IBM Cognos Analysis Studio

**Version 10.1.0**

# User Guide

## Product Information

This document applies to IBM Cognos BI 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® Analysis Studio. Analysis Studio is a Web-based tool for exploring, analyzing, and comparing dimensional data to help you answer business questions.

## Audience

To use this document, you should have

- experience using a Web browser
- knowledge of business analysis concepts
- knowledge of your business requirements

If you have experience working with IBM Cognos Series 7 PowerPlay, see "Tips for IBM Cognos Series 7 PowerPlay Users" (p. 99).

## Finding information

To find IBM® Cognos® product documentation on the web, including all translated documentation, access one of the IBM Cognos Information Centers at http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp. Updates to Release Notes are published directly to Information Centers.

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

## Using quick tours

Quick tours are short online tutorials that illustrate key features in IBM Cognos product components. To view a quick tour, start IBM Cognos Connection and click the **Quick Tour** link in the lower-right corner of the Welcome page. Quick Tours are also available in IBM Cognos Information Centers.

## Accessibility features

This product does not currently support accessibility features that help users with a physical disability, such as restricted mobility or limited vision, to use this product.

## 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 and changed 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 *Installation and Configuration Guide* for your product.

For information about new features for this release, see the *New Features Guide*.

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 the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

## New Features in Version 10.1.0

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

### 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 (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.

For more information, see "Sharing Results" (p. 73).

### 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)**.

### Lifecycle Manager

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 Windows®-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*.

Lifecycle Manager is available for download from www.ibm.com.

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### Mozilla Firefox Support

Mozilla Firefox 3.1 is now a supported browser for Analysis Studio.

For a full list of supported software environments, see the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

## Removed Features in Version 10.1.0

Listed below are features that are removed since the last 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.

## New Features in Version 8.4

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

### Persistent Column Widths in Analysis Studio

In earlier versions, the column width set in a report was not saved.

Now you no longer have to spend extra time resizing columns to improve the visual aspects and general usability of the report when you reopen it.

### Access to the IBM InfoSphere Business Glossary

If you use the IBM® InfoSphere™ Business Glossary, you can now access the glossary from data objects in IBM Cognos Report Studio, IBM Cognos Query Studio, and IBM Cognos Analysis Studio.

You can access the glossary from the following data objects:

- Query subject
- Query item
- Measure
- Dimension
- Hierarchy
- Level
- Property/attribute
- Top node member
- Member
- Level item

### Lineage

You can view information on the life cycle and major transformations that have occurred to the items in an analysis. For business users, the information may be as simple as the point of origin of the data and when it was last updated. For technical users, this may include in-depth information about the data sources, data types, and calculation expressions.

If you have the necessary permissions, you can view lineage information in Analysis Studio by right-clicking an item in the source tree and clicking **Lineage**. You can also use the **Run with options** command in IBM Cognos Connection to open a saved analysis in Cognos Viewer, right-clicking an item in the crosstab, and clicking **Lineage**.

### Support for Multiple Hierarchies in the Same Dimension

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

For more information, see "Inserting Items" (p. 28).

## Changed Features in Version 8.4

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

## Extended Suppression Capabilities in Analysis Studio

It is now easy to add or remove zero or null values. Previously users had to invoke suppression on each measure multiple times for each nested group to ensure that only rows where data is zero or null were suppressed. If you missed a measure, a row with data may have been suppressed.

You can now invoke suppression across multiple items at the same time and verify against a list of items to show how suppression was applied.

For more information, see "Use IBM Cognos BI Suppression" (p. 60).

**Note:** Reports that have been created using the totals-based suppression method in IBM® Cognos® 8 Version 8.1 will be upgraded to use the 8.4 suppression method.

Reports that have been created using the context-sensitive suppression in IBM Cognos 8 Version 8.2 will not be upgraded because the context-sensitive suppression method can be used in conjunction with the 8.4 suppression method.

## New Features in Version 8.3

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

## Design Mode for Analysis Studio

In IBM® Cognos® Analysis Studio, you can use select **Get Data Later** from the **Settings** menu to create crosstab set definitions without running a full query after each action. This provides you with a faster way to create your analyses and validate against the data only when needed.

For more information, see "Inserting Items" (p. 28).

## Sharable Custom Sets

You can now share custom sets among groups of Analysis Studio users to save time and collaborate on a shared view of the business.

For more information, see "Create a Custom Set" (p. 61).

## Editing Calculations

You can now edit calculations in Analysis Studio. This can simplify the process of analysis when you create calculations that reference other calculations and you want to make a change.

Instead of having to go back, delete, and recreate the various component calculations, you simply modify your calculation.

For more information, see "Create an Item-Based Calculation" (p. 68).

## Extended Multimeasure Analysis

You can now nest measures on the outside of the crosstab axis. For example, you can set up a nested crosstab with Years in the columns and Products in the rows. You can nest Revenue next to Products, then nest Gross Margin under Revenue to view both measures for Products at the same time. This makes it easy to make comparisons.

To access this feature, select measures from the **Insertable Objects** pane and drag them to the outside of the crosstab axis.

## Cube Updated Date Information

The cube information you can see in the **Information** pane now includes the last date that the cube was updated.

For more information, see "The Information Pane" (p. 21).

You can also add the last cube update information to the output of your analysis. For more information, see "Set the Report Options" (p. 73).

## More Formatting Capabilities

You can now apply formatting templates to the output of your saved analyses to apply a corporate style for the analyses created by certain users, groups, or roles. The templates, created by an IBM Cognos Report Studio author, can include custom titles, headers, and footers.

For more information, see "Apply a Template" (p. 75).

### Override Special Characters

You can modify how special characters such as nulls, division by zero, and overflows appear in Analysis Studio. You can create your own formats to replace these characters so that the analysis process is easier.

For more information, see "Override Special Characters" (p. 76).

## Changed Features in Version 8.3

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

### Product Behavior After Upgrade

When you upgrade from IBM® Cognos® 8 BI version 8.2 to version 8.3, some features in IBM Cognos 8 may behave differently after the upgrade. When you upgrade reports, for example, changes in behavior may cause validation errors.

Documentation is available about the behavior changes. This documentation includes examples of the changed behavior and solutions for issues that may occur during the upgrade. For more information, see *Upgrading to IBM Cognos 8 BI 8.3: Changes in Product Behavior* on the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

### Selection-based Suppression is Now the Default

Early versions of IBM Cognos Analysis Studio remove empty cells from crosstabs using totals-based suppression. This method is a convenient way to remove rows or columns where the total results in a null or zero value throughout the analysis. However, there are instances when this method does not work.

All analyses previously created using totals-based suppression are automatically converted to the new suppression when opened.

### Special Cell Values Shown Differently

The default formatting for special cell values in reports originally created in Analysis Studio has changed from 8.2 to 8.3. Special cell values include nulls and missing values, division by zero values, values denied by security, N/A, overflow, or other error values.

You can change the characters for special cell values. For more information, see "Override Special Characters" (p. 76).

| Cell values | IBM Cognos 8.3 | IBM Cognos 8.2 and earlier |
|---|---|---|
| Nulls and missing values | (blank) | (blank) |
| Overflow or underflow | -- | #!Overflow |
| Division by zero | /0 | /0 |

| Cell values | IBM Cognos 8.3 | IBM Cognos 8.2 and earlier |
|---|---|---|
| Security (for example, insufficient access rights) | #!Security | #!Security |
| N/A | -- | (blank) |
| Error | -- | #!Error |
| Casting error | -- | #!Casting Error |

## Default Calculation Position

The default position for calculations in Analysis Studio has changed from 8.2 to 8.3. In previous releases, calculations were positioned at the end of a set. In a crosstab that contains many items, the calculation may not be visible on the screen. The default position of calculations is now after the last item used as an operand in the calculation.

The position of a calculation in a saved analysis created in Analysis Studio 8.2 may appear in a new position in the crosstab when viewed in Analysis Studio, IBM Cognos Report Studio, or IBM Cognos Viewer in IBM Cognos 8.3. This does not apply to reports originally created in Analysis Studio and then saved in Report Studio.

## Context Filters Now Affect All Edge Values

Context filters now apply to all edge expressions, as they do to cell values.

For more information, see *Upgrading to IBM Cognos 8 BI 8.3: Changes in Product Behavior* on the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

# Chapter 2: Analysis Studio

IBM® Cognos® Analysis Studio is the component of IBM Cognos Business Intelligence that you can use for multidimensional analysis and exploration of large data sources.

Use the interactive drag-and-drop environment in Analysis Studio to explore and analyze data to find answers to business questions.

Using Analysis Studio, you can

- find and focus on items that are important to your business
- understand trends and anomalies
- compare data, such as details to summaries, or actual results to budgeted results
- assess performance by focusing on the best or worst results
- establish relative importance using calculations such as growth or rank
- share your findings with others

Analysis Studio is the component of IBM Cognos BI that you can use for multidimensional analysis and exploration of large data sources.

IBM Cognos BI is designed to help you report, monitor, and analyze your company's corporate performance quickly and easily. For an overview of the IBM Cognos BI components and how they work together, see IBM Cognos *Getting Started*.

## Who Uses Analysis Studio?

Analysis Studio is not only for people with the word analyst in their job title, but for any business user who must understand and discover answers to business questions in company data. People who can use Analysis Studio to support their decisions include

- regional managers who must assess performance
- manufacturing managers who must conduct defect analysis
- customer representatives who must understand their customer relationships

## What is Exploration?

You can use Analysis Studio to quickly change how you view performance indicators, such as revenue or production costs.

OLAP (online analytical processing) exploration refers to the term slicing and dicing to describe the ease with which you can change context and view details. For example, you look at revenue for the years 2001 to 2005 by sales region. You notice a dip in the revenue for 2004. By clicking on 2004, you can drill down to show revenue results by quarters for 2004. You can easily change the view from quarters for 2004 to sales personnel by replacing quarters with sales personnel.

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To help you focus on the data that answers your business questions, Analysis Studio automatically maintains the context of your analysis so that you can focus on the results, not the tool. In the previous example, when you change the view from the quarters in 2004 to sales personnel, Analysis Studio retains 2004 as the context. For more information, see "Focusing Your Analysis" (p. 45).

## What is Analysis?

You can use Analysis Studio to compare and manipulate data to understand the relationships between data and its relative importance. Whether you want to assess revenue growth or to identify top performers, Analysis Studio provides the filtering, calculating, and sorting support you need for analysis.

To extend the example of reviewing revenue by sales region and sales personnel, you can add sales targets and then calculate the percentage difference between the sales target and actual revenue for each salesperson. Because the top 10% performers are awarded a bonus, you can also rank the sales personnel across all regions using the percentile calculation. The result indicates who made their sales quota as well as who is eligible for a bonus.

## Large Data Considerations

In the IBM Cognos Business Intelligence suite, only Analysis Studio intelligently manages large data volumes to improve performance and to avoid overwhelming you with details. You can then focus on your analysis.

Analysis Studio helps you find meaningful details while keeping summaries in view to maintain a clear overview of your data. You can

- use **Search** in the source tree to find only the items you need
- keep crosstabs small by using top/bottom and other filters
- limit the number of visible items in the source tree or crosstab
- control the presentation of rolled up data by using subtotals

If you want to see all the items in a large set, you can click the run button on the toolbar to view the analysis as an HTML report.

## Sharing the Results

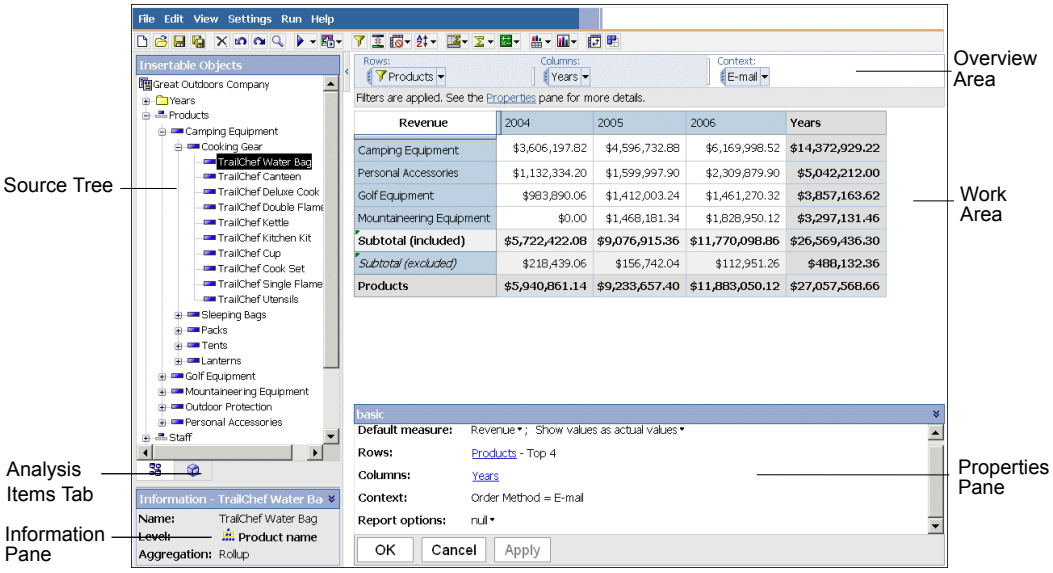
When you view an analysis by using the IBM Cognos Viewer, you produce a report that can be scheduled, viewed, or saved in HTML, PDF, or Excel format. Reports created by any studio in IBM Cognos BI, including Analysis Studio, can be shared with other users using IBM Cognos Connection. For more information, see the IBM Cognos Connection *User Guide*.

You can also use Report Studio to extend the report definition to include other reporting elements, or enhance the report by defining bursting rules. For more information, see the Report Studio *User Guide*.

For more information about the formats you can use to share an analysis, as well as how to set report options such as titles and page breaks, see "Sharing Results" (p. 73).

# The Analysis Studio Interface

The IBM® Cognos® Analysis Studio window consists of three panes (the **Insertable Objects** pane, the **Information** pane, and the properties pane), a work area, and an overview area.




## The Work Area

The work area contains the crosstabs and charts that you use to explore and analyze data. You can view your analysis as a crosstab, a chart, or a crosstab and a chart.

Analysis is a process in which you explore the relationships between items to help you understand your business. The crosstab helps you discover whether the value of one item is associated with that of another. You can quickly change, limit, or expand the items you see in the crosstab, using techniques such as filtering and drilling, to quickly focus on the most significant items.

**Tip:** You can use the display button on the toolbar to show only the chart, only the crosstab, or both.

### What Is An Item?

An item is an element that you can manipulate in the work area. Items include rows, columns, sets, and so on. A member is a common term for an item in the dimensional hierarchy of the source tree. Members added from the source tree to your analysis are also items.

## The Source Tree

The **Source** tab of the **Insertable Objects** pane contains the source tree for the package selected for the analysis.

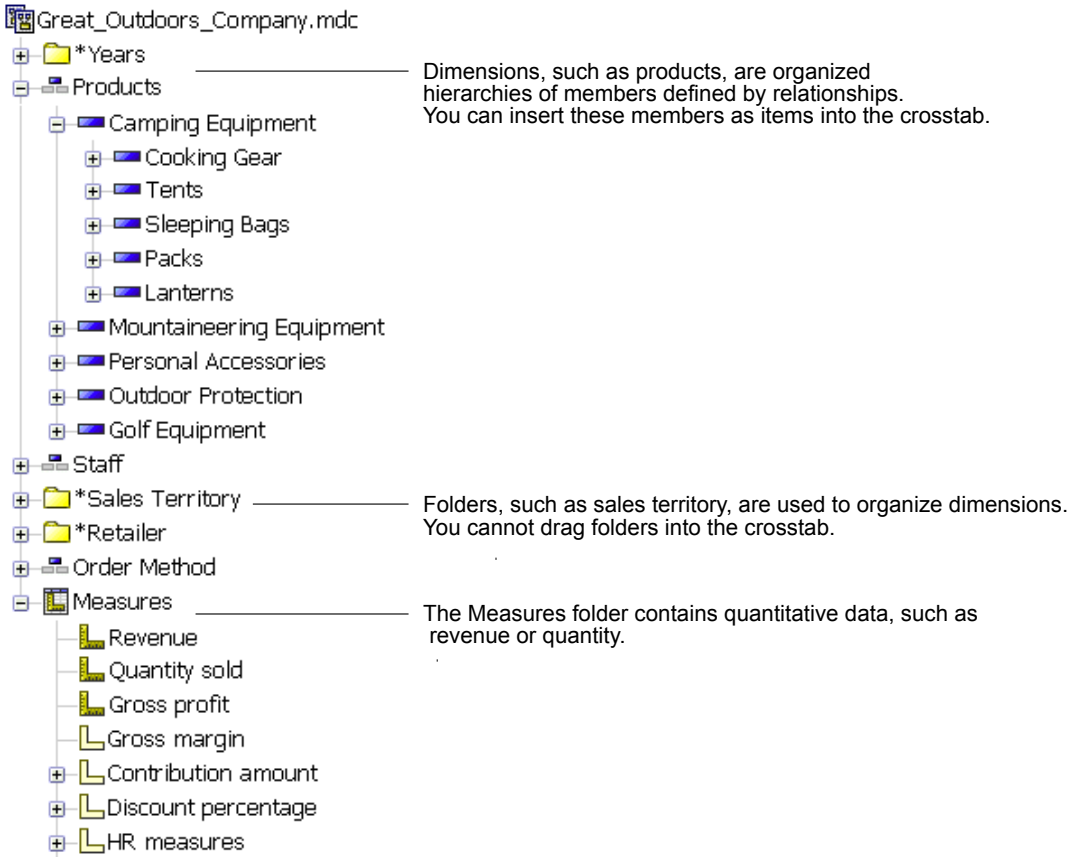
The source tree presents a dimensional view of your data, organized into dimensions, hierarchies, levels, and measures.

**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.

The **Measures** folder contains quantitative data, such as revenue or quantity.

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.

The following is an example of a source tree.




## Relative Time Hierarchies

When you open an analysis that contains the years 2005 and 2006 in the rows from the Years hierarchy, the crosstab simply compares the years 2005 and 2006.

In the source tree, the time dimension may also contain relative time hierarchies, such as Current Month, Last Month, QTD, Prior QTD, YTD, Prior YTD, and so on. Current Month contains the most recent month of data in the cube, and the other hierarchies are relative to Current Month.

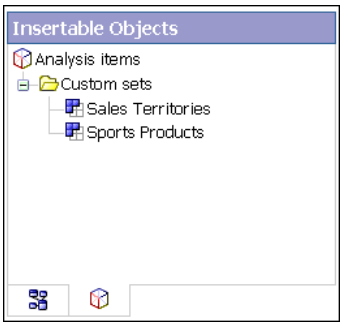
For example, you insert Prior YTD into the rows, then nest YTD into the rows under Prior YTD. If the current month is December 2006, the analysis shows the results for January to December 2005 versus January to December 2006.

If you save the analysis and open it the following year, when the current month is June 2007, the analysis shows results for January to June 2006 versus January to June 2007. The results shown in your analysis change, relative to Current Month in the updated cube.

The administrator may alter the date ranges for these items, or create specific relative time items based on the needs of your organization.

## The Analysis Items Tab

The **Analysis Items** tab contains items created in the analysis, such as custom sets and named sets.




## The Information Pane

The **Information** pane shows the name, level, attributes (if any), and aggregation associated with the selected item in the source tree, as well as any additional information provided by the data modeler.

Possible aggregation types for measures are sum, count, count distinct, count nonzero, and none.

Possible aggregation types for other items are rollup and computed.

To open or close the information pane, click the upward pointing or the downward pointing chevron on the right side of the pane.

You can also use the **Information** pane to insert a level into the crosstab.

### Cube Update Information

Cubes are updated frequently to ensure that they contain the latest information. You can see when an IBM Cognos PowerCube was last updated by selecting the cube name in the **Insertable Objects** pane and then scrolling down to **Cube updated** in the **Information** pane. You can also add the last cube update information to the output of your analysis.

For more information, see "Set the Report Options" (p. 73).

## The Properties Pane

The properties pane provides a comprehensive view of the crosstab or selected set in the work area.

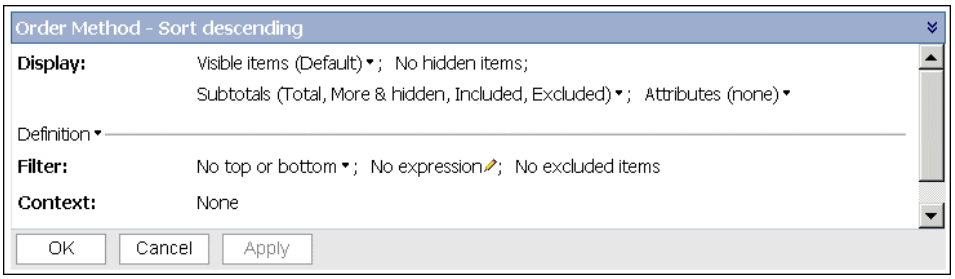
You can also use the properties pane to make several changes and apply them at the same time, instead of running different commands. For example, you can

- specify the number of items to show
- create a user-defined filter
- sort data
- unhide data

If you select a set, the properties pane shows you the displayed properties, such as subtitles and the number of visible items, and undisplayed properties, such as filters and calculations, for that set. If you click elsewhere in the crosstab, the properties pane shows you the properties for that crosstab, such as the default measure, links to rows and columns, any existing context, and selected report options.

To open or close the properties pane, click the upward pointing chevron or the downward pointing chevron on the right side of the pane.

This shows how the open properties pane appears when you select a set and open the properties pane.

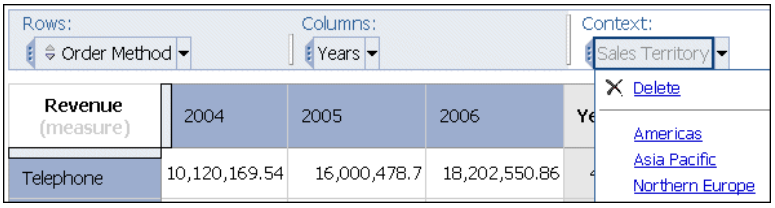



## The Overview Area

You can use the overview area as a convenient place to quickly explore and change the contents of the work area.

The overview area shows any applied filters and sorting. You can rearrange rows and columns, drill up or down, and provide context for the work area.

A set selected in either the crosstab or in the overview area is also selected in the other.




### Rows and Columns

Each box in the **Rows** area and **Columns** area represents one or more sets in the crosstab. Stacked sets appear as a single box labeled **Combination**. A selection-based set appears as a box with (**list**) appended to the label.

For information about stacked sets, see "Crosstab Layouts" (p. 40). For information about selection-based sets, see "Sets" (p. 37).

If the crosstab contains nested rows or nested columns, you can drag the boxes that represent the items in the overview area to quickly change the nesting order.

Each box in the **Rows** area and **Columns** area also reflects the details shown in the work area. For example, when you change the number of visible items in the crosstab, the same number are shown in the **Rows** or **Columns** list.

You can also use the lists to drill up or down.

### Context

The context you specify applies as a whole to the work area. For example, you can drag **Sales Territory** from the **Insertable Objects** pane to the context area. When you click a specific territory from the list, the values in the crosstab change to represent data for that territory.

For information about using context as a filter, see "Filter Values Using Context" (p. 53).

# Chapter 3: Creating a Basic Analysis

Create an analysis to help you make more effective business decisions by exploring significant relationships in your company data.

You can also open an existing analysis to use as the basis of a new analysis.

Before you can create an analysis, the administrator must have created a package in IBM® Cognos® Framework Manager and published it to a location in the IBM Cognos Connection portal to which you have access.

For an example about creating a basic analysis, see "Example - Create a Crosstab for an Analysis of Order Method Revenue" (p. 34).

If you are already comfortable with the Analysis Studio fundamentals, you may want to refine your analysis by using tasks such as manipulating the rows and columns, filtering data, calculating data, and sharing the results.

## Create a New Analysis

You can create a new analysis using either a blank analysis or the default analysis.

Before you create a new analysis, you must select a package to use as a source of data.

You can also open an existing analysis to use as the basis of a new analysis, changing it, and saving it using another name.

### Steps

1. In your Web browser, open IBM Cognos Connection by typing the URL supplied by your administrator.

   **Tip:** Create a bookmark in your browser for quick access to IBM Cognos Connection.

2. On the **Public Folders** tab, click the package that you want to use as a data source.

   **No Entries** means that there are no analyses created using this package.

3. Click the **Analysis Studio** link on the toolbar.

   If the **Select a Package** page appears, click the package that you want.

4. In the **New** dialog box, choose whether to use a **Blank Analysis** or the **Default Analysis**.
   - A blank analysis starts with a blank crosstab in the work area.
   - A default analysis uses either the default analysis for the package as defined in IBM Cognos Connection or the first two dimensions in the data source for the crosstab rows and columns and the first measure in the data source for the crosstab measure.

5. Click **OK**.

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Analysis Studio starts. The items that you can use in the analysis are listed in the **Insertable Objects** pane.

**Tip:** To exit Analysis Studio and return to IBM Cognos Connection, from the **File** menu, click **Exit**.

# Finding the Items That You Need

The source tree for the package that you select can contain large amounts of data. To find the items that you need in the source tree, you can

- expand a dimension to see successive levels and details
- specify a greater or lesser number of items to show in the source tree
- search for more items

The source tree shows 20 items for any one dimension at a time. You can change this value in the session to a maximum of 50.

If there are more than 20 items in the dimension, a **More** icon appears at the bottom of the list. Every time you click the **More** icon, an additional 20 items appears until you reach the maximum. Now the **More** icon is replaced by a **Search** icon. If you click this icon, you can enter your search criteria to find the items that interest you.

You can also insert a level block to insert data items that may not be visible in the source tree. In both above cases, a Retrieved items node will appear in the Analysis Studio source tree below the Search node.

## Search for Items in the Source Tree

By default, the maximum number of items shown in any single dimension 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, see the *Administration and Security Guide*.

**Note:** You cannot search in the source tree for items that are enclosed in brackets, for example Drinks (Colas), when using Microsoft® SQL Server® Analysis Services 2000 or earlier versions. Do not include brackets in the search string when using these versions of Microsoft SQL Server Analysis Services 2000.

### Steps

1. In the source tree, click the item that you want to search.
2. Click the search button on the toolbar.

   **Tip:** You can also right-click the selected icon, and then click **Search**.
3. Specify the search keywords.

   If necessary, specify a search option. The **Case insensitive** check box is unavailable if the data provider does not support case insensitive searching.

4. Click **Search**.

   **Tip:** To stop a search, click the **Stop** button.

5. Drag the items from the **Results** box to the crosstab.

   **Tip:** To use the results as a context filter, drag them to the **Context filter** section of the overview area.

## Specify the Number of Items Shown in the Source Tree

You can specify the number of items to show in the source tree for the current session to make it easier to use. The number of items retrieved is shown next to the name of the parent item.

In the source tree, the **Search** icon appears at the end of the list if more items exist than can be shown at once.

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, see the *Administration and Security Guide*.

### Steps

1. Right-click an item in the source tree.
2. Click **Set Number of Items to Show**.
3. Specify the number to show and the scope options.
4. Click **OK**.

   **Tip:** To restore the maximum number of items to the default, repeat steps 1 to 2 and click **Reset to default limit to show**.

## The Retrieved Items Node

During a session in Analysis Studio, you might retrieve data items that are not visible in the source tree. You can view these data items by using the retrieved items node.

There are different ways you might retrieve more items than can be shown in the source tree. For example:

- You search to find all retailers that begin with a specific letter. When you have expanded the retailer level to show the maximum of 50 items in the source tree, you click the Search icon and enter your search criteria. The retrieved items that are not visible in the source tree appear under the Retrieved items node.
- You insert a level into a crosstab. If the number of items in the level exceeds the number that can be shown in the source tree, the items above the allowable number appear under the Retrieved items node.

  For information about inserting a level, see "Insert All the Items of a Level" (p. 34).

This list only persists while your session is active. You can right-click the retrieved items node to sort the items in ascending or descending order.

# Inserting Items

You insert items from the source tree as rows and columns in a crosstab to create sets for analysis. A set is a collection of like data. For example, you can have a set of data named years that includes quarters as details.

## Get Data Later

From the **Settings** menu, you can click **Get Data Later** to quickly create crosstab views that use complex filters and sets without executing a full query to the data source.

When working with **Get Data Later** applied, you cannot switch to a chart without first retrieving data. The **Chart** and **Crosstab and Chart** options from the **View** menu are unavailable.

If you are interested in only the summarized results, you can insert items without details.

You can also simultaneously insert all the items of a level, insert adjacent sets, or insert items from different levels of the same dimension.

Other techniques for inserting items are nesting items and replacing items.

For information about different crosstab layouts that you can use, see "Crosstab Layouts" (p. 40).

You cannot drag folders from the source tree.

If the crosstab contains fixed width columns, labels that exceed the fixed width are truncated and ellipses are shown. You can pause the pointer over the truncated cells to see a tool tip that shows the full information.

## Notes

- When using an IBM® Cognos® PowerCube 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.
- When you insert items from a relational data source containing sparse data, you may see data in the analysis appear and disappear unexpectedly. For example, a crosstab may contain 10 members along the rows and 10 members along the columns. When you add a member from another dimension to the context area, some members may disappear along the row or column

because they are not in scope for that particular context. For more information, see the Framework Manager *User Guide*.

This can also occur when using SAP BW data sources.

### Tips

- You can resize the columns in an open analysis by dragging on the resize icon .
- You can insert items as a selection-based set by pressing Shift+click or Ctrl+click to select multiple items in a dimension and then dragging them to the crosstab.

## Insert Items

An analysis must have at least one set of items and at least one measure.

In addition to items from the source tree, you can insert the following into the crosstab:

- items retrieved in a search
- levels from the **Information** pane
- calculations

### Steps

1. In the source tree, click the item that you want to insert.
2. Drag the item to the desired location in the crosstab.

   A flashing black bar indicates where you can drop the item.

   A detail-based set appears in the crosstab.

### Limitations When Inserting Multiple Hierarchies from the Same Dimension

You can insert multiple hierarchies from the same dimension in a crosstab. For example, you can place one hierarchy from a dimension on one edge of the crosstab and another hierarchy from the same dimension nested on the same edge, on another edge, or in the **Context filter** area.

You can perform arithmetic, percentage and ranking calculations using multiple hierarchies.

However, aggregate or analytic calculations that refer to different hierarchies from the same dimension, such as total, count, average, minimum, and maximum, are not supported.

Unexpected results may occur when using items from the same hierarchy on multiple crosstab edges. A crosstab that contains items from the same hierarchy on more than one edge may have unpredictable results. These results may change from release to release. For example, in an analysis that uses items from Years on rows and Quarters on columns, unexplainable More values and Totals, and unexpected blank cells may appear. Also, expected results may be difficult to read because the useful numbers are distributed over a large area of mostly blank cells.

For best results, ensure that items from the same hierarchy are on the same crosstab edge before saving.

# The Default Measure

The default measure specifies the measure to use for a crosstab or chart if the measure is not set by one of the existing axes. For example, you create a crosstab with **Products** in the rows and **Quantity Sold** in the columns. You add **Revenue** to the **Measure** drop zone to make it the default measure, but the values in the rows do not change because they refer to the measure **Quantity Sold** in the column axis. However, if you replace the measure **Quantity Sold** with the non-measure **Order Method**, the values now refer to **Revenue** as the default measure.

**Tip:** To quickly change the default measure, right-click the cell in the upper left corner of the crosstab, click **Change Default Measure**, and choose a measure.

# Save an Analysis

Save the analysis to preserve any changes.

For information about setting up folders in IBM® Cognos® Connection for your work, see the IBM Cognos Connection *User Guide*.

You can also open an existing analysis to use as the basis of a new analysis.

### Steps

1. Click the save button on the toolbar.
2. If you are saving the analysis for the first time, specify where you want to save the analysis and type a file name.
3. Click **OK**.

# Save an Analysis as the Basis of a New Analysis

You can save an analysis using a different name or location to use it as the basis of a new analysis.

You can also save an analysis using the same name to preserve changes.

### Steps

1. Click the save as button on the toolbar.
2. Specify a name and location.
3. Click **OK**.

# Open an Existing Analysis

You can open an existing analysis to view the current data, make changes to it, or use it as the basis of a new analysis.

### Steps

1. In your Web browser, open IBM® Cognos® Connection by typing the URL supplied by your administrator.
2. Locate the name of the analysis that you want to open and click it.

   The analysis opens in Analysis Studio.

   **Note:** If an analysis is run and saved as an HTML report, the HTML icon appears next to the analysis link. When you click the link, the analysis runs as an HTML report. To open the analysis for editing, click the icon that opens the analysis in Analysis Studio.
3. View the data, using the scroll bars to see more rows or columns.

   **Tip:** To increase or decrease the available space, click the hide pane or show pane button in the upper-right corner of the **Insertable Objects** pane or resize the pane .
4. Make any changes that you want.
5. Save the analysis.

   If you want to use the analysis as the basis of a new analysis, save it using a different name.

   **Tip:** To open a new analysis while working in an existing analysis, click the new button on toolbar. The new analysis maintains the state of the source tree in the **Insertable Objects** pane and maintains any items on the **Analysis Items** tab.

# References to Inaccessible or Missing Items

When you open an existing analysis, it may reference items from the underlying data source that are missing or inaccessible. This may occur for one of these reasons:

- The model changed.

  For example, a level may no longer be present, or an item that previously existed is no longer present after refreshing the data source.
- Part of the data source, such as an item, level, hierarchy, or dimension, is inaccessible because of security restrictions.

When this occurs, a dialog box prompts you to either replace the missing items, or have IBM® Cognos® Analysis Studio prune the analysis by removing inaccessible items and their dependent items, such as filters, calculations, sorts, and so on.

For example, an analysis contains revenues for three countries plus a calculated column and a filter. If the item for one of the countries is missing and you choose to prune the analysis, Analysis Studio will remove the calculation and the filter and show the analysis without the missing item.

# Using Lineage

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.

Lineage is available only after your administrator has configured it. For more information, see the IBM® Cognos® Business Intelligence *Administration and Security Guide*.

**Note:** Lineage is not supported in reports that are not linked to packages.

You can use the lineage tool that comes with IBM Cognos BI, 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 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.

### Step

- In the source tree, right-click the item for which you want to see lineage information, and click **Lineage**.

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

# Access to the IBM InfoSphere Business Glossary

If you use the IBM® InfoSphere™ Business Glossary, you can access the glossary from any of the following data objects:

- Query subject
- Query item
- Measure
- Dimension

- Hierarchy
- Level
- Property/attribute
- Top node member
- Member
- Level item

### Step

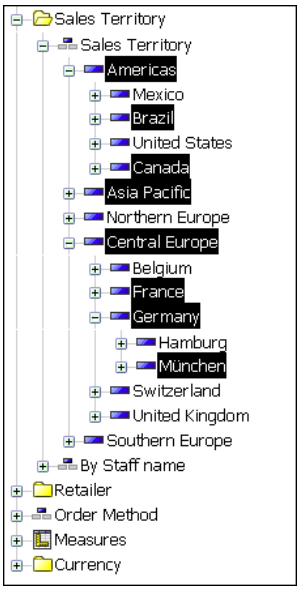
- Right-click the item and click **Glossary**.

  The IBM InfoSphere Business Glossary appears.

## Insert Items From Multiple Levels of a Dimension

Use selection-based sets to position one or more items from a dimension adjacent to each other in the crosstab for a mixed grain comparison.

For example, you can select items from a single dimension like the following in the source tree.




You can drag these items to the crosstab.

You can also nest items from the multiple levels of the same dimension.

### Steps

1. In the source tree, expand the dimension to locate the items that you want to insert.
2. Press Shift+click or Ctrl+click to select multiple items in a dimension and then drag them to the crosstab.

   A selection-based set appears in the crosstab.

# Insert All the Items of a Level

You can simultaneously insert all the items of a level.

Levels define the way data is grouped in dimensions. For example, a geographical dimension in a source tree might contain levels for country, region, and city. You can click a single city and instantly insert every item that belongs to the city level into the crosstab.

### Steps

1. In the source tree, click an item that belongs to the level that you want.
2. From the right-click menu, choose whether to
   - **Insert Level***(name of item level)*
   - **Replace with Level***(name of item level)*

   All the items of the same level appear in the crosstab.

   **Tip:** You can also drag the level icon from the **Information** pane to the location that you want in the work area.

# Insert Items Without Details

If you are interested in only the summarized results, you can insert items without details.

You can also insert items with details.

### Steps

1. From the **Settings** menu, click **Insertion Options**, **Insert without details**.
2. Drag the item from the source tree to the desired location in the crosstab.

   Items added to the crosstab appear without details until you change the setting again.

   **Tip:** You can also right-click an item, drag the item to the desired location in the crosstab while keeping the right mouse button pressed, and click **Insert without Details** or **Replace without Details**.

# Example - Create a Crosstab for an Analysis of Order Method Revenue

You are a business analyst at the Great Outdoors Company, which sells sporting equipment. You are asked to analyze the consequences of discontinuing the fax and mail order methods, which are expensive to process.

First you get the items you need and insert them into a crosstab for further analysis.

Before you can try this example, you must set up the sample packages that come with IBM® Cognos® Business Intelligence. For more information, see the *Administration and Security Guide*.

## Steps

1. In the IBM Cognos Connection home page, click the **Public Folders** tab.
2. Click the **Sales and Marketing** (**cube**) package.
3. Click the **Analysis Studio** link.

   Analysis Studio opens, and data from the **Sales and Marketing** package appears in the source tree.
4. Drag **Revenue** from the **Measures** folder to the **Measure** area in the crosstab.
5. Drag **Retailers** to the **Columns** area in the crosstab.
6. Drag **Order method** to the **Rows** area in the crosstab.
7. Click the save button on the toolbar.
8. In the **Name** box, type **Order Methods Revenue**
9. Leave the default destination folder as **Public Folders**, and click **OK**.

You now have data to compare and analyze. Next, you can see if revenues for these methods are growing or declining.

Rows: Order method | Columns: Retailers | Context filter:

| Revenue | Northern Europe | Central Europe | Asia Pacific | Americas |
|---|---|---|---|---|
| Fax | 4,990,053.72 | 15,058,541.07 | 21,860,598.84 | 17,900,54 |
| Telephone | 36,162,936.46 | 76,039,094.89 | 83,503,417.94 | 119,676,79 |
| Mail | 7,569,880.81 | 10,698,741.87 | 12,763,167.65 | 12,008,34 |
| E-mail | 12,059,800.38 | 43,854,665.16 | 32,455,838.86 | 66,841,06 |
| Web | 444,306,519.32 | 816,097,608.57 | 948,064,398.80 | 1,103,958,69 |
| Sales visit | 25,232,255.12 | 75,894,126.30 | 70,484,129.49 | 107,417,74 |
| Special | | 2,512,792.78 | 13,207,627.40 | 10,732,41 |
| **Order method** | **530,321,445.81** | **1,040,155,570.64** | **1,182,339,178.98** | **1,438,535,60** |

# Chapter 4: Working With Items in the Crosstab

You can manipulate the way rows and columns appear in a crosstab for more effective comparison by nesting rows or columns, swapping rows and columns, limiting the details shown in a set, and showing and hiding rows or columns.

Analysis is a process in which you explore the relationships between items to help you understand your business. The crosstab helps you discover whether the value of one item is associated with that of another.

Comparisons are key elements of nearly every analysis. The following are different types of comparisons.

| Comparison | Example |
|---|---|
| Simple comparison | Tents versus sleeping bags |
| Multiple comparison | Tents versus golf clubs, tees, and golf balls |
| Multidimensional comparison | Products versus territories, this year to date versus last year to date |
| Mixed grain comparison | Tents versus similar camping products, this year versus last year, and the last quarter versus last year |
| Summaries of measures at different levels | Tents as a share of camping products, as a share of European sales |

## Sets

Sets are the basic building block of IBM® Cognos® Analysis Studio. A set identifies a group of items from a single hierarchy. In Analysis Studio, you can manipulate the individual sets in the crosstab.

Sets may be

- sorted by value, label, or attribute
- filtered by value, label, or attribute
- nested or stacked in the crosstab
- used as a filter
- saved as a custom set for reuse later in the analysis

The following are the different kinds of sets you can use.

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| Set | Description |
|---|---|
| detail-based set | A collection of data based on a selected item and all its immediate details. For example, you can have a set of data named years that includes quarters as details. |
| selection-based set | A collection of individual items that you have explicitly selected. The items or members may be selected from one or more levels from the same hierarchy.<br>If the target set is a selection-based set and the selected source tree items are from the same hierarchy, then the selected items are appended to the end of the list when dragged into the crosstab.<br>In the crosstab, you can create a new selection-based set from an existing set by selecting the members you want, then clicking **Keep** in the right-click menu. The new selection-based set replaces the set from which it originates. |
| level-based set | A set based on a single level. For more information, see "Insert All the Items of a Level" (p. 34). |
| stacked set | Also known as a union set. Two or more independent sets adjacent to each other in a crosstab. For rows, a new set is appended below or above the target set. For columns, the new set is appended left or right of the target set |
| measure set | Measure sets are comprised of one or more measures. In nested sets, measure sets may be placed on the inside of either the rows or the columns, but not both. |
| custom set | A collection of data defined in Analysis Studio that can be saved and reused in the same analysis. For more information, see "Create a Custom Set" (p. 61). |
| predefined set | A set of members defined inside an OLAP data source as a list or by an expression. IBM Cognos Business Intelligence can use predefined sets in analysis and report authoring. A predefined set is also known as a named set in Microsoft® SQL Server® Analysis Services. |

# Select a Set, Row, or Column

You must select sets, rows, or columns before you can perform actions on them.

The actions you can perform depend on what you select.

**Tip:** To deselect, click anywhere in the work area outside the crosstab.

You can use the undo and redo commands to correct mistakes or to experiment with different actions. Undo reverses the last unsaved action, up to ten steps.

**Tip:** Click the undo button on the toolbar.

If you decide you do not want to undo an action, click the redo button on the toolbar.

| Goal | Action |
|---|---|
| To select a set | Click its box in the overview area, or click its label twice slowly, or click on its selector bar. An arrow appears when a selector bar is ready. |
| To select multiple rows or columns | Select their labels by pressing Shift+click or Ctrl+click. |
| To select a single row or column | Click its heading label. Do not click the label text when selecting an item because this initiates drilling down or up. |
| To select a single row and column | Click the intersecting cell of the row and column.<br>Use this command to drill down on a single value. |

# Nest Rows or Columns

You can nest items in a crosstab to compare information by using more than one item in a column or row. For example, a crosstab shows the sales by product line for the past fiscal year. You can add an item to further break down the sales by order method.

In the overview area, you can drag the boxes that represent the nested items to quickly change the nesting order.

### Steps

1. In the source tree, click the item that you want to insert.
2. Drag the item to the location that you want in the rows or columns.

   A black bar indicates where you can drop the item.

   **Tip:** You can also nest rows and columns by right-clicking and using the shortcut menu.

## Nest Items from the Same Dimension

You can expand and go down levels to nest items from a single dimension. Examples include nesting quarters in years, or nesting cities in countries.

The **Expand** command is available only when a dimension contains levels suitable for nesting.

**Note:** You cannot insert items from the source tree between the expanded levels.

### Steps

1. Right-click the crosstab item that you want to nest and click **Expand**.

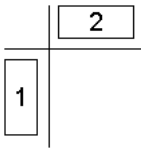
2. Click **Down a level** or **Up a level** to move through the different levels of the dimension.

# Crosstab Layouts

You can choose the most practical layout for your analysis. The following layouts are available.

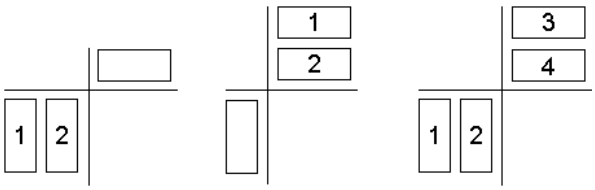
### Basic

This layout contains one set of rows and one set of columns.



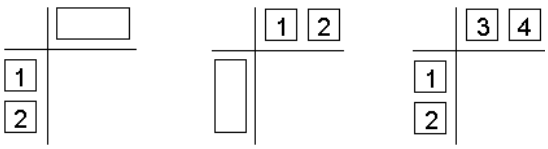

### Nested

This layout contains sets nested either along the rows, the columns, or both.



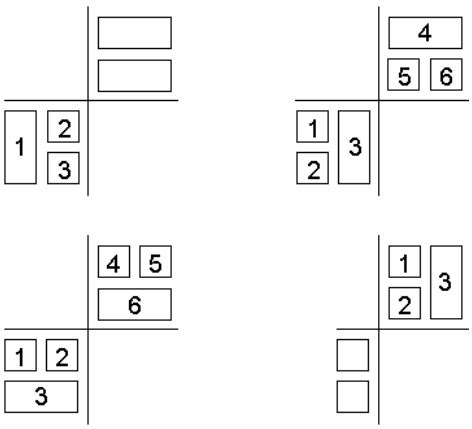

### Stacked

This layout contains two or more sets arranged one above another on the rows, side-by-side on the columns, or both.




### Asymmetric

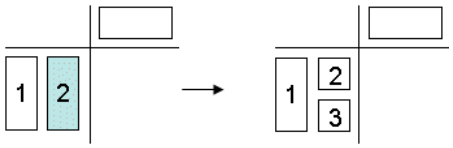
This layout contains both nested and stacked sets. Many combinations are possible.



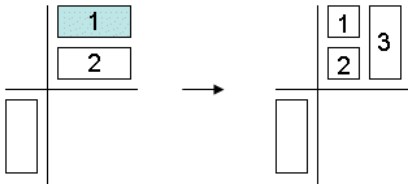
# Insert Sets of Items in Complex Layouts

Some crosstab layouts require more than a simple drag-and-drop operation when you want to insert sets of items, such as in asymmetrical crosstabs.

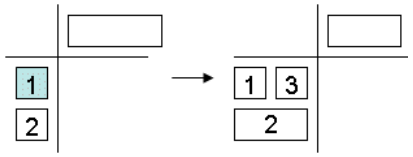
- Insert data above or below a selected set in nested rows. For example, select set 2, right-click the desired data in the source tree, and click **Insert**, **Below Selected Set** to create set 3.




- This example uses nested columns. Select set 1 in the columns, right-click the desired data in the source tree, and click **Insert**, **After Selected Set** to create set 3.




- For example, select set 1, right-click the desired data in the source tree, and click **Insert**, **After Selected Set** to create set 3.




- Replace a selection-based set with one or more items from the same hierarchy to create a new set instead of appending the selected items to the existing set.

For more instructions, see "Example - Create an Asymmetrical Crosstab" (p. 81).

### Steps

1. Select the target location in the crosstab.
2. In the source tree, right-click the item that you want to insert.
3. From the **Insert** menu, select the command that you need.

# Replace Sets

You can replace one set with another for comparison.

When you replace a filtered set, such as top 5 products, or a selection-based set, such as a set containing New York, France, and Asia Pacific, in the crosstab, Analysis Studio retains the context of the data to support your train of thought.

For example, you view your top 5 products. You drag **Customers** from the source tree to the crosstab to replace **Products** to see which customers purchased these products. The **Products** set is automatically moved to the **Context** section of the overview area, and **Customers** is shown in the crosstab. The values for **Customers** refer to the filtered **Products** set.

For information about replacing data in selection-based sets, see "Insert Sets of Items in Complex Layouts" (p. 41).

### Step

- In the source tree, drag an item to the set that you want to replace.

  **Tip:** Alternatively, you can right-click the item that you want to insert in the source tree and select a replacement option from the **Replace** menu.

## Swap Rows and Columns

You can swap rows and columns to analyze your data differently. For example, the rows contain quarters of the fiscal year and the columns contain products. To track trends over time more easily, you can swap them so that the rows contain products and the columns contain quarters.

### Step

- Click the swap rows and columns button on the toolbar.

  **Tip:** You can also use the overview area to swap individual rows and columns by dragging the row or column boxes from one area to the other.

## Specify the Number of Details Shown in a Set

You can specify the number of rows or columns shown in a set to help you focus on the analysis by removing excessive details.

Your administrator specifies the default number and the maximum number of rows or columns shown in the crosstab. For more information, see the *Administration and Security Guide*.

To see all the items in a large set, from the **Run** menu, click **Report Options**. On the **Display** tab, under **Expand "More"**, select **yes, show all items in the query**, then click the run button on the toolbar and view the analysis as an HTML report.

### Steps

1. Select a set.
2. Right-click the selected set and click **Properties**.
3. In the **Display** section of the properties pane, click **Visible items**.

4. Click a number or click **Custom** and specify a number between 1 and 20.

   **Tip:** To restore the number of visible items to the default, repeat steps 1 to 3 and click **Default**.

   Values for the rows or columns that exceed the specified number are rolled up into a row or column named **More**.

# Hide a Row or Column

You can hide rows or columns you do not want to show in a crosstab. For example, you may want to hide rows that contribute marginal values to the total.

The values of hidden rows and columns are included in the **More & hidden** subtotal, and are still included in the summary.

If you want to exclude the value from the **More & hidden** subtotal as well as hide the row or column from view, see "Exclude Items" (p. 56).

You cannot hide items in a selection-based set.

### Steps

1. Right-click a row or column.
2. Click **Hide**.

   **Tip:** To show hidden data, click the **hidden** link, and click **Unhide***(name of hidden item)* or **Unhide All**.

   You can also unhide items by using the **Properties** pane.

# Show Attributes of an Item

If the data source you use contains attributes, you can show the attributes in the item label to provide more detail about items in the crosstab.

Not all data sources contain attributes. It is common to have attributes in Microsoft® SQL Server® Analysis Services (SSAS) data sources.

You can also use the **Information** pane to see the attributes of an item.

You cannot show attributes when the set contains a single member. If you want to show the attributes of a single member set, you must add at least one more member to the analysis, show attributes, and then remove the unwanted members.

### Steps

1. Select a set.
2. Right-click the set and click **Show Attributes**.
3. Click the attributes that you want to show in the item label.

   **Tip:** To view attributes in a selection-based set that contains multiple levels, click the level name. The attributes for all items at that level in the crosstab appear.

# Chapter 5: Focusing Your Analysis

You can explore your data to look for significant comparisons and correlations.

## Drill Down and Drill Up

You can drill down and drill up to change the focus of your analysis by moving between levels of information.

Drill down to see more detail. For example, you can drill down to the lowest-level item to examine the impact of a single aspect of your business.

Drill up to compare results. For example, you can examine revenue for a single product and then drill up to see revenue for the entire product line for comparison.

**Note:** When you drill back up after drilling down, you may lose filters that are applied. For example, you may create a filter to include the data for sales regions of the USA and Canada. You drill down on Florida. When you drill up again, the analysis no longer includes Canada in its scope.

### Steps

1. To drill down or up in a single row or column, pause the pointer over the label text until the icon with the plus sign (+) and caret appears and the text is underlined, and then click.

   **Tip:** The direction of the caret indicates whether you are drilling up or drilling down.

2. To drill down or up in both a row and column simultaneously, click the value at the intersection of the row and the column, and then click again.

## Go to Another Report or Package

You can go to frequently used target reports to help you validate or understand the results of your analysis or report. You can go to the following targets:

- an IBM® Cognos® Analysis Studio analysis
- an IBM Cognos Report Studio report
- an IBM Cognos Query Studio report
- a Microsoft® SQL Server® Analysis Services (SSAS) action

Before you can go to another target, a drill-through definition must be created in the package. For more information, see the *Administration and Security Guide*, or contact your administrator.

### Steps

1. Select a row or column to use as the source.

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2. Click the go to button on the toolbar.

   The **Go To** page opens, showing the available targets.

3. Click the target you want to go to.

   The target appears in Cognos Viewer.

   **Tip:** You can right-click an item in the **Context filter** section of the overview area and click **Use as "Go To" Parameter** in the item's drop-down menu to create a prompt that appears when you run the analysis in Cognos Viewer.

# Show Values as a Percentage

You can show values as a percentage or share of a crosstab total to quickly compare the contribution of an item to the whole.

If the crosstab contains a user-defined arithmetic calculation, such as addition, subtraction, multiplication, or division, Analysis Studio computes the arithmetic calculation first, then applies the % of base calculation when you show values as a percentage. This is also true with exponentiation and rollup calculations.

If the crosstab contains a user-defined percentage calculation, such as percent, percent growth, percent of base, or accumulated percent, there is no change when you show values as a percentage. This is also true with statistical calculations, such as mean or standard deviation, and ranking calculations, such as rank or quartile.

For more information, see "Item-based Calculations" (p. 66).

## Steps

1. Right-click the measures corner of the crosstab.
2. Click **Show Values As**.
3. Choose the type of percentage you want:
   - To show how each value in a row contributes to the total for the row, click **% of Each Row Total**.
   - To show how each value in a column contributes to the total for the column, click **% of Each Column Total** .
   - To show how each value in the crosstab contributes to the total for the crosstab, click **% of Overall Total**.

     The **% of Overall Total** option is available only when there is one overall total for the crosstab. If you insert a stacked set, resulting in multiple totals, the values revert to the default **Actual Values**.

**Tip:** To restore the values, right-click the measures corner of the crosstab and click **Actual Values**.

# Sort Values

By default, IBM® Cognos® Analysis Studio retrieves items in the order defined in the data source. You can sort items to quickly view the most important data.

You can list items in ascending or descending order based on

- a value, such as revenue
- a label, such as name

Whether you select a set or an individual row or column, items are sorted based on the default measure and the summary values of the opposite axis.

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 **Products** in the rows. Select **2005**, sort in descending order, and you see **Retailers** listed from the largest value to the smallest value for each product.

Sorted items are automatically re-sorted when you perform a drill or replace operation on the opposite axis, if **Based on the row** or **Based on the column** in the **Sort** dialog box is set to the default.

When you replace the sorted set itself, the new set uses the default sort order. If you replace Employees in the previous example with **Order Method**, the **Order Method** set is unsorted.

### Steps

1. Select a set, row, or column to sort.
2. Click the sort button on the toolbar.
3. If the item you select contains alphanumeric values, choose either **Sort by labels** or **Sort by values**.
4. Do one of the following:
   - To arrange items from the smallest to the largest value, click **Ascending**.
   - To arrange items from the largest to the smallest value, click **Descending**.
   - To override the default sort behavior of a set, click **Custom**.

The items appear sorted in the crosstab. An icon next to the label in the overview area shows you that a sort is applied to that set.

**Tip:** To remove a sort or restore the default order, click **No Sort**.

## Use Custom Sorting

You can use the custom sort options to override the default sorting behavior. For example, you can sort items based on a measure other than the default measure, or based on a row or column other than the summary values of the opposite axis. The custom sort options also let you sort by attributes.

By default, items in nested sets are sorted based on the values of the innermost nested row or column. You can use custom sorting to sort nested or stacked sets differently than this default.

For an example of custom sorting, see "Example - Perform a Custom Sort" (p. 82).

You must select a set to perform a custom sort.

**Note:** When a selection-based set contains members from different levels, sorting the set by an attribute that is not common to all levels may result in a server error.

Similarly, if you append a member from a different level to a selection-based set that is sorted by attribute, the same error may occur.

### Steps

1. Select a set.
2. Click the sort button on the toolbar, and click **Custom**.

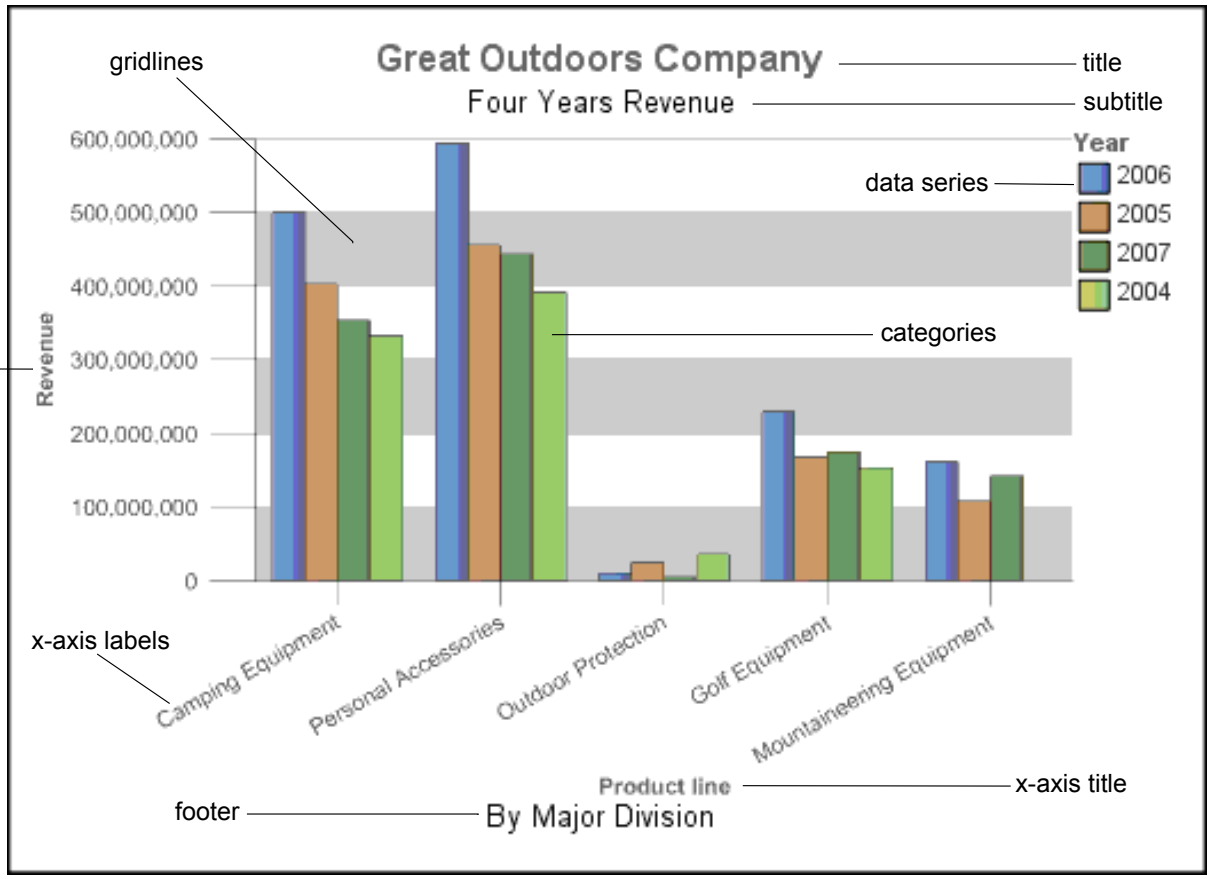
   The **Sort** dialog box opens.
3. Under **Sort order**, select **Ascending** or **Descending**.
4. Under **Options**, select whether to sort
   - **Based on the column** or **Based on the row**

     You can change the defaults as needed.
   - **Based on attribute**
5. Click **OK**.

   **Tip:** To remove a sort or restore the default order, click **No Sort**.

## Creating a Chart

Charts are a graphical way of presenting information. Use charts to reveal trends and relationships that are not evident in tabular reports. For example, you can create a chart to visualize how actual sales compare to projected sales, or to discover whether sales are falling or rising over quarterly periods.




You can also drill up and drill down on charts.

Charts plot the crosstab rows as the data series. Nested rows appear as joined items in the legend. Stacked rows appear sequentially in the legend.

Charts plot the crosstab columns on the x-axis. Nested columns are clustered on the x-axis. Stacked columns are plotted sequentially on the x-axis.

Charts plot a single measure on the y-axis.

If you have the necessary permissions, you can enhance your chart in IBM® Cognos® Report Studio. You can change the appearance of the columns, lines, and areas; add notes and baselines; or customize the chart properties to present the chart more effectively. For more information, see the Report Studio *User Guide*.

For information about charts, see "Chart Types" (p. 113).

## Chart Hotspots

When you pause the pointer over the hotspots of a chart, visual elements appear, such as tooltips and the plus sign (+) and caret that indicate drill-up/down ability.

The response time for showing a chart increases as the number of hotspots increases. The administrator can configure Analysis Studio to limit the number of hotspots returned to provide improved performance. For more information, see the *Administration and Security Guide*.

Prioritization is given to generating hotspots for items such as axis labels and legend labels before individual graphical elements such as bars, pie slices, and so on. Depending on the number of items in a chart and the current setting for the maximum number of hotspots, some axis items may have hotspots while other axis items and all graphical elements do not, or all axis items and some graphical elements may have hotspots while other graphical elements do not.

## Create a Chart

To open your chart in Report Studio, from the **File** menu, click **Open in Report Studio**.

If you make and save changes to an IBM Cognos Analysis Studio chart in Report Studio, the chart can no longer be opened in Analysis Studio.

### Steps

1. With the crosstab open, click the chart button on the toolbar.
2. Click the chart type you want.

   You can also choose

   - whether to use a different grouping type, if available
   - whether to show the values on the chart
   - whether to give the chart a 3-D visual effect

   **Tip:** You can use the display button on the toolbar to show only the chart, only the crosstab, or both.

# Example - Look for a Trend in Order Method Revenues

You are a business analyst at the Great Outdoors Company, which sells sporting equipment. You are asked to analyze the consequences of discontinuing the fax and mail order methods, which are expensive to process.

You want to see if revenues for these methods are growing or declining.

Before you can try this example, you must set up the sample packages that come with IBM® Cognos® Business Intelligence. For more information, see the *Administration and Security Guide*.

### Steps

1. Open the **Order Methods Revenue** analysis.
2. In the crosstab, select **Order Method**.
3. Click the sort button on the toolbar, and then click **Sort by values, Descending**.

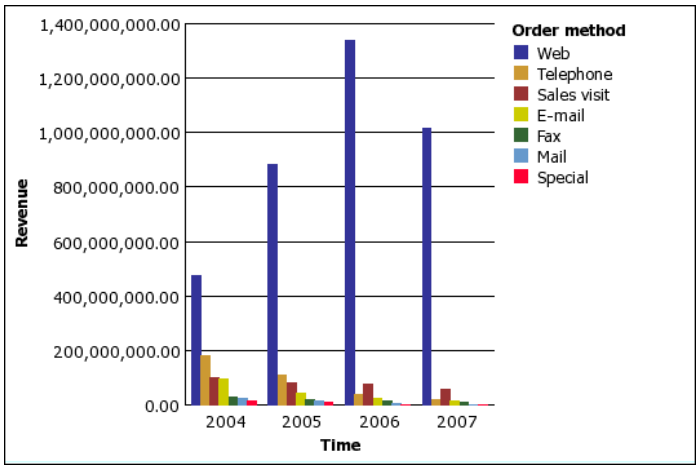
   You can see that mail and fax orders are not major contributors to sales. Now you want to see if the trend of mail and fax orders is increasing or decreasing over time.
4. Drag **Time** from the **Time** folder and replace **Retailers**.

| Revenue | 2004 | 2005 | 2006 | 2007 | Time |
|---|---|---|---|---|---|
| Web | 473,771,464.65 | 881,315,747.68 | 1,339,714,172.77 | 1,017,434,523.30 | **3,712,235,908.40** |
| Telephone | 178,793,580.36 | 107,160,284.09 | 37,199,842.80 | 17,832,073.81 | **340,985,781.06** |
| Sales visit | 101,072,721.10 | 79,721,524.37 | 73,918,652.38 | 55,481,936.15 | **310,194,834.00** |
| E-mail | 95,402,796.21 | 44,318,886.43 | 23,701,042.57 | 16,420,318.95 | **179,843,044.16** |
| Fax | 28,639,472.14 | 19,896,187.76 | 13,445,559.93 | 8,092,322.18 | **70,073,542.01** |
| Mail | 22,766,850.51 | 16,013,779.49 | 6,905,730.44 | 404,978.53 | **46,091,338.97** |
| Special | 13,905,918.75 | 10,769,180.34 | 1,006,100.01 | 1,670,121.15 | **27,351,320.25** |
| **Order method** | **914,352,803.72** | **1,159,195,590.16** | **1,495,891,100.90** | **1,117,336,274.07** | **4,686,775,768.85** |

You want to visually emphasize the revenue trend, so you create a chart.

5. Click the chart button on the toolbar.
6. Click **Column chart, standard**.

   You can see that the rate of growth for the mail and fax order methods is unsatisfactory compared to other methods.




7. Save the analysis. In the **Name** box, type

   **Order Methods Trend**

8. Leave the default destination folder as **Public Folders**, and click **OK**.

You now have more information for further analysis. For example, you can rank the order methods.

# Chapter 6: Limiting the Items in Your Analysis

You can filter out unnecessary items using a variety of techniques, depending on your business question, how you want to compare your data, and how many items you must include in your analysis.

You can

- filter values to show only the items you want to view
- exclude items to eliminate unwanted information
- apply a top or bottom rule, which is useful when analyzing a large amount of data
- create a custom filter to limit the items shown to those that meet a specific criteria, such as products discounted by more than 10%
- remove rows or columns containing only missing values

## Filter Values Using Context

You can use one or more items to quickly focus your analysis on a particular view of the data. This technique is known as filtering using context.

For example, you have a crosstab showing products in the rows and revenue for different quarters in the columns. To change the context to Asia, you drag Asia from the source tree to the **Context** section of the overview area. The crosstab then shows only the values for Asia.

Changing context changes the values that appear. It does not limit or change the items in the rows or columns.

**Note:** You cannot use a set in the context section of the overview area if the filter rule of the set references automated subtotals such as More and Hidden, Subtotal (Included), or Subtotal (Excluded).

### Steps

1. In the source tree, select or search for one or more items to filter on.
2. Drag the item that you want to filter on into the **Context filter** section of the overview area.

   A drop-down list box appears under **Context filter**.
3. Click the item that you want.

   The crosstab shows the results only for the selected item.
4. To create a prompt that appears when you run the analysis in IBM Cognos Viewer, right-click an item in the **Context filter** section of the overview area and click **Use as "Go To" Parameter** in the item's drop-down menu.
5. To change context, select a new item from the drop-down list under **Context filter**.

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6. If you want to use a custom set as a filter, drag the custom set from the **Analysis Items** tab to the **Context filter** section of the overview area.

## Limitations when using Context Filters

Under certain conditions, you might encounter unexpected results when using context filters. For example, measures in the analysis might appear as "--" in IBM® Cognos® Analysis Studio.

This issue can occur under the following conditions:

- In IBM Cognos Framework Manager, the Aggregation rule of the measure is set to Last.
- The dimension is expanded in the analysis.
- The dimension being expanded is inserted into the context filter area.

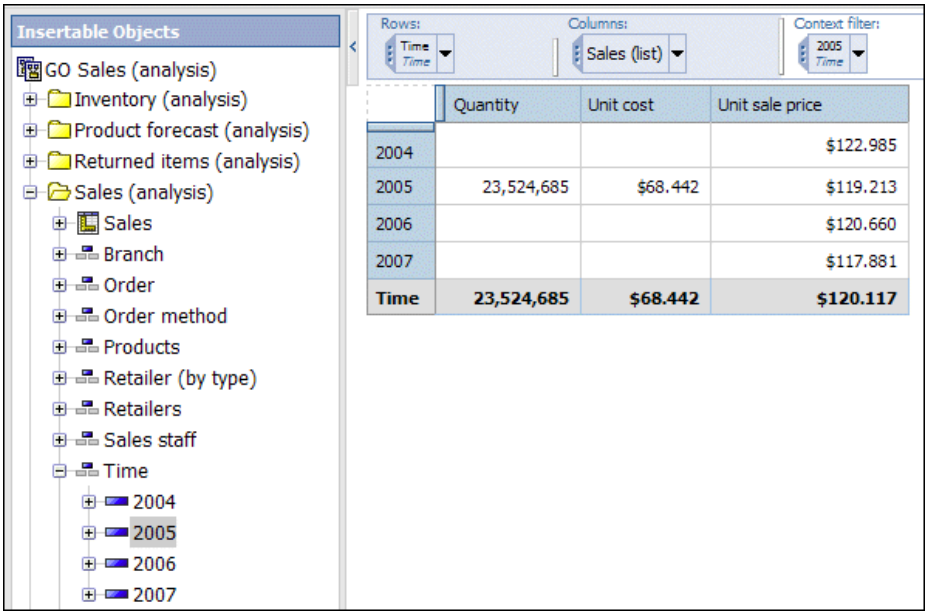
In general, avoid creating a context filter that uses items from the same hierarchy as an item on one of the crosstab edges; instead, put the item directly on the edge. For example, instead of placing all years on the crosstab edge and placing 2005 in the context filter, simply put 2005 on the crosstab edge.

If you insert members from the same hierarchy on both edges of the crosstab, you may encounter unexpected results. For example, an analysis that uses members from Years in the rows and Quarters in the columns is difficult to read because the useful numbers are distributed over a large area of mostly blank cells.

Here are some further considerations when using context filters:

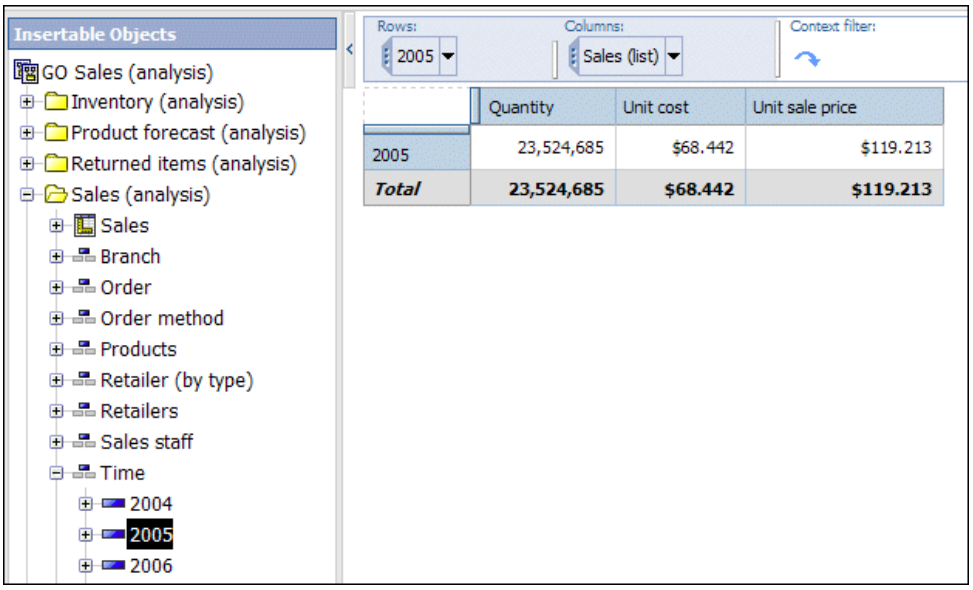
### Calculated Measures Are Not Suppressed by the Context Filter

You are working with dimensionally modeled relational data and you have multiple measures on the report, one of which is a calculated measure (that is, the **Regular Aggregate** property is set to **calculated** in the model). You apply a context filter using items from the same hierarchy as an item on one of the crosstab edges, but values that do not pass the context filter are not removed from the result, even if suppression is applied.



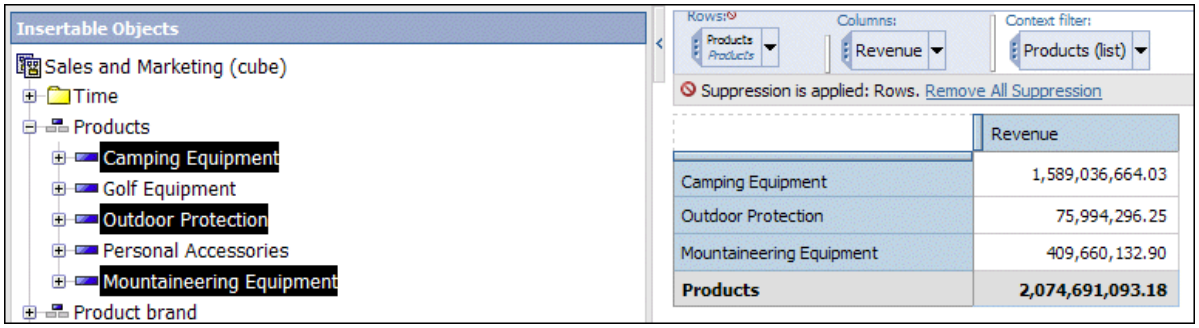
To avoid this, you can drag the desired members from the **Insertable Objects** pane directly onto the row or column edge instead of a using a context filter.

**Note:** To insert a single member, drag the 2005 item to the rows in the crosstab while keeping the right mouse button pressed, and select **Insert without details**.




## General Suppression is Slow on Large Cubes

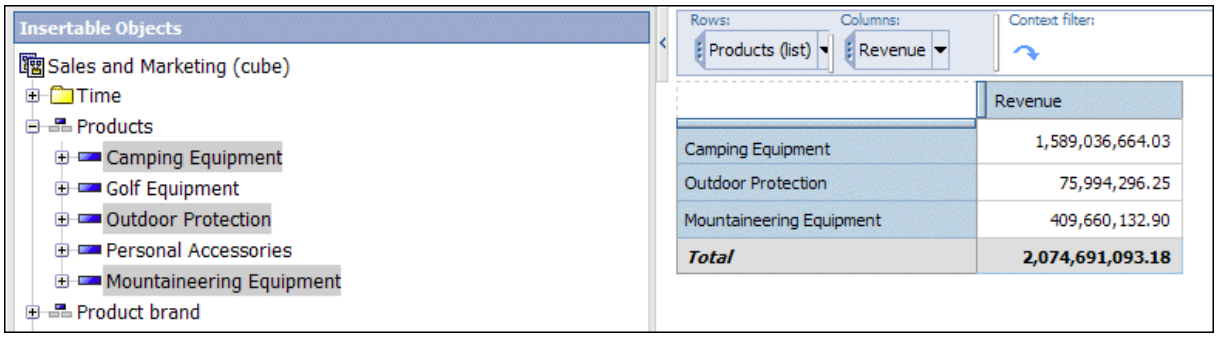
You are using a general suppression option, such **Suppress Rows and Columns**, **Suppress Rows Only**, or **Suppress Columns Only**, in conjunction with a context filter.




If the data set is large, this can take a long time because all of the data is retrieved and then filtered. On large cubes, other means should be used to focus the report:

- If the desired data is from a hierarchy that appears on the row or column edge, do not use a context filter. Instead, you can drag the desired members from the **Insertable Objects** pane directly onto the row or column edge.

  **Note:** To insert a single member, drag the item to the crosstab while keeping the right mouse button pressed, and select **Insert without details**.




- If the desired data is from a hierarchy that does not appear on the edge, use a context filter in conjunction with other means to limit the data, such as a top or bottom filter, the **Suppress Rows of Selection** or **Suppress Columns of Selection** suppression option, or filter the item to limit results, using criteria such as where X is greater than Y, or where X is not null.

## Pin the Context of a Set

When you change the **Context filter** section of the overview area, the values shown for the selected set also change. This includes the items that meet criteria for any applied filters, sorting, ranking, and so on. If you want the applied settings to ignore context changes, you can pin the context of the selected set.

For example, you have a crosstab showing the top three products by order method. You drag **Years** from the source tree to the **Context filter** section of the overview area. As you select different years, the top three order methods change. You are interested in the performance of a particular set of order methods. You want to compare the results for the same set in other years, so you pin the current context. Now you can select different years and keep the same set of order methods in the crosstab.

### Steps

1. Select the set whose context you want to pin.
2. Open the properties pane.
3. Click **Definition**.
4. Click **Hold Current Context** .
5. Click **OK**.

An icon next to the item label in the overview area shows you that the context is pinned.

**Tip:** To restore dynamic context, repeat steps 1 to 3 and click **Use Dynamic Context**.

# Exclude Items

You can choose to remove individual items that are not needed in your analysis.

When you exclude items, you exclude the value from the **Subtotal (included)** subtotal, as well as hide the row or column from view. Its value is now rolled up into the **Subtotal (excluded)** subtotal.

If you want to include the values of hidden rows and columns, use the **Hide** command.

**Note:** You cannot exclude items in a selection-based set.

### Step

- Right-click a row or column and click **Exclude**.

  **Tip:** To show excluded items, select the set that contains the excluded item, open the properties pane, click **Excluded Items**, and then click **Include***(name of excluded item)* or **Include All**.

## Limit Data to Top or Bottom Values

You want to quickly focus your analysis 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 helps to keep the 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 top 50 or the bottom 50 sales people by performance
- 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

To try it yourself, see "Example - Find Your Top or Bottom Performers" (p. 83).

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.

Changing the context filter section of the overview area changes the values shown for the selected set. As a result, the items that meet the top or bottom rule may also change. If you want the filter rules to ignore context changes, you can pin the context.

### Steps

1. Select the set that you want to limit.
2. Click the top or bottom button on the toolbar.

   The **Define top or bottom filter** dialog box appears.
3. Under **Top or bottom**, click **Top** or **Bottom**.
4. Under **Number of items**, specify a number, percentage, or cumulative sum.
5. In the **By measure** box, click the measure that you want to use to specify the top or bottom value.

   Use the default measure when you want the top or bottom rule to be automatically recalculated when the measure changes in the crosstab.

6. In the **For row** box or **For column** box, click the item that contains the values to use to specify the top or bottom rule.

   Use the default item when you want the top or bottom rule to be automatically recalculated during drill and replace operations.

7. Click **OK**.

**Tip:** To remove the top or bottom filter, under **Top or bottom**, click **None**.

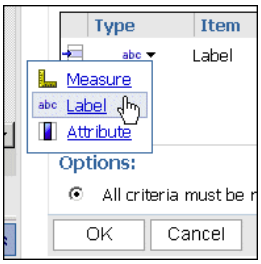
# Create a Custom Filter

You can filter out data so that only the data you require appears in the analysis.

You can specify a filter by using

- measures, such as revenue
- calculations
- labels, such as Asia
- attributes, such as color = black

You can use the **Type** drop down list to specify a filter.




**Note:** When you define a filter rule by using a label or an attribute, the text is case sensitive.

You may want to apply a filter using a currency that is different from the currency shown in the crosstab.

- To change the currency that is shown in the crosstab, drag the currency that you want to filter on into the **Context filter** section of the overview area. Now the filter uses the context of the specified currency.
- To filter on one currency while displaying another, put the currencies on the opposite row or column of the crosstab, and then select the desired currency under **For column** or **For row** when you define the filter rule.

Filters cannot use calculations that reference the set being filtered because this creates a circular reference. Depending how ranking functions (such as rank or quartile) or percentage functions (such as percent of total) are customized, they may not be available when defining a filter.

## Steps

1. Select a set.

2. Click the filter button on the toolbar.
3. Click **Add a filter line**.
4. Under **Type**, select the type of filter: measure, label, or attribute.
5. Select the item on which to filter.
6. Select the operator.
7. Specify the value.
8. Specify the row or column.

   If another filter is needed, click **Add a filter line**.
9. Click **OK**.

   **Tip:** To delete a filter, select it in the **Filter** dialog box and then click the delete button on the toolbar.

# Combine Filters

You can combine filters to create custom AND and OR conditions.

When you filter your data based on a number of criteria, there may be filter rules that are optional and filter rules that are required. You use AND to group rules that are mandatory. You use OR to group filter rules that are optional. For example, customers filtered by Revenue > 1000000 AND Discount >.15 gives different results from Customers filtered by Revenue > 1000000 OR Discount > .15.

A more complex scenario may require combining both mandatory and optional filter rules.

### Steps

1. Select a set.
2. Click the filter button on the toolbar.
3. Click **Combine filter lines**.
4. Press Shift+click or Ctrl+click to select the filter icons next to the filter lines that you want to group.

   **Tip:** To create a filter, click **Add a filter line**.
5. Click **Group**.

   Brackets appear around the grouped items.
6. Click the operator that appears between the filters and click **AND** or **OR** to combine them.

   Continue grouping and specifying **AND** or **OR** operators as needed.
7. Click **OK**.

# Suppressing Empty Cells

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. To remove sparse data in an analysis, you can suppress empty cells that contain a null or zero value.

## Use IBM Cognos BI Suppression

You can suppress empty cells in individual rows and columns, all rows, all columns, or both columns and rows.

Suppression of rows or columns in a crosstab is based on the cell values in the crosstab. In nested crosstabs, if you suppress the detail rows of an inner nested item, then the outer nested item is also suppressed. This applies to all nesting levels in both rows and columns.

Access to the suppression feature depends on the settings in your modeling component, IBM® Cognos® Transformer, IBM Cognos Framework Manager, and IBM Cognos BI Administration. For more information, see the *Administration and Security Guide*.

IBM Cognos Analysis Studio performs all calculations before applying suppression.

By default, Analysis Studio removes the opposite rows and columns that contain zeros and nulls. If you want to remove only nulls, from the **Settings** menu, click **Suppress**, and click **Empty Cells Only**.

A suppression icon next to the item label in the row, column, or overview area indicates that suppression is applied.

### Steps

1. To apply suppression throughout the crosstab where the total results in a null or zero value:
   - Click the suppress items button on the toolbar.
   - Click one of the following: **Suppress Rows and Columns**, **Suppress Rows Only**, or **Suppress Columns Only**.
   - **Note:** The **More** functionality is unavailable when these are selected.

   **Tip:** To remove suppression, click **Remove All Suppression**.
2. To apply suppression to selected rows and columns:
   - Right-click to select a row or column.
   - To remove opposite rows and columns that contain zeros and nulls, from the **Suppress** context menu, click **Suppress Rows of Selection** or **Suppress Columns of Selection**.
   - To make multiple selections, click **Custom**, and, in the **Select Rows** or **Select Columns** dialog, select the rows or columns against which to apply suppression.

     **Tip:** To remove suppression, click **Remove All Suppression**.

# Create a Custom Set

You can specify a name and description for a custom set of data to reuse later.

A custom set preserves the filters, sort order, and calculations you define.

You can use sets that other users create by opening the **Other Analysis** folder in the **Analysis Items** pane and going to a saved analysis. The items in this folder are filtered based on the package. To use a set from another analysis, drag it to the crosstab.

Multiple custom sets may be available in a single saved analysis.

If the originator of a custom set updates it, the set definition is not updated in other analyses that have been created from the original set.

Users of shared custom sets will have a different experience depending on whether the set uses the default dynamic context or whether the context of the set has been pinned. Saved sets have a small red triangle on the set selection bar at the top of the set.

For more information, see "Pin the Context of a Set" (p. 56).

You cannot save a set as a custom set under the following conditions:

- The analysis contains a context filter based on a dynamic definition, such as a calculation or top or bottom filter, rather than a static item or items, such as 2005, or Camping Equipment and Lifestyle Products.
- The set contains a calculation that references multiple dimensions, such as ranking calculations, or a percent of base calculation that references an item from the opposite axis of the crosstab.
- The set contains a user-defined filter based on a calculation.
- The set is expanded to show more than one level.

### Steps

1. Select a set.
2. Click the save as custom set button on the toolbar.

   **Tip:** Alternatively, you can select the set items, right-click, and choose **Save as Custom Set**.
3. Specify a name and, if you want, a description of 256 characters or less.
4. Click **Save**.

Custom sets are saved to the **Analysis Items** tab of the **Insertable Objects** pane.

When you insert a saved custom set, an annotation appears in the corner of the set selector of the custom set.

# Chapter 7: Using Calculations

Calculations are basic to solving problems and making decisions, and can help you to define the relationships between items of interest. For example, calculations such as rank and percentile help you instantly identify the most significant items in your analysis.

In IBM® Cognos® Analysis Studio, you can specify which subtotals to show and can view summaries and calculations without typing complex expressions.

The calculations available depend on how many columns or rows you select before you click **Calculate**.

| Objects selected | Available calculations |
|---|---|
| A single row or column | rank, show values as a percentage of the total, round or round down values, and show absolute values |
| Two rows or columns | arithmetic and percentage calculations |
| Three or more rows or columns | aggregate calculations, such as sum, average, maximum, and minimum |
| A set | all calculations in the **Calculate** dialog box |

You can perform calculations in Analysis Studio by using predefined summaries or item-based calculations.

## Subtotal Calculations

Subtotals present data more conveniently when large dimensions contain too much data to be shown in the crosstab. A subtotal summarizes the measure based on the rules defined in the data source or model. You can specify the number of items to show in the crosstab.

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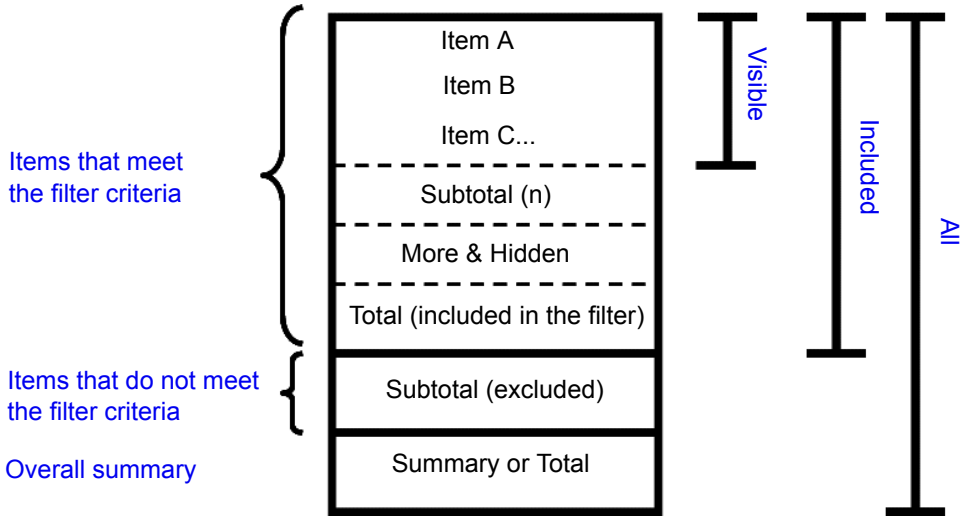
| Revenue | Americas |
|---|---|
| TrailChef Water Bag | $76,748.14 |
| TrailChef Canteen | $117,601.96 |
| TrailChef Kitchen Kit | $178,409.12 |
| TrailChef Cook Set | $203,316.16 |
| TrailChef Deluxe Cook Set | $145,751.16 |
| TrailChef Double Flame | $573,375.76 |
| TrailChef Kettle | $36,916.44 |
| TrailChef Utensils | $81,932.48 |
| Star Lite | $1,447,635.08 |
| Star Dome | $6,928,932.92 |
| *Subtotal (10 items)* | $9,790,619.22 |
| *More & hidden* | $49,426,153.68 |
| ***Total*** | **$59,216,772.90** |

The following table describes each subtotal.

| Subtotal | Description |
|---|---|
| **Subtotal (visible)** | The sum of the visible items, which is updated automatically as you change the data in the crosstab. |
| **More**<br>**More & Hidden** | The values of the remaining items beyond the specified number that still meet any filter criteria. **More** changes to **More & Hidden** if there are any hidden values. This subtotal is updated automatically as you change the data in the crosstab. |
| **Total (included in the filter)** | The sum of the subtotal of visible items and the **More** or **More & Hidden** subtotal. |
| **Subtotal (Excluded)** | The sum of values that are excluded, such as by being filtered out. |
| Summary | A grand total of all the previous subtotals. |

The following diagram shows how subtotals are broken down.




## Show or Hide Subtotals

You can use screen space most efficiently by specifying which subtotals to show and which subtotals to hide.

You can specify the default subtotals to show for all existing and new sets in the analysis. You can also override these default settings for individual sets.

You can also show and hide subtotals using the properties pane.

The only subtotal you can use with selection-based sets is **Total**.

### Steps

1. Choose whether to specify the default subtotals to show for all existing and new sets in the analysis or for an individual set:
   - To specify the default subtotals to show for all existing and new sets, from the **Settings** menu, click **Totals and Subtotals**.

     **Tip:** To view the values for the **More & hidden** subtotal, change **Don't show values** to **Show the values**.
   - To specify the default subtotals to show for an individual set, select the set, and then click the subtotals button on the toolbar.
2. Select the subtotals that you want to show and clear the subtotals that you want to hide.
3. Click **OK**.

# Summary Calculations

Summary calculations apply to all included values.

IBM® Cognos® Analysis Studio provides the following predefined summary calculations:

- Sum

- Average
- Maximum
- Minimum
- Median
- Variance
- Standard Deviation
- Count

## Use a Summary Calculation

You can quickly and easily use a summary to calculate all the included values in a set.

### Steps

1. Select the set that you want to summarize.
2. Click the summarize button on the toolbar.
3. Click the calculation that you want.

   A new row or column of summarized data appears.

   **Tip:** To remove a row or column of summarized data, right-click the row or column and click **Delete**.

# Item-based Calculations

You can create a calculation if you need a comparison or ratio that does not exist in the data source, such as actual revenue as a percentage of planned revenue, or the average revenue per employee.

**Note:** The difference between the arithmetic operation + (addition) and the analytic operation Sum is how nulls are handled in calculations: the addition of null and any number is still null. The sum of items whose values include one or more nulls results in a sum value.

You can perform the following arithmetic calculations in an analysis.

| Arithmetic operation | Description |
|---|---|
| + (addition) | Adds the values of the selected items. |
| - (difference) | Subtracts the values of one selected item from another. |
| * (product) | Multiplies the values of the selected items. |
| / (division) | Divides the values of the selected items. |
| Absolute | Calculates the absolute value of the numbers in the selected item. |

| Arithmetic operation | Description |
|---|---|
| Round | Rounds the values in the selected item to the nearest integer. |
| Round down | Rounds the values in the selected item to the next lowest integer. |
| Square root | Calculates the square root of the values in the selected item. |

You can perform the following percentage calculations in an analysis.

| Percentage operation | Description |
|---|---|
| % | Calculates the value of a selected item as a percentage of another item. |
| % of total | Calculates each value of a selected item as a percentage of the total. |
| % difference (growth) | Calculates the difference between two items as a percentage. |

You can perform the following analytic calculations in an analysis.

| Analytic operations | Description |
|---|---|
| Sum | Calculates the sum of the selected values. |
| Average | Calculates the average of values of the selected items. |
| Maximum | Calculates the maximum value. |
| Minimum | Calculates the minimum value. |
| Median | Calculates the middle value in a set of numbers. |
| Roll up | Calculates the rolled up value. |

You can perform the following ranking calculations in an analysis. By default, the highest value is ranked 1.

| Ranking | Description |
|---|---|
| Rank | Calculates the rank of each value. |

| Ranking | Description |
|---|---|
| Percentile | Calculates a percentile, which is a value that corresponds to one of the equal divisions in a sample. For example, a score higher than 89 percent of those attained is in the 90th percentile. |
| Quartile | Calculates a quartile, which is a value that corresponds to the 25% point in a sample. The first quartile is the 25th percentile, the second quartile is the 50th percentile, and the third quartile is the 75th percentile. |
| Quantile | Calculates a quantile, which is a value that divides a sample into percentiles. For example, if the specified quantile is 5, the percentiles are 20, 40, 60, 80, and100. |

## Create an Item-Based Calculation

You can create a calculation if you need a comparison or ratio that does not exist in the data source, such as actual revenue as a percentage of planned revenue, or the average revenue per employee. The calculations available depend on how many columns or rows you select.

Calculation results are not stored in the underlying data source. Instead, IBM® Cognos® Analysis Studio reruns the calculation each time you view the analysis. The results are always based on the most current data in the data source.

An item-based calculation that you create has no inherent aggregation rule. Because sum is the most common aggregation rule, Analysis Studio provides the sum aggregation rule to calculations so that the appropriate solve order occurs.

If you have several calculations in a crosstab, you should be aware of the default solve order.

You cannot use addition calculations or aggregation calculations that refer to different hierarchies from the same dimension.

Cells show "--" (two dashes) rather than a value in calculations that use nonadditive measures such as count or average. Nonadditive measures are distinguished by a nonadditive measure icon in the source tree.

### Steps

1. Select the rows or columns that you want to use in the calculation.
2. Click the calculate button on the toolbar.
3. Choose whether to use a predefined calculation or create a member-based calculation:
   - To use a predefined calculation, click one of the predefined calculations.
   - To create an item-based calculation, click **Custom**.

     The **Calculate** dialog box appears.

4. In the **Operation** box, click the operation you want to perform.

   Depending on the selected data, you may first need to choose an operation type from the **Operation type** box.

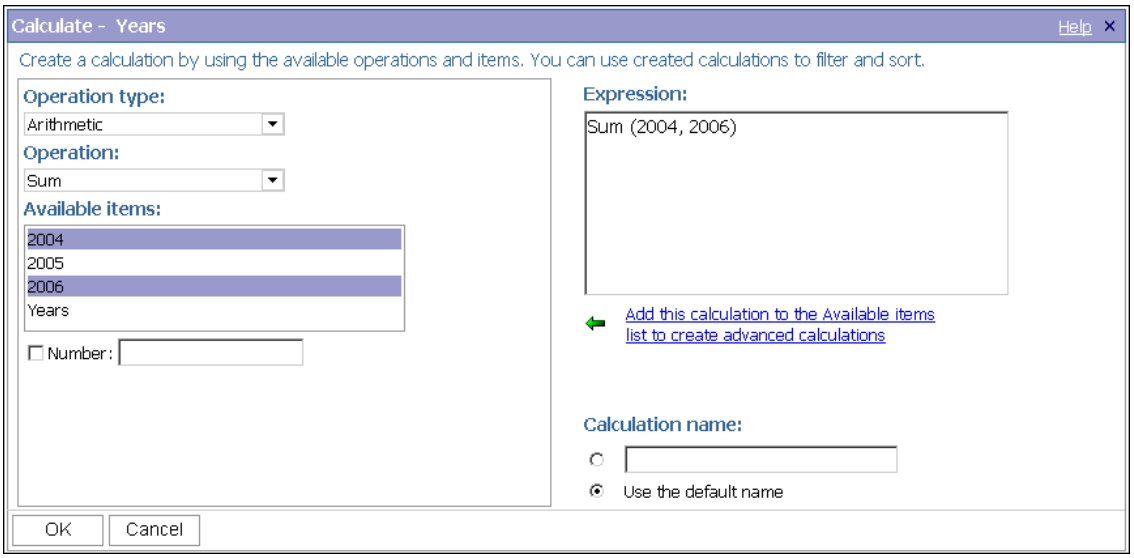
5. Choose which data to use for the calculation:
   - To use existing items, click the items you want in the **Available items** box.
   - To use other data, specify a number in the **Number** box.

6. Click **OK**.

The calculated results appear in a new row or column after the last item used as an operand in the calculation.

To make the name of the calculated row or column more meaningful, or to avoid a default heading name which is too long, type a new name in the **Name** box.

To edit a calculation, right-click the calculated row or column and click **Edit this Calculation**.




## Calculation Solve Order

When calculations in the rows and columns of a report intersect, Analysis Studio performs the calculations in a specific order.

The order in which Analysis Studio performs calculations is as follows:

- 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 analysis 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*.

## Rank Values

Ranking items identifies their relative position to help you compare data.

For example, you can rank a product line, such as golf equipment, to identify how well sales for golf equipment performed relative to other years.

| Revenue | 2004 | 2005 | 2006 | Years |
|---|---|---|---|---|
| Camping Equipment | $20,471,328.88 | $31,373,606.46 | $37,869,055.58 | **$89,713,990.92** |
| Golf Equipment | $5,597,980.86 | $9,598,268.88 | $10,709,215.84 | **$25,905,465.58** |
| Mountaineering Equipment | $0.00 | $9,642,674.54 | $11,248,676.06 | **$20,891,350.60** |
| Outdoor Protection | $1,536,456.24 | $988,230.64 | $646,428.04 | **$3,171,114.92** |
| Personal Accessories | $7,144,797.52 | $10,955,708.04 | $13,793,960.30 | **$31,894,465.86** |
| *Rank (Golf Equipment)* | *3* | *2* | *1* | |
| **Products** | **$34,750,563.50** | **$62,558,488.56** | **$74,267,335.82** | **$171,576,387.88** |

You can also rank to identify how well sales for golf equipment performed relative to other products in the same axis.

| Revenue | 2004 | 2005 | 2006 | Years |
|---|---|---|---|---|
| Camping Equipment | $20,471,328.88 | $31,373,606.46 | $37,869,055.58 | **$89,713,990.92** |
| Golf Equipment | $5,597,980.86 | $9,598,268.88 | $10,709,215.84 | **$25,905,465.58** |
| Mountaineering Equipment | $0.00 | $9,642,674.54 | $11,248,676.06 | **$20,891,350.60** |
| Outdoor Protection | $1,536,456.24 | $988,230.64 | $646,428.04 | **$3,171,114.92** |
| Personal Accessories | $7,144,797.52 | $10,955,708.04 | $13,793,960.30 | **$31,894,465.86** |
| *Rank (Golf Equipment within Products)* | *3* | *4* | *4* | *3* |
| **Products** | **$34,750,563.50** | **$62,558,488.56** | **$74,267,335.82** | **$171,576,387.88** |

Ranking operations include rank, percentile, quartile, and quantile.

If you use the default settings, you can rank values quickly by right-clicking a single row or column and clicking **Rank**.

Analysis Studio uses Olympic ranking for data sources.

The exception is that SAP/BW data sources use serial ranking.

Olympic ranking handles ties by assigning an equal rank to items with equal results. Serial ranking handles ties by assigning a sequential number to items in the order they are retrieved in the data source.

| Team Results | Olympic Rank | Serial Rank |
|---|---|---|
| Red 100 points | Red 1 | Red 1 |
| Green 50 points | Blue 2 | Blue 2 |
| Blue 75 points | Green 3 | Green 3 |
| Yellow 50 points | Yellow 3 | Yellow 4 |
| Orange 25 points | Orange 4 | Orange 5 |

### Steps

1. Select a row or column to rank.
2. Click the calculate button on the toolbar.
3. Click **Custom**.

   The **Calculate** dialog box appears.
4. In the **Operation type** box, click **Ranking**.
5. Choose the desired options under **Operation**, **Available items**, and **Based on measure**.
6. Under **Rank**, choose whether to rank within the selected item only, or to rank with other values on the same axis.
7. Click **OK**.

You can now sort the rank results to show them in numerical order.

## Use Custom Ranking

By default, ranking is based on the innermost nested set and calculates the items that meet the filter criteria in the selected row or column. To calculate rank using different segments of the data or the outermost set, use custom ranking. For an example of custom ranking, see.

### Steps

1. Select a row or column to rank.
2. Click the calculate button on the toolbar.
3. Click **Custom**.

   The **Calculate** dialog box appears.
4. In the **Operation type** box, click **Ranking**.
5. Under **Rank**, click **Custom**.
6. Choose the options that you want:

- Specify whether to rank the highest value or the lowest value as number 1.
- Change the scope of the rank, such as by ranking only within visible items.
- Rank by the innermost or outermost nested set in a crosstab.

7. Click **OK**.

You can now sort the rank results to show them in numerical order.

# Example - Order Methods Ranking

You are a business analyst at the Great Outdoors Company, which sells sporting equipment. You are asked to analyze the consequences of discontinuing the fax and mail order methods, which are expensive to process.

Now that you have detected a trend in the data, you want to see how they rank in your overall revenues.

Before you can try this example, you must set up the sample packages that come with IBM® Cognos® Business Intelligence. For more information, see the *Administration and Security Guide*.

## Steps

1. Open the **Order Methods Trend** analysis.
2. Right-click the **Fax** row and click **Calculate** , **Custom**.
3. In the **Calculate** dialog box, under **Rank**, click **Compare each value in Fax with other values in Order method**.
4. Click **OK**.

   A new row appears that ranks the **Fax** order method against other order methods for each year.
5. Repeat steps 2 to 4, using the **Mail** order method.

   You can see that both **Fax** and **Mail** rank low in every year.
6. Save the analysis as **Order Methods Rank**, leave the default destination folder as **Public Folders**, and click **OK**.

| Revenue | 2004 | 2005 | 2006 | 2007 | Time |
|---|---|---|---|---|---|
| Web | 473,771,464.65 | 881,315,747.68 | 1,339,714,172.77 | 1,017,434,523.30 | **3,712,235,908.40** |
| Telephone | 178,793,580.36 | 107,160,284.09 | 37,199,842.80 | 17,832,073.81 | **340,985,781.06** |
| Sales visit | 101,072,721.10 | 79,721,524.37 | 73,918,652.38 | 55,481,936.15 | **310,194,834.00** |
| E-mail | 95,402,796.21 | 44,318,886.43 | 23,701,042.57 | 16,420,318.95 | **179,843,044.16** |
| Fax | 28,639,472.14 | 19,896,187.76 | 13,445,559.93 | 8,092,322.18 | **70,073,542.01** |
| *Rank (Fax within Order me* | 5 | 5 | 5 | 5 | **5** |
| Mail | 22,766,850.51 | 16,013,779.49 | 6,905,730.44 | 404,978.53 | **46,091,338.97** |
| *Rank (Mail within Order me* | 6 | 6 | 6 | 7 | **6** |
| Special | 13,905,918.75 | 10,769,180.34 | 1,006,100.01 | 1,670,121.15 | **27,351,320.25** |
| **Order method** | **914,352,803.72** | **1,159,195,590.16** | **1,495,891,100.90** | **1,117,336,274.07** | **4,686,775,768.85** |

# Chapter 8: Sharing Results

After you complete your analysis and identify the data that best answers your business question, you may need to share that information with colleagues.

A saved analysis can be viewed, printed, scheduled, or enhanced further in IBM® Cognos® Report Studio like any other report.

If you have the necessary permissions, you can open your analysis in Report Studio to enhance an analysis or deliver it to different people. You can change the default presentation styles to meet your corporate standards, define bursting rules, or modify the query expressions to improve performance. For more information, see the Report Studio *User Guide*.

**Tip:** To open your analysis in Report Studio, from the **File** menu, click **Open with Report Studio**.

**Note:** If you make and save changes to an Analysis Studio analysis in Report Studio, the analysis can no longer be opened in Analysis Studio.

When an analysis is imported into Report Studio, the report contains one query which processes all the sets found on the crosstab. Each set is defined by 18 data items that segment and summarize the base set definition. To maintain reports converted from Analysis Studio in Report Studio, you should understand what each of these items represents and how they relate to each other. For more information, see the Report Studio *User Guide*

Analysis results can be shared in the following ways:

- as HTML output in IBM Cognos Viewer
- as a PDF
- as an Excel spreadsheet
- in CSV or XML format

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

To improve the presentation of the results, you may want to add a title, separate the data on different pages, or expand the values in **More** to show all the details.

## Set the Report Options

You set the report options to make changes to your analysis in preparation for distributing it in different formats.

Report options apply when you run an analysis in IBM® Cognos® Viewer or open an analysis in IBM Cognos Report Studio. These settings are not visible in the work area of IBM Cognos Analysis Studio.

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**Note:** When you run an analysis in IBM Cognos Viewer after selecting the **Outermost groups on rows** option under **Page breaks** on the **Display** tab in the **Report options** dialog box, the outer nesting group is always expanded and any calculations are not shown.

| Tab | Purpose |
|---|---|
| Title | Specify a title or subtitle. |
| Display | Specify whether and where to show the cube update information and filter criteria.<br>Define page breaks.<br>Expand the values in **More** to show all the details. |
| Paper | Set paper orientation and paper size if the output format is PDF. |
| Report Template | Specify a template. |
| Output Purpose | Specify the purpose of your output. |

### Steps

1. Open the analysis.
2. From the **Run** menu, click **Report Options**.
3. Change the values that meet your reporting needs and click **OK**.

## Define Page Breaks

Use page breaks to show different occurrences of data on each page shown in IBM Cognos Viewer. For example, you have a crosstab that shows all products sold by your company, where the outermost rows are grouped by product line. You can specify a page break to show the details for each product line on a separate page when you run a report in IBM Cognos Viewer.

**Note:** If an analysis contains suppressed items in nested rows, selecting the **Outermost groups on rows** check box may produce unexpected results when you run a report in Cognos Viewer.

The page break settings are ignored if the analysis contains no corresponding groups or context items.

The page break options do not apply to charts. Charts appear on a single page.

### Steps

1. From the **Run** menu, click **Report Options**.
2. On the **Page** tab under **Page breaks**, choose a type of page break:
   - To insert a page break at the outermost rows, select the **Outermost groups on rows** check box.

- To insert a page break at each child member of a selected context item, select the **Context item** check box. You can only use one context item. If the **Context** section of the overview area contains more than one item, click the context item you want from the drop-down list under **Context item**.

  **Note:** Analysis Studio inserts one page break for each child member of the selected context item. For example, if you click the **Order Method** context item in the drop-down list, the pages will break at **Fax**, **Telephone**, **Mail**, and so on.

3. Click **OK**.

   **Tip:** To specify default page breaks, clear all the check boxes.

## Apply a Template

You can apply a template to your analyses to give them the same look. For example, you can use a template to customize page headers and footers and to display a company logo.

IBM Cognos Analysis Studio templates must be created in Report Studio before they can be applied. For more information, see the Report Studio *User Guide*.

**Note:** Templates created in previous versions of IBM Cognos BI may not be compatible with Analysis Studio.

### Steps

1. Open the analysis that you want in Analysis Studio.
2. From the **Run** menu, click **Report Options**.
3. On the **Report Template** tab, click **Apply Template** and then click **Select a template**.
4. Locate the template you want to apply, click it and then click **Open**.
5. Click **OK**.
6. If you want to remove any custom formatting previously added to the report, select the **Reset all styles to template defaults** check box.
7. Click **OK**.

   The template is applied when the analysis is run in Cognos Viewer.

To remove a template, on the **Report Template** tab, click **Use Default Template**.

## Specify the Purpose of Your Output

You can specify the output of your analysis to suit your purpose. Differences may exist between an Analysis Studio analysis and a report created to be run in IBM Cognos Viewer in such areas as performance optimization, drill-up and drill-down behavior, and preservation of items such as subtotals, More values, and so on.

Your administrator can change the default behavior. For more information, see the *Administration and Security Guide*.

### Steps

1. From the **Run** menu, click **Report Options**.
2. On the **Output Purpose** tab, specify the purpose of the output:
   - To create a report featuring the current state of the analysis that is as close as possible to the original created in Analysis Studio, select **View as analysis**.

     This option is best if the output must be printed, or if the output must be consistent whether it is launched from Analysis Studio or run from IBM Cognos Connection.

     **Note:** This option makes unavailable the drill-up and drill-down capability in Cognos viewer.
   - To create a report that you can explore by drilling up or down in Cognos Viewer, select **Use as interactive report**.

     This output may be modified by the drill rules of Cognos Viewer, and may have some visual differences from the analysis as seen in Analysis Studio.
3. Click **OK**.

## Override Special Characters

You can modify how special characters such as nulls, division by zero, and overflows appear in IBM® Cognos® Analysis Studio. For example, you can change the default format for cell values that contain division by zero from /0 to ----.

### Steps

1. Open the analysis that you want in Analysis Studio.
2. From the **Settings** menu, click **Data Format**.
3. In the **Data format** dialog box, under **General properties**, click a property and type in the characters you want to use for that property.
4. Click **OK**.

   **Tip:** To revert to the original format, click **Reset**.

## View Output in HTML Format

You can create an HTML version of your analysis. For example, you may want to see all the data in a large set.

You can also view output in PDF, CSV, XML, and Excel or Excel 2000 format.

### Steps

1. Open the report that you want in Analysis Studio.
2. From the **Run** menu, click **Run report** (**HTML**).

   The analysis runs in the IBM Cognos Viewer window.

## View Output in PDF Format

To save a snapshot of your data, you can create a PDF (Portable Document Format) version of your analysis. For best results, use this format when you want to print a report.

You can also view output in HTML, CSV, XML, and Excel or Excel 2000 format.

You must have Adobe Reader installed on your computer to view output in PDF format.

Depending on which version of Adobe Reader you use, you may have unexpected results with tooltips and drilling behavior. For more information, see "Charts in PDF Output Show Unexpected Results" (p. 87).

### Steps

1. Open the report that you want in Analysis Studio.
2. From the **Run** menu, click **Run report** (**PDF**).

   The report opens in PDF format in a new window.

   **Tip:** To specify the orientation and page size of your PDF report, from the **Run** menu, click **Report Options** and then click the **Paper** tab.

## View Output in CSV Format

You can view the analysis data in CSV (Comma Separated Values) format.

The output is determined by the configuration of the computer and by the browser. If you have Excel installed on your computer, Excel may appear in your browser window or in a new window, depending on the configuration. If Excel appears in your browser window, you will see the **File** menu.

You may be asked whether you want to download the CSV file, or you may have the option to open it or save it.

If you have an application other than Excel associated with CSV, the browser calls that application.

You can also view output in HTML, PDF, XML, and Excel or Excel 2000 format.

You cannot export charts to CSV files.

### Steps

1. Open the report that you want in Analysis Studio.

2. From the **Run** menu, click **Run report** (**CSV**).

   The report opens in an Excel spreadsheet.

# View Output in XML Format

You can view the analysis data in XML (eXtensible Markup Language) format. XML output is used as an input source for other applications. It is generally not used to share data among end users.

You can also view output in HTML, PDF, CSV, and Excel or Excel 2000 format.

You cannot export charts to XML files.

### Steps

1. Open the analysis that you want in Analysis Studio.
2. From the **Run** menu, click **Run report** (**XML**).

   The report opens in XML format in a new window.

# View Output in Excel or Excel 2000 Format

You can view reports in different Microsoft® Excel formats, depending on the version of Excel used in your company.

You can also view output in HTML, PDF, CSV, and XML format.

Excel format supports up to 65,536 rows on a single worksheet. When a report exceeds this limit, the data appears on multiple worksheets in the Excel workbook.

The full date format does not always appear correctly in Microsoft Excel 2000 if it is on a system with a regional setting other than English. This does not occur with Microsoft Excel 2002 or 2003 versions. To fix this, specify the desired date format in Excel.

Other limitations exist when producing reports in Microsoft Excel format. For more information about these limitations, see "Limitations When Producing Reports in Microsoft Excel Format" (p. 107).

### Steps

1. Open the analysis that you want in Analysis Studio.
2. From the **Run** menu, click **Run report** (**Excel**).

   The report opens in a new window.

   **Tip:** To view the report in another Excel format, click the Excel button in Cognos Viewer and select the desired format.

# Print Output

Print an analysis to obtain a paper copy. For best results, use the PDF format.

For more information, see the IBM® Cognos® Connection *User Guide*.

### Steps

1. Open the analysis that you want.
2. From the **Run Report** menu, click **Run Report (PDF)**.

   The analysis opens in PDF format.
3. On the Acrobat Reader toolbar, click print.

   **Tip:** To specify the orientation and page size of your PDF report, from the **Run** menu, click **Report Options** and then click the **Paper** tab.

# Chapter 9: Analysis Studio Examples

If you have some experience with IBM® Cognos® Analysis Studio and want to improve your skills, you can try these example tasks. Each example gives you some guidelines on how to create each sample analysis.

If you have never used Analysis Studio, see the Analysis Studio Tour first to learn basic skills.

## Example - Create an Asymmetrical Crosstab

In this topic, you learn how to create asymmetrical crosstab layouts to view several kinds of data in a single crosstab.

You want answers to these questions:

- How much are the gross profit and profit margin for two specific order methods?
- How much is the revenue for all products?
- How much revenue was generated by two specific markets?

If you need more help, see "Inserting Items" (p. 28) and "Insert Sets of Items in Complex Layouts" (p. 41).

### Steps

1. Create a new analysis using the **Sales and Marketing** (**cube**) package.
2. Add the following items to the crosstab:
   - **Revenue** as the default measure
   - **2004**, **2005**, and **2006** (in **Time**) in the columns
   - **E-mail** and **Web** (in **Order Method**) in the rows
   - **Gross profit** and **Profit Margin** (in **Measures**) as nested rows
3. Add **Products** as a stacked set under **Order Method**.

   You now want to insert a new set between **Order Method** and **Products**.
4. Select **Products** as the target location in the crosstab.
5. In the source tree, press Ctrl+click to select **Asia Pacific** and **Americas** (in **Retailers**).
6. Right-click the selected names and, from the **Insert** menu, click **Above Selected Set**.

   Your analysis will look like this.

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| Revenue | | 2004 | 2005 | 2006 | *Total* |
|---|---|---|---|---|---|
| Mail | Gross profit | 9,369,960.54 | 6,314,370.62 | 2,985,646.33 | **18,669,977.49** |
| | Profit Margin | 39.5% | 41.0% | 48.4% | **41.6%** |
| E-mail | Gross profit | 38,887,670.43 | 18,031,154.03 | 9,866,210.86 | **66,785,035.32** |
| | Profit Margin | 26.6% | 31.6% | 35.3% | **29.2%** |
| ***Total*** | **Gross profit** | **48,257,630.97** | **24,345,524.65** | **12,851,857.19** | **85,455,012.81** |
| | **Profit Margin** | **28.4%** | **33.5%** | **38.0%** | **31.2%** |
| Asia Pacific | | 227,714,548.00 | 290,076,956.87 | 380,703,219.69 | **898,494,724.56** |
| Americas | | 292,401,703.35 | 353,489,093.90 | 458,164,908.61 | **1,104,055,705.86** |
| ***Total*** | | **520,116,251.35** | **643,566,050.77** | **838,868,128.30** | **2,002,550,430.42** |
| Camping Equipment | | 332,986,338.06 | 402,757,573.17 | 500,382,422.83 | **1,236,126,334.06** |
| Golf Equipment | | 153,553,850.98 | 168,006,427.07 | 230,110,270.55 | **551,670,548.60** |
| Outdoor Protection | | 36,165,521.07 | 25,008,574.08 | 10,349,175.84 | **71,523,270.99** |
| Personal Accessories | | 391,647,093.61 | 456,323,355.90 | 594,009,408.42 | **1,441,979,857.93** |
| Mountaineering Equipment | | | 107,099,659.94 | 161,039,823.26 | **268,139,483.20** |
| **Products** | | **914,352,803.72** | **1,159,195,590.16** | **1,495,891,100.90** | **3,569,439,494.78** |

# Example - Perform a Custom Sort

In this topic, you learn how to change the default sorting in a crosstab.

You want to know the answers to these questions:

- How profitable are your products?
- What were your most profitable products in 2005?
- What were your most profitable sales territories in 2005?

If you need more help, see "Use Custom Sorting" (p. 47).

## Steps

1. Create a new analysis using the **Sales and Marketing (cube)** package.
2. Add the following items to the crosstab:
   - **Gross Profit** as the default measure
   - **2004**, **2005**, and **2006** (in **Time**) in the columns
   - **Retailers** as rows
   - **Products** as nested rows
3. Right-click the **2005** column in the crosstab and click **Sort**, **Descending**.

   Note the change in **Products**. You now want to sort the sales territories in order of profitability for 2005. But if you select **Retailers** and sort descending, the default will sort based on the summary for all years, even though you are interested in performance for 2005.
4. Select **Retailers** in the crosstab.
5. Open the **Custom Sort** dialog box.

See what happens to the top performers when you filter the crosstab using different order methods or when you change the default measure.

6. Sort in descending order, and under **Options**, change the value in **Based on the column** from the default to **2005**. Leave the default in **By measure** as **Gross Profit**.

   Your analysis will look like this.

Rows: Retailers, Products | Columns: Time (list) | Context filter:

| Gross profit | | 2004 | 2005 | 2006 | *Total* |
|---|---|---|---|---|---|
| Americas | Personal Accessories | 52,216,964.54 | 57,522,220.89 | 77,935,811.04 | **187,674,996.47** |
| | Camping Equipment | 36,637,788.49 | 44,902,535.24 | 56,619,768.86 | **138,160,092.59** |
| | Golf Equipment | 22,284,259.14 | 23,073,374.67 | 34,697,269.58 | **80,054,903.39** |
| | Mountaineering Equipment | | 12,749,127.08 | 19,547,241.02 | **32,296,368.10** |
| | Outdoor Protection | 6,706,050.83 | 4,463,089.60 | 1,957,318.37 | **13,126,458.80** |
| | **Products** | **117,845,063.00** | **142,710,347.48** | **190,757,408.87** | **451,312,819.35** |
| Asia Pacific | Personal Accessories | 35,346,899.02 | 40,878,346.78 | 58,542,315.13 | **134,767,560.93** |
| | Camping Equipment | 30,827,591.15 | 39,583,592.20 | 51,018,259.41 | **121,429,442.76** |
| | Golf Equipment | 19,484,054.35 | 20,881,169.32 | 30,838,034.09 | **71,203,257.76** |
| | Mountaineering Equipment | | 11,735,112.08 | 16,162,979.09 | **27,898,091.17** |
| | Outdoor Protection | 5,560,077.88 | 4,004,637.29 | 1,631,709.84 | **11,196,425.01** |
| | **Products** | **91,218,622.40** | **117,082,857.67** | **158,193,297.56** | **366,494,777.63** |
| Central Europe | Personal Accessories | 36,913,764.95 | 43,938,484.74 | 57,082,840.45 | **137,935,090.14** |
| | Camping Equipment | 25,204,709.99 | 32,852,209.23 | 39,831,823.17 | **97,888,742.39** |
| | Golf Equipment | 14,892,812.04 | 17,169,649.41 | 23,798,365.46 | **55,860,826.91** |
| | Mountaineering Equipment | | 8,921,917.45 | 13,869,057.39 | **22,790,974.84** |
| | Outdoor Protection | 4,769,110.93 | 3,814,919.38 | 1,366,908.72 | **9,950,939.03** |

# Example - Find Your Top or Bottom Performers

In this topic, you learn how to find the top three products within each of the top five markets by revenue. The items returned for each of the top counts change when you change the default measure or add a context filter.

You want to know the answers to these questions:

- What are the top five markets by revenue?
- What are the top three products in each of the top five markets?
- What is the effect of changing the measure or filter criteria?

If you need more help, see "Insert All the Items of a Level" (p. 34), "Limit Data to Top or Bottom Values" (p. 57), and "Filter Values Using Context" (p. 53).

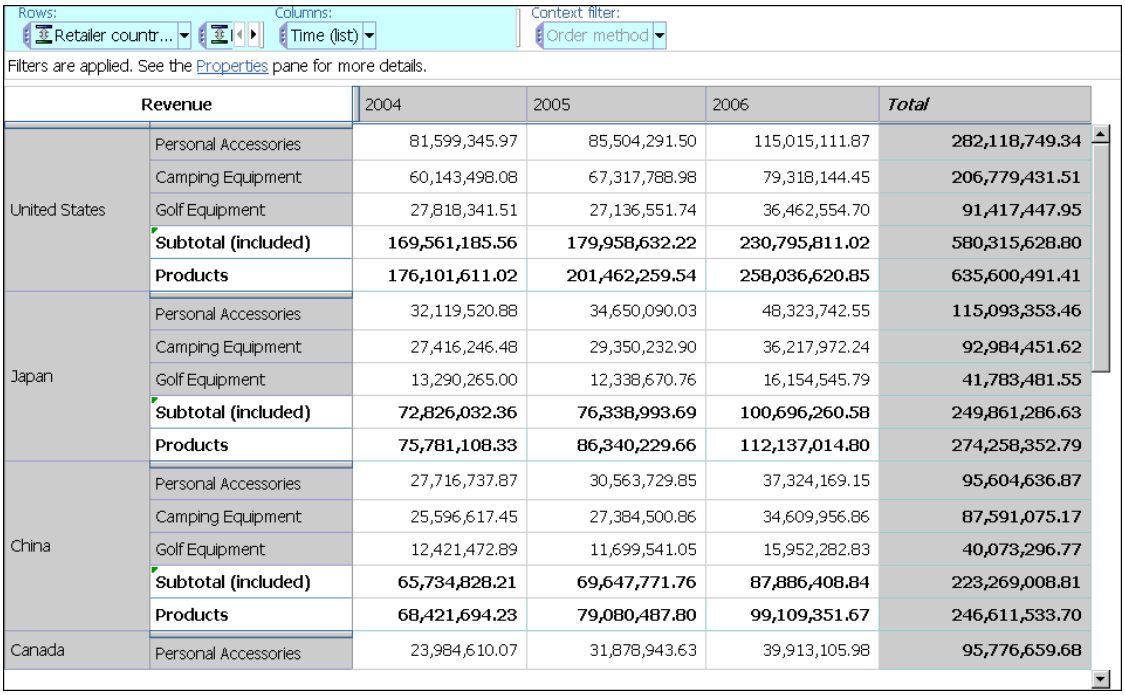
## Steps

1. Create a new analysis using the **Sales and Marketing** (**cube**) package.
2. Add the following items to the crosstab:
   - **Revenue** as the default measure

- all the items in the **Retailer country** level (in **Retailers**) in the rows
- **Products** as nested rows
- **2004**, **2005**, and **2006** (in **Time**) in the columns

3. Apply a top 5 rule for **Retailers**.
4. Apply a top 3 rule for **Products**.
5. Add **Order Method** as a context filter.

   See what happens to the top performers when you filter the crosstab using different order methods or when you change the default measure.




| Revenue | | 2004 | 2005 | 2006 | Total |
|---|---|---|---|---|---|
| United States | Personal Accessories | 81,599,345.97 | 85,504,291.50 | 115,015,111.87 | 282,118,749.34 |
| | Camping Equipment | 60,143,498.08 | 67,317,788.98 | 79,318,144.45 | 206,779,431.51 |
| | Golf Equipment | 27,818,341.51 | 27,136,551.74 | 36,462,554.70 | 91,417,447.95 |
| | **Subtotal (included)** | **169,561,185.56** | **179,958,632.22** | **230,795,811.02** | **580,315,628.80** |
| | **Products** | **176,101,611.02** | **201,462,259.54** | **258,036,620.85** | **635,600,491.41** |
| Japan | Personal Accessories | 32,119,520.88 | 34,650,090.03 | 48,323,742.55 | 115,093,353.46 |
| | Camping Equipment | 27,416,246.48 | 29,350,232.90 | 36,217,972.24 | 92,984,451.62 |
| | Golf Equipment | 13,290,265.00 | 12,338,670.76 | 16,154,545.79 | 41,783,481.55 |
| | **Subtotal (included)** | **72,826,032.36** | **76,338,993.69** | **100,696,260.58** | **249,861,286.63** |
| | **Products** | **75,781,108.33** | **86,340,229.66** | **112,137,014.80** | **274,258,352.79** |
| China | Personal Accessories | 27,716,737.87 | 30,563,729.85 | 37,324,169.15 | 95,604,636.87 |
| | Camping Equipment | 25,596,617.45 | 27,384,500.86 | 34,609,956.86 | 87,591,075.17 |
| | Golf Equipment | 12,421,472.89 | 11,699,541.05 | 15,952,282.83 | 40,073,296.77 |
| | **Subtotal (included)** | **65,734,828.21** | **69,647,771.76** | **87,886,408.84** | **223,269,008.81** |
| | **Products** | **68,421,694.23** | **79,080,487.80** | **99,109,351.67** | **246,611,533.70** |
| Canada | Personal Accessories | 23,984,610.07 | 31,878,943.63 | 39,913,105.98 | 95,776,659.68 |

# Example - Use a Calculation in a Filter

In this topic, you learn how to use a summary calculation in a custom filter to find the products with the least revenue, and more specifically, products whose average revenue is 1,000,000 or less.

You want to know the answers to these questions:

- What is the average revenue for the years 2004, 2005, and 2006?
- What is the average revenue for each product?
- Which products had an average revenue of 1,000,000 or less?

If you need more help, see "Use a Summary Calculation" (p. 66) and "Create a Custom Filter" (p. 58).

## Steps

1. Create a new analysis using the **Sales and Marketing (cube)** package.

2. Add the following items to the crosstab:
   - **Revenue** as the default measure
   - all the items in the **Product** level (in **Products**) as the rows
   - **2004**, **2005**, and **2006** (in **Time**) in the columns
3. Using a summary calculation, calculate the average for the years.
4. Using a summary calculation, calculate the average for **Products**.
5. Create a filter to find the least profitable products, such as products whose average revenue is 1,000,000 or less.

   Your analysis will look like this.

Rows: Product | Columns: Time (list) | Context filter:

Filters are applied. See the Properties pane for more details.

| Revenue | 2004 | 2005 | 2006 | *Average (Time (list))* | *Total* |
|---|---|---|---|---|---|
| Aloe Relief | 435,058.15 | 181,052.14 | 101,812.41 | 239,307.57 | **717,922.70** |
| Calamine Relief | 395,937.90 | 165,096.00 | 95,868.00 | 218,967.30 | **656,901.90** |
| Insect Bite Relief | 613,019.94 | 214,709.64 | 155,562.00 | 327,763.86 | **983,291.58** |
| *Average (Product)* | 481,338.66 | 186,952.59 | 117,747.47 | 262,012.91 | **786,038.73** |
| **Subtotal (included)** | **1,444,015.99** | **560,857.78** | **353,242.41** | **786,038.73** | **2,358,116.18** |
| **Products** | **914,352,803.72** | **1,159,195,590.16** | **1,495,891,100.90** | **1,189,813,164.93** | **3,569,439,494.78** |

# Example - Use Custom Rank

In this topic, you override the default rank behavior to analyze the relative performance of order methods.

You want to know the answers to these questions:

- What is the rank of the order methods shown in the crosstab?
- What is the rank of the order methods in relation to all order methods?

If you need more help, see "Exclude Items" (p. 56) and "Use Custom Ranking" (p. 71).

## Steps

1. Create a new analysis using the **Sales and Marketing (cube)** package.
2. Add the following items to the crosstab:
   - **Revenue** as the default measure
   - **Order Method** as the rows
   - **2004**, **2005**, and **2006** (in **Time**) in the columns
3. Exclude **Telephone** and **Fax**.
4. Select **Total** and rank by right-clicking.

Analysis Studio ranks the items. Is the rank the same if you include all items?

5. Right-click the ranked column and click **Edit this Calculation**.
6. In the **Calculate** dialog box, under **Rank**, click **Custom**.
7. Under **Rank within the following**, click **All items**, then click **OK**.
8. In the **Calculate** dialog box, under **Name**, type

   **Rank**, then click **OK**.

   Your analysis will look like this.

| Revenue | 2004 | 2005 | 2006 | *Rank* | *Total* |
|---|---|---|---|---|---|
| Mail | 22,766,850.51 | 16,013,779.49 | 6,905,730.44 | 6 | **45,686,360.44** |
| E-mail | 95,402,796.21 | 44,318,886.43 | 23,701,042.57 | 4 | **163,422,725.21** |
| Web | 473,771,464.65 | 881,315,747.68 | 1,339,714,172.77 | 1 | **2,694,801,385.10** |
| Sales visit | 101,072,721.10 | 79,721,524.37 | 73,918,652.38 | 3 | **254,712,897.85** |
| Special | 13,905,918.75 | 10,769,180.34 | 1,006,100.01 | 7 | **25,681,199.10** |
| **Subtotal (included)** | **706,919,751.22** | **1,032,139,118.31** | **1,445,245,698.17** | | **3,184,304,567.70** |
| **Order method** | **914,352,803.72** | **1,159,195,590.16** | **1,495,891,100.90** | | **3,569,439,494.78** |

# Appendix A: Troubleshooting

This chapter describes some common problems you may encounter.

For more troubleshooting problems, see the Troubleshooting section of the *Administration and Security Guide*.

## Charts in PDF Output Show Unexpected Results

Charts, when viewed in PDF output, have different levels of interaction support, depending on the version of Adobe® Acrobat Reader and the style of chart element.

Adobe Reader version 5 does not support tooltips. Drill up and down and Go to links have limited support, due to technical limitations. Only rectangular areas in charts, such as bars, columns, horizontal labels on the axis, or legend labels can be enabled for drill or Go to interaction. Non-rectangular areas, such as pie slices in pie charts, cannot be enabled for drill or Go to interactions.

Adobe Reader version 6 and 7 supports tooltips, drill up and down, and Go to links for all chart types. When chart elements overlap or are separated by only a few pixels, the interactive region may be smaller than the area shown.

## Unexpected Results for Analysis Studio Reports Using Suppression and Nested Rows

In IBM Cognos Viewer, you run an IBM Cognos Analysis Studio report for which page breaks have been set. Detail items appear only on the page that contains the item for which suppression is applied, and only summary items appear on all other pages.

This may occur because of the following combined conditions:

- The report contains nested levels.
- Suppression is applied to an item nested inside the outermost group.
- In the report options, the page breaks setting is applied to the outermost groups on rows.

To avoid this result, in Analysis Studio you can do one of the following:

- In the report options, clear the page breaks setting.
- Move the outermost group to the context filter area before applying suppression.
- Remove all suppression.

  You can also run the report as is. To prevent this message from appearing, from the **Run** menu, click **Report Options**. On the **Display** tab, clear the checkbox under **Warning page**.

  If you do not have access to Analysis Studio, contact your administrator.

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## Defining Languages for OLAP Data Sources

The first time you publish a cube definition to IBM Cognos Connection, you must identify all the languages that represent the data contained in the cube. If you add a language to the model after the cube is published, users with locales that match the added language locale may find that Analysis Studio does not recognize references to the member unique names. There is no impact on users whose locale matches the original language list.

## Crosstab Shows Percentage But Chart Shows Values

When the crosstab calculates the percentage of the total for an item, the chart does not show the values as a percentage.

## Cannot Drill when Caption Represents a Blank or a Zero-length String

A dimensional model over relational data may return a zero length '' or blank ' ' caption in the row or column in Analysis Studio. When it does, you cannot drill up or down from the set because no link appears.

If this occurs, you can right-click the caption and select **Drill Up** or **Drill Down** in the shortcut menu.

## Performance Issues when Showing Multiple Attributes Using Dimensionally-modeled Relational Data Sources

If you display multiple attributes for the items in a set on the crosstab, you can only select one attribute at a time, so Analysis Studio executes a query for each attribute selection.

The performance of this approach is an expensive one to execute against a relational data source because of the query necessary to retrieve the attribute and its value.

You can select multiple attributes for a selected crosstab set in Analysis Studio by using the **Properties** pane. By selecting multiple attributes before clicking **OK** or **Apply** in the dialog box, only a single query for all selected attributes is executed, instead of one per attribute. Multiple selection in the UI is the preferred approach for enabling the display of more than one attribute for dimensionally modeled relational data source packages, because of the reduced performance impact on the relational data source.

## Error Occurs in Japanese Internet Explorer 7 When Running an Excel Report in Analysis Studio

An error may occur when you close Japanese Microsoft® Internet Explorer 7 installed on Windows® XP SP2 while it is running an Analysis Studio report in Excel format.

To solve this problem, Microsoft recommends that you unregister the msctf.dll file using the following command:

```
Regsvr32/U Msctf.dll
```

This .dll file is part of the ctfmon.exe speech recognition application. You may turn off any speech recognition application installed on your computer before unregistering the .dll file.

For more information about turning off speech recognition, see Microsoft Knowledge Base article 313176.

## 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.

## Report Differences Between TM1 Executive Viewer and IBM Cognos BI with TM1 Data Sources

When using an IBM® Cognos® TM1® data source, comparable reports created in an IBM Cognos BI 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 BI 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 BI match the values in Executive Viewer.

## 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 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: Samples

IBM® Cognos® Analysis Studio includes sample analyses that are based on the fictional retail company, The Great Outdoors. You can find these and other analyses in the Analysis Studio Samples folder on the Public Folders tab of IBM Cognos Connection.

## Combine Filters Sample

This analysis uses several combined filters to answer a business question. This report uses the following features:

- combining filters
- using custom filters

## Custom Rank Sample

This analysis shows a crosstab that uses custom ranking to override the default rank behavior. This report uses the feature:

- custom ranking

## QTD Growth by Product Brand

This analysis uses a cube calculation to show the QTD growth compared to the overall revenue for the product brand. This analysis uses the following features:

- finding top or bottom values
- charting

## Top 10 Promotions by Retailers

This analysis uses two filters to show the top retailers that have regular sales greater than 100,000,000, as well as the percentage of the overall total that is generated by promotions. The user selects the year to be shown. This analysis uses the following features:

- % calculations of total
- finding top or bottom values
- showing an analysis as a crosstab and a chart
- using a context filter as a Go To parameter

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## Difference between Actual and Planned Revenue

This analysis uses a crosstab to show the difference between Actual and Planned Revenue for the top three camping equipment products. This analysis uses the following features:

- finding top or bottom values
- showing an analysis as a crosstab and a chart
- difference calculations

## Revenue vs % Gross Profit by Product Brand

This analysis uses the Sales and Marketing (cube) package to show the revenue and percentage of gross profit by product brand. The Getting Started guide provides a step-by-step example of how to create this analysis. This analysis uses the following features:

- charting
- % calculation

## The Great Outdoors Company Samples

The Great 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 www.ibm.com. For information about specific installation choices and environments, see the IBM® Cognos® *Architecture and Deployment Guide*, or the Proven Practices and the IBM Cognos Implementation Roadmaps on www.ibm.com. For information about audit samples, see the IBM Cognos *Administration and Security Guide*. For information about Mobile samples, see the IBM Cognos Mobile *Installation and Administration Guide*.

The Great Outdoors Company, or GO Sales, or any variation of the Great 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.

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 *Installation and Configuration Guide*. For instructions on how to set up and configure samples, see the IBM Cognos *Administration and Security Guide* or the IBM Cognos *Installation and Configuration Guide*.

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 dashboards

  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.

Samples are available to everyone. To implement security, see the *Installation and Configuration Guide*.

## The Great Outdoors Group of Companies

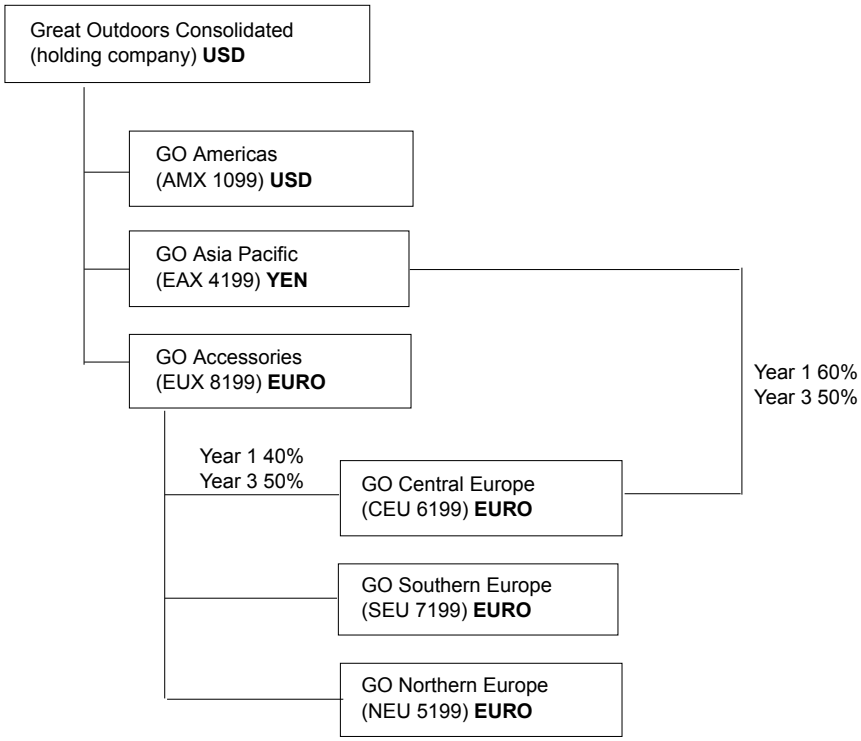
To make designing examples faster, especially financial examples, some general information about The Great Outdoors Company is useful. To look for samples that use particular product features, see the individual sample descriptions in this section.

Revenue for The Great Outdoors Company comes from corporate stores and from franchise operations. The revenues are consolidated from the wholly-owned subsidiaries. There are six distinct organizations, each with its own departments and sales branches. Five of these are regionally-based companies.

The sixth company, GO Accessories:

- Has its own collection of products, differentiated from the other GO companies by brand, name, price, color and size
- Sells from a single branch to all regions and retailers
- Functions both as an operating company based in Geneva, and as a part owner of the three GO subsidiaries in Europe

The diagram below illustrates the consolidated corporate structure, including the percentage changes in ownership for GO Central Europe, and shows the reporting currency and GL prefix for each subsidiary.




Each corporation has the same departmental structure and the same GL structure, shown in the table below. Divisions may not report in the same currencies. For example, the Americas subsidiary reports in US dollars, but the Corporate division local currency is Canadian dollars, and the Operations division local currency is pesos.

| Division (GL) | Department (GL) |
|---|---|
| Corporate (1700) | Sales (1720) |
| | Marketing (1750) |
| | IS&T (1760) |
| | Human Resources (1730) |
| | Finance (1740) |
| | Procurement (1710) |
| Operations (1800) | Production and Distribution (1820) |
| | Customer Service (1820) |

Each corporation has a complete chart of accounts. Most of the accounts, such as those under non-personnel expenses, are at the department level, and contain only summary amounts. For example, although each marketing department has expenses, the cost is unspecified at the transaction level where marketing promotions occur.

## Employees

The Great Outdoors data contains a full list of employees in all divisions, departments, and locations. Data is available for reports about bonuses (Global Bonus report) and sales commissions (Sales Commissions for Central Europe report), training (Employee Training by Year report), and performance reviews and employee satisfaction surveys (Employee Satisfaction 2006). If you use Metric Studio, sample metrics for human resources are also available.

In the GO Data Warehouse (analysis) package, groups of measures and the related dimensions are organized into folders. The employees are organized in hierarchies for region and manager, to make different kinds of aggregation easy to report on. Aggregation has been defined for the Employee Position Summary measures, so that Position count and Planned position count aggregate correctly at each level of time: monthly, quarterly, or yearly. For example, see the Planned Headcount report.

The employees are also listed in a sample LDIF file. This authentication directory is necessary for the Transformer 8 cubes and for IBM® Cognos® Planning samples. No other samples depend on security profiles. For more information, see the IBM Cognos Business Intelligence *Installation and Configuration Guide*.

## Sales and Marketing

Data about sales and marketing is available for all of the companies in the Great Outdoors group. GO Accessories has richer details to support analysis examples. For example, see the Revenue vs % Profit Margin by Product Brand analysis, based on the Sales and Marketing cube. Marketing and sales campaigns are tied to the Great Outdoors regional companies.

Overall, the GO companies have experienced solid growth across most product lines (Sales Growth Year Over Year), in all regions (Revenue by GO Subsidiary 2005), because of factors like an increase in repeat business and new or improved products, such as the high margin sunglasses product line. In the product lines sold by the five regional companies (all but GO Accessories) promotions have had mixed success (Promotion Success by Campaign, Bundle and Quarter). If you use Metric Studio, this can also be seen in the sample metrics.

### Customer Surveys

The data also contains information from customer surveys. For example, the product line that includes bug spray, sun screen, and so on has not been successful (Product Satisfaction - Outdoor Protection 2005) and a source of retailer dissatisfaction may be the level of customer service rather than the returns (Customer Returns and Satisfaction). If you use Metric Studio, this information can also be monitored in metrics.

### Sales Outlets

Revenue from the corporate outlets is available at the transaction level. Revenue from the franchise outlets is available at the consolidated level only (Sales and Marketing cube). Metrics about retailers show that the number of new retail outlets has dropped over the time period covered by this data.

GO Accessories sells worldwide, and sells only accessories. Transaction data for GO Accessories is the primary source for analysis of product by brand, color and size. The other five subsidiaries in the group of companies are regional and sell all product lines for retailers in their region. For

example, the report Top 10 Retailers in 2005 uses sparklines and list data to review revenues at the retailer level.

## Great Outdoors Database, Models, and Packages

The Great Outdoors models illustrate modeling techniques and support the samples. The models are based on the GO data warehouse and the GO sales transactional database and are the basis for the sample reports and queries. Each model contains two packages for publishing analysis (dimensional) and query views of the data.

For a description of each sample report or query, see the user guide for the studio that you open the sample in. For more information about modeling techniques, see the *Guidelines for Modeling Metadata*, or the IBM® Cognos® Framework Manager *User Guide*.

You must have access to Framework Manager, the modeling tool in IBM Cognos BI, to look at the sample models. You may also need to set up the sample databases and connections. For instructions, see the IBM Cognos Business Intelligence *Administration and Security Guide* or the IBM Cognos Business Intelligence *Installation and Configuration Guide*.

### GO Data Warehouse

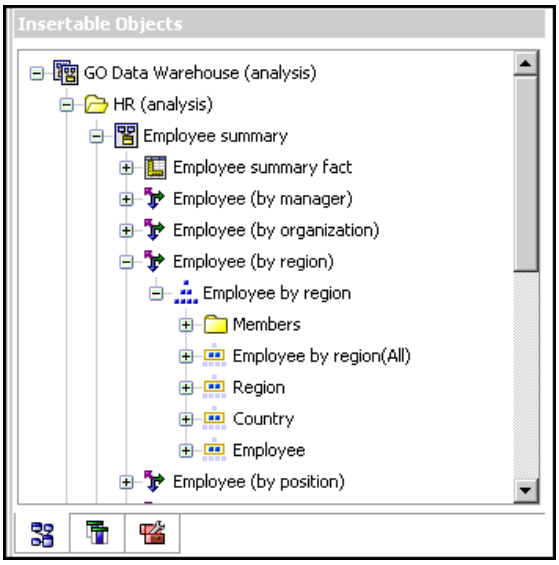
The GO Data Warehouse model, great_outdoors_data_warehouse.cpf, is based on the database GOSALESDW. It contains data about human resources, sales and marketing, and finance, grouped into business areas. In the Database view, the three business areas are grouped into separate namespaces. The Database view contains a fourth namespace (GO Data) for the common information.

The Database view is very similar to the structure of the underlying database. All tables (database query subjects) are unchanged. This enables IBM Cognos BI to retrieve metadata directly from the package in most cases, instead of using a metadata call to the database. The following changes and additions have been made in the Database view:

- Joins have been added as necessary.
- To allow for aggregation at different levels of granularity, some model query subjects have been created. For example, see the relationships between Time and Sales or Sales fact.
- To allow single joins to be made between the lookup tables and each level in a dimension, lookup tables have been copied. For example, see the Products look up tables.

The Business view contains only model query subjects, with no joins. The following changes and additions have been made in the Business view:

- Calculations were added to the model query subjects. For example, the time dimension contains language calculations.
- Where the database has multiple hierarchies, new dimensions have been created to organize each hierarchy. For example, see the employee hierarchies, where employees are organized by manager and region.




## The GO Sales Transactional Database

The GO Sales model, great_outdoors_sales.cpf, is based on the GOSALES database, which is structured as a transactional database. It contains principally sales data.

The Database view is very similar to the underlying database structure. The following changes and additions have been made in the Database view:

- To make it possible to join the fact tables to the time dimension, model query subjects and multipart joins have been used.
- Other joins have been added as necessary.

The Business view contains only model query subjects, with no joins. The following changes and additions have been made in the Business view:

- Calculations were added to the model query subjects.
- Model query subjects that were created in the Database view to enable joins on the time dimension have been linked as reference shortcuts.
- Where the database has multiple hierarchies, new dimensions have been created to organize each hierarchy.
- Sales Staff is a subset of the slowly changing Employee dimension.There is no unique Employee key in GO Sales, so a filter retrieves the current record only. This model does not use historical data.

## The Samples Power Cubes

The following cubes are delivered with the Great Outdoors samples in English, French, German, Japanese and Chinese:

- sales_and_marketing.mdc
- employee_expenses.mdc
- go_accessories.mdc

- go_americas.mdc
- go_asia_pacific.mdc
- great_outdoors_sales_en.mdc

## The Samples Packages

The Great Outdoors samples include six packages. Below is a brief description of each available package.

Go Data Warehouse (analysis) is a dimensionally modeled view of the GOSALESDW database. This package can be used in all studios, including Analysis Studio. Using this package you can drill up and down.

Go Sales (analysis) is a dimensionally modeled view of the GOSALES database. This package can be used in all studios, including Analysis Studio. Using this package you can drill up and down.

Go Data Warehouse (query) is a non-dimensional view of the GOSALESDW database. This package can be used in all studios except Analysis Studio, and is useful for reporting when there is no need for drilling up and down.

Go Sales (query) is a non-dimension view of the GOSALES database. This package can be used in all studios except Analysis Studio, and is useful for reporting when there is no need for drilling up and down.

Sales and Marketing (cube) is an OLAP package, based on the sales_and_marketing.mdc cube.

Great Outdoor Sales (cube) is an OLAP package, based on the great_outdoors_sales_en.mdc cube.

**Note:** The OLAP packages, Great Outdoor Sales (cube) and Sales and Marketing (cube), are not multilingual. The IBM_Cognos_PowerCube.zip archive contains five versions of each package; one in English, French, German, Japanese and Chinese.

# Appendix C: Tips for IBM Cognos Series 7 PowerPlay Users

Like IBM® Cognos® Series 7 PowerPlay Web, IBM Cognos Analysis Studio helps you answer business questions quickly and easily. Analysis Studio supports the same drill-up and drill-down behavior and drag-and-drop control as IBM Cognos Series 7 PowerPlay while addressing demands for more effective ways to analyze large amounts of data.

One important difference between IBM Cognos Series 7 PowerPlay and Analysis Studio is that the amount of data shown in Analysis Studio is reduced to improve query performance, to show only the data you needs, and to help you focus on the analysis.

## What is Different in Analysis Studio?

New techniques for exploration and comparison are required to analyze the large amounts of data that businesses produce.

| What is Different | Details |
|---|---|
| Enhanced user interface | The enhanced IBM® Cognos® Analysis Studio user interface, which includes the source tree, a crosstab, and the overview area, lets you access and manipulate data from large OLAP (online analytical processing) sources. |
| Easier comparative analysis | Two key IBM Cognos Series 7 PowerPlay Windows capabilities are now available for Web use:<br>• selecting multiple members from anywhere in a hierarchy<br>• inserting multiple sets of data in the rows or columns |
| More filters | Enhanced Top or Bottom filters and the ability to create multiple filter rules by combining filters help you to focus on the data that answers your business needs. |
| More calculations | New summary calculations such as average, count, and variance let you summarize a set of related items without the need to retrieve all the data.<br>Ranking calculations such as rank and quartile help to show the relative importance of the data in your analysis. |
| More chart types and chart configurations | IBM Cognos Business Intelligence supports more charts, such as Pareto charts, and more chart configurations, such as 100% stacked charts. |

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| What is Different | Details |
|---|---|
| Support for more data sources | OLAP access is enhanced to expose unique features, such as named sets and attributes. IBM Cognos BI also supports relational data that is dimensionally modeled in IBM Cognos Framework Manager, the IBM Cognos BI modelling solution. |

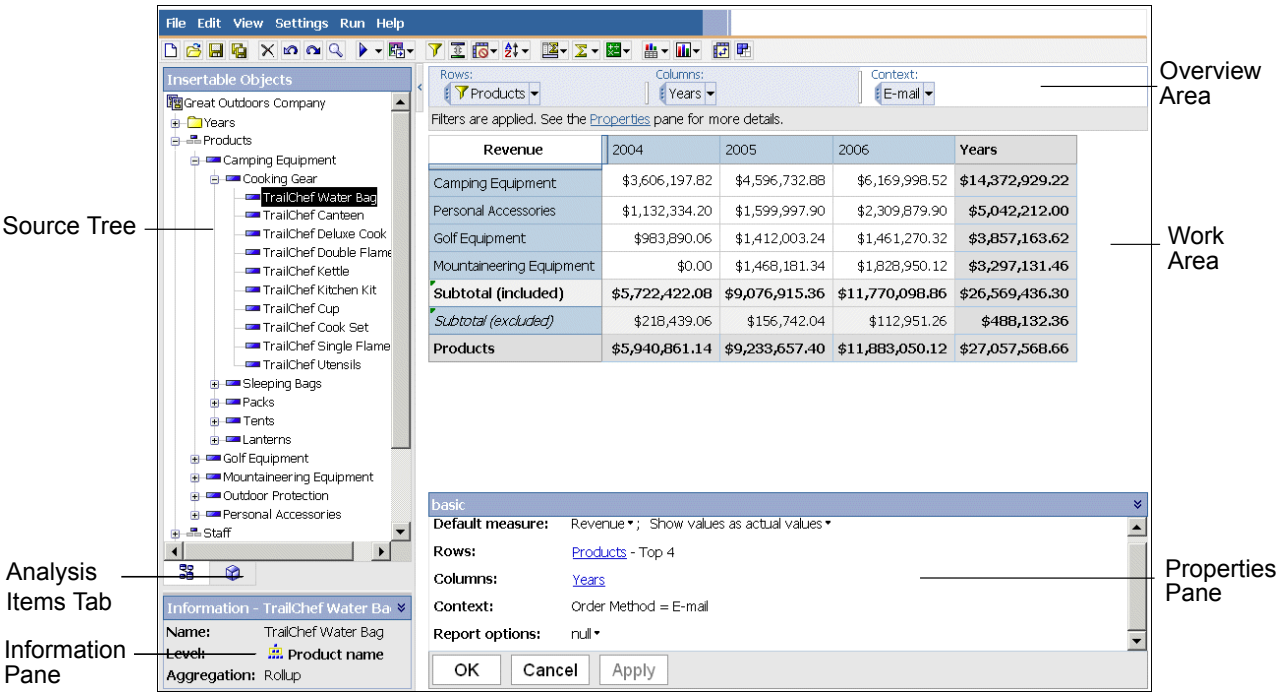
# Mapping IBM Cognos Series 7 to IBM Cognos BI

IBM® Cognos® Business Intelligence retains many of the terms found in IBM Cognos Series 7. Some new terms have been introduced because they are common OLAP terminology. For example, a category is now called a member. Some terms have been updated to be consistent with other IBM Cognos components.

For more information, see "The Analysis Studio Interface" (p. 19).

| IBM Cognos Series 7 PowerPlay | IBM Cognos BI equivalent |
|---|---|
| Dimension viewer | Source tree |
| Dimension line | Overview area |
| Dimension filter | The **Context filter** section of the overview area |
| Category | Member or item |
| Explain | For items in the source tree, use the **Information** pane. For items in a crosstab or chart, use the properties pane. |
| Percent growth | % difference |

The following illustration shows the major interface elements in IBM Cognos Analysis Studio with their new names:




# The Crosstab

When viewing very large reports, much of the data is of little interest to the viewer. IBM® Cognos® Analysis Studio shows an amount of data that is limited by design, as well as by any filters added by the user, and summarizes the remaining data in a single subtotal called **More**. This technique lets you sample enough data to quickly understand the problem and helps you focus on the most significant data.

To change the number of rows or columns that are shown in a set, right-click **More** and change the **Number of Visible Items** setting in the properties pane. The default number of items shown and the maximum number of items shown is controlled by the administrator. For more information, see the *Administration and Security Guide*.

To view all the items in a report, you can run the report like any other report in IBM Cognos BI.

In Analysis Studio:

- the row and column labels are always in view
- in the measures cell of the crosstab, you can right-click to change the default measure
- in the measures cell of the crosstab, you can right-click **Show Values As** to calculate the percentage on nested subtotals, % of each row total, and % of each column total
- you can insert single items with or without details

# The Source Tree

The source tree in IBM® Cognos® Analysis Studio is similar to the dimension viewer in IBM Cognos Series 7 PowerPlay. Some of the icons have changed to be consistent with other IBM Cognos Business

Intelligence components. In some cases, new icons have been introduced to provide more information about the data you are exploring.

The source tree in Analysis Studio limits the number of members that are shown when you browse data. This technique allows you to see data at any level while avoiding the usability and performance issues caused by viewing lists that contain thousands of members. You can search for items of interest and drag the results directly into the crosstab as rows or columns.

| IBM Cognos Series 7 PowerPlay Web | IBM Cognos BI equivalent | Comments |
|---|---|---|
| Cube | Package | In IBM Cognos BI, all data sources published to IBM Cognos Connection are called packages. |
| Dimensions | Dimensions with multiple hierarchies | In IBM Cognos BI, folders cannot be dragged. Only members and measures can be inserted into the crosstab. |
| Category | Member | This icon represents a member. Can also represent root members in a hierarchy that contains multiple root members. |
| | Root Member | This icon represents a root member in a hierarchy that contains only one root member. |
| Measure folder | Measure dimension | The terminology and icon are updated to be consistent with other IBM Cognos BI components. |
| Measure | Measure | This icon represents quantitative data, such as revenue or quantity. |
| | Nonadditive measure | This icon represents a measure that cannot be summarized through addition, such as an average or a percent. |
| Custom subset | Custom set | Custom sets are found on the **Analysis Items** tab. |

# The Toolbar

The toolbar, which provides access to frequently used actions in IBM® Cognos® Analysis Studio, is now at the top of the window to be consistent with other IBM Cognos Business Intelligence components.

This tables describes differences between IBM Cognos Series 7 PowerPlay Web and IBM Cognos BI.

| IBM Cognos Series 7 PowerPlay Web | IBM Cognos BI equivalent | Comments |
|---|---|---|
| Find | Search | Because IBM Cognos BI supports many new data sources, searching is limited to the immediate details of the selected item to maintain performance. |
| | Run | To view all of the data in the analysis or to see how it will show in IBM Cognos Viewer, click the desired output type.<br>You can use the report options to specify a title or expand **More**. |
| Drill Through | Go To | Drill-through capabilities have been enhanced in this release. |
| | Filter | In IBM Cognos Series 7, PowerPlay Windows users can define filter rules, but PowerPlay Web users cannot.<br>Analysis Studio supports filtering by measure, name, or attribute, and provides flexible AND and OR operators. |
| Rank (Top or Bottom option) | Top or Bottom Filter | Top or Bottom filters are extended to focus on a percentage or cumulative sum as well as the top or bottom number of items. |
| Zero Suppress | Suppress Empty Cells | The default suppress option is set to **Zeros and Empty Cells**.<br>To see other options, from the **Settings** menu, click **Suppress**. |

| IBM Cognos Series 7 PowerPlay Web | IBM Cognos BI equivalent | Comments |
|---|---|---|
| Sort | Sort | Analysis Studio offers enhanced sort capabilities. For example, you can sort nested rows and columns in different ways. |
| | Subtotals | Automatic subtotals summarize the rows and columns shown while maintaining the context of data that is filtered out or excluded. |
| | Summarize | Summary calculations, such as count and standard deviation, are available. |
| Calculate | Calculate | New ranking and analytical functions have been added to the many PowerPlay Web calculations as well as the ability to create compound expressions. |
| | Chart type | Additional chart types are available in Analysis Studio, such as Pareto charts, column-line charts, and point charts. |
| Create custom sub-sets | Create custom sets | You can save data of interest as a custom set to preserve its definition. |

# Sets

Sets are the basic building block of IBM® Cognos® Analysis Studio. A set identifies a group of items from a single hierarchy. In IBM Cognos Series 7 PowerPlay Web, most actions apply to all the rows, all the columns, or the entire crosstab. In Analysis Studio, you can manipulate the individual sets in the crosstab.

Sets may be

- sorted by value, label, or attribute
- filtered by value, label, or attribute
- nested or stacked in the crosstab
- used as a dimensional filter

- saved as a custom set for reuse later in the analysis

IBM Cognos Series 7 Version 3 PowerPlay introduced custom subsets to the Web. To define a custom subset, you select a dimension in the dimension viewer and then add it to the crosstab.

To extend this capability, custom sets in Analysis Studio are defined by selecting a set from the rows and columns in the crosstab. This lets you see the data first to confirm your selection and saves the original calculations, sorting, and display properties that define the set.

For example, in IBM Cognos Series 7 PowerPlay, a custom subset based on a search expression maps to a filter by name. But in Analysis Studio, this filter rule may be extended to include measures or attributes such as dates.

**Note:** A popular feature in IBM Cognos Series 7 Version 3 is the ability to select multiple rows or columns and generate a subset from this selection. In Analysis Studio, you can simply select the desired multiple items in the source tree and drag them to the crosstab.

# Frequently Asked Questions

### How do I learn more about Analysis Studio?

The IBM® Cognos® Analysis Studio Quick Tour, which can be found on the **Help** menu, introduces a number of Analysis Studio features. This interactive tour provides step-by-step instructions on how to use Analysis Studio to analyze data.

### Can I use my IBM Cognos Series 7 cubes and reports in IBM Cognos BI?

Yes. You can use cubes created with IBM Cognos Series 7 Version 2 (7.1) or IBM Cognos Series 7 version 3 (7.3) in IBM Cognos Business Intelligence. For up-to-date information about the availability of the migration and upgrade tools, visit the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

You make cubes and reports available in IBM Cognos Connection by using Framework Manager to publish them.

To open IBM Cognos Series 7 reports after they are published, click the **More** link in IBM Cognos Connection for the report you want, and then, on the **Perform an action** page, click **Open with Analysis Studio** or **Open with Report Studio**.

**Note:** If you save over the existing PowerPlay report, it is replaced by the new analysis or report.

### How do I swap rows and columns or rearrange sets?

To swap rows and columns, click the swap rows and columns button on the toolbar. To rearrange nested sets, you can use the interactive overview area to move sets in the crosstab. You can also use the overview area to filter by context.

### How do I expand a set?

In IBM Cognos Series 7, you expand a set by nesting together members from the same dimension. To make this capability more discoverable to new users, **Expand** is now available from the context menu of a set. Select the set, right-click and click **Expand**.

Use **Down a level** or **Up a level** to show the next level of detail and delete the preceding level in one step.

### How do I get to the next or previous layer?

When a dimensional filter has been placed in the **Context filter** section of the overview area, click the drop-down list and click **Next** or **Previous**.

### Has Microsoft SQL Server Analysis Services (SSAS) support improved?

Analysis Studio supports many SSAS features that are unsupported in IBM Cognos Series 7 PowerPlay, such as attributes, named sets, cube roles, and actions.

### Which features have not been brought forward from IBM Cognos Series 7 PowerPlay Web to Analysis Studio?

Several features have not been brought forward to Analysis Studio. You can accomplish some of these tasks by opening the analysis in Report Studio, such as creating prompts from filters, specifying filters based on depth, and exception highlighting, which is called conditional formatting in Report Studio.

80/20 suppression has been replaced with Top or Bottom filtering in Analysis Studio.

# Appendix D: 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 BI 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® BI report, the following message appears:

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.

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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 Business Intelligence Formatting

About 30% of the formatting functions available in IBM® Cognos® BI 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 the following formatting functions available in the Microsoft® Excel spreadsheet software:

- 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 E: Chart Types

IBM® Cognos® Report Studio provides many types of charts for presenting your data in a way that is meaningful for your users.

You can select from a variety of chart types (such as pie, bar, line, gauge, scatter, and so on) and you can select from a variety of chart configurations (such as stacked columns, 3-D pies). Combination charts allow you to use more than one chart type within your chart.

Some chart types are not supported for Microsoft® Excel output or appear differently in Excel. For more information, see "Limitations When Producing Reports in Microsoft Excel Format" (p. 107).

## 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 | pie<br>stacked configuration<br>100 percent stacked configuration |
| Show trends in time or contrast values across different categories | line<br>area<br>bar<br>column |
| Compare groups of related information against actual values | standard configuration<br>radar<br>three-dimensional |
| Compare different kinds of quantitative information | column-line |

## Column Charts

Column charts are useful for comparing discrete data or showing trends over time.

Column charts use vertical data markers to compare individual values.

The following example shows the revenue for each product line.

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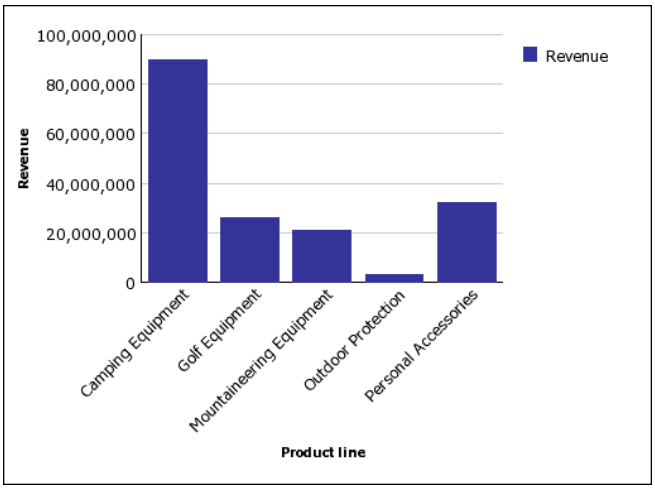


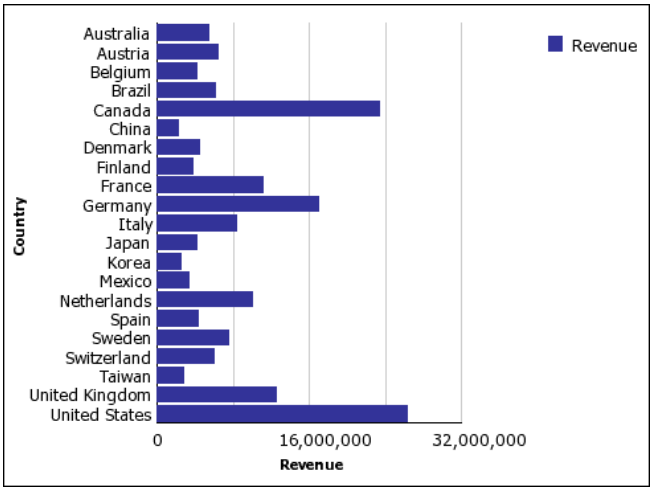

Column charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

# Bar Charts

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

Bar charts use horizontal data markers to compare individual values.

The following example shows revenue for every country.




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

# Pie Charts

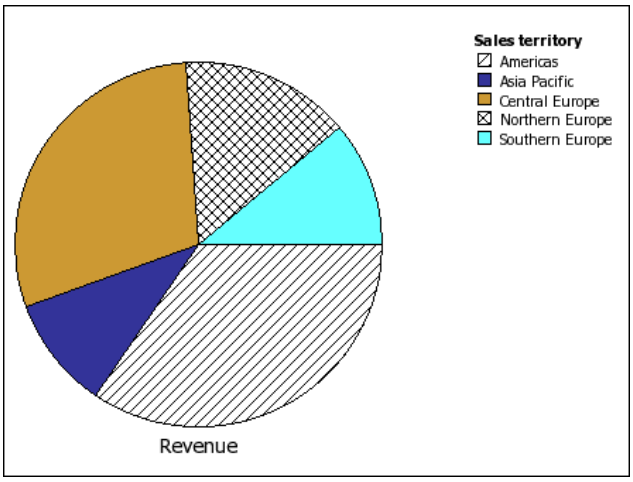
Pie charts are useful for highlighting proportions.

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 pies or gauges per chart. If you need to see more, run the report in Excel 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 Asia Pacific region.




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

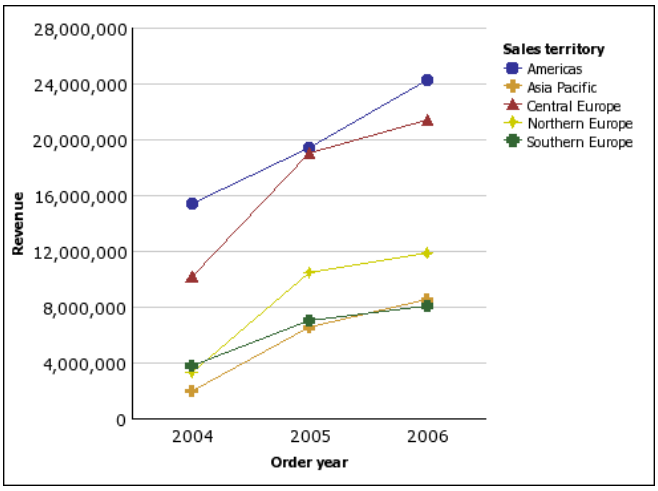
## Line Charts

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

Line charts plot data at regular points connected by lines.

Line charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations. It is best not to use stacked line charts because they are difficult to distinguish from unstacked line charts with multiple data series.

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



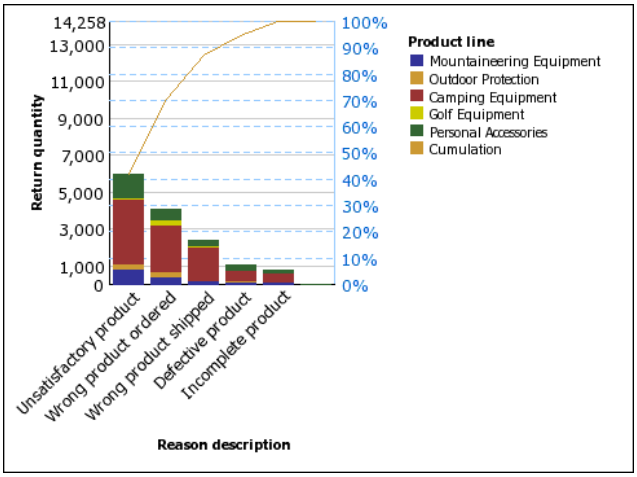
# Pareto Charts

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.

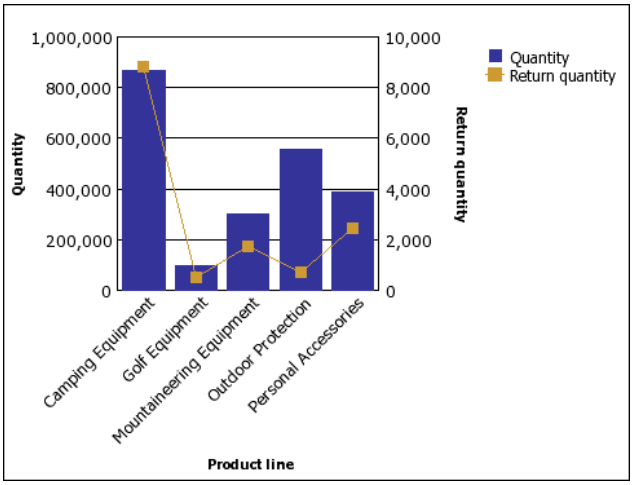



You can also create Pareto charts using horizontal bars.

# Column-Line Charts

Column-line charts are useful for comparing two different measures. An additional quantitative axis appears on the right side of the chart.

This column-line chart shows the quantity of units sold as a column chart and the quantity of returns as a line chart.



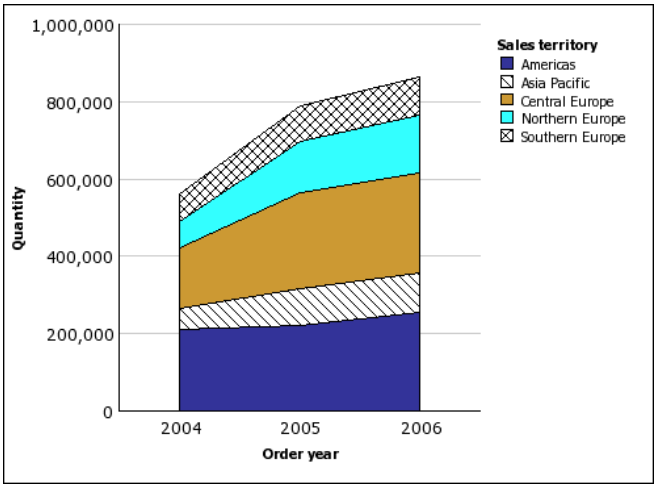
# Area Charts

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.

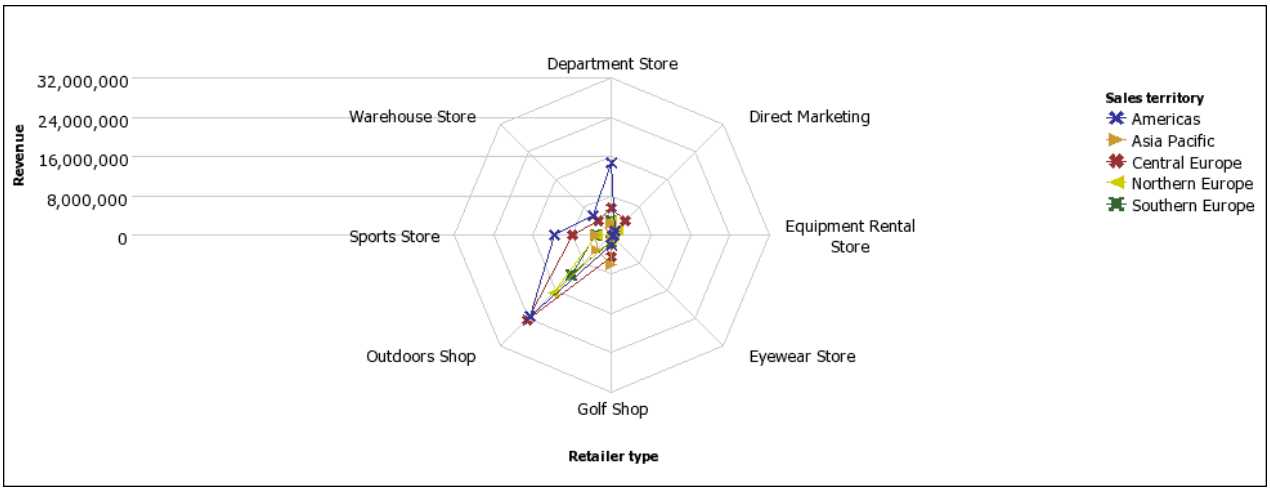



Area charts can plot data using standard, stacked, 100 percent stacked, and three-dimensional configurations.

# 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.

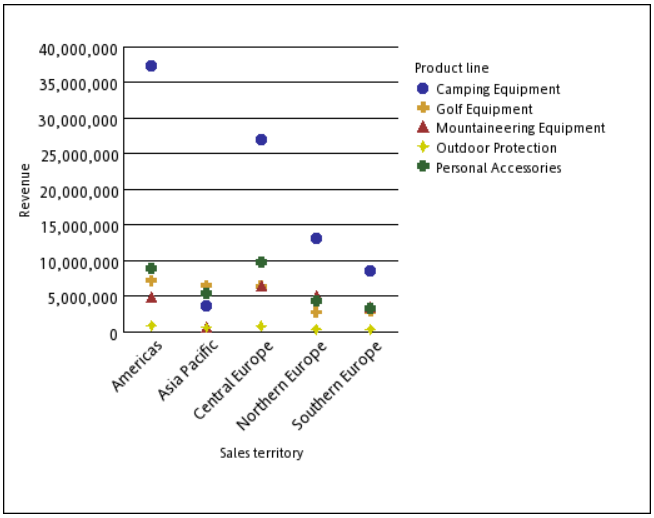
By default, IBM® Cognos® Analysis Studio uses standard and stacked area radar charts. To create a chart as shown in the example, you must use IBM Cognos Report Studio.

# 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.




# 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

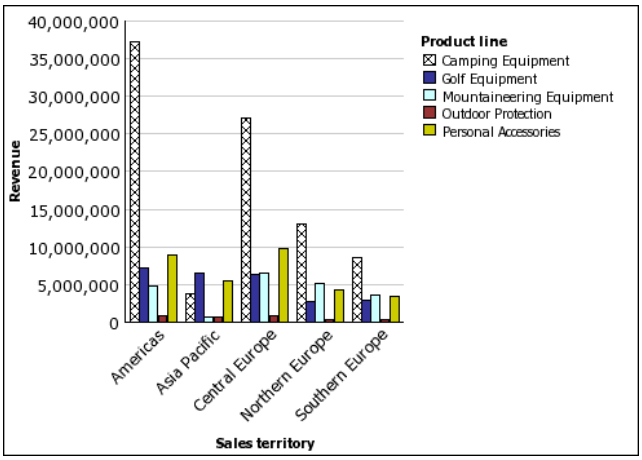
Standard or absolute charts are useful for comparing specific values and for representing discrete data, such as data for different regions or individual employees. For example, a standard column chart that plots regional sales emphasizes the actual value that each region achieves in sales.

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.



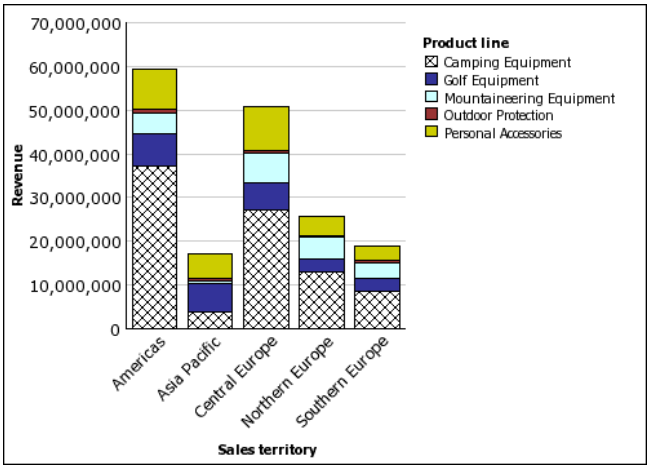

## Stacked Charts

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.



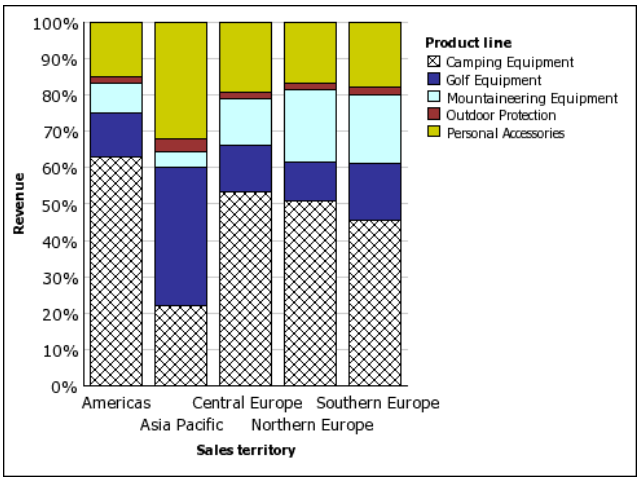

## 100 Percent Stacked Charts

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.



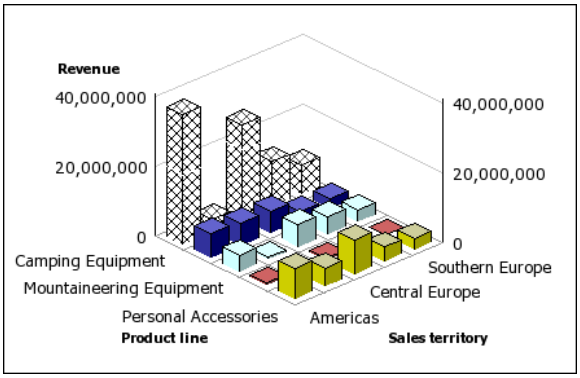

## Three-dimensional Charts

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.



# Glossary

### attribute

In dimensional models, a property that provides qualitative information about members of a level in a dimension. For example, the Store level within the Retailer dimension might have properties such as address or retail space. In general, dimensional attributes do not have measure values or rollups associated with them, but are used to locate or filter members.

In relational models, a query item that is not a measure or identifier. When a query item is an attribute, it is not intended to be aggregated, or used for grouping or generating prompt pick lists.

In BI modeling, a characteristic of an entity which is descriptive rather than a unique identifier or an aggregative measure.

In TM1, a property that provides qualitative information about dimensions.

### 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.

### dimension

In Cognos Planning, a list of related items such as Profit and Loss items, months, products, customers, and cost centers, including calculations. The rows, columns, and pages of a cube are created from dimensions.

In Cognos BI, TM1, and Express, 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.

### 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.

In TM1, to access information by starting with a general category and moving through the hierarchy of information. For example, in a database, to move from field to file to record.

### drill up

To navigate from one level of data to a less detailed level. The levels are set by the structure of the data.

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### 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.

In Data Manager, a particular view of a business dimension. A hierarchy contains the definition of related reference data that is organized into a tree structure of members related as parents and children.

### 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

In Data Manager, a node in a reference structure.

### package

A subset of a model, which can be the whole model, to be made available to the Cognos server.

### 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.

### 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.

### set

A collection of related items or members. Members in a set may be specifically chosen, or selected by one or more filter rules.

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