For example, the **Members** folder for the **Years** level hierarchy contains everything found in the **Year**, **Quarter**, and **Month** levels.

5. Level

Levels are positions within the dimensional hierarchy that contain information at the same order of detail and have attributes in common. Multiple levels can exist within a level hierarchy, beginning with a root level. For example, the **Years** level hierarchy has the following related levels.

Level	Level name	Description
Root	Years	The root level.
First	Year	Years in the Years root level. For example, 2004, 2003, and 2002.
Second	Quarter	Quarters for each year in the Year level. For example, 2004 Q1, 2004 Q2, and 2004 Q3.
Third	Month	Months for each quarter in the Quarter level. For example, Jan., Feb., and Mar.

Tip: The **Measures** dimension contains the measures available in the data source.

6. Member property

Member properties are attributes that each member possesses. For example, gender could be a property for all employee members. For more information, see “Insert a Member Property” on page 113.

Customize the Source Tree

When using dimensional data, you can customize how you see data in the source tree. You can select a full package tree view that shows dimensions, hierarchies, levels, an optional members folder, and member properties.

Or you can select a members-only tree view, such as the one in IBM Cognos Analysis Studio. This view allows you to add only members in your report.

Procedure

1. Click the **Source** tab .
2. To view the members-only tree view, click the view members tree button .
3. To view the full package tree, click the view package tree button .
4. To change what is included in the tree, right-click and click **Package Tree Settings**.
Use the **Preview** pane to choose the appropriate settings.

Insert a Member

By default, when you insert members from the source tree into your report with IBM Cognos Business Insight Advanced, members are inserted with their children and are inserted as sets. You can change how members are inserted. For example, you may want to insert a member without its children or insert only the member's children.

You can set your report options to insert a member's children when you double-click a member that you have already inserted in your report. You can control whether the children are inserted before or after, nested, or not inserted at all. To do this, from the **Tools** menu, click **Options**, and then choose a setting on the **Edit** tab.

You can set the default behavior for replacing members to replace individual nodes, replace the entire edge, or not to replace anything. To do this, from the **Tools** menu, click **Options**, and then choose a setting on the **Edit** tab.

Note: You cannot change the above member insertion and replacing behaviors when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced. In this case, double-clicking a member drills down and replacing members replaces the entire edge.

When inserting members into a crosstab, ensure that you insert members from the same hierarchy on only one of the crosstab edges. If you insert members from the same hierarchy on both edges of the crosstab, you may encounter unexpected results. For example, a report that uses members from years in the rows and Quarters in the columns is very difficult to read because the useful numbers are distributed over a large area of mostly blank cells.

Calculated members from the data source also appear in the source tree. However, calculated members in Microsoft SQL Server Analysis Services (SSAS) cubes do not appear in the list of descendants in the query. If you want these calculated members to appear in a report or a prompt, you must insert them explicitly.

Procedure

1. From the **Source** tab , click the insert member with children button  and select how to insert members.
2. If you want to insert individual members instead of inserting members within a set, click the insert individual members button .
3. Do one of the following:
 - To insert a member above or below another member, drag the new member above or below a cell.
A flashing black bar appears where you can drop the new member.
 - To replace an entire edge, drag the new member to the cell with the member to replace.
A flashing black box appears where you can drop the new member.

Search for a Member

You can perform a member search to quickly find the data you want.

You can control the number of members that are returned in a search by specifying a value for the **Member display count limit (in source tree)** option.

Procedure

1. From the **Source** tab , select and then right-click a hierarchy  or level  and click **Search**.
2. In the **Words** box, type the words or characters for which to search.
3. Click the search parameter to use.
4. To search all descendants instead of just the immediate children, select the **Search all descendants** check box.

For example, when performing a search in a hierarchy, selecting this check box returns members found in all the levels of the hierarchy.

5. Click **Search**.

Results

The search results appear in a hierarchical structure on the **Search** tab . You can browse the hierarchy to explore members at lower levels.

Tip: You can insert members directly from the **Search** tab into a report. This can save you time, because you do not have to define a filter. For example, instead of inserting **Product line** from the **Source** tab and adding a filter for **Camping Equipment**, you can insert **Camping Equipment** from the **Search** tab.

Nest Members

When you insert members in your report, you may want to nest them in another row or column to make your report easier to use. You can nest members from different dimensions. You can also nest sets.

For example, in the following report, the quarters (Q1 to Q4) were selected from the Time dimension and nested only for the GO Americas member, which is from a different dimension.

Amount year to date		<#2004#>
<#GO Americas#>	<#Q1#>	<#1234#>
	<#Q2#>	<#1234#>
	<#Q3#>	<#1234#>
	<#Q4#>	<#1234#>
<#GO Consolidated corporate#>		<#1234#>
<#GO Consolidated eliminations#>		<#1234#>
<#GO Consolidated#>		<#1234#>
<#GO Asia Pacific#>		<#1234#>

When you filter out children from nested sets, the parent set still appears in your report. To avoid this, filter only the top level set and nest only the complete set of descendants at the desired levels.

Procedure

From the **Source** tab , drag the members to the work area. A flashing black bar indicates where you can drop an item.

Insert a Hierarchy

You can quickly insert entire hierarchies in a report.

When using an IBM Cognos PowerCube, a SSAS cube, or a dimensionally-modeled relational data source, you can insert multiple hierarchies from the same dimension in a crosstab. For example, you can place one hierarchy from a dimension on an edge of the crosstab and nest another hierarchy from the same dimension on the same edge, on another edge, or in the **Context filter** area.

You can also perform arithmetic, percentage, and ranking calculations using multiple hierarchies.

Summary or analytic calculations that refer to different hierarchies from the same dimension, such as total, count, average, minimum, and maximum, are not supported. These calculations cause an OP-ERR-0250 error.

Procedure

1. From the **Source** tab , drag the hierarchy  to the report.
2. In the **Insert Hierarchy** dialog box, choose which members to insert:
 - To insert only the root members of the hierarchy, click **Root members**.
 - To insert all members of the hierarchy, click **All members**.

Tip: The default **Level Indentation** property for all members is to show the hierarchical structure when the report is run.

Insert a Member Property

You can insert member properties, which are attributes of a member, in your report. Member properties provides additional information about the member. For example, an employee level may have a property named gender.

In the data tree of the **Source** tab , member properties are identified by the icon .

You can only insert properties. You cannot group them.

Procedure

From the **Source** tab , drag the member property  to the report.

Create a Set of Members

Use sets to group members that are logically related for various actions, such as formatting, nesting, and sorting.

Creating sets is also useful when members may be dynamic over time. For example, the child accounts of a total assets account may change from year to year. By creating a set, you do not have to modify the report each time accounts are added or removed.

By default, IBM Cognos Business Insight Advanced creates sets when you add members in a report.

After you create a set of members, you can add or remove members within the set.

Procedure

1. From the **Source** tab , click the create sets for members button  to toggle between adding individual members and creating sets for members.
2. Select the items to include in the set and drag them to the work area.
3. To add or remove members from the set, right-click the set and click **Edit Members**.

Exclude Members from a Set

You can choose to remove individual items that are not needed in your analysis.

You can exclude one or more members from the original set you added to your report, or you can exclude one or more members from the set as it appears in your report.

Procedure

1. To exclude members from the original set, click the members, click the explore button , click **Exclude Members**, and click **From Initial Set**.
2. To exclude members from the current set, click the members, click the explore button , click **Exclude Members**, and click **From Current Set**.

Tip: To edit whether you exclude members, click the explore button , and click **Edit Set**.

Move Members Within a Set

You can move one or more members to the top or bottom of a set.

Procedure

Select the members, click the explore button , click **Move Members**, and click **To Top** or **To Bottom**.

Tip: You can also right-click the member.

Tip: To undo the move, click the explore button , and click **Edit Set**.

Results

Replace a Member or Set

You can replace an individual member or a set of members with a preset combination of members.

You can replace an individual member or a set of members with any of the following:

- its child members
- members on its level
- a new set made up of some members from the original set
- individual members from the set that have been separated from the set
- an intersection

Procedure

1. To replace a member with its child members or a set of members with the child members of the selected member, click a member, click the explore button , click **Replace**, and click **With Children Members**.
2. To replace a member with its level members or a set of members with the level members of the selected member, click a member, click the explore button, click **Replace**, and click **With Level Members**.
3. To replace a set of members with one or more individual members, select the members you want to keep, click the explore button, click **Replace**, and click **With Individual Members**.
4. To replace a set of members with a set made of a few members, select the members you want in the new set, click the explore button, click **Replace**, and click **With Set of Selected Members**.
5. To replace members or sets with an intersection, select a member or set on each edge of the crosstab, click the explore button, click **Replace**, and click **With Intersection (Tuple)**.

Create Members and Intersections

You can create individual and combinations of members that are separate from the set.

You can add any of the following to your report:

- duplicates of individual members separate from the set
- child members of each of the members in the set as a new column
- an intersection of two or more members from different hierarchies as a new row or column

Procedure

1. To create individual members, select the members, click the explore button , click **Create**, and click **Individual Members**.
2. To add child members, click a member, click the explore button, click **Create**, and click **Next Level Down**.
3. To create an intersection, select the two data members you want to intersect, click the explore button, click **Create**, and click **Intersection (tuple)**.

Expand and Collapse a Member

You can expand a member to add its child members indented below it as new rows, and you can collapse expanded members.

Procedure

1. To add a member's child members, click the member, click the explore button , and click **Expand Member**.
Tip: You can also right-click the member.
2. To remove the expanded member's child members, click the member, click the explore button, and click **Collapse Member**.

Join Multiple Sets

If you have more than one set in your report and you want to perform operations on both sets, you can join multiple sets into one large set.

Procedure

Select the sets, click the explore button , click **Union into One Set**, and click **Remove Duplicates** or **Keep Duplicates**.

Tip: To edit the union, click the explore button , and click **Edit Set**.

Edit the Operations Performed on a Set

You can view the definition of a set to see, change, add, or delete operations that are performed on the set.

The definition of a set shows you, in the graphical tree, the history of all the operations that are performed on the set.

You can see and change the order in which the operations are performed. For example, you apply a top three filter and then exclude one member. Your set now contains only two members. You can choose to exclude the member before the top three filter so that your set still contains three members.

Procedure

1. Select a set.
2. Click the explore button  and click **Edit Set**.
Tip: You can also right-click the set and click **Edit Set**.
A graphical tree shows all the operations that are performed on the set of members.
3. To see the details of an operation, hover your mouse over an operation node.
4. To change the order of an operation, click the operation node, and click the right or left arrow.
5. To edit an operation, click the operation node and click the edit button .
6. To add a new operation, click the new button .

Create Page Layers

When working with dimensional data, you can create page layers in a report to show values for each member on a separate page. For example, your report contains payroll information for the entire company. You want to view values for each department on a separate page.

After you create page layers, a caption appears in the header to indicate the contents of each page. You can navigate between the different pages using links below the report.

Creating page layers is similar to using context filters. However, with context filters, values are filtered according to the member you add to the **Context filter** area. With page layers, the report is split into a separate page for each child of the member you add to the **Page layers** area.

Procedure

1. In the source tree, select or search for one or more items on which to filter.
2. Drag the item into the **Page layers** section of the overview area.

The crosstab shows the results for the children of the selected item on separate pages, and a list appears under **Page layers**.

Tip: To navigate between pages, click **Page down** and **Page up** below the report.

3. To replace the page breaks with items from the same dimension, select an item from the list. To delete the page breaks, from the list, click **Delete**. To delete all the page breaks, right-click the **Page layers** area and click **Delete All**.

Related tasks:

“Divide data into sections” on page 146

Create sections in a report to show a separate list, chart, or crosstab for a data item.

Sort Dimensional Data

You can sort items to view them in your preferred order. For example, if your bar chart shows revenue for each product line by sales region, you can display product lines from the most revenue to the least across the x-axis.

By default, IBM Cognos Business Insight Advanced retrieves items in the order defined in the data source. OLAP data sources always have a defined order. Dimensionally-modeled relational data sources may not always have a defined order; the data modeler defines the sorting options in the model. For more information about data modeling, see the IBM Cognos Framework Manager *User Guide*.

Sorting members in a set by their labels

You can sort the members within a set based on their labels or captions.

For example, a set contains geographical regions and you want to sort the regions within the set in descending alphabetical order.

By default, when you select **Sort Set - Ascending** or **Sort Set - Descending**, sets are sorted based on captions. You can also perform advanced sorting to sort sets using an intersection (tuple) or using a member property.

Only extended data items that represent sets support set sorting. This type of sorting is performed in the query.

Note: Before you can perform this sorting, you must first create sets for the members in your report.

You cannot sort data items from different dimensions that are intermixed.

Procedure

1. Select a set to sort.
2. Click the sort button  and under **Sort by Label**, click **Ascending** or **Descending**.

Tip: To remove a sort order, click **Don't Sort**.

Related tasks:

“Create a Set of Members” on page 113

Use sets to group members that are logically related for various actions, such as formatting, nesting, and sorting.

Sorting sets by value

You can sort members in the sets on the opposite axis based on the value of a member or measure that you select.

For example, a crosstab contains years inserted as individual members in the columns, product lines inserted as a member set in the rows, and revenue as the

measure. You select 2004, click the sort button  and sort by value in descending order. The values in the 2004 column are sorted.

Revenue	2004	2005
Personal Accessories	391,647,093.61	456,323,355.9
Camping Equipment	332,986,338.06	402,757,573.17
Golf Equipment	153,553,850.98	168,006,427.07
Outdoor Protection	36,165,521.07	25,008,574.08
Mountaineering Equipment		107,099,659.94

Note: Before you can perform this sorting, you must first create sets for the members in your report.

In nested crosstabs, items are sorted based on the values of the innermost nested row or column of the opposite axis. For example, a crosstab contains years in the columns and retailers nested within product line in the rows. Select 2004, sort in descending order, and you see retailers listed from the largest value to the smallest value for each product line.

Procedure

1. Select a member or measure to sort.
For example, to sort a set in the row axis, select a member or measure in the column axis.

2. Click the sort button , and under **Sort by Value**, click **Ascending** or **Descending**.

Tip: To remove a sort order, click **Don't Sort by Value**.

Related tasks:

“Create a Set of Members” on page 113

Use sets to group members that are logically related for various actions, such as formatting, nesting, and sorting.

Sorting sets by member properties or tuples

You can perform advanced sorting in a report to sort a row or column by a member property or tuple.

You can sort using the property of a member. For example, your report includes employee names and you want to sort the employees using the gender property.

You can also sort using an intersection of members, also known as a tuple. For example, you want to sort the employees using the value of sick days taken for the year 2006.

Before you begin

Before you can perform this sorting, you must first create sets for the members in your report.

Procedure

1. Select a set to sort.
2. Click the sort button , on the toolbar, and click **Edit Set Sorting**.
3. Specify the sorting options that you want.
4. If you are sorting members from different levels and want to preserve the hierarchy, select the **Hierarchized sorting** check box.
5. If you want to sort items using a member property, under **Sort by**, click **Property** and click the drop down arrow to select the member property you want to use.
6. If you want to sort items using an intersection of members, or tuple, under **Sort by**, click **Intersection (tuple)** and click the ellipsis (...) button. Then, from **Available members and measures**, select the items you want to use and click the right arrow to move them to the **Intersection members and measures** list.

Related tasks:

“Create a Set of Members” on page 113

Use sets to group members that are logically related for various actions, such as formatting, nesting, and sorting.

Format Dimensional Data

Format data in a report to improve readability. For example, you can show all date values in the order year, month, and day. If you do not specify any formatting, data is formatted according to the properties set in the model. If the properties were not set in the model, data is formatted according to the International Components for Unicode (ICU) formats.

You can also format data based on a condition.

When using an IBM Cognos cube or a SAP BW as a data source, mixed currency values use the asterisk character (*) as the unit of measure. Mixed currency values occur when you calculate values with different currencies.

Data formats are not applied in delimited text (CSV) and XML report outputs.

Procedure

1. In the work area, right-click a data item and click **Style, Data Format**.

Tip: You can also use the data format button  in the style toolbar.

2. In the **Format type** box, click a format type.

The properties that you can set for the selected format type appear in the **Properties** box.

3. Set the properties that you want.

For properties in which you type meta-characters that represent certain types of information, such as YYYY-MM-DD for dates, the meta-characters required depend on the authoring language specified for the report.

If you specify a value for the **Pattern** property, all other formatting properties are ignored, with the following exceptions:

- **Missing Value Characters**
- **Zero Value Characters**
- **Negative Pattern**

Some properties are locale-sensitive and should only be changed with caution.

Results

The data formatting properties are applied. If a data item contains values in multiple currencies, but only a subset of those currencies have defined formats, the default format for the locale you are working in is applied to values for which no format is specified.

Specifying the Number of Decimals in Numbers

When specifying the number of decimals, IBM Cognos Business Intelligence uses the IEEE 754 default rounding mode known as half even.

With half even rounding, numbers are rounded toward the nearest truncated value, unless both truncated values are equidistant, in which case the value ending in an even digit is chosen, as follows:

- If the digit immediately after the precision to be shown is greater than 5, the number is rounded up.
- If the digit immediately after the precision to be shown is less than 5, the number is rounded down.
- If the digit immediately after the precision is a 5, the number is rounded down when the preceding digit is even and rounded up when the preceding digit is odd.

For example, the number 78.5 is rounded to 78, while the number 73.5 is rounded to 74.

In addition, if the maximum number of decimals is lower than the actual number of decimals in the number, the number is rounded to the maximum number of decimals.

Locale-sensitive Properties

IBM Cognos Business Insight Advanced contains an extensive library of customized properties adapted to users from different regions who speak different languages. For example, if a modeler specifies that a given data item is a currency, only the proper currency symbol must be specified. When reports are created, Business Insight Advanced automatically adapts the format of the currency numbers to each user according to the content language specified in IBM Cognos Connection.

When modelers or report authors specify properties, these properties override user preferences and risk creating inconsistent formatting for users of other cultures. It is usually much easier and safer to let Business Insight Advanced take care of formatting. For example, for the date format type, different regions use different characters to represent the date separator. If you specify a date separator, you may confuse users in other regions.

The following data formatting properties are locale-sensitive:

- **Currency Symbol Position**
- **Date Separator**
- **Date Ordering**
- **Calendar Type**
- **Time Separator**
- **Display AM/PM Symbols**
- **Clock**
- **Decimal Symbol**
- **Negative Sign Position**
- **Thousands Separator**
- **Group Size (digits)**
- **Secondary Group Size (digits)**
- **Missing Value Characters**
- **Zero Value Characters**
- **Pattern**
- **Negative Pattern**

Suppress Empty Cells in Dimensional Reporting

Sparse data may result in crosstabs showing empty cells. For example, a crosstab that matches employees with products results in many rows of empty values for the revenue measure if the employee does not sell those products.

You can suppress rows, columns, or rows and columns based on divide by zero, missing, and overflow values. Suppressing rows or columns without data gives you a more concise view of your report.

Calculations are performed before suppression is applied. If you have multiple crosstabs or charts, you must select one in order to access suppression options.

Access to the suppression feature depends on the settings in your modeling component, IBM Cognos Transformer, IBM Cognos Framework Manager, and IBM Cognos Administration.

You can also use filters to suppress null cells in your reports. Using filters ensures that calculations take suppression into account. You may also obtain better report performance because the filtering is done at the data source.

Procedure

1. From the **Data** menu, click **Suppress**  and click **Suppression Options**.
2. Under **Suppress**, choose what sections to suppress.
3. Under **Suppress the following**, choose which values to suppress.

Related tasks:

“Filtering dimensional data” on page 132

Use filters to remove unwanted data from reports. Data is shown in the report only if it meets the filter criteria.

Limitations When Formatting Empty Cells in SAP BW Data Sources

When working with SAP BW data sources, if the SAP BW server administrator configured custom formatting for empty cells on the SAP BW server, this custom format does not appear in IBM Cognos Business Intelligence reports. Ask your administrator to configure the formatting of empty cells in IBM Cognos Business Intelligence.

Example - Suppress Zeros in Rows and Columns in an Existing Report

You are a report writer at The Sample Outdoors Company, which sells sporting equipment. You have a report that compares current year data to previous year data. You want to suppress zeros in the report to make the report more concise. You use the zero suppression tool to set the level of suppression.

Procedure

1. Open the Sample Outdoors Company Balance Sheet as at Dec. 31, 2006 report.
2. From the **Data** menu, click **Suppress**  and click **Suppression Options**.
3. Under **Suppress the following**, click **Rows and columns**.
4. Under **Suppress the following type of values**, select the **Zero values** check box.
5. Run the report.
Rows and columns containing zeros are hidden.

Year to date (USD \$ 000's)	2006 Actual results in USD	2005 Actual results in USD
	December	December
Assets (total)	\$4,353,363,798	\$3,804,483,176
Current assets (total)	\$2,336,392,807	\$2,139,066,575
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Common stock	(\$719,183,000)	(\$749,178,000)
Other capital	(\$69,921,200)	(\$183,898,457)
Retained earnings - net	(\$1,961,541,522)	(\$1,116,128,225)
Currency translation gain (or loss)	(\$428,864)	(\$404,488)

Summarize Dimensional Data

Summarize data in your reports to obtain a total, count, average, minimum, maximum, and so on.

After you add summary rows or columns, you can move them by dragging them elsewhere in the report.

You can also use summary functions in custom calculations.

The following table defines the different types of summaries.

Summary	Description
Automatic Summary	Uses the default summary for the data item, as specified in the data source. For example, a data item that represents part numbers likely uses count as the default summary.
Total	Adds all values, excluding null and missing values.
Count	Counts all values, excluding null and missing values.
Average	Adds all values, and then divides by the count of values, excluding null and missing values.
Minimum	Selects the smallest value, excluding null and missing values.
Maximum	Selects the largest value, excluding null and missing values.

Procedure

1. Click the row or column to summarize.
2. On the toolbar, click the summarize button  and select a summary type. The summary appears as a new row or column.
3. To change the summary label, right-click the label and type a new name, such as **Total (February sales)**.
Tip: To remove a summary, select the summary label, and click the delete button .

Related concepts:

“Using Dimensional Calculations” on page 125

Insert a calculation to make your report more meaningful by deriving additional information from the data source. For example, you create an invoice report, and you want to see the total sale amount for each product ordered. Create a calculated column that multiplies the product price by the quantity ordered.

Creating dimensional custom groups

Create custom groups to classify existing data items into groups that are meaningful to you.

You can reduce the number of values into smaller, more meaningful groups. For example, you can change a list of employees into my team and others.

When working with dimensional data and crosstabs or charts, you can create custom groups only on sets of members. After you create a custom group in a set, the members in the set are replaced by the custom groups.

When you create custom groups in a list, a new column is added to the report, with the name *data item* (Custom). You can use this new column to group or sort the report. If you want to show only the new groups, you can delete the original column.

When creating custom groups on sets of members, consider the following:

- Members included in a custom group must be from the same level in a hierarchy.
- If you insert a hierarchy used in a custom group elsewhere in the data container, it must be inserted as a sibling of the custom group.
- Automatic aggregation on a custom group might not work as expected. For example, you might encounter error cells (- -).

Procedure

1. To add custom groups in a crosstab or chart that includes sets of members, do the following steps:
 - a. Right-click a set and click **Edit Set**.
 - b. Click the **New** icon  and select **Custom Grouping**.
 - c. In the **Custom Grouping** window, select the **New Custom Group** icon .
 - d. Type a New group name.
 - e. Select members from the **Available members** list and move them to the **Members** list.

2. To add custom groups to a list, do the following steps:
 - a. Click the column that you want to group on and from the **Data** menu, select **Calculate > Define Custom Groups**.

Tip: You can click either the column heading or one of the column cells.
 - b. Click the **New Group Entry** icon  .
 - c. To group by values that you select, click **New Select Values Group**, type a **New Group Name**, select the required values from the **Values** box, and move the values to the **Selected Values** box.
 - d. To group by a range of values, click **New Range Group**, type a **New Group Name**, and enter the **From** and **To** values.
3. If you do not want a group name to appear for remaining values, select **Do not show remaining values**. Clicking this option will produce empty cells for remaining values.
4. If you want the group name for remaining values to match each value, select **Use each remaining value as a group name**.
5. If you want to specify your own group name for all remaining values, select **Group remaining values into a single group** and type the name that you want.
6. If you are adding custom groups in a list, under **New data item name**, select either the default data item name or type a new data item name.

Using Dimensional Calculations

Insert a calculation to make your report more meaningful by deriving additional information from the data source. For example, you create an invoice report, and you want to see the total sale amount for each product ordered. Create a calculated column that multiplies the product price by the quantity ordered.

You build calculations in the expression editor using functions.

If a calculation is used in multiple reports, or by different report authors, ask your modeler to create the calculation as a standalone object in the model and include it in the relevant package.

Calculation Solve Order

When calculations in the rows and columns of a report intersect, calculations are performed in the following order:

- addition or subtraction
- multiplication or division
- aggregation (rollup)
- remaining arithmetic functions: absolute, round, round down, average, minimum, maximum, medium, count
- percentage, % difference (growth) or % of total
- rank, quartile, quantile, or percentile

If both calculations have the same precedence, for example, if they are both additions, then the row calculation takes precedence.

If you have the necessary permissions, you can open your report in IBM Cognos Report Studio and override the order of precedence by changing the solve order

property for a data item. For more information, see the Report Studio *User Guide*.

Limitations of Calculations

Use only the expressions and functions available in Business Insight Advanced, and follow their syntax. For best results, do not build calculations or summaries over other calculations that were authored in Report Studio.

Minimal checking exists for calculations. If your calculation uses an invalid expression, your report results may contain unexpected values.

In addition, you should define member summaries as follows:

summary_function (*currentMeasure* within set *set_reference*)

where *set_reference* is a level or set inserted from the **Source** tab .

Unless otherwise required, *summary_function* should be the aggregate function. If you use an explicit summary function, you may encounter problems with measures (such as profit margin, distinct count, and so on) that have complex rollup values, and/or scenario or account dimension members that do not roll up.

Know your data, and confirm with the owner of the cube where overriding the automatic aggregation is safe.

Because of the above limitations, summaries of calculations may not provide reliable values. For convenience, you may need to build reports where row summaries and calculated member columns intersect. In such reports, these intersections may contain unexpected values. In contrast, row calculations intersecting with column aggregates using the aggregate function are safe because the calculation is performed on the reliably summarized values.

If you need to create more complex expressions, use Report Studio.

Create a Simple Member Calculation

When working with dimensional data sources, you can select members in your report and create simple calculations. In addition to simple arithmetic calculations, you can perform numeric, string, date and time, and interval calculations.

The following table defines the available numeric calculations.

Calculation	Description
- <i>data item</i>	When you select one numeric data item , inserts the negative of the current value.
Absolute	For numeric data items, inserts the absolute value.
Round	For numeric data items, inserts a number rounded to the nearest integer.
Round up	For numeric data items, inserts a number rounded to the nearest integer.

Calculation	Description
Round down	For numeric data items, inserts a number rounded to the integer closest to zero.
Rollup	Summarizes, or rolls up, all the values in a hierarchy.
%	Calculates the value of the first item selected as a percentage of the second item.
% Difference	Calculates the difference between two items as a percentage.
% Of Base	Takes the first selected member from edge A and the second selected member from edge B. The calculation result of a percent of base compare all of the values for member A to the intersect value of members A and B. Note: This calculation is only available if you select two members from different hierarchies, each from a different edge.
Custom	Allows you to specify your own value when performing a simple arithmetic calculation. Also allows you to change the order of operands, or type a custom name for the new calculated row or column.

The following table defines the available string calculations.

Calculation	Description
Remove trailing spaces	For string data items, removes any extra spaces that appear after the last character in the string. Spaces between words are not removed. Extra spaces can sometimes cause unexpected results when you sort, filter, or search.
First ? characters	For string data items, truncates the text to show only the first number of characters that you specify.
Last ? characters	For string data items, truncates the text to show only the last number of characters that you specify.

The following table defines the available date and time calculations.

Calculation	Description
Add ? years, Add ? months, Add ? days, Add ? hours, Add ? minutes, or Add ? seconds	When selecting one date or time data item, adds the specified number of years, months, days, hours, minutes, or seconds to the selected value.
Year, Month, Day, Hour, Minute, and Second	When selecting one date or time data item, shows the year, month number, day number, hour, minute, or second value.
Years between, Months between, Days between, Hours between, Minutes between, and Seconds between	When selecting two date or time data item, shows the number of years, months, days, hours, minutes, or seconds between the two value.

The following table defines the available interval calculations.

Calculation	Description
Days	For interval data items, such as number of days between two dates

If you want to create a more advanced calculation that uses mathematical functions or if you want to create a calculated member, calculated measure, set expression, or value expression, instead create a query calculation.

Procedure

1. Select the items in your report to calculate.

Tip: Shift+click or Ctrl+click to select multiple items.

2. Click the insert calculation button  and select the calculation to perform.

Note: Only calculations that are applicable to the items that you have selected appear.

3. To change the order of the operands or the name of the calculated item added to the report, click **Custom**.

Results

The calculation appears as a new row or column in your report.

Limitations When Summarizing Measures in DMR Data Sources

There are limitations when summarizing dimensionally-modeled relational (DMR) measures and semi-additive measures in crosstabs using the aggregation function count distinct, median, standard-deviation, or variance. The following limitations can produce empty or error cells when the report is run:

- The aggregation function must apply to all members of a level or all children of a member.

- Error cells are produced when drilling down on a crosstab that has two nested levels.

If you do not consider these limitations in a calculation, the report may return inaccurate results.

Creating a Query Calculation

When working with dimensional data, insert a query calculation into your report to add a new row or column with values that are based on a calculation. For example, you create a query calculation named Euros that converts dollars to euros by multiplying an existing dollar measure by a conversion rate. Euros can then be displayed to end users in a separate row or column.

In Business Insight Advanced, you can create the following types of calculations:

- Create calculated members or calculated measures where the expression is a member or a tuple-based (as opposed to property-based) value expression. For example, [2005] - [2004] is a calculated member and [Revenue] - [Planned Revenue] is a calculated measure.
- Use set expressions to create calculated sets of members. For example, children ([2004]) is a set expression that displays the child members of 2004. You must base each set expression on a hierarchy and the set expression must contain only members from this hierarchy.
- Create value expressions when you want to insert a string, number, date, or interval value.

You can also create a calculation that uses an intersection (tuple) that you already defined.

Assigning a Hierarchy or Dimension

You must assign each query calculation to a hierarchy or dimension. For best results, select the hierarchy or dimension upon which your calculation focuses. For example, if your calculated member is based on years, select the Time hierarchy. If you create a calculated measure, select the Measures dimension.

Select only a hierarchy that cannot affect the value of the calculation. For example, the hierarchy Camping Equipment has the same value regardless of its Products context as it appears in the report. Therefore,

- the calculation ([Camping Equipment]-[Mountaineering Equipment]) has a well-defined meaning only in the Products hierarchy, so select that hierarchy.
- the calculation tuple ([Revenue], [Camping Equipment]) can be assigned to either the Products or Measures hierarchy, as it is not affected by either context.
- the calculation ([Revenue] - [Camping Equipment]) does not have a well-defined meaning in any hierarchy, and is not reliable.

Automatic Database Aggregation

You can use automatic database aggregation only when using IBM Cognos PowerCubes and Microsoft SQL Server 2005 Analysis Services (SSAS) data sources.

Quality of Service Indicators

Not all data sources support functions the same way. The data modeler can set a quality of service indicator on functions to give a visual clue about the behavior of

the functions. Report authors can use the quality of service indicators to determine which functions to use in a report. The quality of service indicators are as follows:

- not available (X)
This function is not available for any data source in the package.
- limited availability (!!)
The function is not available for some data sources in the package.
- limited support (!)
The function is available for all data sources in the package but is not naturally supported for that data source. IBM Cognos Business Intelligence uses a local approximation for that function. This approximation may cause poor performance and unexpected results.
- unconstrained (no symbol)
The function is available for all data sources.

Using Quotation Marks in Literal Strings

When inserting literal strings in an expression, you must enclose the string in single quotation marks. If the string contains a quotation mark, it must be modified. For example, if you want to insert the string ab'c, you must type 'ab"c'.

Create a Query Calculation

If you are using a IBM DB2[®] data source, the subtract operator is invalid if you combine the datatypes timestamp2 and packed decimal.

When creating an expression that for use in a double-byte environment, such as Japanese, the only special characters that work are ASCII-7 and ~ -- | | - \$ ¢ £ ¬.

Procedure

1. From the **Toolbox** tab , drag **Query Calculation** to the report.
2. In the **Name** box, type a meaningful name for your expression.
For example, if you are calculating the difference between 2007 revenue and 2006 revenue, you could name your expression **2007 - 2006 Revenue**.
3. Click the type of calculation that you want to create, and select the hierarchy or dimension that contains the data that is the focus of your calculation.
4. In the **Available Components** pane, define the calculation:
 - Specify how you want to view the available data items in your data package by clicking the view member tree button  or the view package tree button .
 - To add data items that are not shown in the report, on the source tab , double-click the data items.
 - To add data items that are in the report but not necessarily in the model, such as calculations, double-click the data items on the data items tab .
 - To add functions, summaries, and operators, on the functions tab , double-click elements.

Tip: To filter the visible functions, summaries, and operators in the

Available Components pane, click the filter button  and filter by the function type, what the function returns, or what the function acts on.

Tip: You can also type the calculation directly in the **Expression Definition** box. When typing date values, ensure that the date format is correct for your database type.

5. Click the validate button .

Any validation errors appear on the **Errors** tab of the **Information** pane.

Tip:

- To show or hide the **Available Components** pane, click the blue arrow to the right of the pane.
- To show or hide the **Information** pane, click the blue arrow above the pane.
- To copy and paste expression components in the **Expression Definition** pane, use the copy button  and the paste button .

Create an Intersection (Tuple)

When working with dimensional data, an intersection, also known as a tuple, is useful for obtaining a value from the combination of two or more members that you specify. Each member must be from a different hierarchy. The intersection can include only one measure.

For example, the intersection (Revenue, 2004, Cooking Gear) shows the revenue value for the year 2004 and for the product line Cooking Gear.

Procedure

1. From the **Toolbox** tab , drag the **Intersection (Tuple)** object to the report.
2. From the **Available members and measures** pane, select items and click the right arrow to move them to the **Intersection members and measures** box. You can also use items from the **Calculated Members and Measures** tab .
3. To define the hierarchy for this intersection, click a parent object in the **Intersection hierarchy** box.

Drill on a Member or Set

You can drill up or down on members and sets within IBM Cognos Business Insight Advanced.

In crosstabs, drilling down on a member adds the member's children so the crosstab displays both the member and its children. Drilling up on a member adds the member's parent set so the crosstab displays both the member and its parent set.

In charts, drilling down on a legend member or x-axis member displays that member's children. Drilling up on a legend title or axis title displays the parent set of the member you drilled on.

Note: You can enable drill-up or drill-down links or double-click drilling in the **Edit Options**.

To allow drilling in the report output, such as HTML output, you must enable drilling (**Data, Drill Options**).

Procedure

1. Double-click a member to drill down.

Tip: You can also click a member, click the explore button , and click **Drill Down** or **Drill Up**. Or you can right-click a member and click **Drill Down** or **Drill Up**.

2. Double-click the parent to drill up.

Related tasks:

“Create a Drill-up and Drill-down Report” on page 138

When working with dimensional or dimensionally-modeled relational (DMR) data sources, you can create reports that allow the reader to drill down to lower-level data sets or drill up to higher-level data sets.

Filtering dimensional data

Use filters to remove unwanted data from reports. Data is shown in the report only if it meets the filter criteria.

When working with dimensional data sources, you can filter only by members and measures. Filtering is not available for data items that represent a single member or calculated member.

For predictable results, when using the dimensional reporting style, use context filters, limit data to top or bottom values, and filter the members within a set. Not following these guidelines might yield unexpected results. In addition, the results may change depending on what else is in the report, the data source used, and whether the package uses the dynamic query mode.

You can use filters to suppress null cells in your reports. Using filters ensures that calculations take suppression into account. If you want to perform calculations before suppression is applied, use the **Suppress** option.

If you filter values that are floating-point numbers, you may encounter imprecise filtering results due to rounding or data truncation. Floating-point numbers may appear differently in the report than how they are stored in the data source. To ensure accurate results, your filter criteria should account for any rounding issues.

By default, filters on measures are applied after automatic aggregation because, by definition, dimensional data is aggregated. For members, filters are applied before aggregation, which reduces the amount of data received from the data source. You can change whether filters are applied before or after aggregation using the **Edit filters** option.

Procedure

1. Click the data item on which you want to filter.

Tip: If you select two or more items, you can filter using a range.

2. On the toolbar, click the filter button .

3. Select a filter condition from the list.

Results

The filter is applied to the report. By default, the values of any filters applied appear as an additional subtitle.

Related concepts:

“Relational and dimensional reporting styles” on page 15

You can create reports in IBM Cognos Business Insight Advanced using either a relational reporting style or a dimensional reporting style depending on the type of data source you use.

Related tasks:

“Suppress Empty Cells in Dimensional Reporting” on page 121

Sparse data may result in crosstabs showing empty cells. For example, a crosstab that matches employees with products results in many rows of empty values for the revenue measure if the employee does not sell those products.

Creating a context filter

When working with dimensional data, you can use context filters, or slicer filters, to quickly focus your report on a particular view of the data.

For example, the following crosstab contains product lines in the rows, years in the columns, and revenue as the measure. We want to filter the values to show us the revenue for only Web orders from Asia Pacific. To change the context, you drag Asia Pacific and Web from the source tree to the **Context filter** section of the overview area. The crosstab then shows the revenue for only Asia Pacific and Web. Changing context changes only the values that appear. It does not limit or change the items in the rows or columns.

Asia Pacific				
Web				
Revenue	2004	2005	2006	2007
Camping Equipment	36,415,479.91	77,222,359.67	121,312,260.99	83,023,522.78
Mountaineering Equipment		18,115,550.83	37,258,799.5	31,810,456.11
Personal Accessories	67,562,845.5	94,998,084.39	136,872,087.64	106,879,947.27
Outdoor Protection	4,135,482.66	4,388,590.73	2,241,092.7	1,107,629.48
Golf Equipment	8,586,746.5	27,061,602.93	49,822,888.09	39,248,971.12

The members that are used as the context filter appear in the report header when you run the report.

Any summary values in the report are recomputed to reflect the results returned by the context filter.

You can create multiple context filters to filter across two or more different hierarchies.

Context filters are different from other filters. When you filter data, members that do not meet the filter criteria are removed from the report. A context filter does not remove members from a report. Instead, their values are filtered and you see blank cells.

When creating context filters, use only members from hierarchies that are not already projected on an edge of the crosstab and use only one member per hierarchy.

Procedure

1. From the **Source** tab , select or search for one or more items on which to filter.
2. Drag the item on which to filter into the **Context filter** section of the overview area.
3. To change context, select a new item from the **Context filter** box.

Limiting data to top or bottom values

You want to focus your report on the items of greatest significance to your business question. For example, you want to identify your top 100 customers and what that group of customers is worth.

You can limit the data to the top or bottom values of a set. This keeps the amount of data shown in the work area small, even when using large data sources.

You can define a top or bottom rule by specifying

- a number, such as the 50 top or bottom performing sales people
- a percentage, such as customers who contribute to the top 10% of overall revenue
- a cumulative sum, such as customers who contribute to the first ten million dollars of overall revenue

If the selected set contains a user-defined filter, the top or bottom rule applies only to the included values. For example, if you apply a filter to show only retailers with revenue greater than one million dollars, the bottom rule applies to the lowest values within those results.

You can filter a set of members to show only those at the top or bottom and base the filter on the measure you are using and the set of members on the opposite edge. You can also specify a custom filter.

Procedure

1. Click the set that you want to filter, click the explore button , click **Top or Bottom**, and then click one of the filtering options.
Tip: You can also right-click the member.
2. If the filtering option that you want is not listed, click **Custom**.
3. In the **Top or Bottom** dialog box, click **Top** to filter to the top values or **Bottom** to filter to the bottom values.
4. To choose how and how much you want to filter, click **Count**, **Percent**, or **Sum** and type the number of data items to show, the percent of data items to show, or the value to sum.
5. Choose the intersection on which to base your filter by clicking the ellipsis (...) button and selecting the members and measure for the intersection from either the **Source** tab or the **Calculated Members and Measures** tab.

Tip: To edit the top or bottom filters, click the explore button , and click **Edit Set**.

Filtering the members within a set

You can remove members from within a set by specifying filter conditions so that only the members that you require remain.

You can filter a set based on

- member captions
For example, your set includes employee names and you want to keep only the employees with names that begin with a specific letter.
- properties that are numeric or strings
For example, your set includes employee names and you want to filter employees using the gender property.
- intersection of values (tuple)
For example, you want to keep only the employees who used less than ten sick days for the year 2008.

If you want to create a more complex filter, you can combine multiple conditions using AND, OR, and NOT operators. By default, multiple conditions are combined with an AND operator, which means that all conditions must be met for the filter to take effect.

Filtering the members in a set is not the same as relation detail or summary filters.

Procedure

1. Select a set.
2. From the toolbar, click the explore button  and click **Filter Set**.
3. Select how you want to filter.
 - If you want to filter the set using a caption, click **Caption**.
 - If you want to filter the set using a member property, click **Property** and select from the drop-down list.
 - If you want to filter the set using an intersection of members, or tuple, click **Intersection (tuple)** and click the ellipsis (...) button. Then, from **Available members and measures**, select the desired items and click the right arrow to move them to the **Intersection members and measures** list.
4. Specify the **Operator** and **Value** to complete your condition and click **OK**.
5. To add additional conditions, click the new button .
6. If you include multiple conditions in your filter, use the **AND**, **OR**, and **NOT** operators to combine them.
 - To add an operator, select the conditions that you want to combine, and click an operator.
 - To change an operator, double-click the operator to toggle among available ones or select the operator and then select a different one from the list.
 - To remove an operator, select it in the condition string, and then click the delete button .
7. To change a condition, click the edit button .

Tip: To edit a filter, click the explore button , and click **Edit Set**.

Creating a custom filter

Create custom filters when the values you want to use in your filter conditions do not appear in your report.

You can use filters to create prompts in the report. Prompts provide questions that help users to customize the information in a report to suit their own needs. For example, you create a prompt so that users can select a region. Only data for the specified region is retrieved and displayed in the report.

Procedure

1. Select the data item on which you want to filter.

Tip: If you select two or more items, you can filter using a range.

2. On the toolbar, click the filter icon .
3. Click **Create Custom Filter**.
4. Under **Condition**, select the type of condition you want.
5. Under **Values**, select your values. If you filter numeric data, select the type of filter condition that you want to create: **Specific values**, **Comparison**, or **Range**.
6. If you want users to be prompted when they run the report, select the **Prompt for values when report is run in viewer** check box.
7. If you want the filter to include null values, select the **Include missing values (NULL)** check box.

Combining filter conditions

You can combine two or more filter conditions to do more complex filtering. Combined filters allow you to create compound conditions that are grouped with AND or OR conditions.

For example, you want to filter the columns Product line and Year in a report. The specific data you want to retrieve is the quantity of Camping Equipment sold in 2010 and the quantity of Golf Equipment sold in 2009. To do this, you must create a complex filter that combines several filter conditions.

Procedure

1. On the toolbar, click the filter icon .
2. Click **Edit filters**.
3. Click the new button , select **Combined**, and click **OK**.
4. In the **Create Filter** window, select the data item on which you want to filter and click **OK**.
5. Under **Condition**, select the type of condition you want.
6. Under **Values**, select your values. If you filter numeric data, select the type of filter condition that you want to create: **Specific values**, **Comparison**, or **Range**.
7. If you want users to be prompted when they run the report, select the **Prompt for values when report is run in viewer** check box.

8. If you want the filter to include null values, select the **Include missing values (NULL)** check box.
9. Click the operator that appears between the filters and click **AND**, **OR**, or **NOT** to combine them.
10. Click the new condition button , and specify a second filter condition.
11. Click the operator that appears between the filters and click **AND**, **OR**, or **NOT** to combine them.

Editing filters

You can specify whether filters are mandatory and whether to apply them before or after automatic aggregation.

Procedure

1. On the toolbar, click the filter button .
2. Click **Edit filters**.
3. To edit an existing filter, select the filter that you want to edit and click the edit button .

Tip: Click the new button  to add new filters.

4. To specify whether the filter is mandatory, in the **Usage** box, select an option.
5. To specify whether to apply filters before or after automatic aggregation, in the **Application** box, select an option.

Removing filters

You can remove a single filter or all filters for your report if they are no longer needed.

Procedure

1. On the toolbar, click the filter icon .
2. To remove all the filters in your report, click **Remove all filters**.
3. To remove a single filter, click **Edit filters**.
4. Select the filter that you want to remove and click the delete icon .

Extended Data Items

Extended data items differ from the traditional, expression-based text strings by enabling you to view details, select sets, sort sets, and apply contextual calculations.

You can do the following with extended data items that are not available with traditional data items:

- View details

You can select an extended data item and then, from the **Data** menu, click **Data Properties** to see where the data item appears in the package and in the report queries.

- Select member sets

You can select a member in a set to highlight it as the primary selection and the other members as secondary selections.

- Sort sets

You can select an extended data item, click the sort button , and click **Advanced Set Sorting** to sort a set in ascending or descending order, to sort hierarchically, and to sort by caption, by a property, or by an intersection (tuple).

- Apply contextual calculations

You can select an extended data item and then, from the **Data** menu, click **Calculate** to see a contextual list of calculations that are available for this extended data item.

Create a Drill-up and Drill-down Report

When working with dimensional or dimensionally-modeled relational (DMR) data sources, you can create reports that allow the reader to drill down to lower-level data sets or drill up to higher-level data sets.

Drilling up and down allows you to view more general or more detailed information on your data within a predefined dimensional hierarchy (such as Years - Year - Quarter - Month), without having to create different reports.

You must run the report before you can drill up or down.

Note: You cannot set drill options when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure

1. From the **Data** menu, click **Drill Options**.
2. In the **Report output drill capabilities** box, select the **Allow drill-up and drill-down** check box.

By default, Business Insight Advanced determines which items can be drilled on, based on the dimensional structure.

Tip: If you want the report to be used as the source during a package drill-through, select the **Allow this report to be a package-based drill-through source** check box and click **OK**. For more information about package drill-through, see the IBM Cognos Business Intelligence *Administration and Security Guide*.

Related tasks:

“Drill on a Member or Set” on page 131

You can drill up or down on members and sets within IBM Cognos Business Insight Advanced.

Chapter 9. Formatting Reports

Format your report to make it more readable and to reflect company standards. When you format a report in IBM Cognos Business Insight Advanced, the formatting is stored in a layout.

You can also format a report based on conditions.

Add a Header or Footer to a Report

Add a header or footer to make a report easier to read. Headers and footers are containers in which you can add objects like text, images, and report expressions such as the current date and page numbers.

When you create a new report, a header and footer is included by default. You can insert a table in the header or footer to split it into multiple cells.

Before you begin

To see the headers and footers, ensure that the visual aids are turned on.

Procedure

1. From the **Structure** menu, click **Headers & Footers**, and then click **Page Header & Footer**.
2. Select the appropriate check boxes, and click **OK**.
3. If you want to add objects to a header or footer, drag the object that you want from the **Toolbox** tab  to the appropriate location.

Add Borders to an Object

You can add borders to objects in a report such as a cell, a column, a row, a header, a footer, or to the whole report.

Once you define a style for an object, you can copy and reuse it on another object.

Procedure

1. In the work area, click the object to which you want to add a border.

Tip: To quickly select the parent of an object, click the object, and then click the select ancestor button  in the **Properties** pane title bar.

2. From the style toolbar, use the all borders button  to specify the border properties that you want.

Add Text

You can add text to a report. You can insert text in other objects, such as a block or table cell, or directly in the report page.

You can also add multilingual text to a report.

Procedure

1. From the **Toolbox** tab , drag the **Text Item** object  to the report.
2. Type the text and click **OK**.

Tip: You can also paste text from another part of the report.

Results

You can now format the text by changing the font, color, size, style, justification, and alignment.

Specify the Font for a Report

You can specify the font properties for objects in a report.

Once you define a style for an object, you can copy and reuse it for another object.

Procedure

1. Click the object for which you want to specify the font.

Tip: To specify the default font for the entire report, click the page body.

2. From the style toolbar, specify the font properties that you want.

You can also right-click the object, and click **Style** and **Font**.

Tip: Type a list of fonts in the **Family** box if you are not sure whether a specific font is installed on a user's computer. For example, if you type, **Times New Roman**, IBM Cognos Business Insight Advanced checks to see if Times New Roman is installed. If it is not, Business Insight Advanced checks for Arial. If Arial is not installed, the monospace font used by the computer is used.

Results

If you clicked **(Default)** for any of the font properties, the default value for the property is used. Default values are stored in a style sheet that is used across all IBM Cognos Business Intelligence tools. You can modify default values by applying different style classes.

Add Color to an Object

You can add background and foreground color to objects in the report.

Procedure

1. Select the object to which you want to add color.

Tip: To quickly select the parent of an object, click the object, and then click the select ancestor button  in the **Properties** pane title bar.

2. From the **Style** menu, click **Style**.
3. Click **Background Color** or **Foreground Color**.
4. To apply an existing color, click the **Web Safe Colors** tab or **Named Colors** tab and choose one of the available colors.

Use a named color to select a color from a small set of colors. Use Web safe colors to select from 216 available colors.

5. To apply a custom color, click the **Custom Color** tab and type values in the **Red**, **Green**, and **Blue** boxes.
The values must be hexadecimal.

Copy Object Formatting

You can quickly copy the formatting of items in your report, such as fonts, colors, borders, and number formats, and apply that formatting to other items.

Procedure

1. Click an item that has the formatting to copy.
2. Do one of the following:
 - To copy all the formatting applied to the item, click the pick up style button , click the item to format, and then click the apply style button .
 - To copy only one of the formatting styles, click the down arrow to the right of the pick up style button and click the style to copy. Then click the item to format and click the apply style button.
3. If you want to make changes to a style that you copied, click the down arrow to the right of the pick up style button and click **Edit Dropper Style**.
4. In the **Style** dialog box, specify basic and advanced style characteristics.

Insert an Image in a Report

You can insert an image in a report. You can insert images in other objects, such as blocks or table cells, directly in the report page or as the background image of another object.

Before you begin

The images that you insert must first be uploaded to the IBM Cognos Business Intelligence server or another Web server and must be .gif or .jpg format.

Procedure

1. From the **Toolbox** tab , drag the **Image** object  to the report and then double-click it.
2. In the **Image URL** dialog box, type the URL of the image to insert or click **Browse** to go to the location containing the image.

To browse images on a Web server, you must enable Web-based Distributed Authoring and Versioning (WebDAV) on your Web server. For more information about configuring Web servers, see the IBM Cognos Business Intelligence *Installation and Configuration Guide*.

Add Background Effects

You can add background effects to enhance the appearance of your report.

You can enhance objects, such as data containers (lists, crosstabs, and charts), headers, footers, page bodies, and so on with borders, gradient fill effects, drop shadows, and background images. You can also apply background effects as a class style.

The background effect is rendered within the rectangle area that bounds the object. To use a generated background in a chart, the chart must have a fixed size.

If the background image is complex and large, the size of the report output may be affected proportionately.

Background effects are rendered only if the data container has a fixed height and width; if a percentage size is used, the effects are ignored.

Resizing or overflow behavior is ignored for generated images in HTML reports.

Procedure

1. Click the object.
2. To choose a preset background effect, click the background effects presets button  on the style toolbar, and then click a background.
3. Click the style button .
4. Click the **Advanced** tab.
5. Click the edit button  beside the **Background effects** box.
6. Select one or more of the following:
 - To apply a border, click **Border** and specify settings for border style, width, color, corner radius for rounded rectangles, and transparency. If the element also includes a fill with a transparency setting, select the **Allow transparent bleed** check box to apply the same transparency to the border.
 - To apply a fill effect, click **Fill** and specify the settings. The fill effect can either be a solid color, a gradient, or a pattern. You can define a gradient fill effect as a linear, radial line, or radial rectangle gradient.
 - To apply a drop shadow effect, click **Drop Shadow** and specify the shadow color, transparency value, color, and offset settings. The default horizontal and vertical offset is 5 pixels.
 - To specify one or more images as a background, click **Images**. You can specify the transparency value and the position for each defined image. You can also specify a custom position for each image.

Related tasks:

“Add Background Effects to a Chart Object” on page 72

You can change the look of certain charts and chart objects by applying visual effects such as drop shadows, borders, fills, texture effects, and bevel effects.

Insert Page Numbers in a Report

You can insert page numbers in a report and specify the number style to use.

You can select a predefined page numbering scheme or create a custom scheme. You can easily insert page numbers using the **Page Number** object.

Procedure

1. From the **Toolbox** tab , drag **Page Number** to the report.

Tip: When you create a new report using one of the existing report layouts, **Page Number** is already inserted in the page footer.

2. Right-click the page number symbol and click **Edit Number Style**.
3. Choose the style to use.

The first three choices apply only to vertical page numbers. The remaining choices specify how vertical and horizontal page values appear.

4. If you want to customize the choice that you made in the previous step, click

the edit button , make your changes, and click **OK**.

A custom number style is created. If you later choose a different number style, the custom style is removed from the list.

Tip: In the **Custom Number Style** dialog box, when you pause the pointer over a box, a tooltip describes how that box affects page numbers. For example, the **Separator Text** box contains the text, such as a hyphen, that separates page values for both vertical and horizontal pages.

Insert Other Objects

In addition to text and images, the **Toolbox** tab contains other objects that you can add to the report layout.

Object	Description
Text item	Inserts text.
Block	Inserts an empty block, a container in which you can insert other objects. This is useful for controlling where objects appear. Tip: You can use blocks to add space between objects. However, empty blocks are not rendered. You must insert an object or specify the height and width.
Table	Inserts a table, a container in which you can insert other objects. This is useful for controlling where objects appear.
Query Calculation	Inserts a calculation.
Intersection (Tuple)	Inserts an intersection (tuple).
Image	Inserts an image.
Crosstab Space	Inserts an empty cell on a crosstab edge. Allows for the insertion of non-data cells on an edge. Blank cells appear for the edge when the report is run. Insert this object when a crosstab edge does not produce useful data and you want blanks to appear in the cells instead.

Object	Description
Crosstab Space (with fact cells)	<p>Inserts an empty cell on a crosstab edge. Allows for the insertion of non-data cells on an edge. The contents of the fact cells for the edge are rendered when a measure is added or the default measure is specified.</p> <p>If the crosstab space is nested, the scope of the fact cells is the scope of the item that is at the level before the space.</p> <p>If the crosstab space is not nested and there are no items nested below it, the scope of the fact cells is the default measure.</p>
List	Inserts a list.
Crosstab	Inserts a crosstab. You can insert multiple crosstabs in your report layout.
Chart	Inserts a chart. You can insert multiple charts in your report layout.
Hyperlink	Inserts a hyperlink so that users can jump to another place, such as a Web site.
Date	Inserts the date when the report runs.
Time	Inserts the time when the report runs.
Page Number	Inserts page numbers that you can customize.

Before you begin

Before you can add a hyperlink, HTML item, or hyperlink button, you must have the **HTML Items in Report** capability. For more information, see the IBM Cognos Business Intelligence *Administration and Security Guide*, or contact your administrator.

Procedure

To add an object, drag it to the work area or double-click it from the **Toolbox** tab



Align an Object

You can specify an alignment for an object in a report to determine where it appears.

Tables can also be used to determine where objects appear in a report.

Procedure

1. Select the object that you want to align.
2. From the style toolbar, click an available horizontal or vertical alignment button.

Lay Out Report Pages

You can divide your report pages into various layouts, including two columns, two rows, and four quarters. You can then drag report objects to the report sections.

Procedure

Click the page layout button , and then click a report layout. If report objects are already in the report, they will move to fit the new layout.

Use a Table to Control Where Objects Appear

You can use tables in your report to control where objects appear. Tables can be inserted anywhere in a report, such as a header, a footer, or the page body. After you create a table, insert the objects you want in the cells.

You can also apply a predefined table style to tables.

The alignment buttons can also be used to determine where objects appear in a report.

Procedure

1. From the **Toolbox** tab , drag **Table**  to the report.
2. In the **Number of columns** and **Number of rows** boxes, type the number of columns and rows for the table.
3. If you want to have the table span the width of the report page, select the **Maximize width** check box.
4. If you want to add borders to the table, select the **Show borders** check box.
5. If you want to merge cells in the table, select the cells and click the merge cells  button.
6. Select the table object.
7. In the **Properties** pane, under **Positioning**, double-click the **Table Properties** property.
8. To display both the inside and outside borders, do the following:
 - Clear the **Collapse borders** check box.
 - Type a number in the **Cell spacing** text box to define how much space to add between the table cells.
 - Select the **Show empty cell borders** check box to display the borders even for empty cells.
9. To fix the size of the columns in the table, check the **Fixed size** check box. When this check box is cleared, the table columns expand to fit the text.

Apply a Table Style

Apply a table style to quickly format tables. You can also apply a table style to crosstabs.

Procedure

1. Click the table, list, or crosstab to which you want to apply a table style.

Tip: To quickly select the parent of an object, click the object, and then click the select ancestor button  in the **Properties** pane title bar.

2. From the **Style** menu, click **Apply Table Style**.
3. In the **Table styles** box, click the table style that you want.

Tip: Some styles are unique to tables or crosstabs.

4. If you are applying a table style to a crosstab, select the **Set this style as the default for this report** check box to set the style as the default for all crosstabs.

Divide data into sections

Create sections in a report to show a separate list, chart, or crosstab for a data item.

For example, you have a list that shows products purchased. For each product, the product type is also shown. You section the product type column to show a separate list for each product type. The product type appears as the heading for each list.

Creating sections is similar to grouping data. The difference is that when you create sections, a separate list, crosstab, or chart appears for each data item and a section header appears outside the list, crosstab, or chart. In addition, you can group data items only in lists but you can create sections in lists, crosstabs, and charts.

When working with dimensional data, you can also create page layers to show values on a separate page for each member.

When you remove a section, the data item is returned to the original list, crosstab, or chart. For crosstabs, if you created sections for both rows and columns at once (with Ctrl+click or Shift+click), when you remove the section, all data items are returned to one edge of the crosstab for the first data item that you selected. For example, you Ctrl+click the rows and then the columns, and you create a section. When you remove the section, all data items are returned to the rows. You can then drag the data items that belong in the columns back into the **Columns** area.

Procedure

1. Click the data item on which to section.

Tip: To create multiple sections at once, use Ctrl+click or Shift+click.

2. Click the section/unsection button .
3. To remove a section, click the data item and click the section/unsection button.

Related tasks:

“Group Data” on page 91

Group data items in a list report to remove duplicate values. For example, you have a report that shows products purchased. For each product, the product type is also shown. You group the product type column to show only one instance of each product type in the list.

“Create Page Layers” on page 117

When working with dimensional data, you can create page layers in a report to show values for each member on a separate page. For example, your report contains payroll information for the entire company. You want to view values for each department on a separate page.

Apply Padding to an Object

Apply padding to an object to add white space between the object and its margin or, if there is a border, between the object and its border.

Tip: You can quickly apply left or right padding by either pressing Tab and

Shift+Tab or by clicking the increase indent  and the decrease indent  buttons in the style toolbar. When using the toolbar buttons, you can indent an object by up to nine times the indentation length. You can specify the indentation length to use by clicking the arrow beside either button and clicking **Set Default Indent Length**.

Procedure

1. Select the object to which you want to apply padding.
2. From the **Style** menu, click **Style**.
3. Under **Padding**, click the edit button .
4. Specify top, bottom, left, and right padding by typing values in the corresponding boxes and choosing the unit of measure you want.

Set Object Margins

Set the margins for objects in a report to add white space around them.

For Date, Time, Row Number, and Page Number objects, you can only set the left and right margins. If you want to set the top or bottom margins for these objects, place them in a table or a block. Then set the margin or padding properties on the table or block object.

Procedure

1. Select the object for which you want to set margins.
2. From the **Style** menu, click **Style**.
3. Under **Margin**, click the edit button .
4. Specify the top, bottom, left, and right margins by typing values in the corresponding boxes and choosing the unit of measure you want.

Rename a Row or Column

Change the row or column title to provide a more meaningful name.

By default, when you run a report, the column title is taken from one of the following:

- if defined, the **Data item label** property of the data item. This is the label seen in the report output.
- if defined, the label of the data item in the model
- the **Data item name** property of the data item. This is the name of the data item in the query.

Consequently, the column title you see in the layout may not be the column title you see when you run the report. For example, if you modify the **Data item name** property of the data item, the column title in the layout will change to the new name. However, when you run the report, the column title that appears will be, if defined, the data item label in the report or the data item label in the model. If neither of these are defined, only then will the modified name be used as the column title.

When you insert a member calculation or summary in a crosstab, row or column headings use the data item label.

Procedure

Right-click the row or column heading you want to change and select one of the following:

- To show the label that is seen in the report output, click **Data Item Label**.
Tip: To change the data item label, click **Edit Data Item Label**.
- To use static text that you type, click **Show Text** and type the new name in the **Edit Label** dialog.
- To restore the default name, click **Show Default Contents**.
- To leave the heading blank, click **Show Empty Cell**.

Specify Text Flow in an Object

You can specify text flow properties by choosing any of these options.

Option	Description
Direction	Sets the reading order of an object, such as right to left.
Writing mode	Sets the direction and flow of content in an object.
Bi-directional	Sets the level of embedding in an object.
Type	Sets the type of alignment used to justify text in an object.
Kashida space	Sets the ratio of kashida expansion to white space expansion when justifying lines of text in the object. This property is used in Arabic writing systems.

Note: All the text flow properties work with HTML output but do not apply to PDF output.

Procedure

1. Click the object you want.
2. From the **Style** menu, click **Style** and click the **Advanced** tab.
3. Under **Text flow & justification**, click the edit button .
4. Choose how you want text to flow by specifying the options that you want.

Specify Line Spacing and Breaking

You can specify text properties by choosing any of these options.

Option	Description
Line Height	Sets the distance between lines of text in an object.
Letter Spacing	Sets the amount of additional space between letters in an object.
Text Indent	Sets the indentation of the first line of text in an object. Note: This property works with HTML output but does not apply to PDF output.
Word Break	Sets line-breaking behavior within words.
Break words when necessary	Sets whether to break words when the content exceeds the boundaries of an object.
Enforce stricter line-breaking rules for Japanese Text	Sets line-breaking rules for Japanese text.

Procedure

1. Click the object you want.
2. From the **Style** menu, click **Style** and click the **Advanced** tab.
3. Under **Spacing & breaking**, click the edit button .
4. Specify the text properties.

Specify the Height and Width of an Object

You can specify the height and width of objects using various units of measurement. In addition, if the object is a block, you can specify how to handle content overflow. Specify the height and width by choosing any of these options.

Option	Description
Height	Sets the height of the object.

Option	Description
Width	Sets the width of the object.
Content is not clipped	If the contents of the block exceed the height or width of the block, the block automatically resizes to fit the contents.
Content is clipped	If the contents of the block exceed the height or width of the block, the content is clipped. Note: The clipped content still exists. It is just not visible in the block.
Use scrollbars only when necessary	If the contents of the block exceed the height or width of the block, scrollbars are added to the block.
Always use scrollbars	Scrollbars are added to the block.

When you use a percentage to specify the size of an object, the percentage is relative to the object's parent. In some cases, setting the size of an object using percentages will not give you the results that you want unless you also specify the size of the parent container.

Procedure

1. Click the object you want.
2. From the **Style** menu, click **Style** and click the **Advanced** tab.
3. Under **Size & overflow**, click the edit button .
4. Specify the options that you want.

Control How Other Objects Flow Around an Object

For each object in your report, you can specify how other objects flow around the object.

The following options are available:

Option	Description
Float	Sets how other objects flow around the object.
Allow floating objects on both sides	Allows other objects to flow on both sides. The Float property must be set.
Move below any floating object on the left side	If there are other objects to the left of the object, the object moves below those objects. The Float property must be set.
Move below any floating object on the right side	If there are other objects to the right of the object, the object moves under those objects. The Float property must be set.
Move below any floating object	Moves the object under any other object in which the Float property was set.

Procedure

1. Click the object you want.
2. From the **Style** menu, click **Style** and click the **Advanced** tab.
3. Under **Floating**, click the edit button .
4. Specify how you want other objects to flow around the object by specifying the options that you want.

Highlight Data Using a Conditional Style

Add conditional styles to your report to better identify exceptional or unexpected results. A conditional style is a format, such as cell shading or font color, that is applied to objects if a specified condition is true.

For example, you want to automatically highlight in green the departments in your organization that meet their budget quotas and highlight in red the departments that go over budget. Creating conditional styles color-codes information in your reports so that you can find areas that need attention.

You can apply multiple conditional styles to objects. For example, you can apply one style in specific cells and another style for the overall report. If multiple styles set the same property, such as font color, the last style in the list is applied.

You can apply conditional styles based on any data item in your report.

You can create the following types of conditional styles.

Type	Description
Numeric Range	Highlights straight numerical data, such as revenues and losses.
Date/Time Range	Highlights data from specific dates and times.
Date Range	Highlights data from specific dates.
Time Range	Highlights data from specific times.
Interval	Highlights data falling between set intervals.
String	Highlights specific alphanumeric items in a report. For example, you can highlight all instances of a specific word or phrase, such as Equipment. String criteria are case-sensitive. If multiple string conditions are met, only the first conditional style is applied.
Advanced	Creates conditional styles that use calculations or expressions. If multiple advanced conditions are met, only the first conditional style is applied.

Create a New Conditional Style

You can apply conditional styles based on any data item in your report.

Procedure

1. Click the object for which you want to define a conditional style and click the conditional styles button .

Tip: You can also right-click the object and click **Style, Conditional Styles** or click the object, and then, in the **Properties** pane, set the **Conditional Styles** property.

2. Click the add button  and click **New Conditional Style**.
3. Select the data item to determine the condition and click **OK**.

The type of conditional style that you can use depends on the type of data item you select.

4. In the **Name** box, type a name for the conditional style.
5. To define a numeric value, date/time, date, time, or interval condition:
 - Click the new button  and select a value to define a threshold. The value appears in the **Range** column, and two ranges are created.
 - For each range, under **Style**, click one of the predefined styles to apply to the range or click the edit button  and create a new style.

Tip: You can also define a style for the cells in your report that have missing values.

- Repeat the steps above to add other conditions.

Tip: Under **Style**, pause the pointer over each range  to see the condition produced for that range.

- To move a value above or below a threshold, click the arrow button  next to the value.

For example, you insert a threshold value of five million. By default, the ranges are less than or equal to five million and greater than five million. Moving the five million value above the threshold changes the ranges to less than five million and greater than or equal to five million.

6. To define a string condition:
 - Click the new button and select how to define the condition.
 - To select more than one individual value, click **Select Multiple Values** and click the values.
 - To type specific values, click **Enter Values** and type the values.
 - To specify your own criteria, such as values that begin with the letter A, click **Enter String Criteria** and specify the condition.
 - For each condition, under **Style**, click one of the predefined styles to apply or click the edit style button and create a new style. Specify the style to apply to remaining values by clicking one of the predefined styles beside **Remaining values (including future values)**.
 - Specify the order in which to evaluate the conditions.

Conditions are evaluated from top to bottom, and the first condition that is met is applied.

Reuse an Existing Conditional Style

You can create a conditional style once and reuse it on multiple objects in your report. You can specify the order in which conditional styles are applied. You can also use existing local classes as your conditional styles.

Procedure

1. Click the data item for which you want to define a conditional style, and then click the conditional styles button .

Tip: You can also right-click the data item and click **Style, Conditional Styles** or click the data item, and then, in the **Properties** pane, set the **Conditional Styles** property.

2. Click the add button , click **Use Existing Conditional Style**, and select the style.

Create an Advanced Conditional Style

You can create advanced conditional styles that use calculations or expressions.

If multiple advanced conditions are met, only the first conditional style is applied.

Procedure

1. Click the data item for which you want to define a conditional style, and then click the conditional styles button .

Tip: You can also right-click the data item and click **Style, Conditional Styles** or click the data item, and then, in the **Properties** pane, set the **Conditional Styles** property.

2. Click the add button  and click **Advanced Conditional Style**.
3. Type a name for the conditional style.
4. Click the add button  and specify the expression that defines the condition.
5. For each condition, under **Style**, click one of the predefined styles to apply or click the edit button  and create a new style. Specify the style to apply to remaining values by clicking one of the predefined styles beside **Remaining values (including future values)**.
6. Specify the order in which to evaluate the conditions by clicking a condition and then clicking the move up or move down arrow.

Conditions are evaluated from top to bottom, and the first condition that is met is applied.

Example - Add a Conditional Style to an Existing Report

You are a report writer at The Sample Outdoors Company, which sells sporting equipment. You have a report that compares current year data to previous year data and highlights negative percentage variances in red (Poor) and positive percentage variances in green (Excellent). You want to add a third conditional style

to indicate percentage variances above 0 but less than 10. You create a conditional style that highlights percentage variances between 0 and 10% in yellow (Average).

Procedure

1. Open the **GO Balance Sheet as at Dec 31 2006** report from the **GO Data Warehouse (analysis)** package.
2. Right-click any cell in the **% Variance** column and click **Style, Conditional Styles**.
3. Select **Conditional Style 1** and click the edit button .
4. Select the first advanced condition listed and click the edit button.
5. Delete **=0** from the expression definition.
6. Click the **Functions** tab, and then expand the **Operators** folder.
7. Double-click **between**, and then click after **between** in the expression, add a space, and type **0**.
8. Double-click **and**, and then click after **and** in the expression, add a space, type **.1**, and click **OK**.
9. From the **Style** box associated with this condition, click **Average**.
10. Select the second advanced condition listed and click the edit button.
11. Replace **>0** in the expression with **>.1** and click **OK**.
12. Leave the style associated with this condition as is.
13. Run the report.

The new conditional style appears in the **% Variance** column.

Year to date (USD \$000's)	Current Year (2006)		Previous Year (2005)	
	December	December	Variance	% Variance
Assets (total)	9,459,048	10,717,093	-1,258,045	-11.74%
Current assets (total)	5,709,903	5,960,900	-250,996	-4.21%
Operating assets (total)	3,319,279	4,301,658	-982,378	-22.84%
Other assets (total)	429,865	454,536	-24,671	-5.43%
Liabilities (total)	-4,255,662	-3,856,126	-399,536	10.36%
Current liabilities (total)	-3,364,742	-3,059,376	-305,366	9.98%
Long-term and other liabilities (total)	-890,920	-796,749	-94,171	11.82%
Equity (total)	-5,203,386	-6,860,968	1,657,582	-24.16%
Common stock	-1,871,226	-1,780,558	-90,668	5.09%
Other capital	-991,916	-615,202	-376,714	61.23%
Retained earnings - net	-2,327,374	-4,450,170	2,122,797	-47.70%
Currency translation gain (or loss)	-12,870	-15,038	2,168	-14.41%
Declared dividends	0	0	0	-
BALANCE				

Specify what appears for data containers that contain no data

You can specify what appears in a data container when no data is available from the database.

When no data is available, you can show one of the following options:

- An empty data container, such as a blank list.

- Alternate content, such as another data container or an image. You can insert any object from the **Toolbox** tab.

In IBM Cognos Business Insight Advanced, to insert alternate content, you must be in the **Page Design** mode (**View > Page Design**).

- Text, such as *There is no data available for this month*. If you show text, you can format it. By default, the text **No Data Available** appears.

You can specify what appears when no data is available for the following data containers: lists, crosstabs, charts, maps, repeaters, repeater tables, and tables of contents.

If your report includes multiple data containers, you can specify different no data contents for each container.

Procedure

1. Select a data container.
2. In the **Properties** pane, click the select ancestor icon  and click the data container type.
3. Click the ellipsis (...) button next to the **No Data Contents** property and select what should appear for data containers that contain no data:

- To show an empty data container, click **No Contents**.
- To show alternate content, click **Content specified in the No data tab**.

Two tabs appear at the top of the data container and the **No Data Contents**

tab  is selected automatically.

From the **Toolbox** tab , insert the objects to appear when there is no data available into the **No Data Contents** tab.

- To show text, click **Specified text** and type the text that you want to appear.

Modifying Report and Object Styles

Objects in reports are assigned a Cascading Style Sheet (CSS) class that provides a default style for the object. For example, when you create a new report, the report title has the class property **Report title text** assigned to it. In addition, objects inherit the classes set on their parent objects.

You can apply a different class to an object to change its appearance.

You can also use classes to highlight data using conditional styles.

If you use Microsoft Internet Explorer Web browser version 6, some color gradients used in the 10.x default report styles are not supported.

Modify the Report Style

You can change the styles in the style sheet to make your entire report appear differently.

You cannot edit the report style when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure



1. From the report actions button , click **Report Properties**.
2. In the **Report styles** list, select one of the following options:
 - To work with classes in the default style sheet, click **10.x styles**.
 - To work with classes that were used in IBM Cognos 8, click **8.x styles**.
Use 8.x report styles when you are working with reports created in IBM Cognos 8 and you want to preserve their original appearance.
 - To work with classes that were used in IBM Cognos ReportNet[®], click **1.x styles**.
Use 1.x report styles when you are working with reports created in ReportNet and you want to preserve their original appearance.
 - To work with classes that have minimal styling defined, click **Simplified styles**.
This option is useful when creating financial reports.

Modify Object Styles

You can change the style of specific objects in your report to change its appearance.

Procedure

1. Click the object for which you want to change the style.
2. From the **Style** menu, click **Style** and click the **Advanced** tab.
3. Under **Classes**, click the edit button .
4. Click the classes that you want to apply from the **Local classes** and **Global classes** panes and then click the right arrow button.
5. If you applied more than one class, in the **Selected classes** pane, specify the order in which the classes are applied by clicking each class and clicking the up or down arrow button.
Classes in the **Selected classes** pane are applied from top to bottom. The style properties from all classes are merged together when they are applied. However, if the classes have style properties in common, the properties from the last class applied override those from previous classes.

(Don't Print) Class

The **(Don't Print)** class allows HTML items to display in the Web browser but not to print.

The **(Don't Print)** class behaves as follows in the various report output formats:

- HTML
The Web browser defines the behavior. The HTML standard is that the item appears on the screen in the Web browser but is excluded by the print operation of the Web browser.
- PDF
The item is excluded from the output.
- Microsoft Excel 2002 spreadsheet software
The class is specified in the HTML that IBM Cognos uses to render Microsoft Excel 2002 output. However, Microsoft Excel 2002 does not appear to honor it and displays the item as missing some or all other style definitions.

- Microsoft Excel 2007 spreadsheet software
The item is excluded from the output.
- CSV
The item is included in the output.
- XML
The item is included in the output.

An alternative way to consistently exclude a report object from HTML, PDF and Microsoft Excel output is to set the **Box Type** property for the object to **None**. CSV and XML report outputs will still contain the object.

Modifying the Default Layout Style Sheet

In addition to modifying classes in a report, you can create and modify classes that will apply to all reports. Default styles are stored in a style sheet named `GlobalReportStyles.css`.

For information about modifying the style sheet, see the IBM Cognos Business Intelligence *Administration and Security Guide*, or contact your administrator.

Chapter 10. Managing Existing Reports

You can save existing reports on your computer, copy them to the clipboard or open them from the clipboard, and update them when your data package changes.

Open and Save a Report on Your Computer

By default, the reports you create are stored on the IBM Cognos Business Intelligence server. You can, however, open and save reports on your computer.

Opening and saving reports on your computer is useful when you want to send a report to a report author who is working in a different environment or save the report to a source code controlled directory on a local network or drive.

You cannot open and save a report on your computer when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure

1. Obtain the LFA.dll from your IBM Cognos BI administrator.
The DLL is located in the bin directory where IBM Cognos BI is installed.
2. Open a command prompt window.
3. Register the LFA.dll file by typing the following:
`regsvr32 LFA.dll`
4. In your browser, set your computer and the IBM Cognos BI server as trusted sites.
5. In Business Insight Advanced, from the **Tools** menu, click **Options**.
6. Click the **Advanced** tab.
7. Select the **Allow local file access** check box and click **OK**.
The menu items **(Local) Open** and **(Local) Save As** appear in the **File** menu.
8. Close and restart Business Insight Advanced.

Results

You can now open and save reports on your computer.

Note: The first time you try to open or save a report locally from the Microsoft Internet Explorer Web browser, Internet Explorer asks you whether you want to allow an ActiveX control on the page to interact with other parts of the page. Click **Yes** to continue.

Copy a Report to the Clipboard

You can copy a report specification to the clipboard so you can open it from the clipboard later.

This process is different for the Microsoft Internet Explorer and Mozilla Firefox Web browsers because the clipboard works differently in each Web browser.

Related tasks:

“Open a Report from the Clipboard”

You can open a report specification that was previously copied to the clipboard.

Copy a Report to the Clipboard in Internet Explorer

This process is different for the Microsoft Internet Explorer and Mozilla Firefox Web browsers because the clipboard works differently in each Web browser.

Procedure

From the **Tools** menu, click **Copy To Clipboard**.

Copy a Report to the Clipboard in Firefox

This process is different for the Microsoft Internet Explorer and Mozilla Firefox Web browsers because the clipboard works differently in each Web browser.

Procedure

1. From the **Tools** menu, click **Copy To Clipboard**.
2. In the **Copy Report to Clipboard** dialog box, copy the entire report specification.
3. Open a text editor and paste the report specification.
4. Copy all the text from the text editor report specification.

Now the text is saved on your computer's clipboard.

Open a Report from the Clipboard

You can open a report specification that was previously copied to the clipboard.

This is useful for importing an XML report specification from outside the IBM Cognos Business Intelligence environment.

Although IBM Cognos Business Insight Advanced attempts to validate the report specification, it is your responsibility to ensure that it is correct. For more information, see the IBM Cognos Software Development Kit *Developer Guide*.

Note: You cannot open a report from the clipboard when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Procedure

From the **Tools** menu, click **Open Report from Clipboard**.

Related concepts:

“Copy a Report to the Clipboard” on page 159

You can copy a report specification to the clipboard so you can open it from the clipboard later.

Managing Changes in the Package

If changes were made to the package used to create a report, the report must be updated. When you open a report, IBM Cognos Business Insight Advanced automatically checks to see if the package has changed. If it has, a message appears indicating that the report will be updated to the latest version of the package.

Chapter 11. Working With Your External Data

You can supplement your enterprise data with your own external or personal data file.

This allows you to create a report using an external file that contains data which is not part of your IBM Cognos Business Intelligence enterprise data. For example, you are an analyst and you receive a spreadsheet that contains what-if data about opening new branches of your retail store. You are asked to analyze the impact of these possible new branches on existing sales volumes. You link this scenario data with your enterprise data and create a professional report using IBM Cognos BI.

You import your own data file and start reporting on it right away. After importing, your external data file is protected by the same IBM Cognos security as your enterprise data, thus allowing you to report on your data in a secure and private environment.

You can use the following types of files:

- Microsoft Excel (.xls) spreadsheet software files

IBM Cognos BI supports external data sources from Microsoft Excel up to version Microsoft Excel 2007. For an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit <http://www.ibm.com/>.

- tab-delimited text (.txt) files
- comma-separated (.csv) files
- XML (*.xml) files

Your XML files must adhere to the IBM Cognos schema specified at `c10_location/bin/xmldata.xsd`. For more information, contact your IBM Cognos administrator.

This schema consists of a dataset element, which contains a metadata element and a data element. The metadata element contains the data item information in item elements. The data element contains all the row and value elements.

For example, the following simple XML code produces a table with two columns (Product Number and Color) and two rows of data.

```
<?xml version="1.0" ?> <dataset xmlns="http://developer.cognos.com/schemas/xmldata/1/" xmlns:xs="http://www.w3.org/2001/XMLSchema-instance">
<metadata> <item name="Product Number" type="xs:string" length="6"
scale="0" precision="2" /> <item name="Color" type="xs:string"
length="18" scale="0" precision="8" /> </metadata> <data> <row>
<value>1</value> <value>Red</value> </row> <row> <value>2</value>
<value>Blue</value> </row> </data> </dataset>
```

To work with your external data, you start with an existing IBM Cognos package. You import data from your external file into the package and create links between data items in your file and data items in your enterprise data source. You then publish a new package that allows you to create reports that use your data and your enterprise data, or reports that use only your data. You can link your external data with both dimensional and relational data sources.

Before you can import your own external data file, your IBM Cognos administrator must grant you permission for the **Allow External Data** capability found within the **Report Studio** capability, and you must have permission to use IBM Cognos Report Studio or IBM Cognos Business Insight Advanced. For more information, see the IBM Cognos Business Intelligence *Administration and Security Guide*.

External Data Packages

When you import external data into a package, you do not overwrite the original package. You create a new package that includes the original package, the new external data, and any links or relationships that you defined between the two. By default, the new package is saved in the **My Folders** area of IBM Cognos Connection appends **External Data** to the original package name.

You can change where your package is published.

IBM Cognos Samples

Sample external data sources in Microsoft Excel (.xls) format are provided with IBM Cognos BI. You can import these sample files into the Sample Outdoors Company sample reports found within the **Business Insight Advanced Report Samples** folder of the **GO Data Warehouse (analysis)** or **GO Data Warehouse (query)** package.

You can find the following external data source files on the server where IBM Cognos BI is installed in the `c10_location/webcontent/samples/datasources/other` directory.

- accounts.xls
- employee.xls
- organization.xls
- product_brand.xls
- product_color.xls
- product_line.xls
- product_name.xls
- product_size.xls
- product_type.xls
- products.xls
- promo_sets.xls
- promotions.xls
- region.xls
- retailers_site.xls
- time.xls

To obtain these files, contact your IBM Cognos administrator.

Import Data

You select the file to import from your own computer, or from your local area network.

You select which columns to import.

You then specify a namespace to use. The namespace provides a unique name to associate with the data items that you import. The namespace appears in the data tree in the **Source** tab  and is used to organize the data items. By default, the namespace is the imported file name without the extension.

If you change the default name for the namespace, you are prompted to select the external data file each time you run the report. To avoid this, select the **Allow server to automatically load file** check box.

Procedure

1. From the **Tools** menu, click **Manage External Data**.

Tip: You can also click the manage external data button  at the top of the **Source** tab .

2. On the **Select Data** page of the wizard, under **External data file**, click **Browse** and select your external data file to import.

If you want the server to load the file without prompting users when they run the report, select the **Allow the server to automatically load the file** check box.

If selected, you must use the Universal Naming Convention (UNC) path, such as `\\servername\filename` and you must ensure that the IBM Cognos server has access to the file.

3. Under **Data items**, select the check box for the data items that you want to import.
4. Type a name for the namespace and click **Next**.

The namespace appears in the **Source** tree, and identifies the external data within the package. By default, the name is the name of your imported external data file.

5. If you do not want to link your data or change the data attributes, click **Finish** now.

Map Data

If you want to create reports that contain data from both your external file and from your enterprise data, you must link at least one query subject from your package or from an existing report to a data item in your external data. This mapping creates a relationships between your external data and your enterprise data. For example, your external data contains information about employees, including an employee number. You map the employee number from your external data file to the employee number in your enterprise data. This ensures that your data is integrated smoothly.

Procedure

1. On the **Data Mapping** page, link existing query subjects in your enterprise data to data items in your external data file
2. Under **Existing query subject / report**, click the ellipsis (...) button and do one of the following:
 - If you want to select a query subject from the data tree, click **Choose Query Subject** and select a query subject.
 - If you want to select from the query subjects included in a report, click **Choose a Report** and select a report.
3. Click the two data items that you want to link and click the **New link** button.

A link appears linking two data items.

Tip: You can create multiple links for multiple data items. To delete a link, select the link and click **Delete Link**.

4. Click **Next**.

Finish Importing Data

You can change how query items from your external data file appear after they are imported into IBM Cognos Business Intelligence. For example, you can change the number of decimal places or the default summary.

If you want to use numeric data from your external data source as a measure in a crosstab, you must assign that data item a default summary other than

Unsupported. A specified default summary makes the data item appear as a

measure in the data tree in the **Source** tab . Otherwise, if you add the data item with an **Unsupported** default summary as the measure in a crosstab, no values appear.

Attribute	Description
Data type	Identifies whether data in the file is one of the following type: Integer , which represents numeric values. Decimal , which represents integer values that are scaled by a variable power of 10. Text , which represents values that contain letters and symbols. Date or Date Time , which represent dates and times.
Default summary	Identifies Sum, Average, Max, Min, Count or Unsupported as the default type of summary for the data item. Applies only to Integer and Decimal data types.
Decimal places	Specifies the number of decimal places for the data item. Applies only to the Decimal data type.

If you mapped links between data items in your external data and data items in your enterprise data, specify the options that define the relationships between the data items.

For each data item that you import and link, specify whether values are unique or exist more than once in both your external data and in your enterprise data. You can also specify how to handle rows that contain missing values in the report results.

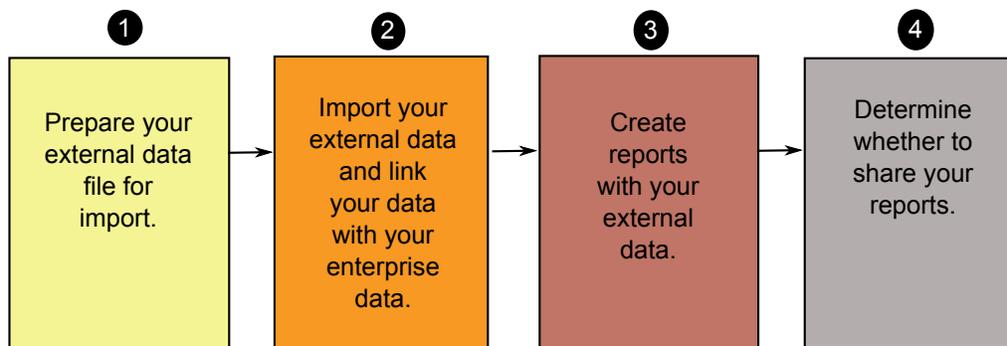
Procedure

1. On the **Data Attributes** page, specify the attributes for each data item after it is imported and click **Next**.
For example, if you import numeric data items, you can change the default summary and number of decimal places.
2. On the **Mapping Options** page, specify the relationships between the linked data items and how to process the results in the report output.
3. Click **Finish**.

Preparing to Work with your External Data

To work with your external data, follow the process in this section.

There are four steps to preparing to work with your external data. The following diagram details these steps.



1. Prepare your external data file for import.

Ensure that your external data file matches your enterprise data for your reporting needs. For example, if your external data file contains sales values by month, ensure that the formatting of months in your file matches the formatting used in your enterprise data source. Ensure that you can uniquely link at least one column from your external data file, such as product codes or years, with your enterprise data source.

The maximum file size that you can import is 2.5 MB, with a maximum of 20000 rows. You can import a maximum of one external data file per package. Your IBM Cognos modeler can override these governors in IBM Cognos Framework Manager.

2. Import your external data.

You import your external data file from your own computer or from a location on your network into an existing IBM Cognos package.

A step-by-step wizard guides you through importing your data. If you want to create reports that contain data from both your external data file and your enterprise data source, you must link data items from the two data sources. You can import all or a subset of data columns from your external file.

By adding external data, you extend an existing IBM Cognos package definition with the new data items from your file and you create a new package.

3. Create reports with your external data file.

After you import and link your external data, it appears as a new namespace in

the data tree of the **Source** tab  and is integrated with the IBM Cognos content.

You can then create reports with your data and perform any operation, such as filtering, sorting, grouping, or adding calculations. When you run the report, it uses data items from your external data file.

You can save reports that contain your external data within the **My Folders** area of the IBM Cognos portal.

4. Determine whether you want to share your reports that use external data with other people in your organization. If you decide to share, take into account these considerations.

Working with Date Data

If the data that you import contains dates, ensure that the dates use the format yyyy-mm-dd.

Working with Dimensional Data Sources

If your enterprise data source is dimensional, such as OLAP or dimensionally-modeled relational, and you want to link your external data with your enterprise data, you must first create a tabular or list report. Create and save a list report with your enterprise data that contains the data items that you want to use to link with your external data. Ensure that you remove the aggregate rows that are automatically added in the footer of the list. This list is a projection of your dimensional data source.

When you import your external data, use the list report that you created to link your external data with the query subject from your enterprise data.

Data in your external file is relational by nature because it consists of tables and rows. If your enterprise data source is dimensional, you can still import and work with your external data. However, you cannot mix relational data from your external data files, and dimensional data from your enterprise data source within the same query. For example, a data container, such as a list, crosstab, or chart, uses one query and you cannot mix relational and dimensional data within the same list, crosstab, or chart. Doing so will cause an error.

If you want to use data from both the external data file and the original package within the same query, you must link the external data to a query subject within the current package instead of another report.

Working with External Data in an Unsecured IBM Cognos Application

If your IBM Cognos application is not secured, and users can log on anonymously, you may encounter issues if multiple people import external data in the same package.

For example, Robert imports his external data into package A and saves the package and reports he created in **My Folders**. Then, Valerie also imports her external data into the same package A and saves the package in **My Folders**. Valerie has therefore overwritten Robert's external data in package A. Now, if Robert tries to run one of his reports, he encounters errors because his external data is no longer in package A.

To avoid this problem,

- save packages that contain external data with a unique name.
- apply security to your IBM Cognos applications so that users do not share the same **My Folders** area.

Publish the Package

You can change the name and location of the package with your external data to help you differentiate between data packages.

Procedure

1. If you want to rename the package that will be published or change the location where it is published, do the following:
 - In the **Manage External Data** dialog, under **Package name**, click the ellipsis (...) button.
 - Type a new name for the package and select the location where to save it.
 - Click **Save**.
2. Click **Publish**.

Results

IBM Cognos Business Intelligence imports your external data into a new package. A namespace with the data items from your external file appears in the data tree in

the **Source** tab .

You can now create reports with your external data.

Edit Your External Data

After you import your data, you can change the data mappings and options that you originally specified and republish the package.

You can

- rename the namespace, which renames the organizational folder that appears in the data tree in the **Source** tab . If you change the namespace, you are prompted for the external data file when you run the report.
- change which columns to import
- change the data mapping links

- change the data attributes
- change the mapping options

You can also import multiple external data files into the same package. To do this, your data modeler must modify governors in the model and republish the package that contains your enterprise data. For more information, see the IBM Cognos Framework Manager *User Guide*.

Procedure

1. From the **Tools** menu, click **Manage External Data** .
2. In the **Manage External Data** dialog box, select the external data to edit and click the edit button .
3. In the left pane, select the options that you want to change.
4. Click **OK** and the re-publish the package.

Results

IBM Cognos Business Intelligence re-imports your external data and updates the data items that appears in the data tree in the **Source** tab .

You can now create and update reports with your external data.

Delete Your External Data

You can delete your external data from within the package that you created if you no longer need it.

Procedure

1. From the **Tools** menu, click **Manage External Data** .
2. In the **Manage External Data** dialog box, select the external data package to delete and click the delete button .
3. Click **Publish**.

Results

The external data namespace is removed from the package.

If you also no longer require the external data package or any reports created with the package, you can delete it from within IBM Cognos Connection.

Running a Report That Contains External Data

Reports that contain external data run the same way as reports that contain only enterprise data. If you have access to the report, you will also have access to the external data included within the report.

You may be prompted to select the location of the external data file when you run the report if either

- the report author did not specify to automatically load the file.

- the IBM Cognos Business Intelligence server can not locate the file.

However, you are not re-prompted within the same Web browser session.

You can determine whether data in a report uses external data by tracing its lineage. For more information, see “View Lineage Information for a Data Item” on page 36.

Making your Reports Public

After you created a report that uses your external data, you may want to make it public to share it with coworkers. They can run your report using your external data file that you made available on a public network drive that the IBM Cognos server can access. They can also use their own version of the file. If they use their own version, the file must contain the same columns as your original external data file that you used to import the data and create the report. In addition, you must clear the **Allow server to automatically load file** check box in the **Select Data** page of the **Manage External Data** wizard.

To make reports public, you must save them in the **Public Folders** area of the IBM Cognos portal. To save content in **Public Folders**, you must have the appropriate permissions. Contact your IBM Cognos administrator to obtain permissions and to inform him or her that you are sharing a package or files.

If you share your reports, ensure that you maintain the reports.

Chapter 12. Upgrading Reports

When you open a report that was created in a previous version of IBM Cognos Business Intelligence, it is automatically upgraded. Any problems detected during the upgrade process appear as information messages  and error messages  in the **Upgrade Information** dialog box. You must fix any errors in the report and then validate the report before you can run it. In some cases, the information or error message is linked to the location of the issue in your report. To go to the location of the issue, click the message, and then click **Select**. If only warnings and information appear in the dialog box, these will disappear when you click **OK**.

Tip: To view this dialog box again, from the **File** menu, click **Upgrade Information**.

After you upgrade a report to the most recent version of IBM Cognos BI, you can no longer open it with a previous version.

Lifecycle Manager

You can download IBM Cognos Lifecycle Manager from <http://www.ibm.com/> to help you test your reports. Lifecycle Manager is a verification tool that checks that your reports run and produce the same results in the new environment.

Lifecycle Manager is a Microsoft Windows operating system-based application for auditing upgrades to the latest version of IBM Cognos BI from IBM Cognos ReportNet 1.1 MR3 or MR4, and from IBM Cognos 8 versions 8.2, 8.3, or 8.4.

It provides a verification feature that validates, executes, and compares report results from two different IBM Cognos BI releases. This helps to identify upgrade and compatibility issues between releases. User interface design and status reporting functionality provide both a proven practice process and support for upgrade project planning and status reporting. Lifecycle Manager also automates much of the process of bundling the required files, such as reports and models, for the test case. For more information, see the Lifecycle Manager *User Guide*.

Upgrading Reports from IBM Cognos Business Intelligence Version 8.4

When you upgrade IBM Cognos BI to version 10.1.0 or later, some reports may look or behave differently after the upgrade. This section describes changes that you may encounter in your reports.

Tips for Report Studio Express Authoring Users

IBM Cognos Business Insight Advanced is both an extension of and a replacement for IBM Cognos Report Studio Express authoring mode, which allowed financial analysts to create statement-style reports. The Report Studio Express authoring mode allowed you to create only crosstabs with dimensional data sources, with no relational or charting support.

Business Insight Advanced is a unified authoring and analysis environment for the more advanced business users who want additional insight into their business. It offers full support for list reports, charts, and relational data sources, and offers an entirely different user experience.

Because the user interface of Business Insight Advanced is designed for data exploration, some default behaviors have changed from the Report Studio Express authoring mode in version 8.4.

If you prefer to use the defaults from version 8.4, you can configure Business Insight Advanced to behave like the Report Studio Express authoring mode (**Tools, Options**).

Below is a list of changed behaviors.

Action	Behavior in Report Studio Express® Authoring Mode version 8.4	Behavior in Business Insight Advanced version 10.1.0
<p>Double-clicking a data item (for dimensional data sources).</p> <p>Also applies to Report Studio.</p>	<p>Inserts children.</p>	<p>Drills down.</p> <p>You can change the behavior of double-clicking a member (Tools, Options, Edit tab, Double-click on member action).</p>
<p>Inserting members from the data tree (for dimensional data sources).</p>	<p>Inserts individual members (not in sets).</p>	<p>Inserts the member and its children, and creates a set.</p> <p>To change how members are inserted, in the Source tab  , click the insert member with children button  and select how to insert member.</p> <p>To toggle between adding individual members and creating sets for members, in the Source tab  , click the create sets for members button  .</p>
<p>Location of the content pane.</p>	<p>Content pane is on the left side.</p>	<p>Content pane (Insertable Objects) is on the right side.</p> <p>You can move the pane to the left side (Tools, Options, View tab, Position pane on the right (requires restart)).</p>

Upgrading Report Styles

IBM Cognos Business Intelligence Version 10.1.0 and later includes a new default report style with updated colors and gradients. If your report uses a custom report template, your report will appear the same in this version of IBM Cognos BI as it did in previous versions. By default, new reports and new report objects, such as lists and crosstabs, appear in the new report style.

If you want to continue to work with the previous 8.x report style, set the **Override 10.x styles with 8.x styles on new reports** option (**Tools, Options, Advanced** tab).

You can update the style of an upgraded report to use the new 10.x style (report

actions button , **Report Properties, Report styles, 10.x styles**).

Note: You cannot edit the report style when you have opened a widget from a Business Insight workspace to edit it in Business Insight Advanced.

Related concepts:

“Modifying Report and Object Styles” on page 155

Objects in reports are assigned a Cascading Style Sheet (CSS) class that provides a default style for the object. For example, when you create a new report, the report title has the class property **Report title text** assigned to it. In addition, objects inherit the classes set on their parent objects.

Chapter 13. Samples

Sample reports are included with IBM Cognos BI. When installed, you can find them in the Public Folders tab in IBM Cognos Connection.

The Sample Outdoors Company

The Sample Outdoors Company samples illustrate product features and technical and business best practices.

You can also use them for experimenting with and sharing report design techniques and for troubleshooting. As you use the samples, you can connect to features in the product.

For examples related to different kinds of businesses, see the product blueprints at <http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp>. For information about specific installation choices and environments, see the *IBM Cognos Business Intelligence Architecture and Deployment Guide*, or the Proven Practices and the IBM Cognos Implementation Roadmaps on <http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp>. For information about audit samples, see the *IBM Cognos Business Intelligence Administration and Security Guide*. For information about Mobile samples, see the *IBM Cognos Mobile Installation and Administration Guide*.

The Sample Outdoors Company, or GO Sales, or any variation of the Sample Outdoors name, is the name of a fictitious business operation whose sample data is used to develop sample applications for IBM and IBM customers. Its fictitious records include sample data for sales transactions, product distribution, finance, and human resources. Any resemblance to actual names, addresses, contact numbers, or transaction values, is coincidental. Unauthorized duplication is prohibited.

Where to find the samples

The samples are included with the product and the samples for each studio are described in the related user guide and online help. To use the samples, you must install, set up, and configure them or contact your administrator to find out where they are installed. For instructions on how to install the samples, see the *IBM Cognos Business Intelligence Installation and Configuration Guide*. For instructions on how to set up and configure samples, see the *IBM Cognos Business Intelligence Administration and Security Guide* or the *IBM Cognos Business Intelligence Installation and Configuration Guide*.

Samples outline

The samples consist of the following:

- Two databases that contain all corporate data, and the related sample models for query and analysis
- Five samples cubes and the related models
- A metrics data source including associated metrics and a strategy map for the consolidated company, and a model for Metric extracts.
- Reports, queries, query templates, and workspaces

To run interactive reports, scripts are required. To see all the reports included in the samples packages, copy the files from the samples content installation into deployment folder and then import the deployments into the IBM Cognos Business Intelligence product.

Security

Samples are available to everyone. To implement security, see the *IBM Cognos Business Intelligence Installation and Configuration Guide*.

Samples in the GO Data Warehouse (analysis) Package

The following reports are some of the reports found in the GO Data Warehouse (analysis) package.

Promotion Success

This report shows the financial results of the company's promotional campaigns, including how much of the company's total revenue is attributable to each promotional campaign. This report can be used as an existing report for the external data sample files.

This report uses the following features:

- lists
- grouping
- summarizing
- text items
- tables
- custom headers and footers

Retailer sales target

This report shows sales targets by year and retailer site. This report can be used as an existing report for the external data sample files.

This report uses the following features:

- lists
- foreground colors
- font sizes
- custom headers

Samples in the GO Data Warehouse (query) Package

The following reports are some of the reports found in the GO Data Warehouse (query) package.

Employee Expenses by Region

This report shows the employee expenses result by regions. This report can be used as an existing report for the external data sample files.

This report uses the following features:

- lists
- grouping

- custom footers

Returns by Product Brand

This report provides information about the returned items situation by returns reason and product brand. This report can be used as an existing report for the external data sample files.

This report uses the following features:

- lists

Appendix A. Troubleshooting

This chapter describes some common problems you may encounter.

For more troubleshooting problems, see the *IBM Cognos Business Intelligence Troubleshooting Guide*.

Auto Correct Errors in a Report

When you are in Page Preview mode, IBM Cognos Business Insight Advanced shows you data as you are creating your report.

However, if an error occurs and the application cannot retrieve the data, you can use the auto-correct feature to determine if there are any incorrect items in your report. Business Insight Advanced provides a list of such items, each of which you can then remove to successfully view your report.

For example, if your report refers to member unique names (MUNs) that are either no longer present in the model or inaccessible due to security restrictions, you cannot view your report in Page Preview mode.

If the auto-correct feature cannot identify any incorrect items in your report, you can switch to **Page Design** mode and manually remove or edit incorrect items, or contact your administrator.

To access the auto-correct feature, from the **Tools** menu, click **Auto Correct**.

Note: You cannot use the auto-correct feature when you have opened a widget from an IBM Cognos Business Insight workspace to edit it in Business Insight Advanced.

Problems Creating Reports

The topics in this section document problems you may encounter when creating reports.

Metadata Change in Oracle Essbase Not Reflected in Reports and in the Studios

When there is a metadata change on the Oracle Essbase server, the change is not immediately reflected in the metadata tree in the studios. In addition, when a report is run, the report does not pick up the republished changes.

To view the new structure, you must restart the IBM Cognos Content Manager server.

Relationships Not Maintained in a Report With Overlapping Set Levels

In a report, the relationship between nested or parallel member sets at overlapping levels in the same dimension may not always be maintained.

For example, a named set in the data source that contains members from both a Year and Month member is nested under Year, but is not properly grouped by year.

In another example, an error message such as this appears:

OP-ERR-0201 Values cannot be computed correctly in the presence of multiple hierarchies ([Product].[B1], [Product].[Product]) that each have a level based on the same attribute (Product).

This problem occurs in the following scenarios involving non-measure data items X and Y, which overlap in the same dimension:

- X and Y together as ungrouped report details
- Y nested under X
- Y appended as an attribute of a group based on X

When using named sets, or sets that cover more than one level of a hierarchy, do not use sets from the same dimension in more than one place in the same report. They should appear on only one level of one edge.

Unexpected Summary Values in Nested Sets

If a report contains nested sets, summaries other than the inner set summaries may contain unexpected values. For example, you insert a summary in a crosstab that contains a set with years in the rows.

	Revenue
2004	914,352,803.72
2005	1,159,195,590.16
Total	2,073,548,393.88

You then nest a product line set within years.

		Revenue
2004	Camping Equipment	332,986,338.06
	Golf Equipment	153,553,850.98
2005	Camping Equipment	402,757,573.17
	Golf Equipment	168,006,427.07
Total		2,073,548,393.88

Notice that the summary value does not change to represent the total of the new values. This occurs because the within set aggregation used with dimensional packages does not take into account sets that are nested below the set that is summarized.

To show the correct summary values, if the inner and outer sets do not belong to the same dimension, you can nest a copy of the inner summary item under the outer summary item, as follows.

		Revenue
2004	Camping Equipment	332,986,338.06
	Golf Equipment	153,553,850.98
	Total	486,540,189.04
2005	Camping Equipment	402,757,573.17
	Golf Equipment	168,006,427.07
	Total	570,764,000.24
Total	Total	1,057,304,189.28

Limited Support for Relational Functions When Used with OLAP Data Sources

When working with an OLAP data source, we recommend that you not use relational functions, such as substring and concatenation functions, in a report that also contains a measure with the **Aggregate Function** property set to **Calculated** or **Automatic** in the model. If you do so, you may encounter unexpected results. For example, some summaries are calculated using the **Minimum** function instead of the aggregate function derived from the individual query items.

In the expression editor, an exclamation mark (!) that precedes a function indicates that the function is not naturally supported for that data source. IBM Cognos Business Intelligence uses a local approximation for that function. Because an approximation is used, performance can be degraded and the results may not be what you expect.

For example, you create an IBM Cognos Query Studio report that contains the data items Product line and Retailer site count. The footer summary is set to **Calculated**. You then insert a calculated column that returns the first three characters of the Product line item, which uses the relational concatenation function. The footer summary now shows the lowest gross margin value.

Product line	First Three Characters	Retailer site count
<u>Camping Equipment</u>	Cam	<u>632</u>
<u>Mountaineering Equipment</u>	Mou	<u>265</u>
<u>Personal Accessories</u>	Per	<u>810</u>
<u>Outdoor Protection</u>	Out	<u>639</u>
<u>Golf Equipment</u>	Gol	<u>367</u>
Summary		265

For more information about aggregation functions, see the *IBM Cognos Query Studio User Guide* or the *IBM Cognos Report Studio User Guide*.

Columns, Rows, or Data Disappear With SSAS 2005 Cubes

Microsoft SQL Server 2005 Analysis Services (SSAS) has a feature called AutoExists that removes tuples that have no facts at the intersection of two hierarchies of the same dimension.

Columns, rows, or data can disappear if you set the default member of a hierarchy to a member that does not exist with every other member in the dimension. To avoid this problem, change the default member that caused the disappearance to a member that exists with all other members in the dimension.

Columns, rows, or data can also disappear if members are specified that result in one or more non-existent tuples. There is currently no workaround for this scenario. For more information, see Microsoft Knowledge Base article #944527 at <http://support.microsoft.com>.

You may also encounter unexpected results if the default member of a hierarchy is a member that doesn't also exist in all other hierarchies in the dimension, and if you query members from different hierarchies in the same dimension.

For example a crosstab includes the following (using the Adventure Works cube):

- Rows: Generate([Adventure_Works].[Account].[Accounts],set([Balance Sheet],[Units])) nested with children([Adventure_Works].[Department].[Departments]->:[YK],[[Department]].[Departments]].&[1]])
- Column: [Adventure_Works].[Account].[Account Number].[Account Number]
- Measure: [Adventure_Works].[Measures].[Amount]

You run the report and notice that the query renders with some blanks cells. You then apply the simple detail filter [Amount]>1 and run the report. Only row labels are displayed and all data and columns are missing.

In the Adventure Works cube, the [Account].[Accounts] attribute has a default member set to [Net Income]. When evaluating the GENERATE set expression, SSAS looks in the entire cube space and looks at all coordinates for the [Account] dimension. These coordinates include both [Account].[Account Type].&[] and [Account].[Accounts].[Net Income]. Because these two coordinates don't exist within the same hierarchy, SSAS returns an empty set.

To avoid this problem the SSAS administrator must set the default member in the cube to a member that exists in all other hierarchies.

Report Differences Between TM1 Executive Viewer and IBM Cognos Business Intelligence with TM1 Data Sources

When using an IBM Cognos TM1[®] data source, comparable reports created in an IBM Cognos Business Intelligence studio and in TM1 Executive Viewer may contain different cell values. This occurs because the TM1 Executive Viewer product uses an algorithm for selecting default members for non-projected dimensions that differs slightly from traditional OLAP clients.

To avoid this problem, when filtering your reports in the IBM Cognos Business Intelligence studios, use context filters that match the default selections shown in the Executive Viewer user interface. This ensures that the cell values in IBM Cognos Business Intelligence match the values in Executive Viewer.

Order of Metadata Tree Differs for TM1 Data Sources

When using a an IBM Cognos TM1 data source, the order of members in the metadata tree of the **Source** tab of an IBM Cognos Business Intelligence studio may differ from the order shown in TM1 Architect.

By default, TM1 Architect renders members of hierarchies using a slightly different algorithm than does IBM Cognos BI. IBM Cognos BI automatically renders member metadata from TM1 data sources in hierarchical order.

From within TM1 Architect, if you want to see how an IBM Cognos BI studio will render a hierarchy, click the **Hierarchy Sort** button.

Problems Calculating Data

The topics in this section document problems you may encounter when calculating or summarizing data.

Incorrect Results with IBM Cognos PowerCubes and Time Measures

If a report uses an IBM Cognos PowerCube data source and a combination of data items, you will encounter incorrect results.

The following combination of data items in a report that uses an IBM Cognos PowerCube data source will give incorrect results.

- a measure with a **Time State Rollup** set to **Average** or **Weighted Average**
- an aggregate (*members from time dimension*) expression
- an intersection with a member in a relative time hierarchy

To avoid incorrect results, do not use this combination in your reports.

Problems Running Reports

The topics in this section document problems you may encounter when viewing or running reports.

Measure Format Disappears in SSAS 2005

Microsoft SQL Server 2005 Analysis Services (SSAS) does not propagate formatting through calculations. IBM Cognos compensates for this whenever possible, but cannot guarantee to do so in all cases. As a result, if you are working with a Microsoft SSAS cube, any calculation (other than a non-count summary) that is based on or intersects with a formatted measure, such as a currency, may lose the measure format. This may also happen if you use a detail filter or context filter (slicer).

For example, a crosstab includes members on one edge and a measure with formatting, such as a currency symbol and decimal places, applied on the other edge. When you run the report, you see the formatting for each cell. However, if you add a detail filter, such as *measure > 1* and run the report, all the formatting disappears.

Additionally, because the SSAS behavior depends on the fine details of the MDX generated by IBM Cognos Business Intelligence, whether the format is lost in a report can change from release to release.

To avoid this problem, specify explicit formatting for the affected row, column, or cell.

Appendix B. Limitations When Producing Reports in Microsoft Excel Format

There are limitations when producing reports in Microsoft Excel format.

Unable to Load Images from the IBM Cognos Business Intelligence Content Store in a Report

If a report contains an image whose URL points to the IBM Cognos Business Intelligence content store, the Microsoft Excel spreadsheet software generates an access violation error and shuts down.

This problem is a known issue in the Microsoft knowledge base, and Microsoft is currently investigating the problem. This problem occurs only in Excel 2002.

Blank Worksheet Appears

If the Microsoft Excel spreadsheet software cannot download a worksheet within a timeout period, Excel may instead open a blank worksheet.

Warning Message Appears When Excel Opens an IBM Cognos Business Intelligence Report

Each time the Microsoft Excel spreadsheet software opens an IBM Cognos Business Intelligence report, a warning message appears.

The warning message is as follows:

Some of the files in this Web page are not in the expected location. Do you want to download them anyway? If you are sure the Web page is from a trusted source, click Yes.

The Excel workbook in HTML/XML format requires the presence of the file `filelist.xml`. IBM Cognos BI does not allow the creation of local files on the client side. In addition, a local file that contains URLs introduces a security issue. Consequently, this message will appear whenever you open an IBM Cognos BI report in Excel. If you see this error message, click **Yes** to open the report.

Spreadsheet Content Not Saved for Reports Saved in XLS Format

If you open a report that was saved in XLS format or run a report in XLS format, and security settings in your Web browser are set so that you are prompted to open or save the report, do not click **Save**. If you save the report, the spreadsheet content will not be saved. This is because Microsoft Excel reports in Microsoft Office 2000 HTML format use relative paths to the spreadsheets. The relative URL paths are no longer available when you open a saved XLS report.

Instead, click **Open** first and then choose to save the report.

Unable to Load Excel Report in Netscape 7.01

This version of IBM Cognos Business Intelligence does not support loading Microsoft Excel reports in Netscape 7.01.

Unsupported IBM Cognos BI Formatting

About 30% of the formatting functions available in IBM Cognos Business Intelligence are not supported in the Microsoft Excel spreadsheet software.

In particular, Excel does not allow changing locale-dependent formatting attributes, such as the following:

- Decimal Separator
- Exponential Symbol
- Group Separator
- Monetary Decimal Separator
- AM String
- Day Name
- Day Short Name
- Decimal Delimiter Symbol
- Month Name
- Month Short Name
- PM String

In addition, Excel does not support the following:

- Format Width
- International Currency Symbol
- List Separator
- Percent Symbol (Excel does not support percent symbols for charts)
- Multiplier
- Overline Text Format
- PerMill Symbol
- Plus Sign
- Scale (Excel has a different scaling formula than IBM Cognos BI)
- Calendar (Excel does not allow changing the calendar)
- Era Name
- First Day Of Week
- Show Era

Cells Contain Series of

Cells in the Microsoft Excel spreadsheet software have a limit of 255 characters. If your report contains text strings that are longer than 255 characters, they will be formatted as text and appear as #####.

To resolve this problem, use fewer characters.

Excel Cannot Render Reports with More Than 256 Columns

The Microsoft Excel spreadsheet software limits the size of a worksheet size to 65,536 rows by 256 columns.

If your report contains more than 65,536 rows, it is split into multiple worksheets. The number of worksheets that your report can contain is limited by the physical memory of your computer. If your report contains more than 256 columns, the following error occurs:

Reports with more than 256 columns cannot be rendered in Excel.

Table and Column Widths

The Microsoft Excel spreadsheet software does not support using percentages to determine the width of tables.

If the report contains only one table, the value of the width attribute for the Table element in the report specification determines the width of the table in the Excel worksheet. If the report contains more than one table, Excel determines the width of all the tables in the worksheet. If the tables are nested, the width specified for the outer table is used and, if necessary, the width is adjusted to accommodate data in the nested tables. The columns and rows around the table are merged to preserve the appearance of the nested table. When you save the workbook, only a single table is saved per worksheet.

Secure Socket Layer (SSL) Is Not Supported in Some Excel Formats and Versions

SSL is supported for only the Microsoft Excel 2002 format in Microsoft Excel 2002 and Microsoft Excel 2003.

Number Formats Become Currency Formats in Japanese Excel

A report uses the Number data format and you save it as Microsoft Excel output. When you open the report in the Japanese version of Microsoft Excel, the data format is listed as Currency rather than Number. This occurs because Japanese Excel interprets the standard Number data format slightly differently than other versions of Excel.

The value appears correctly in Number format. For example, if you specified five digits as your number format, five digits still appear. In Excel, click the **Custom** number format to see the exact format string being used.

Reports Show Data in Wrong Columns

A report contains a large amount of data that is presented using a large number of nested report objects, such as tables and blocks. When the report is produced in Microsoft Excel format, some of the data appears in the wrong columns. This occurs because Excel has a 64K limit on how many nested cell objects can appear in a single spreadsheet.

To solve this problem, you can redesign the report to present the data using non-nested structures.

Unable to Access Reports on Remote Servers

You cannot access a report in Microsoft Excel format on a remote server.

To resolve this problem, you must change the hostname portion of the gateway URI from localhost to either the IP address of the computer or the computer name. You do this using IBM Cognos Configuration.

Unsupported Excel Formatting

IBM Cognos Business Intelligence does not support some formatting.

The following formatting functions that are available in the Microsoft Excel spreadsheet software are not supported by IBM Cognos BI:

- background images in table cells
- Excel-specific headers and footers
- text flow and justification
- floating text objects
- white space, normal, and wrap text formatting
- maximum characters

Some layouts do not show exactly in HTML and PDF due to Excel limitations.

Hyperlink Buttons Are Not Supported in Excel

The Microsoft Excel spreadsheet software does not support hyperlink buttons.

Unable to View Reports in Excel Format Sent as Email Attachments

IBM Cognos Business Intelligence can send Microsoft Excel reports in HTML and XML format by email. However, you cannot open them directly from the email message.

Save the Excel email attachments to your computer and view them from there.

Cell Height and Width Are Incorrect

The width and height of cells that contain data with curly brackets {} or parentheses () may appear incorrectly.

This is because the Microsoft Excel spreadsheet software uses different word wrapping algorithms than IBM Cognos Business Intelligence.

Appendix C. Calculation components

You can build calculations, or expressions, in the expression editor using the components that are defined in this section.

Operators

Operators specify what happens to the values on either side of the operator. Operators are similar to functions, in that they manipulate data items and return a result.

(

Identifies the beginning of an expression.

Syntax

(expression)

)

Identifies the end of an expression.

Syntax

(expression)

*

Multiplies two numeric values.

Syntax

value1 * value2

,

Separates expression components.

Syntax

expression (parameter1, parameter2)

/

Divides two numeric values.

Syntax

value1 / value2

+

Adds two numeric values.

Syntax

value1 + value2

-

Subtracts two numeric values or negates a numeric value.

Syntax

```
value1 - value2  
or  
- value
```

when

Works with the case construct. You can define conditions to occur when the when expression is true.

Syntax

```
case [expression] when ... end
```

Constants

A constant is a fixed value that you can use in an expression.

date

Inserts the current system date.

date-time

Inserts the current system date and time.

interval

Inserts a zero interval: 000 00:00:00.000.

number

Inserts the number 0, which can be replaced with a new numeric value.

string

Inserts an empty string as two single quotation marks between which you can type a string.

time

Inserts the current system time.

time with time zone

Inserts a zero time with time zone.

timestamp with time zone

Inserts an example of a timestamp with time zone.

List Summaries

This list contains predefined functions that return either a single summary value for a group of related values or a different summary value for each instance of a group of related values.

aggregate

Returns a calculated value using the appropriate aggregation function, based on the aggregation type of the expression. This function appears in the Budget vs. Actual sample report in the GO Data Warehouse (analysis) package.

Syntax

```
aggregate ( expression [ auto ] )  
aggregate ( expression for [ all|any ] expression { , expression } )  
aggregate ( expression for report )
```

average

Returns the average value of selected data items. Distinct is an alternative expression that is compatible with earlier versions of the product.

Syntax

```
average ( [ distinct ] expression [ auto ] )  
average ( [ distinct ] expression for [ all|any ] expression { , expression } )  
average ( [ distinct ] expression for report )
```

Example

```
average ( Sales )
```

Result: Returns the average of all Sales values.

count

Returns the number of selected data items excluding null values. Distinct is an alternative expression that is compatible with earlier versions of the product.

Syntax

```
count ( [ distinct ] expression [ auto ] )  
count ( [ distinct ] expression for [ all|any ] expression { , expression } )  
count ( [ distinct ] expression for report )
```

Example

```
count ( Sales )
```

Result: Returns the total number of entries under Sales.

maximum

Returns the maximum value of selected data items. Distinct is an alternative expression that is compatible with earlier versions of the product.

Syntax

```
maximum ( [ distinct ] expression [ auto ] )  
maximum ( [ distinct ] expression for [ all|any ] expression { , expression } )  
maximum ( [ distinct ] expression for report )
```

Example

```
maximum ( Sales )
```

Result: Returns the maximum value out of all Sales values.

median

Returns the median value of selected data items.

Syntax

```
median ( expression [ auto ] )  
median ( expression for [ all|any ] expression { , expression } )  
median ( expression for report )
```

minimum

Returns the minimum value of selected data items. Distinct is an alternative expression that is compatible with earlier versions of the product.

Syntax

```
minimum ( [ distinct ] expression [ auto ] )  
minimum ( [ distinct ] expression for [ all|any ] expression { , expression } )  
minimum ( [ distinct ] expression for report )
```

Example

```
minimum ( Sales )
```

Result: Returns the minimum value out of all Sales values.

standard-deviation

Returns the standard deviation of selected data items.

Syntax

```
standard-deviation ( expression [ auto ] )  
standard-deviation ( expression for [ all|any ] expression { , expression } )  
standard-deviation ( expression for report )
```

Example

```
standard-deviation ( ProductCost )
```

Result: Returns a value indicating the deviation between product costs and the average product cost.

total

Returns the total value of selected data items. Distinct is an alternative expression that is compatible with earlier versions of the product. This function is displayed in the Budget vs. Actual sample report in the GO Data Warehouse (analysis) package.

Syntax

```
total ( [ distinct ] expression [ auto ] )  
total ( [ distinct ] expression for [ all|any ] expression { , expression } )  
total ( [ distinct ] expression for report )
```

Example

```
total ( Sales )
```

Result: Returns the total value of all Sales values.

variance

Returns the variance of selected data items.

Syntax

```
variance ( expression [ auto ] )  
variance ( expression for [ all|any ] expression { , expression } )  
variance ( expression for report )
```

Example

```
variance ( Product Cost )
```

Result: Returns a value indicating how widely product costs vary from the average product cost.

Crosstab/Chart Summaries

This list contains predefined functions that return either a single summary value for a set of members or a different summary value for each member of a set of members.

aggregate

Returns a calculated value using the appropriate aggregation function based on the aggregation type of the expression.

Syntax

```
aggregate ( < currentMeasure|numeric_expression >  
within set set_expression )  
aggregate ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

average

Returns the average value of the selected data items.

Syntax

```
average ( < currentMeasure|numeric_expression >  
within set set_expression )  
average ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

Example

```
average ( Sales )
```

Result: Returns the average of all Sales values.

count

Returns the number of selected data items excluding null values.

Syntax

```
count ( < currentMeasure|numeric_expression >  
within set set_expression )  
count ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

Example

```
count ( Sales )
```

Result: Returns the total number of entries under Sales.

maximum

Returns the maximum value of selected data items.

Syntax

```
maximum ( < currentMeasure|numeric_expression >  
within set set_expression )  
maximum ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

Example

```
maximum ( Sales )
```

Result: Returns the maximum value out of all Sales values.

median

Returns the median value of selected data items.

Syntax

```
median ( < currentMeasure|numeric_expression >  
within set set_expression )  
median ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

minimum

Returns the minimum value of selected data items.

Syntax

```
minimum ( < currentMeasure|numeric_expression >  
within set set_expression )  
minimum ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

Example

```
minimum ( Sales )
```

Result: Returns the minimum value out of all Sales values.

standard-deviation

Returns the standard deviation of the selected data items.

Syntax

```
standard-deviation ( < currentMeasure|numeric_expression >  
within set set_expression )  
standard-deviation ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

total

Returns the total value of the selected data items.

Syntax

```
total ( < currentMeasure|numeric_expression >  
within set set_expression )  
total ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

variance

Returns the variance of the selected data items.

Syntax

```
variance ( < currentMeasure|numeric_expression >  
within set set_expression )  
variance ( < currentMeasure|numeric_expression >  
within < detail|aggregate > expression )
```

Functions

Functions are pre-written formulas that simplify the process of creating calculations. Using functions, you can quickly create formulas that may be difficult to build yourself.

abs

Returns the absolute value of "numeric_expression". Negative values are returned as positive values.

Syntax

```
abs ( numeric_expression )
```

Example 1

```
abs ( 15 )
```

Result: 15

Example 2

```
abs ( -15 )
```

Result: 15

ancestor

Returns the ancestor of "member" at "level" or at "integer" number of levels above "member". Note: The result is not guaranteed to be consistent when there is more than one such ancestor.

Syntax

```
ancestor ( member, level|integer )
```

Example 1

```
ancestor ( [TrailChef Water Bag] , 1 )
```

Result: Cooking Gear

Example 2

```
ancestor ( [TrailChef Water Bag] , 2 )
```

Result: Camping Equipment

Example 3

```
ancestor ( [TrailChef Water Bag] , [great_outdoors_company].  
[Products].[Products].[Product type] )
```

Result: Cooking Gear

bottomCount

Sorts a set according to the value of "numeric_expression" evaluated at each of the members of "set_expression" and returns the bottom "index_expression" members.

Syntax

```
bottomCount ( set_expression , index_expression , numeric_expression )
```

Example

```
bottomCount ( [great_outdoors_company].[Products].[Products].  
[Product line] , 2 , [Revenue] )
```

Result: Returns the bottom two members of the set sorted by revenue.

Product line	Revenue
-----	-----
Outdoor Protection	\$3,171,114.92
Mountaineering Equipment	\$20,891,350.60

bottomPercent

Sorts the set specified in "set_expression" in ascending order and returns the bottommost elements from the sorted set whose cumulative percentage of the total is greater than or equal to "percentage".

Syntax

```
bottomPercent ( set_expression , percentage , numeric_expression )
```

Example

```
bottomPercent ( set ( [Camping Equipment] , [Golf Equipment] ,  
[Mountaineering Equipment] ) , 40 , [2006] )
```

Result: For the set of Camping Equipment, Golf Equipment, and Mountaineering Equipment, returns the members with the smallest Gross profit whose total for the year 2006 is at least 40% of the overall total.

bottomSum

Sorts the set specified in "set_expression" in ascending order and returns the bottommost elements from the sorted set whose cumulative total is greater than or equal to "value".

Syntax

```
bottomSum ( set_expression , value , numeric_expression )
```

Example

```
bottomSum ( members ( [great_outdoors_company].[Products].  
[Products].[Product line] ) , 6000000 , tuple ( [2006] ,  
[great_outdoors_company].[Measures].[Gross profit] ) )
```

Result: For the Product line members, returns the members with the smallest Gross profit whose total for the year 2006 is at least \$6,000,000.

caption

Returns the caption values of "level", "member", or "set_expression". The caption is the string display name for an element and does not necessarily match the unique identifier used to generate the business key or member unique name (MUN) for the element. The caption is not necessarily unique; for example, the caption for a month may return the month name without further year details to make the value unique.

Syntax

```
caption ( level|member|set_expression )
```

Example 1

```
caption ( [TrailChef Water Bag] )
```

Result: TrailChef Water Bag

Example 2

```
caption ( [great_outdoors_company].[Products].[Products].[Product line] )
```

Result: Returns the caption values of the Product line set.

```
Camping Equipment  
Mountaineering Equipment  
Personal Accessories  
Outdoor Protection  
Golf Equipment
```

cast

Converts "expression" to a specified data type. Some data types allow for a length and precision to be specified. Make sure that the target is of the appropriate type and size. The following can be used for "datatype_specification": character, varchar, char, numeric, decimal, integer, smallint, real, float, date, time, timestamp, time with time zone, timestamp with time zone, and interval. When type casting to an interval type, one of the following interval qualifiers must be specified: year, month, or year to month for the year-to-month interval datatype; day, hour, minute, second, day to hour, day to minute, day to second, hour to minute, hour to second, or minute to second for the day-to-second interval datatype. Notes[®]: When you convert a value of type timestamp to type date, the time portion of the timestamp value is ignored. When you convert a value of type timestamp to type time, the date portion of the timestamp is ignored. When you convert a value of type date to type timestamp, the time components of the timestamp are set to zero. When you convert a value of type time to type timestamp, the date component is set to the current system date. It is invalid to convert one interval datatype to the other (for instance because the number of days in a month is variable). Note that you can specify the number of digits for the leading qualifier only, i.e. YEAR(4) TO MONTH, DAY(5). Errors will be reported if the target type and size are not compatible with the source type and size.

Syntax

```
cast ( expression , datatype_specification )
```

Example 1

```
cast ( '123' , integer )
```

Result: 123

Example 2

```
cast ( 12345 , varchar ( 10 ) )
```

Result: a string containing 12345

ceiling

Returns the smallest integer that is greater than or equal to "numeric_expression".

Syntax

```
ceiling ( numeric_expression )
```

Example 1

```
ceiling ( 4.22 )
```

Result: 5

Example 2

```
ceiling ( -1.23 )
```

Result: -1

children

Returns the set of children of a specified member.

Syntax

```
children ( member )
```

Example

```
children ( [Camping Equipment] )
```

Result: Returns the set of children for Camping Equipment.

```
Cooking Gear  
Tents  
Sleeping Bags  
Packs  
Lanterns
```

closingPeriod

Returns the last sibling member among the descendants of a member at "level". This function is typically used with a time dimension.

Syntax

```
closingPeriod ( level [ , member ] )
```

Example 1

```
closingPeriod ( [great_outdoors_company].[Years].[Years].[Month] )
```

Result: 2006/Dec

Example 2

```
closingPeriod ( [great_outdoors_company].[Years].[Years].[Year] )
```

Result: 2006

Example 3

```
closingPeriod ( [great_outdoors_company].[Years].[Years].[Month] , [2006 Q 4] )
```

Result: 2006/Dec

cousin

Returns the child member of "member2" with the same relative position as "member1" to its parent. This function appears in the Revenue by GO Subsidiary 2005 sample report in the GO Data Warehouse (analysis) package.

Syntax

```
cousin ( member1 , member2 )
```

Example 1

```
cousin ( [Irons] , [Camping Equipment] )
```

Result: Cooking Gear

Example 2

```
cousin ( [Putters] , [Camping Equipment] )
```

Result: Sleeping Bags

completeTuple

Identifies a cell location (intersection) based on the specified members, each of which must be from a different dimension. However, completeTuple () implicitly includes the default member from all dimensions not otherwise specified in the arguments, rather than the current member. CompleteTuple will use the default measure rather than the currentMeasure in the query if the measure is not defined in the completetuple function. This function appears in the Planned Headcount sample report in the GO Data Warehouse (analysis) package.

Syntax

```
completeTuple ( member { , member } )
```

Example 1

```
completeTuple ( [Mountaineering Equipment] , [Fax] )
```

Result: The completeTuple does not pick up the currentMember by default as the tuple function does. The values in the first column are identical across each year because the default member of the Years dimension, the root member, is used rather than the current member. Likewise, the first column displays Revenue rather than Quantity Sold because the Revenue measure is the default from the Measures dimension. CompleteTuple will use the default measure rather than the currentMeasure in the query if the measure is not defined in the completetuple function.

Quantity Sold	Mountaineering Sales by Fax
-----	-----
2004	\$1,220,329.38
2005	\$1,220,329.38
2006	\$1,220,329.38

Example 2

```
completeTuple ( [Mountaineering Equipment] , [Fax] ,
[Quantity sold] , currentMember ( [great_outdoors_company].
[Years].[Years] ) )
```

Result: The completeTuple function uses the currentMember of the Years dimension and the Quantity sold measure.

Quantity Sold	Mountaineering Sales by Fax
-----	-----
2004	0
2005	8,746
2006	7,860

current_date

Returns a date value representing the current date of the computer that the database software runs on.

Syntax

```
current_date
```

Example

```
current_date
```

Result: 2003-03-04

currentMember

Returns the current member of the hierarchy during an iteration. If "hierarchy" is not present in the context in which the expression is being evaluated, its default member is assumed. This function appears in the Rolling and Moving Averages interactive sample report.

Syntax

```
currentMember ( hierarchy )
```

current_timestamp

Returns a datetime with time zone value, representing the current time of the computer that runs the database software if the database supports this function. Otherwise, it represents the current time of the computer that runs IBM Cognos Business Intelligence software.

Syntax

```
current_timestamp
```

Example

```
current_timestamp
```

Result: 2003-03-03 16:40:15.535000+05:00

defaultMember

Returns the default member of "hierarchy".

Syntax

```
defaultMember ( hierarchy )
```

Example 1

```
defaultMember ( [great_outdoors_company].[Products].[Products] )
```

Result: Products

Example 2

```
defaultMember ( [great_outdoors_company].[Years].[Years] )
```

Result: Year

Example 3

```
defaultMember ( hierarchy ( [great_outdoors_company].[Measures].[Quantity sold] ) )
```

Result: Revenue

descendants

Returns the set of descendants of "member" or "set_expression" at "level" (qualified name) or "distance" (integer 0..n) from the root. Multiple options may be specified (separated by a space) to determine which members are returned. self: Only the members at the specified level are included in the final set (this is the default behaviour in the absence of any options). before: If there are any intermediate levels between the member's level and the one specified, members from those levels are included. If the level specified is the same as the member upon which the function is applied, the member is included in the final set. beforewithmember: If there are any intermediate levels between the member's level and the one specified, members from those levels are included. The member upon which the function is applied is also included in the final set. after: If other levels exist after the specified level, members from those levels are included in the final set. This function appears in the Sales Commissions for Central Europe sample report in the GO Data Warehouse (analysis) package.

Syntax

```
descendants ( member|set_expression , level|distance  
[ , { self|before|beforewithmember|after } ] )
```

Example 1

```
descendants ( [great_outdoors_company].[Products].[Products]  
.[Products] , [great_outdoors_company].[Products].[Products].  
[Product type] )
```

Result: Returns the set of descendants of the Products set at the Product type level.

Note: [great_outdoors_company].[Products].[Products].[Products] is the root member of the Products hierarchy.

```
Cooking Gear  
Sleeping Bags  
Packs  
Tents  
...  
Eyewear  
Knives  
Watches
```

Example 2

```
descendants ( [great_outdoors_company].[Products].[Products].[Products] , 1 )
```

Result: Returns the set of descendants of the Products set at the first level.

```
Camping Equipment  
Golf Equipment  
Mountaineering Equipment  
Outdoor Protection  
Personal Accessories
```

Example 3

```
descendants ( [great_outdoors_company].[Products].  
[Products].[Products] , 3 , before )
```

Result: Returns the descendants of the Products set before the third level.

```
Camping Equipment  
Cooking Gear  
Sleeping Bags  
Packs  
Tents  
...  
Eyewear  
Knives  
Watches
```

Example 4

```
descendants ( [great_outdoors_company].[Products].  
[Products].[Products] , 2 , self before )
```

Result: Returns the set of descendants of the Products set before and including the second level.

```
Camping Equipment  
Cooking Gear  
Sleeping Bags  
Packs  
Tents
```

...
Eyewear
Knives
Watches

except

Returns the members of "set_expression1" that are not also in "set_expression2". Duplicates are retained only if the optional keyword all is supplied as the third argument.

Syntax

```
except ( set_expression1 , set_expression2 [ , all ] )
```

Example

```
except ( set ( [Camping Equipment] , [Mountaineering Equipment] ) ,  
        set ( [Camping Equipment] , [Golf Equipment] ) )
```

Result: Mountaineering Equipment

extract

Returns an integer representing the value of datepart (year, month, day, hour, minute, second) in "datetime_expression".

Syntax

```
extract ( datepart , datetime_expression )
```

Example 1

```
extract ( year , 2003-03-03 16:40:15.535 )
```

Result: 2003

Example 2

```
extract ( hour , 2003-03-03 16:40:15.535 )
```

Result: 16

filter

Returns the set resulting from filtering a specified set based on the Boolean condition. Each member is included in the result if and only if the corresponding value of "Boolean_expression" is true.

Syntax

```
filter ( set_expression , Boolean_expression )
```

Example

```
filter ( [Product line] , [Gross margin] > .30 )
```

Result: Mountaineering Equipment

firstChild

Returns the first child of "member".

Syntax

`firstChild (member)`

Example 1

`firstChild ([By Product Lines])`

Result: Camping Equipment

Example 2

`firstChild ([Camping Equipment])`

Result: Cooking Gear

firstSibling

Returns the first child of the parent of "member".

Syntax

`firstSibling (member)`

Example 1

`firstSibling ([Outdoor Protection])`

Result: Camping Equipment

Example 2

`firstSibling ([Camping Equipment])`

Result: Camping Equipment

floor

Returns the largest integer that is less than or equal to "numeric_expression".

Syntax

`floor (numeric_expression)`

Example 1

`floor (3.22)`

Result: 3

Example 2

`floor (-1.23)`

Result: -2

head

Returns the first "index_expression" elements of "set_expression". The default for "index_expression" is 1.

Syntax

`head (set_expression [, index_expression])`

Example 1

```
head ( members ( [great_outdoors_company].[Products].[Products].  
[Product line] ) )
```

Result: Camping Equipment

Example 2

```
head ( members ( [great_outdoors_company].[Products].[Products].  
[Product line] ) , 2 )
```

Result: Returns the top two members of the Product line set.

Camping Equipment
Mountaineering Equipment

hierarchize

Orders the members of "set_expression" in a hierarchy. Members in a level are sorted in their natural order. This is the default ordering of the members along a dimension when no other sort conditions are specified.

Syntax

```
hierarchize ( set_expression )
```

Example

```
hierarchize ( set ( [Golf Equipment] , [Mountaineering Equipment] ,  
[Camping Equipment] ) )
```

Result: Returns Camping Equipment, Golf Equipment, Mountaineering Equipment.

hierarchy

Returns the hierarchy that contains "level", "member", or "set_expression".

Syntax

```
hierarchy ( level|member|set_expression )
```

Example 1

```
hierarchy ( [Cooking Gear] )
```

Result: Returns every member in the hierarchy that contains Cooking Gear.

Products
Camping Equipment
Cooking Gear
TrailChef Water Bag
TrailChef Canteen
...
Mountain Man Extreme
Mountain Man Deluxe

Example 2

```
hierarchy ( [great_outdoors_company].[Products].[Products].[Product line] )
```

Result: Returns every member in the hierarchy that contains the Product line.

Products
Camping Equipment
Cooking Gear
TrailChef Water Bag

```
TrailChef Canteen
...
Mountain Man Extreme
Mountain Man Deluxe
```

item

Returns a member from the "index" location within "set_expression". The index into the set is zero based.

Syntax

```
item ( set_expression , index )
```

Example

```
item ( children ( [Camping Equipment] ) , 2 )
```

Result: Sleeping Bags

intersect

Returns the intersection of "set_expression1" and "set_expression2". The result retains duplicates only when the optional keyword "all" is supplied as the third argument.

Syntax

```
intersect ( set_expression1 , set_expression2 [ , all ] )
```

Example

```
intersect ( set ( [Camping Equipment] , [Mountaineering Equipment] )
, set ( [Camping Equipment] , [Outdoor Protection] , ) , all )
```

Result: Camping Equipment

lag

Returns the sibling member that is "index_expression" number of positions prior to "member".

Syntax

```
lag ( member , index_expression )
```

Example 1

```
lag ( [Tents] , 1 )
```

Result: Cooking Gear

Example 2

```
lag ( [Tents] , -2 )
```

Result: Packs

lastChild

Returns the last child of a specified member.

Syntax

```
lastChild ( member )
```

Example 1

```
lastChild ( Cooking Gear )
```

Result: TrailChef Utensils

Example 2

```
lastChild ( [By Product Line] )
```

Result: Golf Equipment

lastPeriods

Returns the set of members from the same level that ends with "member". The number of members returned is the absolute value of "integer_expression". If "integer_expression" is negative, members following and including the specified member are returned. Typically used with a time dimension. This function appears in the Rolling and Moving Averages interactive sample report.

Syntax

```
lastPeriods ( integer_expression , member )
```

Example 1

```
lastPeriods ( 2 , [2006 Q 4] )
```

Result: Returns the last two members from the level that ends with 2006 Q 4.

```
2006 Q 3
```

```
2006 Q 4
```

Example 2

```
lastPeriods ( -3 , [2006 Q 4] )
```

Result: Returns the last three members from the level that starts with 2006 Q 4.

```
2006 Q 4
```

```
2007 Q 1
```

```
2007 Q 2
```

lastSibling

Returns the last child of the parent of a specified member.

Syntax

```
lastSibling ( member )
```

Example

```
lastSibling ( [Camping Equipment] )
```

Result: Golf Equipment

lead

Returns the sibling member that is "index_expression" number of positions after "member". If "index_expression" is negative, returns the sibling member that is "index_expression" number of positions before "member".

Syntax

```
lead ( member , index_expression )
```

Example 1

```
lead ( [Outdoor Protection] , 1 )
```

Result: Personal Accessories

Example 2

```
lead ( [Outdoor Protection] , -2 )
```

Result: Golf Equipment

lower

Returns "string_expression" with all uppercase characters shifted to lowercase.

Syntax

```
lower ( string_expression )
```

Example

```
lower ( 'ABCDEF' )
```

Result: abcdef

member

Defines a member based on "value_expression" in "hierarchy". "String1" identifies the member created by this function. It must be unique in the query and different from any other member in the same hierarchy. "String2" is the caption of the member; if it is absent, the caption is empty. To ensure predictable results, you should supply the "hierarchy". Note: All calculations used as grouping items whose sibling items are other calculations or member sets should be explicitly assigned to a hierarchy using this function. The results are not predictable otherwise. The only exception is where the calculation involves only members of the same hierarchy as the siblings. In this case, the calculation is assumed to belong to that hierarchy.

Syntax

```
member ( value_expression [ , string1 [ , string2 [ , hierarchy ] ] ] )
```

Example

```
member ( total ( currentMeasure within set filter  
  ( [great_outdoors_company].[Products].[Products].[Product name] ,  
    caption ( [great_outdoors_company].[Products].[Products].[Product name] )  
    starts with 'B' ) ) , 'BProducts' , 'B Products' ,  
  [great_outdoors_company].[Products].[Products] )
```

Result: Returns the quantity sold and revenue for all products that start with the letter B.

members

Returns the set of members in "hierarchy" or "level". In the case of a hierarchy, the order of the members in the result is not guaranteed. If a predictable order is required, an explicit ordering function (such as hierarchize) must be used.

Syntax

```
members ( hierarchy|level )
```

Example 1

```
members ( [great_outdoors_company].[Years].[Years] )
```

Result: Returns the members in Years.

Example 2

```
members ( [great_outdoors_company].[Products].[Products].[Product line] )
```

Result: Returns the members in Product line.

mod

Returns the remainder (modulus) of "integer_expression1" divided by "integer_expression2". "Integer_expression2" must not be zero or an exception condition is raised.

Syntax

```
mod ( integer_expression1, integer_expression2 )
```

Example

```
mod ( 20 , 3 )
```

Result: 2

nextMember

Returns the next member in the "member" level.

Syntax

```
nextMember ( member )
```

Example

```
nextMember ( [Outdoor Protection] )
```

Result: Golf Equipment

nullif

Returns null if "expression1" equals "expression2", otherwise returns "expression1".

Syntax

```
nullif ( expression1, expression2 )
```

openingPeriod

Returns the first sibling member among the descendants of a member at "level". This function is typically used with a time dimension.

Syntax

```
openingPeriod ( level [ , member ] )
```

Example 1

```
openingPeriod ( [great_outdoors_company].[Years].[Years].[Month] )
```

Result: 2004/Jan

Example 2

```
openingPeriod ( [great_outdoors_company].[Years].[Years].[Year] )
```

Result: 2004

Example 3

```
openingPeriod ( [great_outdoors_company].[Years].[Years].[Month] , [2006 Q 4] )
```

Result: 2006/Oct

order

Arranges the members of "set_expression" according to their "value_expression" and the third parameter. ASC and DESC arrange members in ascending or descending order, respectively, according to their position in the set hierarchy. Then the children of each member are arranged according to "value_expression". BASC and BDESC arrange members in the set without regard to the hierarchy. In the absence of an explicit specification, ASC is the default.

Syntax

```
order ( set_expression , value_expression [ , ASC|DESC|BASC|BDESC ] )
```

Example 1

```
order ( members ( [Great Outdoors Company].[Product].[Product].[Product type] ) ,  
[Quantity sold] , BASC )
```

Result: Returns the quantity sold for each product type in no particular order.

Product Line	Quantity
-----	-----
Woods	13,924
Irons	14,244
Safety	22,332
...	...
Sunscreen	215,432
Insect Repellents	270,074
Lanterns	345,096

Example 2

```
order ( members ( [Great Outdoors Company].[Product].[Product].[Product type] ) ,  
[Quantity sold] , ASC )
```

Result: Returns the quantity sold for each product type in ascending order.

Product Line	Quantity
-----	-----
Woods	13,924
Irons	14,244
Putters	23,244
...	...
Tents	130,664
Cooking Gear	198,676
Lanterns	345,096

parallelPeriod

Returns a member from a prior period in the same relative position as "member". This function is similar to the cousin function, but is more closely related to time series. It takes the ancestor of "member" at "level" (called "ancestor") and the sibling of "ancestor" that lags by "integer_expression" positions, and returns the parallel period of "member" among the descendants of that sibling. When unspecified, "integer_expression" defaults to 1 and "member" defaults to the current member.

Syntax

```
parallelPeriod ( level [ , integer_expression [ , member ] ] )
```

Example 1

```
parallelPeriod ( [great_outdoors_company].[Years].[Years].
[Quarter] , -1 , [2006/Aug] )
```

Result: 2006/Nov

Example 2

```
parallelPeriod ( [great_outdoors_company].[Years].[Years].
[Quarter] , 1 , [2006/Aug] )
```

Result: 2006/May

Example 3

```
parallelPeriod ( [great_outdoors_company].[Years].[Years].
[Year] , 2 , [2006/Aug] )
```

Result: 2004/Aug

parent

Returns the member that is the parent of "member" or "measure".

Syntax

```
parent ( member|measure )
```

Example

```
parent ( [Cooking Gear] )
```

Result: Camping Equipment

periodsToDate

Returns a set of sibling members from the same level as "member", as constrained by "level". It locates the ancestor of "member" at "level" and returns that ancestor's descendants at the same level as "member" (up to and including "member"). Typically used with a time dimension. This function is displayed in the Rolling and Moving Averages interactive sample report.

Syntax

```
periodsToDate ( level , member )
```

Example

```
periodsToDate ( [great_outdoors_company].[Years].  
[Years].[Year] , [2004/Mar] )
```

Result: Returns values for [2004/Jan], [2004/Feb], [2004/Mar]

power

Returns "numeric_expression1" raised to the power "numeric_expression2". If "numeric_expression1" is negative, then "numeric_expression2" must result in an integer value.

Syntax

```
power ( numeric_expression1 , numeric_expression2 )
```

Example

```
power ( 3 , 2 )
```

Result: 9

prevMember

Returns the member that immediately precedes "member" in the same level. This function is displayed in the Sales Growth Year Over Year sample report in the GO Data Warehouse (analysis) package.

Syntax

```
prevMember ( member )
```

Example 1

```
prevMember ( [Outdoor Protection] )
```

Result: Personal Accessories

Example 2

```
prevMember ( [2005] )
```

Result: 2004

rootMember

Returns the root member of a single-root hierarchy. This function is displayed in the Promotion Success sample report in the GO Data Warehouse (analysis) package.

Syntax

```
rootMember ( hierarchy )
```

rootMembers

Returns the root members of a hierarchy.

Syntax

```
rootMembers ( hierarchy )
```

Example

```
rootMembers ( [great_outdoors_company].[Years].[Years] )
```

Result: By Time

_round

Returns "numeric_expression" rounded to "integer_expression" places to the right of the decimal point. Notes: "integer_expression" must be a non negative integer. Rounding takes place before data formatting is applied.

Syntax

```
_round ( numeric_expression , integer_expression )
```

Example

```
_round ( 1220.42369, 2 )
```

Result: 1220.42

set

Returns the list of members defined in the expression. The members must belong to the same hierarchy.

Syntax

```
set ( member { , member } )
```

Example

```
set ( [Golf Equipment] , [Irons] , [TrailChef Cup] )
```

Result: Returns Golf Equipment, Irons, and TrailChef Cup.

siblings

Returns the children of the parent of the specified member.

Syntax

```
siblings ( member )
```

Example

```
siblings ( [Golf Equipment] )
```

Result: Returns the siblings of Golf Equipment.

```
Camping Equipment  
Golf Equipment  
Mountaineering Equipment  
Outdoor Protection  
Personal Accessories
```

sqrt

Returns the square root of "numeric_expression". "Numeric_expression" must be non negative.

Syntax

```
sqrt ( numeric_expression )
```

Example

```
sqrt ( 9 )
```

Result: 3

subset

Returns a subset of members in "set_expression" starting at "index_expression1" from the beginning. If the count "index_expression2" is specified, that many members are returned (if available). Otherwise, all remaining members are returned.

Syntax

```
subset ( set_expression, index_expression1 [ , index_expression2 ] )
```

Example 1

```
subset ( members ( [great_outdoors_company].[Products]  
.[Products].[Product line] ) , 2 )
```

Result: Returns the members of the Product line set starting at the second member.

```
Mountaineering Equipment  
Outdoor Protection  
Personal Accessories
```

Example 2

```
subset ( members ( [great_outdoors_company].[Products].[Products]  
.[Product line] ) , 2 , 2 )
```

Result: Returns two members of the Product line set starting at the second member.

```
Mountaineering Equipment  
Outdoor Protection
```

substring

Returns the substring of "string_expression" that starts at position "integer_expression1" for "integer_expression2" characters or to the end of "string_expression" if "integer_expression2" is omitted. The first character in "string_expression" is at position 1.

Syntax

```
substring ( string_expression , integer_expression1 [ , integer_expression2 ] )
```

Example

```
substring ( 'abcdefg' , 3 , 2 )
```

Result: cd

tail

Returns the last "index_expression" elements of "set expression". The default for "index_expression" is 1.

Syntax

```
tail ( set_expression [ , index_expression ] )
```

Example 1

```
tail (members ( [great_outdoors_company].[Products].[Products]  
.[Product line] ) )
```

Result: Returns the last member of the Product line set.

Personal Accessories

Example 2

```
tail ( members ( [great_outdoors_company].[Products].[Products]  
.[Product line] ) , 2 )
```

Result: Returns the last two members of the Product line set.

Outdoor Protection
Personal Accessories

topCount

Sorts a set according to the values of "numeric_expression" evaluated at each of the members of "set_expression" and returns the top "index_expression" members.

Syntax

```
topCount ( set_expression , index_expression , numeric_expression )
```

Example

```
topCount ( [great_outdoors_company].[Products].  
[Products].[Product line] , 2 , [Revenue] )
```

Result: Returns the top two revenues for the Product line set.

Product line	Revenue
-----	-----
Camping Equipment	\$89,713,990.92
Personal Accessories	\$31,894,465.86

topPercent

Sorts the set specified in "set_expression" in descending order and returns the topmost elements from the sorted set whose cumulative percentage of the total is greater than or equal to "percentage".

Syntax

```
topPercent ( set_expression , percentage , numeric_expression )
```

Example

```
topPercent ( set ( [Camping Equipment] , [Golf Equipment] ,  
[Mountaineering Equipment] ) , 40 , [2006] )
```

Result: or the set of Camping Equipment, Golf Equipment, and Mountaineering Equipment, returns the members with the largest Gross profit whose total for the year 2006 is at least 40% of the overall total.

topSum

Sorts the set specified in "set_expression" in descending order and returns the topmost elements from the sorted set whose cumulative total is greater than or equal to "value".

Syntax

```
topSum ( set_expression , value , numeric_expression )
```

Example

```
topSum ( children ( [Products] ) , 16000000 , tuple ( [2006] ,  
[great_outdoors_company].[Measures].[Gross profit] ) )
```

Result: For the Product line members, returns the members with the smallest Gross profit whose total for the year 2006 is at least \$6,000,000.

trim

Returns "string_expression" trimmed of leading and trailing blanks or trimmed of a certain character specified in "match_character_expression". "Both" is implicit when the first argument is not stated and blank is implicit when the second argument is not stated.

Syntax

```
trim ( [ [ trailing|leading|both ] [ match_character_expression ]  
 , ] string_expression )
```

Example 1

```
trim ( trailing 'A' , 'ABCDEFA' )
```

Result: ABCDEF

Example 2

```
trim ( both , ' ABCDEF ' )
```

Result: ABCDEF

tuple

Identifies a cell location (intersection) based on the specified members, each of which must be from a different dimension. This function implicitly includes the current member from all dimensions that are not otherwise specified in the arguments. The current member of any dimension not specified in the evaluating context is assumed to be the default member of that dimension. The value of this cell can be obtained with the "value" function.

Syntax

```
tuple ( member { , member } )
```

Example

```
tuple ( [Mountaineering Equipment] , [Fax] )
```

Result: Returns the Mountaineering Equipment sales by fax.

union

Returns data for "set_expression1" and "set_expression2". The result retains duplicates only when the optional keyword "all" is supplied as the third argument.

Syntax

```
union ( set_expression1 , set_expression2 [ , all ] )
```

Example 1

```
union ( set ( [Camping Equipment] , [Golf Equipment] ) , set  
  ( [Golf Equipment] , [Mountaineering Equipment] ) )
```

Result: Returns data for both sets as one new set, showing the Golf Equipment column only once.

Example 2

```
union ( set ( [Camping Equipment] , [Golf Equipment] ) , set  
  ( [Golf Equipment] , [Mountaineering Equipment] ) , all )
```

Result: Returns data for both sets as one new set, showing the Golf Equipment column twice.

unique

Removes all duplicates from "set_expression". The remaining members retain their original order.

Syntax

```
unique ( set_expression )
```

upper

Returns "string_expression" with all lowercase characters converted to uppercase.

Syntax

```
upper ( string_expression )
```

Example

```
upper ( 'abcdef' )
```

Result: ABCDEF

value

Returns the value of the cell identified by "tuple". Note that the default member of the Measures dimension is the Default Measure.

Syntax

```
value ( tuple )
```

Example 1

```
value ( tuple ( [great_outdoors_company].[Years].[Years].[Year] ->:[PC]  
.[Years (Root)].[20040101-20041231] , [great_outdoors_company]  
.[Measures].[Revenue] ) )
```

Result: \$34,750,563.50

Example 2

```
value ( tuple ( [2004] , [Camping Equipment] , [Revenue] ) )
```

Result: \$20,471,328.88

Appendix D. Accessibility Features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

See the IBM Accessibility Center (<http://www.ibm.com/able>) for more information about the commitment that IBM has to accessibility.

Accessibility features in IBM Cognos Business Insight Advanced

There are several accessibility features in IBM Cognos Business Insight Advanced.

The major accessibility features are described in the following list:

- You can use command keys, or shortcut keys, to navigate through Business Insight Advanced. Shortcut keys directly trigger an action and usually make use of the Ctrl keys.
- Business Insight Advanced uses Web Accessibility Initiative—Accessible Rich Internet Applications (WAI-ARIA). This means that people with limited vision can use screen-reader software, along with a digital speech synthesizer, to listen to what is displayed on the screen.

Note: To take full advantage of the accessible features of Business Insight, use Mozilla Firefox version 4.0 or higher and Freedom Scientific JAWS version 12.0.

Keyboard Shortcuts

This product uses some standard Microsoft Windows and accessibility shortcut keys.

Action	Shortcut keys
Enables or disables the accessibility feature - a Business Insight Advanced restart is required. The default is disabled .	Ctrl+Shift+Tab
Opens the context menu for the selected item, if available.	Shift+F10
Switches focus from or to the main menu and the main worksheet.	Ctrl+F10
Opens the online help.	F1
Closes the Web browser window.	Alt+F4
Copies objects.	Ctrl+C
Pastes objects.	Ctrl+V

Considerations to Improve Report Accessibility

Creating accessible reports ensures access of information to all users, with all levels of ability.

For example, people with a visual impairment may use screen reading technology to access the information in a report.

The following are some design considerations for creating accessible reports:

- Avoid using visual cues, such as bold text or color, to convey important information.
- Avoid using pictures and OLE Objects in PDF documents, as these items are tagged as artifacts and ignored by the screen reader.
- Avoid using conditional formatting to convey important information.
- When selecting color palettes for report objects, choose patterns or shades of gray.
- Ensure that there is a table corresponding to chart types that are rendered as images because the screen reader ignores this information.
- Ensure that the report has a title.
- Gain an understanding for screen reading technology.
- Avoid spelling and grammatical errors, as they cause the screen reading software to misinterpret the information.
- Avoid using features like calendar boxes and up and down selections on time controls. Instead use prompts such as check boxes, radio buttons, combo boxes, and multi-select boxes.
- Ensure that the target application is accessible when using embedded Web applications or drill-through paths.
- Avoid using large, complex list or crosstab reports.
Displaying the information in multiple simple lists or crosstab reports is more manageable for assistive technology users.
- Add alternate text to images, charts, and other visual objects so that screen readers can provide context for them.
- When using tables, add summary text to provide context for the table content. If the top cells in a table behave as headers, designate these cells as headers so that screen readers can identify the relationships.

Enable Accessible Report Outputs

If you want to include accessibility features, such as alternate text, summary text, and designated cell headers in tables, you must enable these accessibility features in the report output.

You can enable accessible report outputs in one of the following ways:

- in the IBM Cognos Business Insight Advanced run options, so that the report has accessibility features enabled when you run the report from within Business Insight Advanced.
- in IBM Cognos Connection as a run option (**Run with options, Enable accessibility support**), so that report consumers can run the report once with accessibility features.
- in IBM Cognos Connection as a property (**Set properties, Report** tab), so that report consumers can always run the report with accessibility features.
- in IBM Cognos Connection, as a user preference (**My area, My preferences**), so that report consumers can enable accessibility features for all of their reports. Accessibility settings in the report properties overwrite this setting.
- in IBM Cognos Administration, as a server-wide option, so that all reports for all IBM Cognos users have accessibility features enabled. Accessibility settings in the user preferences and report properties overwrite this setting.

Administrators can also change a system-level setting that forces the accessibility features on or off regardless of any other settings.

For information about the last four options, see the *IBM Cognos Connection User Guide* or the *IBM Cognos Administration and Security Guide*.

Procedure

From the **Run** menu, click **Run Options** and select the **Include accessibility features** check box.

Add Alternate Text to Images and Charts

You can add alternate text for images, maps, and charts to make your reports accessible. When a screen reader encounters one of these objects, it reads the alternate text that you added to the object.

You can add translations for the text to support users in multiple languages. When users run a report, IBM Cognos Business Intelligence uses the alternate text in the appropriate language.

If you use images only for visual spacing in your report, leave the **Alternate Text** property empty.

Procedure

1. Select the image or chart object.
2. In the **Properties** pane, click the select ancestor button  and select the **Image**, **Map**, or chart object.
3. Double-click the **Alternate Text** property.
4. Select **Specified text** and click the ellipsis (...) button.
5. In the **Default text** box, type a description for the object, and click **Add**.
6. In the **Languages** dialog box, select the languages that apply to your text.
7. Double-click a language and type the translation of the text for each language.
8. From the **Run** menu, click **Run Options** and select the **Include accessibility features** checkbox.

Add Summary Text to Tables

You can provide summary text for crosstabs, lists, repeater tables, and table objects. This text provides context for the entire object to make your reports accessible. When a screen reader encounters one of these objects in HTML report outputs, it reads the description that you added to the object.

The table summary is not displayed in visual Web browsers. Only screen readers and speech browsers use the summary text. The summary text is usually read immediately before the table caption.

You can add translations for the text to support users in multiple languages. When users run a report, IBM Cognos BI uses the summary text in the appropriate language.

If you use tables for report layout, leave the summary empty to indicate to screen readers that the table is used exclusively for visual layout and not for presenting tabular data.

Procedure

1. Select the crosstab, list, or table.
2. In the **Properties** pane, click the select ancestor button  and select the **Crosstab, List, Repeater Table, or Table** object.
3. Double-click the **Summary Text** property.
4. Select **Specified text** and click the ellipsis (...) button.
5. In the **Default text** box, type a description for the object, and click **Add**.
6. In the **Languages** dialog box, select the languages that apply to your text.
7. Double-click a language and type the translation of the text for each language.
8. From the **Run** menu, click **Run Options** and select the **Include accessibility features** checkbox.

Designate Cells Headers in Tables

You can specify whether specific table cells are table headers. This allows screen readers and speech browsers to identify the relationships between the cells in your tables.

Procedure

1. Select the table cells.
2. In the **Properties** pane, set the **Table Header** property to **Yes**.
3. From the **Run** menu, click **Run Options** and select the **Include accessibility features** checkbox.

IBM and Accessibility

See the IBM Accessibility Center for more information about the commitment that IBM has to accessibility.

The accessibility center is online at <http://www.ibm.com/able>.

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Glossary

This glossary includes terms and definitions for IBM Cognos Business Intelligence.

The following cross-references are used in this glossary:

- See refers you from a term to a preferred synonym, or from an acronym or abbreviation to the defined full form.
- See also refers you to a related or contrasting term.

To view glossaries for other IBM products, go to www.ibm.com/software/globalization/terminology.

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A

access permission

A privilege that permits the access or use of an object.

accountability scorecard

A scorecard that Metric Studio automatically builds for each user which contains the metrics and projects they own.

agent A process that performs an action on behalf of a user or other program without user intervention or on a regular schedule, and reports the results back to the user or program.

alias An alternative name used instead of a primary name.

anonymous access

A type of access that allows users and servers to access a server without first authenticating with it.

application tier component

For installation, the set of processors that access the query databases to gather information and then render the results as

PDF and HTML reports and metrics.

Application tier components also pass requests to Content Manager and render the results that Content Manager retrieves from the content store.

attribute

In BI Modeling, a characteristic of an entity which is descriptive rather than a unique identifier or an aggregative measure.

authentication

The process of validating the identity of a user or server.

authentication provider

The communication mechanism to an external authentication source. Functionalities, such as user authentication, group membership, and namespace searches, are made available through authentication providers.

B

burst To create several report results by running a single report once. For example, the user can create a report that shows sales for each employee, and run it once, sending different results to regional managers by bursting on region.

burst key

The dimension or level of a query in the report specification that is used to create, or burst, a set of report results.

C

CA See certificate authority.

calculated member

A member of a dimension whose measure values are not stored but are calculated at run time using an expression.

canvas

An area within a dashboard or workspace that users interact with to create, view, and manipulate content and data.

capability

A group of functions and features that

can be hidden or revealed to simplify the user interface. Capabilities can be enabled or disabled by changing preference settings, or they can be controlled through an administration interface.

cardinality

1. For relational data sources, a numerical indication of the relationship between two query subjects, query items, or other model objects.
2. For OLAP data sources, the number of members in a hierarchy. The cardinality property for a hierarchy is used to assign solve orders to expressions.

cascading prompt

A prompt that uses values from a previous prompt to filter the values in the current prompt or pick list.

certificate

In computer security, a digital document that binds a public key to the identity of the certificate owner, thereby enabling the certificate owner to be authenticated. A certificate is issued by a certificate authority and is digitally signed by that authority. See also certificate authority.

certificate authority (CA)

A component that issues certificates to each computer on which components are installed.

CGI See Common Gateway Interface.

cipher suite

The combination of authentication, key exchange algorithm, and the Secure Sockets Layer (SSL) cipher specification used for the secure exchange of data.

class style

A combination of formatting characteristics, such as font, font size, and border, that the user names and stores as a set.

CM See Content Manager.

Common Gateway Interface (CGI)

An Internet standard for defining scripts that pass information from a web server to an application program, through an HTTP request, and vice versa.

condition

An expression that can be evaluated as true, false, or unknown. It can be

expressed in natural language text, in mathematically formal notation, or in a machine-readable language.

constraint

1. A security specification that denies one or more users the ability to access a model component or to perform a modeling or authoring task.
2. A restriction on the possible values that users can enter in a field.

contact

A named e-mail address to which reports and agent e-mails can be sent. Contacts are never authenticated.

content locale

A code that is used to set the language or dialect used for browsers and report text, and the regional preferences, such as formats for time, date, money, money expressions, and time of day.

Content Manager (CM)

The service that retrieves information from the content store, and saves information to the content store.

content store

The database that contains the data needed to operate, such as report specifications, published models, and security rights.

credential

A set of information that grants a user or process certain access rights.

cube A multidimensional representation of data needed for online analytical processing, multidimensional reporting, or multidimensional planning applications.

custom set

In Analysis Studio, a named object which can include filter rules, calculations, and sort rules. Custom sets can define a set of members that is different from any set originally defined in the cube model. See also predefined set, set.

D**dashboard**

A web page that can contain one or more widgets that graphically represent business data.

data source

The source of data itself, such as a database or XML file, and the connection information necessary for accessing the data.

data source connection

The named information that defines the type of data source, its physical location, and any sign-on requirements. A data source can have more than one connection.

data tree

Within a studio, a structure that contains objects such as query subjects, query items, dimensions, levels, and members. A data tree is used as a palette of the available data that can be inserted into calculations, filters, display areas, and other authoring gestures.

deployment

The process of moving an application (such as a report or model) to a different instance. For example, reports are often created in a test environment and then deployed to production. When an application is deployed, it is exported, transferred, and imported.

deployment archive

A file used for deployment. A deployment archive contains the data from the content store that is being moved.

deployment specification

A definition of what packages to move (deploy) between source and target environments, the deployment preferences, and the archive name. Deployment specifications are used for import and export.

derived index

A calculated metric that provides a status and a score based on other metrics.

details-based set

A set based on an item and its immediate details. See also set.

dimension

In Cognos BI and TM1, a broad grouping of descriptive data about a major aspect of a business, such as products, dates, or locations. Each dimension includes different levels of members in one or more hierarchies and an optional set of calculated members or special categories.

dimensional data source

A data source containing data modeled using OLAP concepts, including dimensions, hierarchies, and measures.

drill down

In a multidimensional representation of data, to access information by starting with a general category and moving downwards through the hierarchy of information, for example from Years to Quarters to Months.

E

event A change to a state, such as the completion or failure of an operation, business process, or human task, that can trigger a subsequent action, such as persisting the event data to a data repository or invoking another business process.

event key

A combination of data items that uniquely defines an event instance. Identifying an event instance enables the agent to determine if it is new, ongoing or stopped.

event list

The set of detected event instances evaluated by the task execution rules to determine which agent tasks should be performed.

F

fact See measure.

G**gateway**

An extension of a web server program that transfers information from the web server to another server. Gateways are often CGI programs, but may follow other standards such as ISAPI and Apache modules.

glyph The actual shape (bit pattern, outline) of a character image. For example, italic A and roman A are two different glyphs representing the same underlying character. Strictly speaking, any two images which differ in shape constitute different glyphs. In this usage, glyph is a

synonym for character image, or simply image (The Unicode Standard – Version 1.0).

group A collection of users who can share access authorities for protected resources.

grouping
In reporting, the process of organizing common values of query items together and only displaying the value once.

H

hierarchy
The organization of a set of entities into a tree structure, with each entity (except the root) having one or more parent entities and an arbitrary number of child entities.

I

information card
A display of high-level information about dashboard, workspace, or report content, such as owner, contact information, date modified, and an optional thumbnail view of the dashboard, workspace, or report.

information pane
In Analysis Studio, a pane that helps the user to confirm their selection in the data tree by displaying related information, such as the level and attributes.

initiative
A task developed to achieve objectives or close the gap between performance and targets. Initiatives are associated with individual objectives and often known as projects, actions, or activities.

item See member.

J

job A group of runnable objects, such as reports, agents, and other jobs that the user runs and schedules as a batch.

job step
The smallest part of a job that can be run separately. A job step can be a report or it can be another job.

L

layout The arrangement of printed matter on a screen or page, including margins, line spacing, type specification, header and footer information, indents, and more.

level A set of entities or members that form one section of a hierarchy in a dimension and represent the same type of object. For example, a geographical dimension might contain levels for region, state, and city.

locale A setting that identifies language or geography and determines formatting conventions such as collation, case conversion, character classification, the language of messages, date and time representation, and numeric representation.

M

MDX See Multidimensional Expression Language.

measure
A performance indicator that is quantifiable and used to determine how well a business is operating. For example, measures can be Revenue, Revenue/Employee, and Profit Margin percent.

member
A unique item within a hierarchy. For example, Camping Equipment and 4 Man tent are members of the Products hierarchy.

metric A measure to assess performance in a key area of a business.

metric extract
A set of mappings between an existing Cognos data source and a Metric Studio object or value. For example, a cube measure named Revenue is mapped to a Metric Studio metric named Revenue Actual Value.

metric package
In Cognos Connection, a representation of a Metric Studio application. A metric package contains connection information, reports, and metric management tasks for that application. See also package.

metric store
A database that contains content for

metric packages. A metric store also contains Metric Studio settings, such as user preferences.

metric type

A category of metrics that defines the business rules such as performance pattern, units, and meaning of a group of metrics. For example, Revenue can be a metric type, and European Revenue and North American Revenue would be metrics of this type.

model A physical or business representation of the structure of the data from one or more data sources. A model describes data objects, structure, and grouping, as well as relationships and security. In Cognos BI, a model is created and maintained in Framework Manager. The model or a subset of the model must be published to the Cognos server as a package for users to create and run reports.

multidimensional data source

See dimensional data source.

Multidimensional Expression Language (MDX)

The multidimensional equivalent of Structured Query Language (SQL).

N

named set

See predefined set.

namespace

A part of the model in which the names may be defined and used. Within a namespace, each name has a unique meaning.

news item

A single entry in a Really Simple Syndication (RSS) compatible format. It can include a headline, text, and a link to more information. A news item task in an agent can be used to create news items for display in a Cognos Connection portlet.

O

object In Report Studio, an empty information container that can be dragged to a report from the Toolbox tab and then filled with data. Reports are made up of objects, which include crosstabs, text items, calculations, graphics, and tables.

object extract

An extract that defines the metadata for a Metric Studio object, such as a user defined column, a scorecard, or a data source.

P

package

A subset of a model, which can be the whole model, to be made available to the Cognos server. See also metric package.

page set

In Report Studio, a set of one or more designed pages which repeat in the report output for each instance of a chosen query item. See also set.

passport

Session-based information, stored and encrypted in Content Manager memory, regarding authenticated users. A passport is created the first time a user accesses Cognos 8, and it is retained until a session ends, either when the user logs off or after a specified period of inactivity.

portlet

A reusable component that is part of a web application that provides specific information or services to be presented in the context of a portal.

predefined set

A set of members defined inside an OLAP data source as a list or by an expression. Predefined sets can be used in analysis and report authoring. See also custom set, set.

product locale

The code or setting that specifies which language, regional settings, or both to use for parts of the product interface, such as menu commands.

project

1. In Metric Studio, a task or set of tasks undertaken by a team and monitored on a scorecard. A project tracks dates, resources, and status.
2. In Metric Designer, a group of extracts. Each extract contains the metadata that is used to populate the Metric Studio data store or to create applications.

prompt

A report element that asks for parameter values before the report is run.

properties pane

Within a studio, a pane that provides an overview of the properties for selected data. The properties pane can also be used to make several changes and apply them at the same time, instead of repeating several different commands.

publish

In Cognos BI, to expose all or part of a Framework Manager model or Transformer PowerCube, through a package, to the Cognos server, so that the data can be used to create reports and other content.

Q

query The simple report specifications created and edited by Query Studio.

query item

A representation of a column of data in a data source. Query items may appear in a model or in a report and contain a reference to a database column, a reference to another query item, or a calculation.

query subject

A named collection of query items that are closely functionally related. Query subjects are defined using Framework Manager to represent relational data and form the set of available data for authoring reports in Query Studio and Report Studio. A query subject is similar to a relational view in that it can be treated as a table but does not necessarily reflect the data storage.

R
Really Simple Syndication (RSS)

An XML file format for syndicated Web content that is based on the Really Simple Syndication specification (RSS 2.0). The RSS XML file formats are used by Internet users to subscribe to websites that have provided RSS feeds. See also Rich Site Summary.

repeater

In Report Studio, a cell container that

repeats values within itself with no predefined internal structure.

repeater table

In Report Studio, a table-like container that repeats cells across and down the page or row in the associated query.

report A set of data deliberately laid out to communicate business information.

report output

The output produced as a result of executing a report specification against a data set.

report specification

An executable definition of a report, including query and layout rules, which can be combined with data to produce a report output.

report view

A reference to another report that has its own properties, such as prompt values, schedules, and results. Report views can be used to share a report specification instead of making copies of it.

response file

An ASCII file that can be customized with the setup and configuration data that automates an installation. The setup and configuration data would have to be entered during an interactive install, but with a response file, the installation can proceed without any intervention.

Rich Site Summary (RSS)

An XML-based format for syndicated web content that is based on the RSS 0.91 specification. The RSS XML file formats are used by Internet users to subscribe to websites that have provided RSS feeds. See also Really Simple Syndication.

RSS

1. See Really Simple Syndication.
2. See Rich Site Summary.

S

score A number or ranking that expresses applicability in relation to a standard.

scorecard

A collection of metrics representing the performance of one unit or aspect of an organization.

scorecard structure

The hierarchy of scorecards that reflects how an enterprise organizes its metrics.

security provider

See authentication provider.

selection-based set

A collection of individual items that the user has explicitly selected. The items or members may be selected from one or more levels of the same hierarchy. See also set.

session

The time during which an authenticated user is logged on.

set

A collection of related items or members. Members in a set may be specifically chosen, or selected by one or more filter rules. See also custom set, details-based set, page set, predefined set, selection-based set, stacked set.

stacked set

Two or more sets arranged one above another in rows or side-by-side in columns. See also set.

strategy

The overall plan of action (such as for a brand unit, business unit, channel, or company) to achieve a stated goal. Strategies normally cover a period of more than one year.

strategy map

In Metric Studio, a visual representation of the strategy and the objectives of that strategy for an organization. For example, a strategy map may show employees how their jobs are aligned to the overall objectives of the organization.

summary

In reporting and analysis, an aggregate value that is calculated for all the values of a particular level or dimension. Examples of summaries include total, minimum, maximum, average, and count.

T

task An action performed by an agent if the event status meets the task execution rules. For example, an agent can send an e-mail, publish a news item, or run a report.

task execution rule

A user-specified option within an agent that determines which statuses and values cause a task to be run. It determines which tasks to execute for each event instance.

template

In report authoring, a reusable report layout or style that can be used to set the presentation of a query or report.

thumbnail

An icon-sized rendering of a larger graphic image that permits a user to preview the image without opening a view or graphical editor.

tuple An ordered collection of two or more members from different dimensions. For example, the tuple (2007, Camping Equipment, Japan) returns the value for the intersection of the three members: 2007, Camping Equipment, and Japan. Tuples can be used to filter and sort data, and to create calculations.

U**union set**

See stacked set.

user Any individual, organization, process, device, program, protocol, or system that uses the services of a computing system.

user-defined column

In metric management, a column used to represent a value other than the actual or target. It may be an industry benchmark or any other useful additional numerical information for a period, including a calculation based on the other values of the metric. User-defined columns may be different for each metric type.

W**watch list**

A list of metrics that each user has chosen to monitor closely. If notification is enabled in Metric Studio, the user will receive e-mail notification of changes to these metrics. Users can also choose to display their watch list as a portlet within Cognos Connection.

watch rule

A user-defined condition that determines

whether a report is delivered to the user. When the rule is run, the output is evaluated and, if it satisfies the condition or rule, the report is delivered by e-mail or news item. Watch rules limit report delivery to those reports containing data of significance to the user.

Web Services for Remote Portlets

A standard for creating presentation-oriented web services so that they can be easily integrated within other applications, such as web portals.

widget

A portable, reusable application or piece of dynamic content that can be placed into a Web page, receive input, and communicate with an application or with another widget.

work area

The area within a studio that contains the report, analysis, query, or agent currently being used.

workspace

See dashboard.

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