

# IBM® Cognos® 8 Business Intelligence

**QUERY STUDIO**

**USER GUIDE**



## Product Information

This document applies to IBM® Cognos® 8 Version 8.4 and may also apply to subsequent releases. To check for newer versions of this document, visit the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

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# Introduction

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This document is intended for use with Query Studio. Query Studio is a Web product for creating simple queries and reports.

This document includes procedures and background information to help you create simple business intelligence reports.

## Audience

To use this guide effectively, you should be familiar with your organization's business and its data.

## Related Documentation

Our documentation includes user guides, getting started guides, new features guides, readmes, and other materials to meet the needs of our varied audience. The following documents contain related information and may be referred to in this document.

**Note:** For online users of this document, a Web page such as **The page cannot be found** may appear when clicking individual links in the following table. Documents are made available for your particular installation and translation configuration. If a link is unavailable, you can access the document on the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

Document	Description
IBM Cognos 8 Getting Started	Teaching new users how to use IBM Cognos 8
IBM Cognos Connection User Guide	Using IBM Cognos Connection to publish, find, manage, organize, and view IBM Cognos content, such as scorecards, reports, analyses, and agents
IBM Cognos 8 Administration and Security Guide	Managing servers, security, reports, and portal services; and setting up the samples, customizing the user interface and troubleshooting
Framework Manager User Guide	Creating and publishing models using Framework Manager
Report Studio Professional Authoring User Guide	Authoring reports that analyze corporate data according to specific needs
Report Studio Express Authoring User Guide	Authoring financial reports that analyze corporate data according to specific needs

## **Finding Information**

Product documentation is available in online help from the **Help** menu or button in IBM Cognos products.

To find the most current product documentation, including all localized documentation and knowledge base materials, access the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

You can also read PDF versions of the product readme files and installation guides directly from IBM Cognos product CDs.

## **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.

## **Getting Help**

For more information about using this product or for technical assistance, visit the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)). This site provides information on support, professional services, and education.

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# Chapter 1: What's New?

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This section contains a list of [new](#) features for this release. It also contains a cumulative list of similar information for previous releases. This information will help you plan your upgrade and application deployment strategies and the training requirements for your users.

For changes to previous versions, see "[What's New in Version 8.3](#)" (p. 10).

For information about upgrading, see the IBM Cognos 8 *Installation and Configuration Guide* for your product.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

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

## New Features in Version 8.4

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

### View Lineage Information for Data

You can now view lineage information for a data item to see what the item represents before you add it to a report. A data item's lineage information traces the item's metadata back through the package and the package's data sources. Viewing lineage information ensures that you add the correct data items to a report. For example, you can view the lineage information of a model calculation to see how it was created. You can view this information from Report Studio, Query Studio, Analysis Studio, and Cognos Viewer. For more information, see "[View Lineage Information for Data Items](#)" (p. 76).

### Enhanced Sorting and Filtering

You can now add filters without adding a column. A context menu in the data tree now allows for adding filters directly from the tree without first having to add the data item to the report. Text filters now include multi-line text control. You can paste text from other applications into type-in filters. You can also use wildcards to define filters. For more information, see "[Filters](#)" (p. 49) and "[Sort Data](#)" (p. 62).

For some data items, you can type in the data that you want to filter on and choose from a list of operations such as starts with and contains.

### Extended Suppression Capabilities

You can now suppress rows, columns, or rows and columns based on zero, null, divide by zero, and overflow values in reports created with relational, dimensionally-modeled relational, and OLAP data sources. For more information, see "[Suppress Empty Cells](#)" (p. 78).

## More User Preferences

You can now save more user preferences in Query Studio. New preferences include the following:

- Data retrieval mode allows you to run a report with all data, preview with limited data, or preview with no data.
- You can specify a default template for reports.
- You can select the type of filter dialog to use by default. These include picklist, type-in, or select with search.

For more information, see "[Filters](#)" (p. 49).

## Enhanced Drill-through Capabilities

In earlier versions of IBM Cognos 8, model-based drill-through supported only reports created in Analysis Studio, Query Studio, or Report Studio as targets. Other types of drill-through targets are now supported. For example, you can drill through to PowerPlay Studio reports saved in the content store, or to a PowerCube. A Report Studio author can now define a drill definition that allows a report to be shown on the Go To page only when a specific measure, dimension, hierarchy, alternate hierarchy, level, or query item exists in the source report. This allows the author to restrict when the drill path is available to users.

## What's New in Version 8.3

This section contains a list of new, changed, and deprecated features for past releases. It also contains a cumulative list of similar information for previous releases. Knowing this information will help you plan your upgrade and application deployment strategies and the training requirements for your users.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

For information about upgrading, see the IBM Cognos 8 *Installation and Configuration Guide* for your product.

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

## New Features in Version 8.3

Listed below are new installation components and configuration properties since the last release. Links to directly-related topics are included. Links to further details of the impact of changes are included.

### PDF Horizontal Pagination

Reports can now span two or more page widths in a PDF. This is useful when you want wide data items in lists and crosstabs to show in their original size. The **shrink to fit the page width** option

from previous releases is still available. If you uncheck the **shrink to fit the page width** option, horizontal pagination occurs in the PDF output. This produces a report with two numbers in the footer of the PDF. The first is the vertical pagination number, the second is the horizontal pagination number. For example, 1 1, 1 2, 1 3, 2 1, 2 2, 2 3, and so on.

## Changed Features in Version 8.3

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

For more information about changes in the product behaviour, 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](http://www.ibm.com/software/data/support/cognos_crc.html)).

### Changes to Default Data Formats for OLAP Data Sources

The default formats for calculated values have changed when you use the following OLAP data sources:

- Dimensionally-modeled relational data sources
- IBM Cognos PowerCube
- IBM Cognos 8 Planning - Contributor
- Essbase
- SAP BW

The changes may affect the number of decimal places, the number of group separators, or the rounding precision used in your reports. The following table lists some examples of the changes.

Data format or calculation	Description of change
Group separators	<p>Large percentage results now include group separators (typically a comma at every three digits). For example, 1234.00% becomes 1,234.00%.</p> <p>If none of the values in a calculation or summary use group separators, the results also do not use group separators.</p>
\$0 format	Measures that were formatted with the IBM Cognos format string \$0 (possible with Essbase) now have decimal places, since this format string doesn't specify that decimals should be suppressed.

Data format or calculation	Description of change
Division	<p>If the numerator is a currency with at least one decimal and the denominator is a query constant, a number, or a percentage, the result now has as many decimals as the currency. In all other cases, the result of a division always has three decimals.</p> <p>If the denominator is a query constant, a number, or a percentage, the result now has the same format type as the numerator. In all other cases, the result of a division is a number.</p>
Square root	<p>If the operand is a currency with decimals, its decimal precision is now used for the result. Otherwise the result has three decimal places.</p>
Rounding	<p>The results now have as many decimals as the rounding precision.</p>

You can override these default formats using Report Studio or Query Studio. For more information, see the Knowledge Base on the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

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# Chapter 2: Using Query Studio

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Query Studio is the reporting tool for creating simple queries and reports in IBM Cognos 8.

In Query Studio, you can

- **view data**  
Connect to a data source to view data in a tree hierarchy. Expand the query subjects to see query item details.
- **create reports**  
Use the data source to create reports, which you can save and reuse. You can also create a new report by opening an existing report, changing it, and saving it using another name.
- **change the appearance of reports**  
Improve the layout of your report. For example, you can create a chart, add a title, specify text and border styles, or reorder columns for easy comparison.
- **work with data in a report**  
Use filters, summaries, and calculations to compare and analyze data. Drill up and drill down to view related information.

To use Query Studio effectively, you should be familiar with the Web, as well as your organization's business and its data. You may also need to be familiar with other components of IBM Cognos 8.

## Report Studio

Report Studio is the professional reporting tool for IBM Cognos 8. Use it to author more complex reports.

Report Studio offers greater flexibility in calculating and formatting results. Report authors can open Query Studio reports to create more advanced reports.

The Professional authoring mode gives users access to the full range of Report Studio functionality. In this mode, you can create any report type, including charts, maps, lists, and repeaters, using any data source (relational or multi-dimensional). Professional authoring mode contains a superset of the features available in the Express authoring mode. However, you cannot view live data.

The Express authoring mode provides a simplified and focused Report Studio interface. It is designed for non-technical users to create traditional financial and management statement reports. Express authoring mode allows access only to dimensionally-modeled data and uses a member-oriented data tree.

## IBM Cognos Connection

IBM Cognos Connection is the Web portal for IBM Cognos 8. Use the portal to store and access your reports. If you have the necessary permissions, you can also use the portal for report administration, including scheduling and distributing reports.

Administrators use the portal to administer servers, optimize performance, and specify access permissions.

### **Framework Manager**

Framework Manager is the data modeling tool for IBM Cognos 8.

The packages that you use to generate reports are based on models that are created in the modeling tool, Framework Manager. A model is a set of related objects, such as query subjects, dimensions, filters, and calculations. When you open a package in IBM Cognos 8, these model objects are visible in the left frame.

### **Analysis Studio**

Analysis Studio is the analysis tool for IBM Cognos 8. Use it to explore, analyze, and compare dimensional data.

Analysis Studio helps you answer business questions by finding meaningful information in large data sources.

### **Metric Studio**

Metric Studio is the metrics tool for IBM Cognos 8. Use it to create scorecard applications and monitor the metrics within them.

Metric Studio helps you translate your organization's strategy into relevant, measurable goals that align each employee's actions with a strategic plan.

### **Event Studio**

Event Studio is the event management tool for IBM Cognos 8. Use it to notify decision-makers in your organization of events as they happen, so that they can make timely and effective decisions.

Event Studio ensures that critical information is detected quickly and delivered to key stakeholders in your business. You can create and manage processes that monitor data and perform tasks when the data meets predefined thresholds.

## **Building IBM Cognos 8 Applications**

The lifetime of an IBM Cognos 8 business intelligence application can be months, or even years. During that time, data may change and new requirements appear. As the underlying data changes, authors must modify existing content and develop new content. Administrators must also update models and data sources over time. For more information about using data sources, see the *IBM Cognos 8 Administration and Security Guide* and the *Framework Manager User Guide*.

In a working application, the technical and security infrastructure and the portal are in place, as well as processes for change management, data control, and so on. For information about the workflow associated with creating IBM Cognos 8 content, see the *IBM Cognos 8 Architecture and Deployment Guide*. For additional information, see the IBM Cognos Solutions Implementation Methodology toolkit, which includes implementation roadmaps and supporting documents.

Information about the toolkit is available on the IBM Cognos Software Services Web site (<http://support.cognos.com/en/consulting/csim/index.html>).

The following graphic provides an overview for how to use IBM Cognos 8 to build applications across all of your IBM Cognos 8 components.



#### ❑ Locate and prepare data sources and models

IBM Cognos 8 can report from a wide variety of data sources, both relational and dimensional. Database connections are created in the Web administration interface, and are used for modeling, for authoring, and for running the application.

To use data for authoring and viewing, the business intelligence studios need a subset of a model of the metadata (called a package). The metadata may need extensive modeling in Framework Manager.

#### ❑ Build and publish the content

Reports, scorecards, analysis, dashboards and more are created in the business intelligence studios of IBM Cognos 8. Which studio you use depends on the content, lifespan, and audience of the report, and whether the data is modeled dimensionally or relationally. For example, self-service reporting and analysis are done through Query Studio and Analysis Studio, and scheduled reports are created in Report Studio. Report Studio reports and scorecards are usually prepared for a wider audience, published to IBM Cognos Connection or another portal, and scheduled there for bursting, distribution, and so on. You can also use Report Studio to prepare templates for self-service reporting.

#### ❑ Deliver and view the information

You deliver content from the IBM Cognos portal or other supported portals, and view information that has been saved to portals, or delivered by other mechanisms. You can also run reports, analyses, scorecards, and more from within the business intelligence studio in which they were created.

For information about tuning and performance, see the IBM Cognos 8 *Administration and Security Guide* and the IBM Cognos Resource Center ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

## Open the Web Portal

The IBM Cognos Connection Web portal is a single point of access to all IBM Cognos 8 content. You also use the portal to manage and distribute your reports. For information about other tasks you can do in IBM Cognos Connection, see "[Report Administration](#)" (p. 47).

### Steps

1. Start your Web browser.
2. In the address bar, type the URL supplied by your administrator, and then press Enter.

If prompted, type your logon name, password, and any other information required.

**Tip:** Create a bookmark in your browser for quick access to the portal.

You can now [create a new report](#) using an available package as a data source or [open an existing report](#).

## Creating a Report

When you create a report in Query Studio, you are actually creating a query definition, which is a specific set of instructions for extracting particular data.

Before you can create a report, the administrator must have previously created a package in Framework Manager and published it to a location in the IBM Cognos Connection portal to which you have access. In addition, the administrator must grant you Query Studio capabilities before you can begin. You need the **Create** capability to create reports and the **Advanced** capability to use advanced authoring features, such as creating complex filters.

Before you use Query Studio, answer the following questions:

- What business question do you want to answer? For example, you can ask "Which sales representative sold the most products?"
- Which type of report best answers the business question, a crosstab report or a chart?
- Who is the target audience?
- What data items and calculations do you need?

Creating a report involves the following tasks:

- [Create the report.](#)
- [Add data.](#)
- [Save the report.](#)
- [Run the report.](#)

You can work with the data that appears in the report and change the layout ([p. 37](#)).

## Create a Report

You can create a new report by inserting items from the data source into an empty report.

You can also create a new report by [opening an existing report](#), changing it, and saving it using another name.

### Steps

1. In the IBM Cognos Connection home page, on the **Public Folders** tab, navigate to the package  that you want to use as a data source.

If there is more than one package available, the **Select a Package** page appears. **No Entries** means that no reports were created using this package.

You may not be able to use a package if you do not have access permission. For example, if the data source is a cube, cube security may prevent you from accessing certain data. For more information, contact your administrator.

- From the **Launch** menu in the top right corner, click the **Query Studio** link .
- Query Studio opens. The query items you can use are listed in the left pane.

**Tip:** To exit Query Studio and return to IBM Cognos Connection, click **Return**.

You can now [add data](#) and [save the report](#).

## Open an Existing Report

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

### Steps

- From the **Manage File** menu, click **Open**.
- Locate and click the report you want to open, then click **OK**.

The report opens in Query Studio.

### Tips

- If you want to use the report as the basis of a new report, [save it using a different name](#).
- To browse through the pages of a report, use the links at the bottom of the page.
- To increase the available space for viewing reports, click the hide menu button in the top right corner of the menu.
- To view the menu, click the show menu button  in the top left corner of the report.
- You can also resize the menu, and hide/show toolbars .

## Reports and Package Versions

In Query Studio, reports always use the most recent version of the package. If the package is republished, you are notified that the report will use the newest version of the package. You must save the report to complete the update.

Note that changes to the package can affect the report.

In Cognos Viewer, if you open a saved report after the package it is based on is republished, one of two things happens:

- If the original version of the package still exists, the report runs against the original version.
- If the original version of the package no longer exists, the report is updated to run against the most recent version.

For information about using the report viewer to produce an HTML version of a report, see the IBM Cognos Connection *User Guide*.

The report modeler specifies whether previous versions of a package are preserved. For information about model versioning, see the Framework Manager *User Guide*.

## Add Data to a Report

A new report contains no data. You choose the report items that you want to include in the report from the package. Packages can include

- query subjects
- query items, such as columns of measures and non-measures
- query items created by the data modeler, such as calculated report items
- dimensions organized in hierarchies and levels

Items added from the package to your report are called report items. Report items appear as columns in list reports, and as rows and columns in crosstab reports. In charts, report items appear as data markers and axis labels.

You can expand the scope of an existing report by inserting additional report items, or you can focus on specific data by removing unnecessary report items.

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

You can also add calculations to a report ([p. 71](#)).

### Data Source Icons

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

Icon	Object
	Package, which contains the objects you can insert in a report.
	Namespace, used to organize objects.
	Query subject, which represents a table in the database.
	In relational data sources, query item, which represents a column of qualitative data in the database, such as product name or country. In dimensional data sources, level attribute, which represents a property of a level.

Icon	Object
	A member is a unique item within a hierarchy. For example, Camping Equipment and 4 Man tent are members of the Products Hierarchy.
	Dimension, which represents a broad grouping of descriptive data about a major aspect of a business, such as products, dates, or markets.
	Hierarchy, which represents a collection of dimensional members organized into a tree structure.
	Level, which is a set of members that have common attributes. For example, a geographical dimension might contain levels for country, region, and city.  Multiple levels can exist within a level hierarchy, beginning with the root level. The root level is the parent and rollup of all members in the first level. It is used to obtain a rollup of all values across the hierarchy and to provide a convenient point to start drilling.  For example, a Years level hierarchy may contain the following levels: <ul style="list-style-type: none"> <li>• Root level Years</li> <li>• First level Year</li> <li>• Second level Quarter</li> <li>• Third level Month</li> </ul>
	Measure or fact, a query item that represents a column of quantitative data in the database, such as revenue or quantity.
	Measures folder, which contains hierarchical measures.
	Model filter.
	Folder, used to organize data items. You cannot import a folder into your report.

## Steps

1. Open a report in Query Studio.
2. Click the **Insert Data** menu command.

A tree hierarchy of the selected package appears in the left pane.

**Note:** If you are working with a dimensional data source, the names of levels and members in a dimension come from the model. It is the responsibility of the modeler to provide meaningful names.

3. In the left pane, double-click the items you want to add.

The items appear in the work area.

### Tips

- By default, each new report item follows the last report item, but you can insert an item in a different position. Click an existing heading in your report. The next item you add from the package precedes this heading.
- You can also control the order of items by dragging them to the work area. For example, you can drag an item between two columns that are already in your report.
- To simultaneously add several query items, use Ctrl+click to select multiple items, and then, at the bottom of the left pane, click **Insert**.
- To remove data permanently from your report, click the report item heading, then click the delete button  on the toolbar.

## Save a Report

Save your report to preserve any changes.

What you save in Query Studio is the query definition, which is a specific set of instructions for extracting particular data. It is not a snapshot of the data you retrieve at the time you save the report. For example, if you run a report that you saved two weeks ago, the data in the report reflects any changes in the updated data source.

### Steps

1. Click the save button  on the toolbar.
2. If you are saving the report for the first time, specify where you want to save the report and type a file name.  
If you want to include a description, type the information you want to add in the **Description** box.
3. Click **OK**.

## Save a Report Using a Different Name or Location

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

### Steps

1. Click the save as button  on the toolbar.
2. Specify a name and location.  
To include a description, type the information you want to add in the **Description** box.
3. Click **OK**.

## Run a Report

You can run a report to retrieve any recently updated data from the data source. A Query Studio report also runs when you open it, or when you make any changes.

If you run a report against a data source that does not support functions or features in the report, an error message appears that explains why the action is not supported. This happens more frequently when you use a dimensional data source.

You can cancel a query that is running only during the initial portion of its execution. After this time, the report runs to completion.

For information about other run options, see the IBM Cognos Connection *User Guide*.

### Run with Prompts

In Query Studio, prompts ask for user input to define the content of a report. If a report contains prompts, you are prompted when you open the report and when you run the report. For information about prompts, see ["Use a Prompt" \(p. 59\)](#).

### Run with All Data

The **Run With All Data** command runs the report using the full data source. Running a report can take a long time. If you plan to make several changes to a report, run the report in preview mode to save time and computer resources by limiting the rows of data that your report retrieves.

### Preview Reports with Limited Data

By limiting data retrieval, you can run reports more quickly.

Preview mode improves the report performance only if the data modeler defines one or more design mode filters in the Framework Manager project. Design mode filters restrict the amount of data that a preview report retrieves to a predetermined limit. A report based on a package that does not contain a design mode filter is not faster when run in preview mode.

Preview mode does not work if you are using a dimensional data source. In addition, a report in limited data mode does not compute rollups.

**Note:** You cannot change this predetermined limit in Query Studio. For information about creating filters in Framework Manager, see the Framework Manager *User Guide*.

When you use this command, remember that the data retrieved in preview mode is not complete. The accuracy of the data returned is limited to the number of preview rows predefined in the model. For example, summarized values will be incorrect because they do not include all of the data.

When a preview uses limited data, a torn border appears at the top and bottom of your report as a visual reminder that you are not using the entire data source.

Limited data		
Product line	Country	Quantity
Camping Equipment	Germany	103,412
	Japan	3,562
	United States	117,136
Camping Equipment		<b>117,136</b>
Golf Equipment	Germany	6,410
	Japan	7,158
	United States	10,470
Golf Equipment		<b>10,470</b>
Mountaineering Equipment	Germany	27,584
	Japan	3,330
	United States	34,132
Mountaineering Equipment		<b>34,132</b>
Outdoor Protection	Germany	39,006
	Japan	28,172
	United States	68,630
Limited data		

### Preview Reports with No Data

Preview reports with no data when you want to see what your report will look like without using actual data. This is useful when you are designing your report or when you want to make formatting changes. When you preview reports with no data, you do not use the data source at all. Artificial data replaces the numbers and characters from the data source. None of the data is correct.

When a preview uses no data, a torn border appears at the top and bottom of your report as a visual reminder that you are not using the entire data source.

Data is turned off		
Product line	Country	Quantity
abcd	abcd	1,234
	abcd	1,234
	abcd	1,234
abcd		<b>1,234</b>
abcd	abcd	1,234
	abcd	1,234
	abcd	1,234
abcd		<b>1,234</b>
Summary		<b>1,234</b>

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, choose how to run the report:
  - To run the report using all data, click **Run with All Data** .

- To run the report using limited data, click **Preview with Limited Data**.  
If the package that the report is based on contains a design filter, performance is improved.
- To run the report using no data, click **Preview with No Data**.

## Set Default Run Commands

You can set the default behavior for how data is displayed in new reports.

**Note:** You may not have the option to set the default run commands. For more information, contact your administrator.

The run commands for reports include the following:

- Run with all data (p. 21)
- Preview reports with limited data (p. 21)
- Preview reports with no data (p. 22)

### Steps

1. Open a report in Query Studio.
2. From the **Manage File** menu, click **My Preferences**.
3. From the **Default data display** menu, choose how the data is displayed when you run the report:
  - To set the default run option to run the report using all data, click **Run with All Data**.
  - To set the default run option to run the report using limited data, click **Preview with Limited Data**.
  - To set the default run option to run the report using no data, click **Preview with No Data**.
4. Click **OK**.

## View a Report in PDF Format

To save a snapshot of your report data, you can create a PDF version of your report.

**Note:** When you want to print a report, use the PDF format for best results.

You must have Adobe Acrobat Reader installed on your computer to view a report in PDF format.

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in PDF Format** .

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 Report** menu, click **Specify PDF Options**.

## View a Report in CSV Format

You can view list reports 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, you may see Excel appear within 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, then the browser will call that application.

You cannot view charts or crosstab reports in CSV format.

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in CSV Format**.  
The report opens in a spreadsheet.
3. In the **File** menu, click **Save As**, and specify a name and location.  
The report is saved as a text file that you can import into other products.

## View a Report in XML Format

You can view reports in XML format.

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in XML Format**.  
The report opens in XML format in a new window.

## View a Report in Excel 2000 Format

You can view reports in Microsoft Excel versions earlier than 2002.

Excel 2000 format supports up to 65,536 rows and multiple sheets.

### Date Formats and Excel

The IBM Cognos 8 full date format does not always display 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, re-apply the proper format in Excel.

Other limitations exist when producing reports in Microsoft Excel format.

For information about these limitations, see "[Limitations When Producing Reports in Microsoft Excel Format](#)" (p. 97).

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in Excel 2000 Format**.

The report opens in a new window.

## View a Report in Excel 2000 Single Sheet Format

You can view reports on a single sheet in Microsoft Excel versions earlier than 2002.

Excel 2000 single sheet format offers improved security. Excel 2000 may have cookies in the URLs to spreadsheets, which could be used to illegally impersonate a user. Excel 2000 single sheet format does not use outgoing URLs. However, there is a limit of 65,536 rows, and page breaks for multiple-author pages are ignored.

Excel 2000 single sheet format also offers the following benefits:

- Works with SSL protocol.
- Works with a single signon.  
Secure reports can be accessed without subsequent signons because the system automatically identifies users and provides security information.
- Works with Netscape 7.01.
- Spreadsheets are contained in a single file for reliable spreadsheet navigation.

### Date Formats and Excel

The IBM Cognos 8 full date format does not always display 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, re-apply the proper format in Excel.

Other limitations exist when producing reports in Microsoft Excel format.

For information about these limitations, see "[Limitations When Producing Reports in Microsoft Excel Format](#)" (p. 97).

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in Excel 2000 Single Sheet Format**.

The report opens in a new window.

## View a Report in Excel 2002 Format

You can view reports in Microsoft Excel versions 2002 and later.

Excel 2002 format offers the following benefits:

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

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

- Works with Netscape 7.01.
- Spreadsheets are contained in a single file for reliable spreadsheet navigation.

Limitations exist when producing reports in Microsoft Excel format.

For information about these limitations, see "[Limitations When Producing Reports in Microsoft Excel Format](#)" (p. 97).

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in Excel 2002 Format**.

The report opens in a new window.

## Open a Report in Report Studio

You can open a Query Studio report in Report Studio to add more functionality to your report.

You must have the necessary permissions before you can open a Query Studio report in Report Studio.

### Step

- From the **Manage File** menu, click **Open in Report Studio**.

You cannot reopen the report in Query Studio after you save it in Report Studio.

## Print a Report

Print your report to obtain a paper copy.

For best results, use the PDF format when you want to print a report.

You can also print a report from IBM Cognos Connection. For more information, see the IBM Cognos Connection *User Guide*.

### Steps

1. Open a report in Query Studio.
2. From the **Run Report** menu, click **View in PDF Format** .

The report opens in PDF format.

3. On the Acrobat Reader toolbar, click print.
4. Select the print options you want and click **OK**.

## Creating Accessible Reports

Creating accessible reports ensures access of information to all users, with all levels of ability.

For example, blind users may use screen reading technology to access the information in a report.

The following are some design considerations for creating accessible reports:

- Avoid using visual cues, such as bold text or color, to convey important information.
- Avoid using pictures and OLE Objects in PDF documents, as these items are tagged as artifacts and ignored by the screen reader.
- Avoid using conditional formatting to convey important information.
- Ensure there is a table corresponding to chart types that are rendered as images because the screen reader ignores this information.
- Deliver reports through HTML, as it is the most supported output format for most screen readers.
- Always ensure there is a title on the report.
- Gain an understanding for screen reading technology.
- Avoid spelling and grammar errors, as they cause the screen reading software to misinterpret the information.
- Avoid using features like calendar boxes and up and down selections on time controls. Using prompts such as check boxes, radio buttons, combo boxes, and multi-select boxes is fine.
- Ensure the target application is accessible when choosing to use embedded Web applications or drill-through paths.
- Avoid using large, complex list or crosstab reports.

Displaying the information in multiple simple lists or crosstab reports is more manageable for users of Assistive Technology.

## Get the Report Definition

The **Report Definition** command describes the report items in each report and gives users, administrators, and customer support an important troubleshooting tool.

**Note:** You cannot change the report properties.

### Steps

1. Open a report in Query Studio.
2. From the **Manage File** menu, click **Report Definition**.

The **Report Definition** dialog box appears. It contains a table that lists every filter, report item, and corresponding expression in the report.

**Tip:** Click **Query Information** to display a text box containing information about the query that you can send to customer support for troubleshooting if needed.

## Setting up a Multilingual Reporting Environment

You can create reports that show data in more than one language and use different regional settings. This means that you can create a single report that can be used by report consumers anywhere in the world.

The samples databases provided with IBM Cognos 8 store a selection of text fields, such as names and descriptions, in more than 25 languages to demonstrate a multilingual reporting environment. For information about how data is stored in the samples databases and how the samples databases are set up to use multilingual data, see the *Administration and Security Guide*.

Here is the process for creating a multilingual reporting environment:

- ❑ Use multilingual metadata.

The data source administrator can store multilingual data in either individual tables, rows, or columns.

For more information about configuring your database for multilingual reporting, see the *Administration and Security Guide*.

- ❑ Create a multilingual model.

Modelers use Framework Manager to add multilingual metadata to the model from any data source type except OLAP. They add multilingual metadata by defining which languages the model supports, translating text strings in the model for things such as object names and descriptions, and defining which languages are exported in each package. If the data source contains multilingual data, modelers can define queries that retrieve data in the default language for the report user.

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

- ❑ Create multilingual maps.

Administrators and modelers use a Windows utility named Map Manager to import maps and update labels for maps in Report Studio. For map features such as country and city names, administrators and modelers can define alternative names to provide multilingual versions of text that appears on the map.

For more information, see the Map Manager *Installation and User Guide*.

- ❑ Create a multilingual report.

The report author uses Report Studio to create a report that can be viewed in different languages. For example, you can specify that text, such as the title, appears in German when the report is opened by a German user. You can also add translations for text objects, and create other language-dependent objects.

For more information, see the Report Studio *Professional Authoring User Guide*.

- ❑ Specify the language in which a report is viewed.

You can use IBM Cognos Connection to do the following:

- Define multilingual properties, such as a name, screen tip, and description, for each entry in the portal.
- Specify the default language to be used when a report is run.

**Tip:** You can specify the default language on the run options page, in the report properties, or in your preferences.

- Specify a language, other than the default, to be used when a report is run.

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

The data then appears in the language and with the regional settings specified in

- the user's Web browser options
- the run options
- the IBM Cognos Connection preferences

Any text that users or authors add appears in the language in which they typed it.

## Report Types

In Query Studio, you can create the following report types:

- [list reports](#)
- [crosstab reports](#)
- [charts](#)

Use report types to look at data in different ways or to answer different business questions. For example, you create a list report to show your entire customer base, and you create a crosstab report to show the quantity of units sold broken down by product line and country. You can create a chart to present data graphically.

You can also combine a chart with either a list report or a crosstab report.

## List Reports

Use list reports to show columns of information, such as product lists or customer lists.

Product line	Quantity
Personal Accessories	389,908
Mountaineering Equipment	301,958
Golf Equipment	99,400
Camping Equipment	866,234
Outdoor Protection	557,854
Summary	<b>2,215,354</b>

A list report shows data in rows and columns. You can apply a filter, summary, or calculation to manipulate the data that appears in the report.

By default, Query Studio automatically suppresses duplicates, summarizes detail values, and generates footer summaries for measures. You can change these defaults (p. 65).

By default, Query Studio builds list reports when you create a report from scratch. You can try [creating a list report](#) yourself.

### Example - Create a List Report for Quantity

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of units sold for each product line in all countries. You can retrieve this information using a list report.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

#### Steps

1. In the IBM Cognos Connection home page, click the **Public Folders** tab.  
All available packages appear.
2. Click the **GO Data Warehouse (query)** package.
3. From the **Launch** menu in the top right corner, click the **Query Studio** link .  
Query Studio opens, and the **GO Data Warehouse (query)** query items appear in the left pane.
4. Expand **Sales and Marketing (query)**.
5. Expand **Sales (query)**.
6. Expand **Product**.
7. Double-click the **Product line** item.
8. Expand **Sales fact**.
9. Double-click the **Quantity** item.  
By default, the report item heading uses the name of the underlying item in the data source. You can also add a descriptive title to the report.
10. At the top of the report, click the **Title** link.
11. In the **Title** box, type  
**Units Sold**
12. Click **OK**.  
You now have a titled report listing the units sold for every product line.
13. Click the save button  on the toolbar.
14. In the **Name** box, type  
**Units Sold**

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

<b>Units Sold</b>	
Product line	Quantity
Camping Equipment	27,301,149
Golf Equipment	5,113,701
Mountaineering Equipment	9,900,091
Outdoor Protection	12,014,445
Personal Accessories	34,907,705
<b>Summary</b>	<b>89,237,091</b>

## Grouped List Reports

A simple list report that contains columns of unique values is easy to understand. However, after you add more columns, you may find that duplicate values appear in your report.

Grouping a report sorts the data and suppresses duplicate values in the grouped column. For example, a report contains information about the quantity of units sold, in columns named Product line, Country, and Quantity. Each product line is sold in more than one country, so the same product line value appears in multiple rows in the Product line column.

Product line	Country	Quantity
Camping Equipment	Germany	103,412
Camping Equipment	Japan	3,562
Camping Equipment	United States	117,136
Golf Equipment	Germany	6,410
Golf Equipment	Japan	7,158
Golf Equipment	United States	10,470
Mountaineering Equipment	Germany	27,584
Mountaineering Equipment	Japan	3,330
Mountaineering Equipment	United States	34,132
Outdoor Protection	Germany	39,006
Outdoor Protection	Japan	28,172
Outdoor Protection	United States	68,630
Personal Accessories	Germany	43,014
Personal Accessories	Japan	21,984

You group by product line to

- suppress duplicate values of the product line report item
- sort the product lines alphabetically
- generate footer summaries for each product line

Product line	Country	Quantity
Camping Equipment	Germany	103,412
	Japan	3,562
	United States	117,136
Camping Equipment		<b>224,110</b>
Golf Equipment	Germany	6,410
	Japan	7,158
	United States	10,470
Golf Equipment		<b>24,038</b>
Mountaineering Equipment	Germany	27,584
	Japan	3,330
	United States	34,132
Mountaineering Equipment		<b>65,046</b>
Outdoor Protection	Germany	39,006
	Japan	28,172
	United States	68,630

For more information, see "[Group Identical Values](#)" (p. 63). You can try [creating a grouped report](#) yourself.

### Example - Create a Grouped List Report for Units Sold

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of units sold for each product line in three specific countries. You reuse a list report that already contains some of the necessary data, and add another column.

At first, your report shows the total quantity of units sold for all product lines in all countries. You apply a filter to the Country column and group by product line to suppress the duplicate values in the Product line column.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example list report (p. 30).

#### Steps

1. Open the **Units Sold** report.
2. Click the heading of the **Quantity** column.
3. Click the **Insert Data** menu command.
4. Expand **Sales and Marketing** (query).
5. Expand **Sales** (query).
6. Expand **Retailer site**.
7. Double-click the **Retailer country** item.

A column appears that represents this item, to the left of the **Quantity** column. You now have a report listing the quantity of units sold for every product line in all countries. However, you

are interested only in the quantity of units sold in three specific countries. Apply a filter to include only the countries you want.

8. Click the heading of the **Retailer country** column.
9. Click the filter button  on the toolbar.
10. In the **Show only the following** box, click **Germany, Japan, and United States**, and then click **OK**.

By default, the filters appear in the subtitle.

You can group by product line to suppress the duplicate values in the **Product line** column.

11. Click the heading of the **Product line** column.
12. Click the group button  on the toolbar.

The values in the Product line column are sorted alphabetically, and duplicate values are removed.

13. Click the save as  button on the toolbar.
14. In the **Name** box, type

**Grouped Units Sold**

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

<b>Units Sold</b>		
Retailer country: Germany, Japan, United States		
Product line	Retailer country	Quantity
Camping Equipment	Germany	1,547,097
	Japan	2,031,007
	United States	4,460,492
<b>Camping Equipment</b>		<b>8,038,596</b>
Golf Equipment	Germany	281,703
	Japan	369,778
	United States	858,351
<b>Golf Equipment</b>		<b>1,509,832</b>
Mountaineering Equipment	Germany	539,671
	Japan	685,229
	United States	1,591,904
<b>Mountaineering Equipment</b>		<b>2,816,804</b>
Outdoor Protection	Germany	773,127
	Japan	902,891
	United States	2,033,754

## Crosstab Reports

A crosstab report shows a measure at the intersection of each row and column. This is useful for showing more information in a smaller area. For example, if a report shows Product line as columns, Country as rows, and Quantity as the measure, the value at the intersection of each column and row shows the quantity of units sold for that product line and that country.

Quantity	Camping Equipment	Golf Equipment	Mountaineering Equipment	Outdoor Protection
Germany	103,412	6,410	27,584	39,000
Japan	3,562	7,158	3,330	28,100
United States	117,136	10,470	34,132	68,000
<b>Summary</b>	<b>224,110</b>	<b>24,038</b>	<b>65,046</b>	<b>135,800</b>

You can try [creating a crosstab report](#) yourself.

## Create a Crosstab Report

Use a crosstab report to show summary information. For example, you create a crosstab report to show quantity of units sold by product line for each country.

Like list reports, crosstab reports show data in rows and columns. However, the values at the intersection points of rows and columns show summarized information rather than detailed information.

When working with a dimensional data source, and inserting members into a crosstab, ensure that you insert members from the same hierarchy only on one of the crosstab edges. If you insert members from the same hierarchy on both edges of the crosstab, you may encounter unexpected results. For example, a report that uses members from years in the rows and quarters in the columns is very difficult to read because the useful numbers are distributed over a large area of mostly blank cells.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the report item you want to use as the top row.
3. Click the pivot button  on the toolbar.

The values of the selected report item are now column headings. The other report items become row headings, and the measure is now at the intersection of the two.

**Tip:** To change the crosstab report back to a list report, click the top row, and then click the ungroup button  on the toolbar.

## Example - Create a Crosstab Report for Units Sold

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of units sold for each product line in three specific countries. You reuse the grouped report that already contains the necessary data, and change the layout for improved analysis.

Before you try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example grouped list report ([p. 32](#)).

### Steps

1. Open the **Grouped Units Sold** report.

- Click the heading of the **Retailer country** column.
- Click the pivot button  on the toolbar.

The values of the Country column are now column headings. The values of the Product line column become row headings. The measure is at the intersection of the two.

- Click the save as button  on the toolbar.
- In the **Name** box, type  
**Crosstab Units Sold**
- Leave the destination folder as **Public Folders**, and click **OK**.

<b>Quantity</b>	Germany	Japan	United States	<b>Summary</b>
Camping Equipment	1,547,097	2,031,007	4,460,492	<b>8,038,596</b>
Golf Equipment	281,703	369,778	858,351	<b>1,509,832</b>
Mountaineering Equipment	539,671	685,229	1,591,904	<b>2,816,804</b>
Outdoor Protection	773,127	902,891	2,033,754	<b>3,709,772</b>
Personal Accessories	1,943,013	2,798,222	6,777,576	<b>11,518,811</b>
<b>Summary</b>	<b>5,084,611</b>	<b>6,787,127</b>	<b>15,722,077</b>	<b>27,593,815</b>

## Charts

Use charts to present information graphically.

A report requires at least one measure and one non-measure to produce a chart. Measures are quantitative data, such as figures for sales, costs, and quantities. Non-measures are qualitative data, such as names, addresses, and countries.

How the data is plotted depends on the chart type. The maximum number of non-measures is two. You can plot any number of measures in a report. However, a chart that has more than four or five measures is difficult to understand.

Query Studio charts plot the most summarized data in the report. Focus the chart by eliminating unnecessary measures from your report and reordering the columns (p. 42) so that the most significant non-measures are in the outer levels of nesting.

For more information, see "Chart Types" (p. 89).

## Create a Chart

Use charts to see patterns and trends in data. For example, you can see how actual sales compare to projected sales, or whether sales are falling or rising over quarterly periods.

You can show just the chart, or the chart with the table appearing under the chart.

### Steps

- Open a report in Query Studio.
- Reorder report items, if necessary.

3. Click the chart button  on the toolbar.
4. In the **Chart type** box, click a chart style.
5. Click a chart configuration.
6. If you want to view only the chart, click **Chart only**.
7. If you want the values to appear on the chart, select the **Show the values on the chart** check box.
8. Click **OK**.

**Tip:** To remove a chart, click the chart button on the toolbar, and then in the **Chart** dialog box, click **None**.

### Example - Create a Pie Chart for Units Sold

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a chart that illustrates the relative contribution each product line makes to the quantity of units sold. You reuse the units sold report to create a pie chart that emphasizes the percentage contribution of each product line.

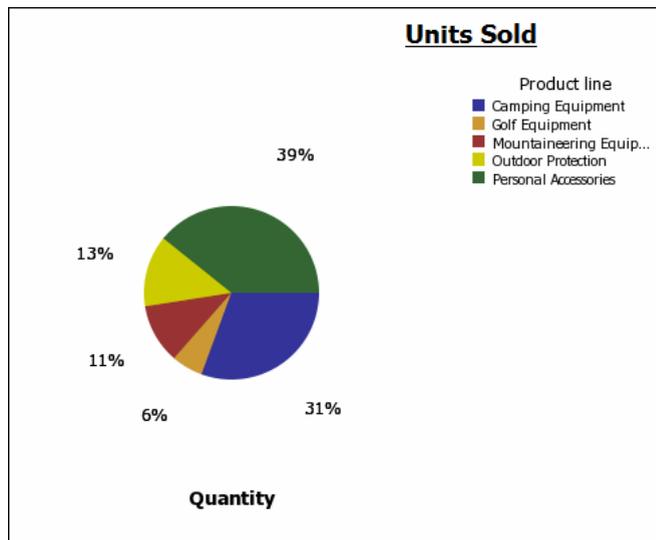
When the focus of a report is actual values, and not relative contribution, create a column chart.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must already have created the example report for sales ([p. 30](#)).

### Steps

1. Open the **Units Sold** report.
2. Click the chart button  on the toolbar.
3. In the **Chart type** box, click **Pie**.
4. Click **100 Percent**.
5. Select the **Show the values on the chart** check box.
6. In **Show the following in the report**, click **Chart only**, and then click **OK**.
7. Click the save as button  on the toolbar.
8. In the **Name** box, type  
**Units Sold Pie**
9. Leave the destination folder as **Public Folders**, and then click **OK**.



### Download a Chart

You can download a chart onto your computer. This is useful when you want to send the chart to someone else or view the chart at a later time.

#### Steps

1. In IBM Cognos Connection, navigate to the report you want.
2. Under **Actions**, click **Run with options** .
3. In the **Format** box, click **HTML**.

You can download a chart only if the report is run in HTML format.

4. Click **Run**.  
The report runs in Cognos Viewer.
5. Right-click the chart you want to download to your computer and click **Download Chart**.
6. Click **Save** and choose the location where you want to save the chart.

The chart is saved as a Portable Network Graphics (.png) file.

## Changing the Appearance of Reports

You can change the appearance of your reports to make them easier to understand and interpret without changing the underlying data. For information about changing the data itself, see "[Working with Data](#)" (p. 49).

In Query Studio, you can change the appearance of reports by

- [applying a template](#)
- [changing the title](#)
- [formatting text and data](#)

- [formatting borders](#)
- [collapsing or expanding a report](#)
- [reordering report items](#)
- [changing the heading name](#)
- [swapping rows and columns](#)
- [controlling the number of rows per page](#)
- [highlighting key information](#)
- [setting page breaks](#)

If you have the necessary permissions, you can use Report Studio to make more extensive changes, such as adding borders and modifying object properties. However, after you edit a report in Report Studio, you can no longer edit it in Query Studio. For more information, see the Report Studio *Professional Authoring User Guide*.

### Apply a Template

You can apply a template to your report pages and prompt pages to give them the same look. For example, you can use a Query Studio template to customize page headers and footers and to re-style layout objects.

By default, Query Studio uses a system-wide template. You can change the system-wide template used with another template. For more information, see the *Administration and Security Guide*.

Query Studio templates must be created in Report Studio before they can be applied. For more information, see the Report Studio *Professional Authoring User Guide*.

#### Steps

1. Open a report in Query Studio.
2. From the **Change Layout** menu, click **Apply Template**.
3. Click **Apply a template** and then click **Select a template**.
4. Locate the template you want to apply and click it.
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**.

#### Tips

- To remove a template, in the **Apply Template** dialog box, click **Do not apply a template**.

- If you make style changes after applying a template, you can restore the styles in the report back to those specified in the template. From the **Change Layout** menu, click **Reset Font and Border Styles**.

## Set a Default Template

You can set a default template to use for new reports.

### Steps

1. Open a report in Query Studio.
2. From the **Manage File** menu, click **My Preferences**.
3. Click **Apply a template** and then click **Select a template**.
4. Click the template that you want to apply.
5. Click **OK**.

## Change the Title

You can create your own descriptive report titles and subtitles.

By default, the link "Title" appears in a new report. Replace this with a more meaningful title, or remove it.

In addition, you can choose to show filter (p. 54) links and sort (p. 62) links in the title area.

The title appears only in the report. Changing the report title does not change the report name that appears in IBM Cognos Connection. For information about changing the report name, see the IBM Cognos Connection *User Guide*.

### Steps

1. Open a report in Query Studio.
2. From the **Change Layout** menu, click **Edit Title Area**.
3. In the **Title** box, type a new title.
4. If you want filters defined in the report to appear in the title area, select the **Show filters** check box.
5. If you want sorting defined in the report to appear in the title area, select the **Show sorts** check box.
6. If you want suppression defined in the report to appear in the title area, select the **Show suppression** check box.
7. Click **OK**.

### Tips

- To remove a title, delete all text in the **Title** box.

- To change the title without going through the menu, click the **Title** link.

## Change the Subtitle

You can create your own descriptive report subtitles.

### Steps

1. Open a report in Query Studio.
2. From the **Change Layout** menu, click **Edit Title Area**.
3. Choose a subtitle option:
  - To create your own subtitle, type a subtitle in the **Subtitle** box.
  - To show no subtitle, make sure the **Subtitle** box is blank.
  - To use the names of filter values as an additional subtitle, select the **Show filters** check box.
4. Click **OK**.

## Format Text and Data

You can format text and data in a report to give it the look you want. For example, you can change the font and font color, as well as specify effects, such as strikethrough. You can format the following:

- titles and subtitles
- filter text
- sections
- column headings
- data
- group, section, and overall summary titles and values

You can also format data using [conditional styles](#). In addition, you can format a report by [applying a template](#).

### Steps

1. Open a report in Query Studio.
2. If you want to format text for a particular object, such as a specific column or a column heading, click the object.

**Tip:** Press Ctrl+click or Shift+click to select multiple objects.

3. From the **Change Layout** menu, click **Change Font Styles** .

**Tip:** You can also use the style toolbar to quickly format an object. For example, you can use the toolbar to change the font, the font size, the font color, or the background color.

4. Specify the options you want to apply.

5. If you want to specify the font color, click the font color button, click the color menu , and choose how you want to select the color:
  - To select a color from a small set of named colors, click **Named colors** and click the color.
  - To select from 216 available Web safe colors, click **Web safe colors** and click the color.
  - To specify a color based on hexadecimal values that you type for red, green, and blue, click **Custom color** and type the hexadecimal values for the colors that you want to combine.
  
6. If you want to specify the background color, click the background color button , click the color menu, and choose how you want to select the color:
  - To select a color from a small set of named colors, click **Named colors** and click the color.
  - To select from 216 available Web safe colors, click **Web safe colors** and click the color.
  - To specify a color based on hexadecimal values that you type for red, green, and blue, click **Custom color** and type the hexadecimal values for the colors that you want to combine.
  
7. Click **Advanced options** and click the objects that you want to format.
 

You can apply styles to the current selection or to specific objects, such as titles and the filter text.

**Tip:** To reset values, click **Reset to default values**.
  
8. Click **OK**.

The formatting is applied to new columns that you add. When inserting a new column in a list, the column inherits the formatting of the column to its left. If you insert the new column to the left of the first column, it inherits the formatting of the first column. When inserting a new column in a crosstab, the column inherits the formatting of the column above it. If you insert a new column above the topmost column, it inherits the formatting of the column under it.

**Tip:** If you want to reset your changes to their default values after you apply the formatting, from the **Change Layout** menu, click **Reset Font and Border Styles**. This removes all settings defined in the current report.

## Format Borders

You can format the borders of tables and sections in a report to give them the look you want.

### Steps

1. Open a report in Query Studio.
2. From the **Change Layout** menu, click **Change Border Styles** .
3. Under **Table borders**, click the borders that you want to format.
4. To specify the color, click the color button .
5. In the **Color** box, choose how you want to select the color:

- To select a color from a small set of named colors, click **Named colors** and click the color.
- To select from 216 available Web safe colors, click **Web safe colors** and click the color.
- To specify a color based on hexadecimal values that you type for red, green, and blue, click **Custom color** and type the hexadecimal values for the colors that you want to combine.

**Tip:** To reset values, click **Reset to default values**.

6. Click **OK**.

**Tip:** If you want to reset your changes to their default values after you apply the formatting, from the **Change Layout** menu, click **Reset Font and Border Styles**. This removes all settings defined in the current report.

## Collapse a Report

You can view only the details you want by expanding and collapsing a report. Collapsing a report temporarily removes progressive levels of detail, making it easier to find and compare high-level summaries. Expanding a report restores the collapsed levels.

You can expand and collapse only those reports that contain a measure.

You cannot collapse reports that contain custom groups (p. 60).

**Note:** There is no visible indication that a report is collapsed. For example, you collapse a report, and then save it. Another person can open the report later and not be aware that the report is collapsed.

### Steps

1. Open a report in Query Studio.
2. Click the collapse group button  on the toolbar.
3. Repeat until you are at the required level of detail.

**Tip:** To expand a collapsed report, click the expand group button  on the toolbar.

## Reorder Report Items

You can reorder report items for easy comparison. For example, you can place a column of prices and a column of costs side by side. You may also want to change the column order to accommodate chart requirements.

You use cut and paste to reorder report items. If you paste a report item before a section, it becomes a section. If you paste a report item before a grouped column, it becomes grouped. If you paste a grouped column after an ungrouped column, it becomes ungrouped.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the column that you want to move.

3. Click the cut button  on the toolbar.
4. Click the heading of the report item before which you want to insert the column.
5. Click the paste button  on the toolbar.

**Tip:** To position a column as the last column, paste with nothing selected.

## Change the Report Item Name

By default, the heading uses the name of the underlying item in the data source. You can change the heading to make it more meaningful. For example, you can rename a report item named `ISO_3_Letter_Code` to `Country`.

Changing the heading name in the report does not change the name of the corresponding report item in the data source.

### Steps

1. Open a report in Query Studio.
2. Double-click the heading of the report item that you want to rename.
3. In the **Name** box, type a new name.
4. Click **OK**.

## Swap Rows and Columns

You can interchange rows and columns in a crosstab, a chart based on a crosstab, or both. For example, if you have a crosstab report that has few rows and many columns, you can swap the rows and columns to make the report easier to read.

If you have multiple rows or columns in a crosstab report, the outermost rows become the outermost columns, and the outermost columns become the outermost rows.

**Note:** You cannot swap rows and columns in a list report.

### Steps

1. Open a report in Query Studio.
2. Click the swap rows and columns button  on the toolbar.

If you have both a chart and a crosstab report open, you can specify which to swap.

## Specify the Rows Per Page

You can specify the maximum number of rows of data to appear on the page.

By default, Query Studio shows 20 rows of data. The more rows that are retrieved, the more time that is needed to retrieve data. You can improve performance by showing fewer rows.

By specifying the rows per page to a higher number, you can scroll up or down the report, eliminating the need to repeatedly page up and page down.

### Steps

1. Open a report in Query Studio.
2. From the **Change Layout** menu, click **Set Web Page Size**.
3. In the **Number of Rows** box, specify the maximum number of rows you want to appear on a page.

**Tip:** To see row numbers in your report, click the **Show row numbers** check box.

4. Click **OK**.

## Highlight Key Information by Defining Conditional Styles

You can define conditional styles to highlight key information in a report. You can use conditional styles with numeric data, text data, and date values.

For example, use conditional styles to highlight all revenue greater than five million in green and all revenue less than one million in red.

### Steps

1. Open a report in Query Studio.
2. Click the report item for which you want to define conditional styles.
3. From the **Change Layout** menu, click **Define Conditional Styles**.
4. If the report item is a measure or date, do the following:
  - For a measure, in the **New value** box, type the value that you want and click **Insert**.

The value appears under the **Range** column, and two ranges  are created.

- For a date, click **Select a date and time** and specify the date and time you want.

The date appears under the **Range** column, and two ranges are created.

- For each range, under **Style**, click one of the predefined styles that you want to apply to the range, or click the edit style button  and create your own style.

**Tip:** You can modify the predefined styles. For more information, see the *Administration and Security Guide*.

- Repeat to add other values.

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

- If you want to move a value above or below a threshold, click the arrow button  next to the value.

For example, if the highest value you insert is five million, and the next highest value is one million, the condition created for the five million value is greater than one million and less than or equal to five million. Moving the five million value above the threshold will produce the condition greater than or equal to five million.

5. If the report item is text, do the following:
  - If you want to select individual values, click **Select values** and click the values you want.
  - If you want to define a range, click **Define a range**, and in the **From** and **To** boxes, type the values you want to use in the range.
  - For each value or range, under **Style**, click one of the predefined styles that you want to apply, or click the edit style button  and create your own style.
  - Specify the style to apply to remaining values by clicking one of the predefined styles beside **Remaining values (include future values)**.
6. Click **OK**.

## Example - Define Conditional Styles for Units Sold

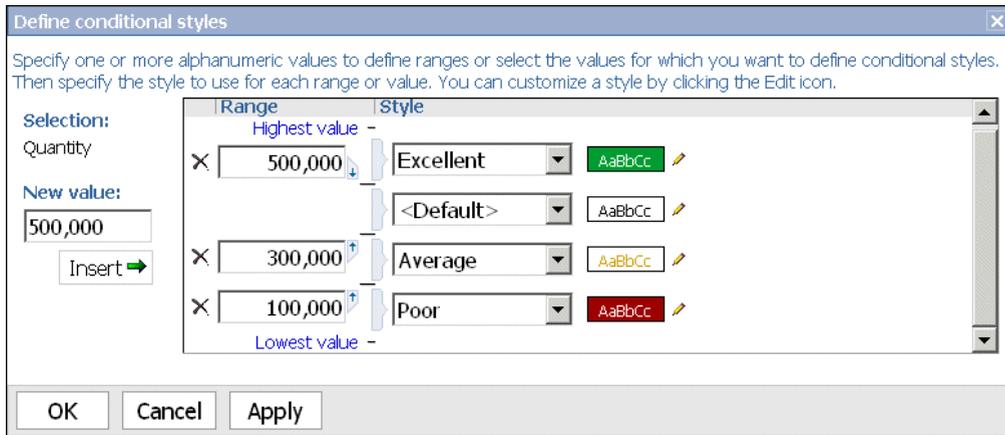
You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of units sold for each product line in all countries. You reuse a list report that already contains the necessary data, and define conditional styles for improved analysis.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example list report ([p. 30](#)).

### Steps

1. Open the **Units Sold** report.
2. Click the heading of the **Quantity** column.
3. From the **Change Layout** menu, click **Define Conditional Styles**.
4. In the **New value** box, type  
100000
5. Click **Insert** to add the value under **Range**.
6. Under **Style**, click **Poor**.
7. Repeat steps 4 to 6 to add 300000 as a value, and assign the style **Average**.
8. Repeat steps 4 to 5 to add 500000 as a value.
9. Click the arrow button  next to 500000 to move the value above the threshold.
10. Assign the style **Excellent** to 500000.



11. Click **OK**.

Values in the **Quantity** column are formatted according to the ranges you defined.

12. Click the save as button  on the toolbar.

13. In the **Name** box, type

**Conditional Styles Example**

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

Product line	Quantity
Camping Equipment	866,234
Golf Equipment	99,400
Mountaineering Equipment	301,958
Outdoor Protection	557,854
Personal Accessories	389,908
<b>Summary</b>	<b>2,215,354</b>

## Set Page Breaks

You can set page breaks in a report to control the data that appears on each page. For example, you have a list that shows all products sold by your company, grouped by product line. You insert a page break so the details for each product line appear on a separate page.

You must have a grouped column or you must create sections before you can set page breaks. For more information, see "[Group Identical Values](#)" (p. 63).

### Steps

1. Open a report in Query Studio.
2. Click the report item that you want to use to insert page breaks.
3. From the **Change Layout** menu, click **Set Page Breaks**.

**Tip:** After you have set page breaks, view the report in PDF, Microsoft Excel 2000, or Microsoft Excel 2002 format to see the page breaks. If you view the report in HTML, it appears in a single HTML page with space separating each group or section.

## Report Administration

If you have the necessary permissions, you can use the Web portal to perform administrative tasks. You can

- schedule a report or a group of reports to run at a specific time
- distribute reports to other users
- select the language to use when a report is run
- maintain the history of a report
- maintain different versions of a report

For more information, see the *Administration and Security Guide*.



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# Chapter 3: Working with Data

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You can control what data your report uses, as well as how it is formatted, calculated, and sorted.

In Query Studio, you can

- [filter](#) the data to retrieve only the data you need
- organize the results by [sorting](#) and [grouping](#)
- [format](#) the data to determine how number, currency, date, and time values appear
- perform [calculations](#) using the data in your reports
- [drill](#) to view related data
- view [lineage information](#) of a data item
- [suppress](#) empty cells

## Filters

You can use a filter to specify the subset of records that the report retrieves. Any data that does not meet the criteria is eliminated from the report, which can improve performance.

You can filter textual, numeric, or date and time data. When filtering measures, you can apply the filter to

- [details](#)
- [summaries](#) in reports that contain summaries
- [individual records in the database](#) for measures only

### Filtering Based On Details

When you filter on details, you filter the values that appear in the detail rows of your report.

Product line	Country	Quantity
Camping Equipment	Germany	103,412
	Japan	3,562
	United States	117,136
Camping Equipment		<b>224,110</b>
Golf Equipment	Germany	6,410
	Japan	7,158
	United States	10,470
Golf Equipment		<b>24,038</b>
Mountaineering Equipment	Germany	27,584
	Japan	3,330
	United States	34,132
Mountaineering Equipment		<b>65,046</b>
Outdoor Protection	Germany	30,006

For example, you filter on details using as criteria all quantities greater than 100000. The only data that matches this criteria are the detail rows for camping equipment sold in the United States and Germany.

Product line	Country	Quantity
Camping Equipment	Germany	103,412
	United States	117,136
Camping Equipment		<b>220,548</b>
Summary		<b>220,548</b>

### Filtering Based On Group Summaries

When you filter on summaries, you filter the values in the footers. Filtering on summaries eliminates groups from your report.

For example, if you filter on summaries using as criteria all quantities greater than 100000, the groups Golf Equipment and Mountaineering Equipment are excluded from the report.

### Filtering Based On Individual Records in the Database

The following report shows the quantity of units of camping equipment sold in three countries. These actual figures do not exist in the data source. The numbers are aggregates, the result of totaling a number of individual records.

Product line	Country	Quantity
Camping Equipment	Germany	103,412
	Japan	3,562
	United States	117,136
Camping Equipment		<b>224,110</b>

If you add another column to the report based on order numbers, it would look like this, listing the quantity of units sold for each individual order.

Product line	Country	Order number	Quantity
Camping Equipment	Germany	1668	42
	Germany	1669	64
	Germany	1671	70
	Germany	1672	68
	Germany	1673	26
	Germany	1674	10
	Germany	1675	58

When you use a filter based on individual records in the database, it is these underlying values that are filtered. For example, if you remove the order number column and then filter based on individual records using all quantities greater than 50 as criteria, you get the following results.

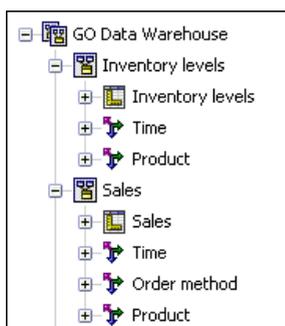
Product line	Country	Quantity
Camping Equipment	Germany	94,704
	Japan	386
	United States	39,656
Camping Equipment		<b>134,746</b>

Note that the quantity of units sold is now smaller because a filter based on individual records in the database includes only those orders where the quantity is greater than 50.

## Multiple-fact Queries

You must understand the result of a query on more than one fact table to achieve the results that you want. The result of a multiple-fact query varies depending on whether you are working with conformed or non-conformed dimensions, on the level of granularity, and on the additive nature of the data.

The following data source has characteristics that affect the results if you use a multiple-fact query with Inventory levels and Sales. Granularity for time differs in that inventory levels are recorded monthly and sales are recorded daily. Also, Sales includes a non-conformed dimension, Order method.



The following examples will help you interpret the results of a multiple-fact query and understand the options for changing a query to obtain the results that you want.

### Conformed Dimensions

Individual queries on Inventory levels and Sales by Quarter and Product yield the following results.

Quarter	Product	Opening inventory	Closing inventory	Quantity
200501	Husky Rope 50	720	727	608
	Aloe Relief	1,128	1,236	1,256
	Course Pro Umbrella	1,077	1,217	902
<b>200501</b>		<b>975</b>	<b>1,060</b>	<b>2,766</b>
200502	Husky Rope 50	667	632	1,246
	Aloe Relief	988	874	1,710
	Course Pro Umbrella	969	1,025	2,158
<b>200502</b>		<b>874</b>	<b>843</b>	<b>5,114</b>

A query on multiple facts and conformed dimensions respects the cardinality between each fact table and its dimensions and returns all the rows from each fact table. The fact tables are matched on their common keys, Product and Time.

Product and Time apply to both Inventory levels and Sales. However, inventory levels are recorded monthly and sales are recorded daily. In this example, results are automatically aggregated to the lowest common level of granularity. Quantity, which comes from Sales, is rolled up to months.

Nulls are often returned for this type of query because a combination of dimensional elements in one fact table may not exist in the other. For example, if Husky Rope 50 was available in inventory in 200501, but there were no sales of this product in the same time period, Quantity would show a null in the Husky Rope 50 row.

### Non-conformed Dimensions

If a non-conformed dimension is added to the query, the nature of the results returned by the query is changed.

Quarter	Product	Order method	Opening inventory	Closing inventory	Quantity
200501	Husky Rope 50	Telephone	720	727	254
	Husky Rope 50	Mail	720	727	70
	Husky Rope 50	E-mail	720	727	50
	Husky Rope 50	Web	720	727	98
	Husky Rope 50	Sales visit	720	727	136
	Aloe Relief	Telephone	1,128	1,236	400
	Aloe Relief	E-mail	1,128	1,236	138
	Aloe Relief	Web	1,128	1,236	378
	Aloe Relief	Sales visit	1,128	1,236	340
	Course Pro Umbrella	Fax	1,077	1,217	72
	Course Pro Umbrella	Telephone	1,077	1,217	140
	Course Pro Umbrella	E-mail	1,077	1,217	202
	Course Pro Umbrella	Web	1,077	1,217	80
	Course Pro Umbrella	Sales visit	1,077	1,217	224
	Course Pro Umbrella	Special	1,077	1,217	184
<b>200501</b>			<b>975</b>	<b>1,060</b>	<b>2,766</b>

Order Method exists only in Sales. Therefore, it is no longer possible to aggregate records to a lowest common level of granularity because one side of the query has dimensionality that is not common to the other side of the query. Opening inventory and Closing inventory results are repeated because it is no longer possible to relate a single value from these columns to one value from Quantity.

Grouping on the Quarter key demonstrates that the result in this example is based on the same data set as the query on conformed dimensions. Summary values are the same. For example, the total quantity for 200501 is 2,766 in both examples.

## Filters on Non-conformed Dimensions

By default, to improve performance, filters are applied at the database level. The default behavior can result in unexpected nulls when you add a filter to a multiple-fact query. If you create a filter on the Order method dimension to show only the fax order method and apply the filter at the data source, the report includes nulls.

Quarter	Product	Order method	Opening inventory	Closing inventory	Quantity
200501	Husky Rope 50		720	727	
	Aloe Relief		1,128	1,236	
	Course Pro Umbrella	Fax	1,077	1,217	72
<b>200501</b>			<b>975</b>	<b>1,060</b>	<b>72</b>
200502	Husky Rope 50	Fax	667	632	82
	Aloe Relief	Fax	988	874	94
	Course Pro Umbrella	Fax	969	1,025	314
<b>200502</b>			<b>874</b>	<b>843</b>	<b>490</b>
200601	Husky Rope 50	Fax	722	741	132
	Aloe Relief	Fax	1,175	1,233	40
	Course Pro Umbrella	Fax	1,463	1,764	130
<b>200601</b>			<b>1,120</b>	<b>1,246</b>	<b>302</b>
200602	Husky Rope 50	Fax	725	714	86
	Aloe Relief	Fax	1,114	1,024	36
	Course Pro Umbrella		1,520	1,388	
<b>200602</b>			<b>1,120</b>	<b>1,042</b>	<b>122</b>
<b>Summary</b>			<b>1,022</b>	<b>1,048</b>	<b>986</b>

The filter is applied only to one subject area, Sales. Because Order method does not exist in Inventory levels, all products still appear in the report. For example, Course Pro Umbrella was in inventory in 200602. Because there were no sales using the fax order method for this product in 200602, Order method and Quantity are null.

To remove the nulls, change the filter so that it is applied to the result set instead of the data source. By applying the filter to the result set, you get the same results that you would get if you were working with conformed dimensions. Only the products that were ordered using the fax order method appear in the report.

Quarter	Product	Order method	Opening inventory	Closing inventory	Quantity
200501	Course Pro Umbrella	Fax	1,077	1,217	72
<b>200501</b>			<b>1,077</b>	<b>1,217</b>	<b>72</b>
200502	Husky Rope 50	Fax	667	632	82
	Aloe Relief	Fax	988	874	94
	Course Pro Umbrella	Fax	969	1,025	314
<b>200502</b>			<b>874</b>	<b>843</b>	<b>490</b>
200601	Husky Rope 50	Fax	722	741	132
	Aloe Relief	Fax	1,175	1,233	40
	Course Pro Umbrella	Fax	1,463	1,764	130
<b>200601</b>			<b>1,120</b>	<b>1,246</b>	<b>302</b>
200602	Husky Rope 50	Fax	725	714	86
	Aloe Relief	Fax	1,114	1,024	36
<b>200602</b>			<b>919</b>	<b>869</b>	<b>122</b>
<b>Summary</b>			<b>989</b>	<b>1,025</b>	<b>986</b>

The summary for quantity is 986 using either filter method, which shows that the results are based on the same data set.

## Create a Simple Filter

You can create a filter that retrieves specific data, such as the orders for a specific customer.

You can also [combine](#) two or more filters into a complex filter, [add a model filter](#), and create a [prompt](#) report.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the item you want to filter.
3. Click the filter button  on the toolbar.

**Tip:** You can also add filters to relational and dimensionally modeled relational data sources directly from the data tree without first adding the data item to the report. To do so, right-click the data item and click **Filter for report**.

Note that if filters already exist for the item, do one of the following:

- To edit a filter, click **Modify the existing filter**.
  - To create a new filter, click **Add a filter to *data item***.
  - To create a combined filter, click **Open the "Combine filters" dialog**.
4. Click the **Condition** box and choose one of the following options:
    - If you want to select items that will appear in the report, click **Show only the following**.
    - If you want to select items that will not appear in the report, click **Do not show the following (NOT)**.
  5. Depending on the type of data you are filtering, select the items you want from a list or specify the range of values to include.

If you specify a range, you can specify whether to include or exclude the **From** and **To** values.

If you are filtering text or alphanumeric values, click **Search for values** or **Type in values**.

Note that these options will not appear unless the data source you are using supports search or type in values.

If you are working with a dimensional data source and you are filtering a level, there may be duplicate names, such as Paris, Ontario and Paris, France.

6. If you are filtering on relational or dimensionally modeled relational data sources, choose the **Type in values** option and click the type of operation you want to perform in the **Operation** box:
  - To filter on specific values, click **Exactly Matches**.
  - To filter on values that start with specific letters or numbers, click **Starts With**.
  - To filter on values that end with specific letters or numbers, click **Ends With**.
  - To filter on values that contain a specific word or number, click **Contains**.

- To filter on SQL patterns, click **Matches SQL Pattern**.
  - To filter on a range of values, click **Is In Range**.
7. If you filter a date range on relational or dimensionally modeled relational data sources, click the type of operation you want to perform in the **Operation** box:
    - To filter on a range between two dates, click **Range**.
    - To filter on a number of days before today, click **Last number of days**, then type a number in the **Number of days before today** box.
  8. If you are filtering a measure, click one of the following options under **Apply the filter to**:
    - To filter details in the report, click **Values in the report**.
    - To filter group summaries in the report, click **Group summaries in the report**, and click the report item you want.
    - To filter on individual values in the data source, click **Individual values in the data source**.
  9. If you are filtering alphanumeric values, select the **Apply the filter to individual values in the data source** check box to filter on individual values in the data source.
  10. Under **Missing values**, click the option you want to use to handle missing values in the report:
    - If you want to include missing values, click **Include missing values**.
    - If you do not want to include missing values, click **Leave out missing values**.
    - If you want to only see missing values, click **Show only missing values**.

When selected, all other options in the **Filter** dialog box are disabled.

If set to **(Default)**, missing values are left out if you defined a range filter. If you did not define a range filter, missing values are included.
  11. Click **OK**.
- By default, the values of any filters applied appear as an additional subtitle.

### Tips

- To remove the filter values subtitle, from the **Change Layout** menu, click **Edit Title Area** and then clear the **Show filters** check box.
- If data rows that you want to exclude are included in your filtered result, clear the **Apply the filter to individual values in the data source** check box when you specify the filter. This removes rows with nulls that are included because of a join between two non-conforming fact tables in the underlying data. Clearing this option can have an impact on query performance.
- You can delete a filtered column but keep the filter itself. Click the column you want to delete and click the delete button . The **Delete** dialog box appears, and you can choose to delete or keep filters and sorting (p. 62) associated with the column.

## Set a Default Filter Dialog Type

Use a default filter dialog when you have a preferred method for selecting values in filters. If you set a default filter dialog type, and the data source you are using supports the value selection method you choose, then your preferred method for selecting values is displayed each time you create a filter.

### Steps

1. Open a report in Query Studio.
2. From the **Manage File** menu, click **My Preferences**.
3. From the **Default filter dialog for value selection** menu, choose how this dialog type is displayed when you create a filter:
  - To display the default filter dialog set in the advanced server settings, click **Default**.
  - To display a dialog where you select the values from a list, click **Pick values from a list**.
  - To display a dialog where you search for values, click **Search for values**.
  - To display a dialog where you type in the values, click **Type in values**.
4. Click **OK**.

## Create a Complex Filter

You can combine two or more filters to do more complex filtering. For example, you want to filter the columns Product line and Country in a report. The specific data you want to retrieve is the quantity of Camping Equipment sold in Germany and the quantity of Golf Equipment sold in Japan. To do this, you must create a complex filter that combines several filters.

You must enable the **Advanced Query Studio** capability before you can create complex filters. For more information, see the *Administration and Security Guide*.

### Steps

1. Open a report in Query Studio.
2. From the **Edit Data** menu, click **Combine Filters**.
3. If the filters you want to combine do not yet exist, click **Add a filter line** and **create** them.
4. Press Shift+click or Ctrl+click to select the select line icon of the filters you want to combine.
5. Click **Group**.

**Tip:** You can modify a filter line by clicking its link.
6. Click the operator that appears between the filters and click **AND** or **OR** to combine them.
7. If you want to convert a filter line or a combined filter into a NOT filter, click the filter line or combined filter and click **Apply NOT**.

**Tip:** If NOT has already been applied to a filter line or combined filter and you click **Apply NOT**, the NOT operator will remain. If you want to remove NOT, click **Remove NOT**.

- Click **OK**.

### Tip

You can delete a filtered column but keep the filter itself. Click the column you want to delete and click the delete button . The **Delete** dialog box appears, and you can choose to delete or keep filters and sorting (p. 62) associated with the column.

## Example - Create a Complex Filter for Units Sold

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of Camping Equipment sold in Austria and the quantity of Golf Equipment sold in China. You reuse a list report that already contains some of the necessary data, and add another column. You then combine filters to retrieve the data you need.

Before you can begin this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example list report (p. 30).

### Steps

- Open the **Units Sold** report.
- Click the **Insert Data** menu command.
- Expand **Sales and Marketing (query)**.
- Expand **Sales (query)**.
- Expand **Retailer site**.
- Drag the **Retailer country** item to the report, between **Product line** and **Quantity**.

If you are working in the Mozilla Web browser, you cannot drag data items to the report. Double-click the item instead.

A column that represents this item appears to the left of the **Quantity** column. You now have a report listing the quantity of units sold for every product line in all countries. However, you are interested in the quantity of units sold only for two specific product lines in two specific countries.

- Click the heading of the **Product line** column.
- Click the filter button  on the toolbar.
- In the **Show only the following** box, select the **Camping Equipment** and **Golf Equipment** check boxes, and then click **OK**.
- Repeat steps 7 to 9 for the **Retailer country** column, selecting **Austria** and **China** as the countries you want.

The **Combine filters** dialog box appears.

11. Press Shift+click to select the select line icon  for both filters, click **Group**, click **Apply**, and then click **OK**.

The filters are combined. You now have a report listing the quantity of Camping Equipment and Golf Equipment sold in Austria and China. However, you are interested only in the quantity of Camping Equipment sold in Austria and Golf Equipment in China.

12. Click the **Product line: Camping Equipment, Golf Equipment** filter, clear the **Golf Equipment** check box, and then click **OK**.
13. Click the **Retailer country: Austria, China** filter, clear the **China** check box, and then click **OK**.
14. In the report, click the **Product line** column.
15. Click the filter button above the report.
16. On the **Detail** tab of the **Combine filters** dialog box, click **Add a filter line**.
17. Select the **Golf Equipment** check box and click **OK**.
18. In the report, click the **Retailer country** column.

On the **Detail** tab of the **Combine filters** dialog box, click **Add a filter line**.

19. Select the **China** check box and click **OK**.
20. In the **Combine filters** dialog box, press Shift+click to select the select line icon  for the **Product line: Golf Equipment** and **Retailer country: China** filter lines and click **Group**.  
You combined two filters by an AND operator.

21. Click the **AND** operator beside the select icon , change it to **OR**, and click **OK**.

You now have a report listing the quantity of Camping Equipment sold in Austria and the quantity of Golf Equipment sold in China.

22. Click the save as button  on the toolbar.

23. In the **Name** box, type

**Filtered Units Sold**

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

Product line	Retailer country	Quantity
Camping Equipment	Austria	724,260
Golf Equipment	China	351,060
<b>Summary</b>		<b>1,075,320</b>

## Add a Model Filter

You can add predefined filters to a report by adding filters that were created in the model.

### Steps

1. Open a report in Query Studio.

2. In the left pane, double-click the model filter you want to add.
 

**Tip:** You can identify a model filter in the left pane by its icon .
3. Click the filter in the title area.
4. Under **Condition**, click one of the following options:
  - If you want to show only the values specified in the filter, click **Show only the filter values**.
  - If you want to show only the values that are not specified in the filter, click **Do not show the values (NOT)**.
5. Expand **Options** and click one of the following options:
  - To filter details in the report, click **Values in the report**.
  - To filter on individual values in the data source, click **Individual values in the data source**.
6. Click **OK**.

## Use a Prompt

Use a prompt when you want to use different criteria for the same report item each time the report runs. The report does not run until you choose the values or click the **Finish** button. If you click the **Finish** button without choosing any values, all data is returned.

For example, use prompts if you want multiple reports, each containing sales information for a different country.

Using prompts is faster and easier than repeatedly changing the filter.

Unless you are using a dimensional data source, the modeler can also set the type of prompt control that Query Studio generates when you run a report, such as an edit box or a list box that users can search for values.

If you use a dimensional data source, the following prompts are not supported:

- Select Date Time
- Select Interval

### Steps

1. Open a report in Query Studio.
2. Click the heading of the column you want to filter.
3. Click the filter button  on the toolbar.
4. Select the **Prompt every time the report runs** check box.

Each time you open or run the report, you can choose or type in the desired filter values. If no filter values are specified, all data is returned.

5. Click **OK**.

6. Repeat steps 2 to 5 to add other prompts.

For example, add more than one prompt to create cascading prompts. However, you can create cascading prompts only if the cascade property for the query item is set in the package. For more information, see the Framework Manager *User Guide*.

**Note:** Prompts in Query Studio are optional. This means that you do not have to select a value when you run the report, and the report will still appear. In addition, if you drill through from another report, such as a Report Studio report, to a Query Studio report, you will not be prompted, even if the Query Studio report contains prompts.

## Create Custom Groups

Create custom groups to produce a new report item containing values that are meaningful to you. Use custom groups to

- convert a list of numeric results into broader categories  
For example, break down sales results into Low, Medium, and High.
- reduce the number of values into a smaller, more meaningful set  
For example, change a list of employees into My Team and Others.

You cannot collapse a report that contains custom groups.

**Note:** Custom groups are not available if you are working with a dimensional data source.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the report item for which you want to create a custom group.  
**Tip:** You can also click a column value.
3. From the **Edit Data** menu, click **Define Custom Groups**.
4. In **Customization type**, choose how to define the values:
  - To create a group of values based on individual items, click **Individual values**.  
**Note:** This option is not available if the report item is numeric, such as revenue.  
In the **New group name** box, type a name, and click the down arrow link to add it to the **Custom groups** box. In the **Available values** box, click the values you want, and click the left arrow link to add them to the **Custom group values** box.
  - To create a group of values by defining a range, click **Ranges**.  
In the **New range name** box, type a name. In the **From** and **To** boxes, specify the criteria you want, and click the arrow link to add to the **Ranges (in sequential order)** box.
5. In the **New item name** box, type a name for your report item.
6. Click **All remaining values (including future values)** and decide how remaining and future values are handled:

- If you want the group name for remaining values to match each value, click **Use the individual values as range names**.

For example, the group name produced for the margin value 0.411 would be 0.411.

- If you do not want a group name to appear for remaining values, click **Do not show range names**.

Clicking this option will produce empty cells in the new report item for remaining values.

**Tip:** This option may improve performance.

- If you want to specify your own group name for all remaining values, click **New range name** and type the name you want.

7. Click **OK**.

## Example - Create a Custom Group for North America

You are a report author at the Great Outdoors Company, which sells sporting equipment. You often work with data about your North American customers, so you want to create a value that combines Canada, Mexico, and the United States into one value.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example grouped list report ([p. 32](#)).

### Steps

1. Open the **Grouped Units Sold** report.
2. Click the heading of the **Retailer country** column.
3. From the **Edit Data** menu, click **Define Custom Groups**.
4. In the **New group name** box, type  
**North America**
5. Click the down arrow link to add it to the **Custom groups** box.
6. In the **Available values** box, click **Canada**.
7. Click the left arrow link to add it to the **Custom group values** box.
8. Repeat steps 6 to 7, clicking **Mexico** and **United States**.

**Tip:** You can also press Ctrl+click to select multiple values.

9. Click **All remaining values (including future values)**.
10. Click **New range name**.
11. In the **New range name** box, type

**Others**

This creates a new custom group named **Others** that includes all values that do not belong to the custom group **North America**.

- Click **OK**.

A new column **Retailer country (Custom)** appears, containing the value **North America**.

- Click the save as button  on the toolbar.

- In the **Name** box, type

**Custom Group Example**

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

Product line	Retailer country	Retailer country (Custom)	Quantity
Camping Equipment	Germany	Others	1,547,097
	Japan	Others	2,031,007
	United States	North America	4,460,492
<b>Camping Equipment</b>			<b>8,038,596</b>
Golf Equipment	Germany	Others	281,703
	Japan	Others	369,778
	United States	North America	858,351
<b>Golf Equipment</b>			<b>1,509,832</b>
Mountaineering Equipment	Germany	Others	539,671
	Japan	Others	685,229
	United States	North America	1,591,904
<b>Mountaineering Equipment</b>			<b>2,816,804</b>
Outdoor Protection	Germany	Others	773,127
	Japan	Others	902,891
	United States	North America	2,033,754

## Sort Data

Sorting organizes your data in either ascending or descending alphabetical or numerical order. For example, you can sort on a column that lists product sales in descending order to rank product sales from the highest to the lowest.

When sorting grouped data, you can choose to sort the detail values or you can sort the summary values in the footers.

### Steps

- Open a report in Query Studio.
- Click the heading of the report item on which you want to sort.
- From the **Edit Data** menu, click **Sort** .

**Tip:** You can also sort directly from the data tree without first adding the data item to the report. To do so, right-click the data item and click **Sort for report**.

- In the **Sort** dialog box, choose the desired sort options.
- Click **OK**.

A small up or down arrow in the heading indicates sorted data.

### Tips

- To remove sorting, from the **Edit Data** menu, click **Sort**, then under **Sort order**, click **Don't sort**, and click **OK**.
- You can delete a sorted column but keep the sort itself. Click the column you want to delete and click the delete button . The **Delete** dialog box appears, and you can choose to delete or keep filters (p. 54) and sorting associated with the column.

## Group Identical Values

If a column in a report contains multiple instances of the same value, you can group these identical values together.

Grouping and ungrouping may change the order of the report items. Sections must precede grouped columns, and grouped columns must precede ungrouped columns.

When working with dimensional data sources, you cannot group two levels or hierarchies from different dimensions in the same list. For example, a list contains the Product Line and Region levels. You group on both these level. Doing so produces the following error:

OP-ERR-0199: The query is not supported. The dimensions on the edge are inconsistent.

### Grouping

Grouping reorders the rows of a selected report item so that identical values appear together and suppresses the display of duplicates.

Each group shows footer values for report items that have footer summarization enabled.

Product line	Country	Quantity
Camping Equipment	Germany	103,412
	Japan	3,562
	United States	117,136
Camping Equipment		<b>224,110</b>
Golf Equipment	Germany	6,410
	Japan	7,158
	United States	10,470
Golf Equipment		<b>24,038</b>
Mountaineering Equipment	Germany	27,584
	Japan	3,330
	United States	34,132
Mountaineering Equipment		<b>65,046</b>
Outdoor Protection	Germany	39,006
	Japan	28,172
	United States	68,630

### Creating Sections

Creating sections shows the value of a selected report item as the heading of a section.

If you create a chart for a report that is grouped in section headings, one chart appears for each section.

<b>Product line : Camping Equipment</b>	
<b>Country</b>	<b>Quantity</b>
Germany	103,412
Japan	3,562
United States	117,136
Camping Equipment	<b>224,110</b>
<b>Product line : Golf Equipment</b>	
<b>Country</b>	<b>Quantity</b>
Germany	6,410
Japan	7,158
United States	10,470
Golf Equipment	<b>24,038</b>
<b>Product line : Mountaineering Equipment</b>	
<b>Country</b>	<b>Quantity</b>
Germany	27,584

You cannot group measures. You can group only report items containing text data or non-measure numeric data, such as order numbers.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the report item by which you want to group.
3. Choose how you want to group:
  - To group, click the group button  on the toolbar.  
The report suppresses duplicate values of the selected report item and lists the values in each group.
  - To create sections, click the create sections button  on the toolbar.

### Tips

- To ungroup or to remove sections, click the original item heading or section heading and then click the ungroup button  on the toolbar.
- To remove the subtotals in a grouped report, click the summarize button  on the toolbar, and then, in the **Summary for footers** box, click **None**.
- To change a sectioned report to a crosstab, click the original item heading and then click the pivot button  on the toolbar.

## Turn Off Automatic Summarization

Query Studio automatically suppresses duplicates. For example, if you add the report items Product Line and Country to a report, Query Studio will only show each unique combination of Product Line and Country once, rather than show all combinations that occur.

Query Studio also automatically summarizes detail values. For example, if you add the report items Product Line and Quantity to a report, you get one row for each Product Line, with the Quantities summarized for that Product Line, rather than thousands of rows, showing each individual record.

Query Studio also automatically generates footer summaries for measures. For example, if you add the report items Product Line and Quantity to a report, you get an overall total for Quantity at the bottom of the report.

Product line	Quantity
Personal Accessories	389,908
Mountaineering Equipment	301,958
Golf Equipment	99,400
Camping Equipment	866,234
Outdoor Protection	557,854
Summary	<b>2,215,354</b>

These defaults make the presentation of reports more convenient for users, but can also make the report run slower or produce unexpected results. You can change these defaults.

**Note:** This changes the normal behavior of Query Studio, and can affect the usability of reports.

If you turn off the automatic generation of footer summaries for measures, the report looks like this:

Product line	Quantity
Personal Accessories	389,908
Mountaineering Equipment	301,958
Golf Equipment	99,400
Camping Equipment	866,234
Outdoor Protection	557,854

You can also turn off the automatic suppression of duplicates and summarization of detail values.

If you turn off the automatic suppression of duplicates and the summarization of detail values, the report looks like this:

Product line	Quantity
Camping Equipment	84
Camping Equipment	126
Camping Equipment	122
Camping Equipment	122
Camping Equipment	272
Camping Equipment	232
Camping Equipment	104
Camping Equipment	130
Camping Equipment	50
Camping Equipment	170
Camping Equipment	100
Camping Equipment	42
Camping Equipment	120
Camping Equipment	84

### Steps

1. From the **Run Report** menu, click **Advanced Options**.
2. In the **Query Options** dialog box, choose an option:
  - To turn off the automatic generation of footer summaries for measures, clear the **Automatically generate footer summaries for measures** check box.
  - To turn off the automatic suppression of duplicates and the summarization of detail values, clear the **Automatically summarize detail values, suppressing duplicates** check box.
3. Click **OK**.

## Change the Data Format

You can use predefined formats to change the appearance of numbers, dates, and times without changing the underlying data. For example, you can show a date in abbreviated format or spell out the day and month in long format.

If you use an SAP BW data source, units of measure are included in the same column as the data values, separated by one space. For example, Celsius and Fahrenheit notations are appended to the end of the value. This format is maintained in IBM Cognos 8 and appears in Query Studio.

Note that an asterisk character (\*) designates an unknown unit of measure, such as a mixed currency calculation or rollup. Mixed currency values occur when you calculate values with different currencies.

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

### Default

The default format removes any report item formatting.

### Number

Use the number format to

- change the number of decimal places
- specify whether to use a thousands separator
- choose different symbols to represent negative numbers
- scale large numbers

### Currency

You can choose from many world currencies. Use either the currency symbol or the international code. For example the currency symbol for the euro is € and the international code is EUR.

You can also change the number of decimal places, specify whether to use a thousands separator, choose different symbols to represent negative numbers, and scale large numbers.

### Percentage

This format shows a number multiplied by 100, using two decimal places and a percent sign. For example, 0.7356 appears as 73.56%.

### Scientific

This format shows a number in exponential notation. For example, the number 224,110 is 2.24110E+05 in scientific notation.

### Date and Time

You can choose from a list of date and time formats, including the 12 or 24 hour clock.

### Steps to Change the Data Format

1. Open a report in Query Studio.
2. Click the heading of the report item you want to format.
3. From the **Edit Data** menu, click **Format Data** and then click one of the following:
  - To format numeric data, in the **Category** box, click a type and define the format as required.
  - To format text data, in the **Category** box, click **Text** and type a number in the **Number of visible characters** box.
  - To format date and time data, in the **Category** box, click a type and then in the **Type** box, click a format.
4. Click **OK**.

## Calculations

You can perform many types of calculations in Query Studio. For example, you can calculate the sum or average of the values in one column, or multiply the values in two columns.

Calculation results are not stored in the underlying data source. Instead, Query Studio reruns the calculation each time you run the report. The results are always based on the most current data in the data source.

**Note:** The functions available when creating calculations are restricted by functions available in the data source.

You can perform calculations in Query Studio by [adding summaries](#) or by [adding calculations](#).

### Summaries

Use the **Summarize** command to add or remove footer values, or to change how detail values are calculated. For example, use the **Summarize** command to place an average in each footer.

Note that summary calculations in list page footers only summarize the data that is visible on that page of the list report.

### Calculations

Use the **Calculate** command to create new report items using data from one or more report items. For example, use the **Calculate** command to add several columns in a list report.

## Add a Summary to a Report

You can use predefined summaries ([p. 65](#)) to calculate the total, count, maximum, minimum, or average of the values in individual report items.

You can apply a summary to

- detail values

These values appear in the detail rows of your report. This functionality is available only if the data in a report item is a measure.

- summary values

These values appear in footers.

The summaries available depend on the type of data in the selected report item. For example, the only summaries you can use with text data is Count or Count Distinct ([p. 69](#)).

There is no visible indication that a summary is applied. For example, you apply the predefined summary function Average, and then save the report. Someone can open the report later and not be aware that the summary figures shown are averages, not totals.

Query Studio provides the following predefined summary functions.

Function	Description
<b>Total</b>	Returns the sum of a set of values.  <b>Note:</b> The largest value that <b>Total</b> can return is the maximum value for the data type of the column. The <b>Total</b> function is performed iteratively. It takes the value from the first row and then adds the second row, followed by the third row, and so on. If at any point the intermediate value exceeds the maximum value for the data type, the data source will return an error.
<b>Count</b>	Returns the total number of records.  For more information, see " <a href="#">Count and Count Distinct Functions</a> " (p. 69).
<b>Maximum</b>	Returns the maximum value. When applied to date or time data, this returns the latest value.
<b>Minimum</b>	Returns the minimum value. When applied to date or time data, this returns the earliest value.
<b>Average</b>	Returns the average of a set of values.
<b>Calculated</b>	Specifies that the summary is defined within the expression that populates the column.  <b>Note:</b> It is expected that the expression itself is an aggregation function and should not require modification to provide summary values.
<b>Automatic</b>	Summarizes values based on the data type.
<b>Median</b>	Returns the median value of the selected data item.
<b>Standard Deviation</b>	Returns the standard deviation of the selected data item.
<b>Count distinct</b>	Returns the total number of unique non-null records.  For more information, see " <a href="#">Count and Count Distinct Functions</a> " (p. 69)
<b>Variance</b>	Returns the variance of the selected data item.
<b>None</b>	Removes footers. This applies only to footer values, not details.

### Count and Count Distinct Functions

The default behavior when you use the Count function differs depending on the type of data that you are counting.

Data type	Default and Options
Query item (relational)	Default: Count Distinct. Options: Choose between Count and Count Distinct.
Set of members (levels, hierarchy)	Default: Count Distinct. Options: Only Count Distinct is possible.
Attributes - OLAP and Dimensionally Modeled Relational (DMR) data sources	Default: None. Summaries are not possible.
Measures - OLAP and DMR	Default: Count. Options: Only Count is possible.
Measure - relational fact query item	Default: Count. Options: Choose between Count and Count Distinct.

### Advanced Summaries

You can use the advanced summaries feature to apply one summary calculation to the detail values and a different summary calculation to the footer values.

In most calculations, the default order of operations for detail values is summarize first, then calculate.

However, if a calculation involves two or more columns that have different detail summaries applied, the default order of operations is calculate first, then summarize. For example, you create the calculated column SALES using the formula PRICE (averaged) \* QUANTITY (totaled).

For footer values, the default order of operations for most calculations is also summarize first, then calculate. However, there are two exceptions when the default order of operations is calculate first, then summarize. The first exception is when a calculation involves two or more columns that have different detail summaries applied. The default is calculate first, then summarize. For example, you create the calculated column SALES using the formula PRICE (averaged) \* QUANTITY (totaled). The second exception is when a calculation involves a single column that is totaled, and a constant is added to this column. For example, you create the calculated column SALES + 1.00.

### Steps

1. Open a report in Query Studio.
2. Click the heading of the report item you want to summarize.
3. From the **Edit Data** menu, click **Summarize** .
4. In the **Summary for footers** box, click the function you want.

If you want to apply one summary calculation to the detail values and a different summary calculation to the footer values, or you want to change the default order of operations in a calculated column, click the **Advanced** link.

5. Click **OK**.

**Tip:** To remove a summary, in the **Summary for footers** box, click **None**.

### Limitations When Summarizing Measures in Dimensionally-modeled Relational (DMR) Data Sources

There are limitations when summarizing DMR measures and semi-additive measures in crosstabs using the aggregation function `count`, `distinct`, `median`, `standard-deviation`, or `variance`. The following limitations can produce empty or error cells when the report is run:

- The aggregation function must apply to all members of a level or all children of a member.
- Error cells are produced when drilling down on a crosstab that has two nested levels.

If you do not consider these limitations in a calculation, the report may return inaccurate results.

### Add a Calculation to a Report

You can perform calculations in a report using data from one or more report items. For example, you can multiply the values of a salary column by 1.05 to see the results of a 5 percent increase. You can also concatenate first names and last names into a single column.

You cannot edit a calculation. Instead, you must delete the calculated report item and recalculate it.

You can see the syntax of the calculation in the **Expression** box of the **Calculate** dialog box. You can also see the expression used in a calculation by [viewing the report definition](#).

If you have the necessary permissions, you can open the report in Report Studio and add more complex calculations. However, after you edit a report in Report Studio, you can no longer edit it in Query Studio. For more information, see the Report Studio *Professional Authoring User Guide*.

For relational data sources, if an expression is used in multiple reports or by different report authors, ask your modeler to create the expression as a standalone object in the model and include it in the relevant package. For information about creating filters in the package, see the Framework Manager *User Guide*.

The following functions are available when you create a calculation. Note that the analytic operations available depend on the data source you are using.

Arithmetic operations	Description
+ (sum)	Adds the values of the selected report items.
- (difference)	Subtracts the values of one selected report item from another.
* (multiplication)	Multiplies the values of the selected report items.
/ (division)	Divides the values of the selected report items.

Arithmetic operations	Description
^ (power)	Raises the values of the selected report item to an exponent.
Absolute value	Calculates the absolute value of the numbers in the selected report item.
Round	Rounds the values in the selected report item to the nearest integer.
Round down	Rounds the values in the selected report item to the next lowest integer.
Square Root	Calculates the square root of the values in the selected report item.

Analytic operations	Description
Average	Calculates the average of values in the selected report items.
Maximum	Calculates the largest of the values in the selected report items.
Minimum	Calculates the smallest of the values in the selected report items.
Rank	Returns the rank of each value in the selected report item. For grouped reports, it can return the rank of each value in a group or within all values.
% of total	Calculates each value of a selected report item as a percentage of the total. For grouped reports, returns each value as the percentage of the group total or the overall total.
Percentile	Returns a percentile of values. For grouped reports, it can return the percentile for each value in a group or within all values.
Quartile	Returns the quartile of values. For grouped reports, it can return the quartile for each value in a group or within all values.
Quantile	Returns the quantile of values. For grouped reports, it can return the quantile for each value in a group or within all values.

### Steps

1. Open a report in Query Studio.
2. Click the headings of the report items you want to include in the calculation.
3. Click the calculate button  on the toolbar.

4. In the **Operation** box, click the type of 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 the data in existing report items, in the **Selected report items** box, click the report items you want.
  - To use other data, in the **Number** box, specify a number.

Depending on the calculation you choose, you may see additional options, such as changing the order of the operands, typing in a number, or choosing a grouping level.

6. Click **Insert**.

The calculated results appear in a new column. By default, the expression used in the calculation is used as the heading name.

### Tips

- To make the name of the calculated column more meaningful, type a new name in the **New item name** box.
- To **concatenate text** into a single column, use the **Concatenation** operation.
- When creating calculations that return a number data type, Query Studio applies formatting rules that depend on the calculation operation used. For more information, see "[Format Rules for Calculations Returning Number Data Types](#)" (p. 103).

## Concatenating Strings

When IBM Cognos 8 concatenates strings locally and if any of the involved strings contain null values, the result of the concatenation is an empty cell or a null value. This occurs because IBM Cognos 8 requires that an expression that involves a null value returns a null value. Many databases ignore null strings when they perform concatenations. For example, if you concatenate strings A, B, and C, and if string B is a null value, the database may concatenate only strings A and C.

## Units of Measures

When creating calculations in Report Studio and Query Studio, you may encounter problems with the units of measure. For example, the calculation Cost\*Cost returns the unit of measure \* instead of a currency unit of measure. To avoid this problem, change the format of the corresponding column to obtain the desired unit of measure.

## Example - Calculate Units Sold in Each Country as a Percentage of the Total

You are a report author at the Great Outdoors Company, which sells sporting equipment. You are requested to create a report that shows the quantity of units sold for each product line in three specific countries as a percentage of the total. You reuse the grouped sales report that already contains the necessary data, and add a calculation that shows the percentage of the total.

It becomes obvious in your report that camping equipment accounts for nearly 30 percent of the total units sold for these three countries.

Before you can try this example, you must set up the sample packages that come with IBM Cognos 8. For more information, see the *Administration and Security Guide*.

You must also have created the example grouped list report (p. 32).

### Steps

1. Open the **Grouped Units Sold** report.
2. Click the heading of the **Quantity** column.
3. From the **Edit Data** menu, click **Calculate** .
4. In the **Operation** type box, click **Percentage**.
5. In the **Operation** box, click **% of total**.
6. Leave the default as **Based on the overall total**.
7. Click **Insert**.

The calculated results appear in a new column, with the expression **% of total (Quantity)** used as the heading.

Product line	Retailer country	Quantity	% of total (Quantity)
Camping Equipment	Germany	1,547,097	5.61%
	Japan	2,031,007	7.36%
	United States	4,460,492	16.16%
<b>Camping Equipment</b>		<b>8,038,596</b>	<b>29.13%</b>
Golf Equipment	Germany	281,703	1.02%
	Japan	369,778	1.34%
	United States	858,351	3.11%
<b>Golf Equipment</b>		<b>1,509,832</b>	<b>5.47%</b>
Mountaineering Equipment	Germany	539,671	1.96%

8. Click the save as button  on the toolbar.
9. In the **Name** box, type  
**Calculated Column Example**
10. Leave the destination folder as **Public Folders**, and click **OK**.

## Drilling to View Related Data

Query Studio supports various drill operations so that you can view related data. You can perform drill operations in lists, crosstabs, and charts.

You can

- **drill up or drill down** within the same report
- **go to** another target

## Drill Up or Drill Down

You can drill up or drill down within the same report. In lists and crosstabs, hyperlinks identify drillable items. In charts, the pointer changes to a hand when you pause it over a drillable item, and a tooltip indicates what you are drilling on. For example, a column chart shows revenue by product line by year. You can drill on a single axis, such as a product line or a year. Additionally, you can drill on both axes, such as Camping Equipment and 2005. In this case, you are drilling on the intersection of Camping Equipment and 2005.

You can also drill up and drill down in a report that is run from IBM Cognos Connection. Reports run from IBM Cognos Connection appear in Cognos Viewer. After you drill up or drill down, you can save the report in report view for viewing later on. For more information, see the IBM Cognos Connection *User Guide*.

Drill up and drill down is available only when you are using dimensionally structured data and viewing the report in HTML format. Furthermore, you can only drill on members in a level. For more information about members, levels, and other dimensional objects, see "[Add Data to a Report](#)" (p. 18). In addition, drill up and drill down must be enabled.

By default, drill up and drill down is enabled.

**Tip:** To enable drill up and drill down, from the **Run Report** menu, click **Advanced Options**. Select the **Enable drill up and drill down in the report output** check box.

### Steps

1. Open a report in Query Studio.
2. Right-click the report item you want to drill on and click **Drill Up** or **Drill Down**.

**Tip:** You can also click the report item itself.

## Go To to Another Target

You can navigate from a Query Studio report to another target. You can go to the following targets:

- a Query Studio report
- a Report Studio report
- an Analysis Studio analysis
- an IBM Cognos Series 7 cube action
- a Microsoft Analysis action

Before you can go to another target, a drill-through definition must be created in the package. For more information, contact your administrator. In addition, drill-through from a package must be enabled in Query Studio.

By default, drill-through from a package is enabled.

**Tip:** To enable drill through, from the **Run Report** menu, click **Advanced Options**. Select the **Enable drill through from a package in the report output** check box.

### Steps

1. Open the report you want in Query Studio.
2. Right-click the report item from which you want to navigate and click **Go To** .

If there is only one possible target for the column, it appears in Cognos Viewer.

If there is more than one possible target for the column, the **Go To** page appears, showing the available targets.

3. Click the target you want to navigate to.

The target appears in Cognos Viewer.

## View Lineage Information for Data Items

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

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

You can use the lineage tool that comes with IBM Cognos 8, 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 8 does not pass security information. IBM Cognos 8 also supports the IBM Metadata Workbench as a lineage tool. For more information about configuring other lineage tools, see the *Administration and Security Guide*.

### The IBM Cognos 8 Lineage Tool

The IBM Cognos 8 lineage tool includes two views: the business view and the technical view.

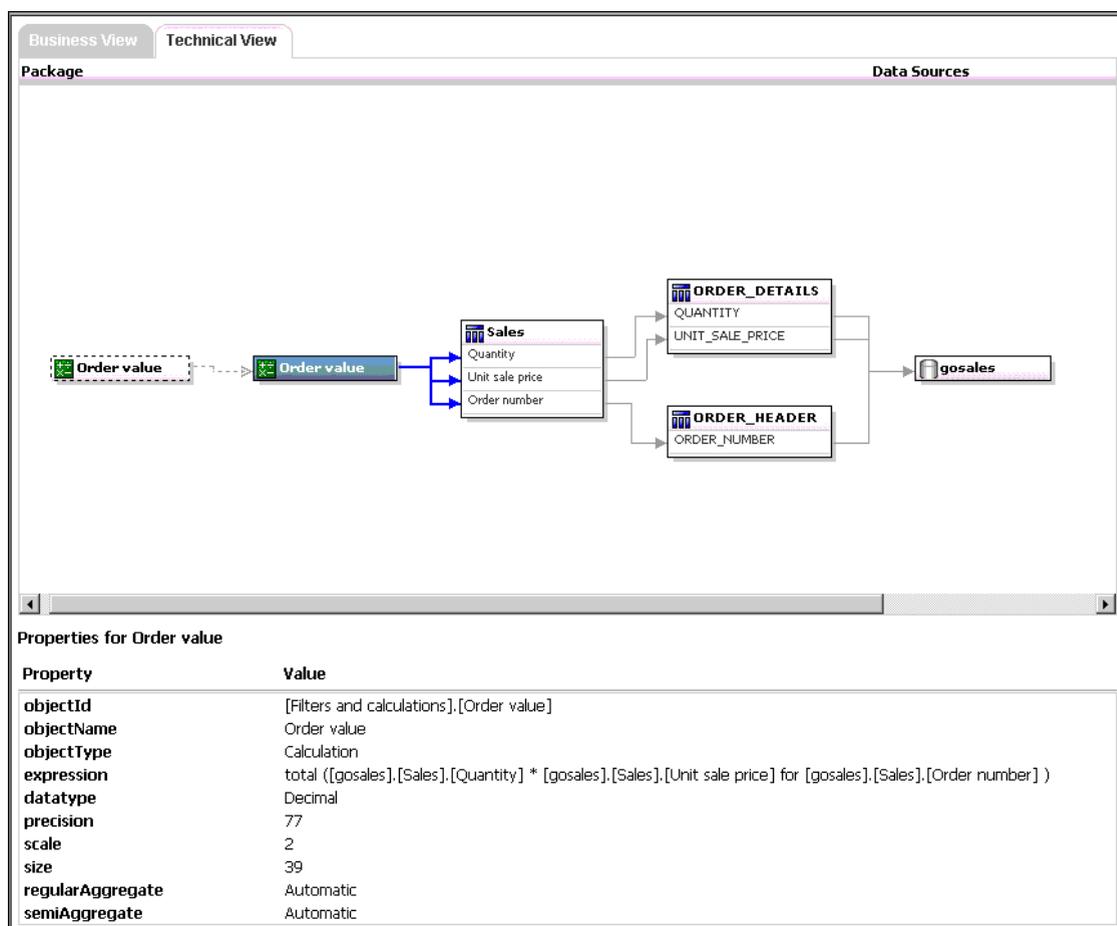
#### Business View

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

#### Technical View

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

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



## Saved Reports

You can also view lineage information when you run a saved report in IBM Cognos Connection. For example, you can click a cell in a crosstab to see how the cell value was calculated. To view lineage information, click an item in the report and then click the **Lineage** button . If you or an administrator runs a saved report with the IBM Cognos 8 lineage tool, both the business view and the technical view are visible. Report consumers can see only the business view. In addition to the **Package** and **Data Sources** areas, a **Report** area exists when looking at the technical view.

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.

To access lineage information, 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.

## Step

1. Click the **Insert Data** menu command.
2. In the left pane, right-click the data 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.

## Suppress Empty Cells

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

You can suppress rows, columns, or rows and columns based on zero, null, divide by zero, and overflow values. Suppressing rows and columns with no data gives you a more concise view of your report.

Calculations are performed before suppression is applied. If you have multiple crosstabs or charts, you must select one in order to access suppression options. With detail and summary filters, if you have more than one query defined in the report, you must click an object linked to a query.

Access to the suppression feature depends on the settings in your modeling component, IBM Cognos 8 Transformer, Framework Manager, and IBM Cognos 8 Administration.

For information about publishing a PowerCube and changing default suppression settings, see the IBM Cognos 8 Transformer *User Guide*.

For information about setting a governor to suppress null values for SAP BW data sources, see the Framework Manager *User Guide*.

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# Appendix A: Troubleshooting

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You can use the **Report Definition** command in the **Manage File** menu or the **Query Information** command in the **Report Definition** box to troubleshoot problems with your reports. The **Report Definition** command shows the expression for each report item. The **Query Information** command shows the query information for each report item.

**Note:** You cannot change the report properties using these commands.

You can find more troubleshooting topics in the Troubleshooting section of the *Administration and Security Guide*.

## QE-DEF-0260 Parsing Error

This error occurs if you pick a list of Query Studio filters that is too large or when the size of the string values for the keys is large.

One solution is to use predefined filters from Framework Manager instead of using the Query Studio interface. Also, we recommend that you pick columns and filter where the distinct list of values is relatively small.

## Chart Labels Overwrite One Another

In Report Studio and Query Studio, if you define a chart and render it in HTML or PDF format using the default sizes, the axis labels of the chart may overwrite each other.

To avoid this problem, make the chart wider or taller by modifying the height and width properties of the chart or enable the Allow Skip property.

## Background Color in Template Does not Appear

When creating a Query Studio template in Report Studio, if you add a list object and change its background color, the color change does not appear when you apply the template to a Query Studio report.

To work around this issue, do one of the following:

- Edit the style sheet (CSS) classes for lists in Report Studio.
- Do not add any objects to the page body when you are creating a Query Studio template.
- Leave the page body blank.

## Subtotals in Grouped Lists

When using a PowerCube that contains a ragged hierarchy, if you group on the first level in the hierarchy, subtotals may appear in the wrong place or show wrong values.

To resolve the issue, group on the second level.

## HRESULT= DB\_E\_CANTCONVERTVALUE Error When Filtering on a \_make\_timestamp Column

You cannot filter on a \_make\_timestamp column, and the following error messages appear:

*UDA-SQL-0114 The cursor supplied to the operation "sqlOpenResult" is inactive*

*UDA-SQL-0206 The OLEDB driver returned the following value: HRESULT= DB\_E\_CANTCONVERTVALUE "*

*RSV-SRV-0025 Unable to execute this request*

The solution is to apply the filter after aggregation and not before.

## Cannot Find the Database in the Content Store (Error QE-DEF-0288)

You cannot retrieve data from the selected database when running a report from Query Studio, IBM Cognos Connection, or Report Studio.

The following error message appears:

*QE-DEF-0288 Unable to find the database...*

If this error does not occur when you are logged on as an administrator, then to solve the problem, ensure that the user has permissions to the signon embedded. If this error always occurs, the data source has not been created. Create the data source with the name mentioned in the error message.

## Parse Errors When Opening or Running an Upgraded Report

Earlier versions of ReportNet and IBM Cognos 8 included the cast\_Date function for reports that run on an Oracle database. This function does not exist for Oracle in IBM Cognos 8.1.2 MR1 and later versions. If a report that uses an Oracle database includes the cast\_Date function, parse errors will be received when you try to open or run the report.

## Overflow Error Occurs When a Value in a Crosstab Is More Than 19 Characters

In a crosstab report, values support a maximum of 19 characters, including the decimal point. If a value exceeds 19 digits, an overflow error occurs. By default, the decimal precision is set to 7 digits, which restricts the number of integers to 11 digits.

To use more than 11 integers, you must edit a configuration file to reduce the decimal precision. For more information, see the IBM Cognos 8 *Administration and Security Guide*.

## A Report or Analysis Does Not Run Because of Missing Items

You attempt to run a report or analysis and a message indicates that one or more items are missing or changed. Each missing item is listed by its MUN (member unique name). The MUN includes the complete path within the hierarchy for the item. When you place your cursor on an item in the **Insertable Objects** pane, the MUN for that item is displayed in a tooltip. This situation may occur if members have been removed from or changed in the data source. It may also occur when you attempt to run a report that uses items to which you do not have access. For example, an administrator may create an analysis that includes items that you don't have the correct permission to access.

The solution is to find a suitable replacement in the **Insertable Objects** pane, and drag it to the **New Item** column. The report or analysis will then run.

## Query Studio Output Takes a Long Time to Run

In IBM Cognos Connection, you click Run with Options and select the Save the report delivery option. This action returns all data, renders the report, and stores it in the content store, which can take a long time.

It is quicker to run the report manually, using the Run command, which generates the report a page at a time.

## Drill-through Links Not Active in the Safari Browser

When viewing a PDF report in the Macintosh Safari browser, you cannot open hyperlinks. This is because the Macintosh Safari browser does not have the necessary Adobe Acrobat plug-in.

To avoid this problem, use the HTML format when creating drill-through reports that may be viewed in Safari.

## A Printed HTML Report is Unsatisfactory

Printing HTML may produce unsatisfactory results.

For best results, use the View in PDF Format command, and then print the PDF. This alternative gives you more control over such things as pagination than the browser does.

## Problems When Printing a PDF Manual

You print a document in PDF format, but the print job is incomplete. For example, the job stops printing when it reaches a particular graphic. This is an Adobe Acrobat Reader issue that can occur when printing some PDFs using some versions of Acrobat Reader and some printer models. The same PDF may print correctly under one or both of the following conditions:

- using a different version of Acrobat Reader
- using a different printer

If you print from an Acrobat 4.0 or later product, you can try the following solution.

### Steps to Force a Page to Print as an Image

1. In Acrobat Reader, from the **File** menu, click **Print**.
2. In the **Printer** section, select the **Print as image** check box.  
Because files print more slowly using this option, make sure you specify only the nonprinting page.
3. In the **Print Range** section, click **Pages from** and **Pages to**, type only the page number of the nonprinting page, and then click **OK**.  
You can print the rest of the PDF by resending the job starting on the next page.
4. Clear the **Print as image** check box.
5. In the **Print Range** section, click **Pages from** and **Pages to**, type the page range for the remaining pages, and then click **OK**.

Although you can use the **Print as image** option to print the file, this setting does not resolve the original printing problem. For more information, see the Adobe Web site.

## A Running Total in Grouped Reports Gives Unexpected Results

You have a running total calculation in a grouped report that returns unexpected values.

Because tabulation of the running total calculation depends on the order in which the grouping is executed, you must ensure that the grouped totals are tabulated before applying the running total.

To ensure that the grouping is executed in correct order, define a running total calculation as a freestanding calculation outside the query subject in Framework Manager, and ensure that the Regular Aggregate property is set to Automatic.

This may also be an issue with other running, moving, and ranking aggregations.

## Metadata Change in Essbase Not Reflected in Reports and in the Studios

When there is a metadata change on the 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 Content Manager server.

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## Relationships Not Maintained in a Report With Overlapping Set Levels

In a report, the relationship between nested or parallel sets at overlapping levels in the same dimension may not always be maintained.

For example, a named set in the data source that contains members from both a Year and Month member is nested under Year, but is not properly grouped by year.

In another example, an error message such as this appears: "OP-ERR-0201 Values cannot be computed correctly in the presence of multiple hierarchies ([Product].[B1], [Product].[Product]) that each have a level based on the same attribute (Product)."

This problem occurs in the following scenarios involving non-measure data items X and Y, that overlap in the same dimension:

- X and Y together as ungrouped report details
- Y nested under X
- Y appended as an attribute of a group based on X

When using named sets, or sets that cover more than one level of a hierarchy, do not use sets from the same dimension in more than one place in the same report. They should appear on only one level of one edge.

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## Summaries on Non-additive Measures Give Incorrect Results for SAP BW

If your list or grouped list report includes a summary, such as a total, average, or variance, on a non-additive measure (such as the price of an item or the quantity on hand in an inventory system), error cells, which typically show two dashes (--), are now returned. However, when using an SAP BW data source, the first value is returned as the summary for the non-additive measure instead of two dashes.

In Query Studio, a meaningless number may now appear instead of two dashes.

To obtain correct results, in Report Studio, set the Suppress property for the query to **None**. This option may cause more empty rows to appear in the report. You can also remove the summaries from your report. The report will no longer include a footer with two dashes or empty cells as the summary.

## Limited Support for Relational Functions When Used with OLAP Data Sources

When working with an OLAP data source, we recommend that you not use relational functions, such as substring and concatenation, in a report that also contains a measure with the **Aggregate Function** property set to **Calculated** or **Automatic** in the model. If you do so, you may encounter

unexpected results. For example, some summaries are calculated using the **Minimum** function instead of the aggregate function derived from the individual query items.

In the expression editor, an exclamation mark (!) that precedes a function indicates that the function is not naturally supported for that data source. IBM Cognos 8 uses a local approximation for that function. Because an approximation is used, performance can be degraded and the results may not be what you expect.

For example, you create a Query Studio report that contains the data items Product line and Retailer site count. The footer summary is set to **Calculated**. You then insert a calculated column that returns the first three characters of the Product line item, which uses the relational function concatenation. The footer summary now shows the lowest gross margin value.

Product line	First Three Characters	Retailer site count
<a href="#">Camping Equipment</a>	Cam	<a href="#">632</a>
<a href="#">Mountaineering Equipment</a>	Mou	<a href="#">265</a>
<a href="#">Personal Accessories</a>	Per	<a href="#">810</a>
<a href="#">Outdoor Protection</a>	Out	<a href="#">639</a>
<a href="#">Golf Equipment</a>	Gol	<a href="#">367</a>
<b>Summary</b>		<b>265</b>

For more information about aggregation functions, see the Query Studio *User Guide* or the Report Studio *Professional Authoring User Guide*.

## Tips for Working with Ragged or Unbalanced Hierarchies

In ragged or unbalanced hierarchies, some members that are not at the lowest level of the hierarchy may have no descendants at one or more lower levels. Support for these hierarchy gaps in relational data sources is limited. More complete support is provided for OLAP data sources, but some reports may still result in unexpected behavior. For example, the following may occur:

- Groups corresponding to missing members may appear or disappear when grouped list reports are pivoted to a crosstab. This happens with set expressions using the filter function, and detail filters on members.
- Ragged and unbalanced sections of the hierarchy are suppressed when set expressions in that hierarchy are used on an edge.
- When a crosstab is sectioned or is split into a master detail report, sections corresponding to missing members become empty.
- Cells that were suppressed may still appear in the report output for reports with ragged or unbalanced hierarchies.

Some of these behaviors may be corrected in a future release, while others may be codified as supported behavior. To avoid these behaviors, do not use levels from ragged or unbalanced hierarchies. Instead of using levels, use the descendants, children, or ancestors.

We consider the following scenarios to be safe:

- One or more nested level references on an edge with no modifying expression.
- A hierarchy reference on only one level of one edge.

- One or more explicit members or sets of explicit members as siblings on only one level of one edge.
- Summaries of the previous three scenarios.

In all cases, you should test reports based on ragged and unbalanced hierarchies to confirm that hierarchy gaps are handled correctly.

For more information about ragged or unbalanced hierarchies, see the Framework Manager *User Guide*.

## Columns, Rows, or Data Disappear With SSAS 2005 Cubes

Microsoft SQL Server 2005 Analysis Services (SSAS) has a feature called AutoExists that removes tuples that have no facts at the intersection of two hierarchies of the same dimension.

Columns, rows, or data can disappear if you set the default member of a hierarchy to a member that does not exist with every other member in the dimension. To avoid this problem, change the default member that caused the disappearance to a member that exists with all other members in the dimension.

Columns, rows, or data can also disappear if members are specified that result in one or more non-existent tuples. There is currently no workaround for this scenario. For more information, see the Microsoft Knowledge Base article at <http://support.microsoft.com/kb/944527>.

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You may also encounter unexpected results if the default member of a hierarchy is a member that doesn't also exist in all other hierarchies in the dimension, and if you query members from different hierarchies in the same dimension.

For example a Report Studio crosstab includes the following (using the Adventure Works cube):

- Rows: Generate([Adventure\_Works].[Account].[Accounts],set([Balance Sheet],[Units])) nested with  
children([Adventure\_Works].[Department].[Departments]->:[YK].[Department].[Departments]].&[1]))
- Column: [Adventure\_Works].[Account].[Account Number].[Account Number]
- Measure: [Adventure\_Works].[Measures].[Amount]

You run the report and notice that the query renders with some blanks cells. You then apply the simple detail filter [Amount]>1 and run the report. Only row labels are displayed and all data and columns are missing.

In the Adventure Works cube, the [Account].[Accounts] attribute has a default member set to [Net Income]. When evaluating the GENERATE set expression, SSAS looks in the entire cube space and looks at all coordinates for the [Account] dimension. These coordinates include both [Account][Account Type]&[] and [Account].[Accounts].[Net Income]. Because these two coordinates don't exist within the same hierarchy, SSAS returns an empty set.

To avoid this problem the SSAS administrator must set the default member in the cube to a member that exists in all other hierarchies.

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## Unexpected Cell Formatting in Reports

When using data sources other than OLAP and you run a report, cell formatting may not appear as expected. For example, some cells may appear very small. This could be caused by null values returned from the query.

To specify what appears for a data container when there are null values in a query, refer to the Report Studio *Professional Authoring User Guide*.

You may also see an "Invalid Dates" message in some cells. This issue is specific to Transformer and occurs when cubes are constructed with unknown date values. For more information, see the Transformer *User Guide*.

494181

## Report Differences Between TM1 Executive Viewer and IBM Cognos 8 with TM1 Data Sources

When using a TM1 data source, comparable reports created in an IBM Cognos 8 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 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 8 match the values in Executive Viewer.

592662

## Order of Metadata Tree Differs for TM1 Data Sources

When using a TM1 data source, the order of members in the metadata tree of the **Insertable Objects** pane of an IBM Cognos 8 studio may differ from the order shown in TM1 Architect.

By default, TM1 Architect renders members of hierarchies using a slightly different algorithm than does IBM Cognos 8. IBM Cognos 8 automatically renders member metadata from TM1 data sources in hierarchical order.

From within TM1 Architect, if you want to see how an IBM Cognos 8 studio will render a hierarchy, click the Hierarchy Sort button.

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# Appendix B: Samples

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IBM Cognos 8 includes sample reports. When installed, you can find them in the **Public Folders** tab in IBM Cognos Connection.

In addition, the **Query Studio Templates** folder contains templates that were created in Report Studio. You can apply these templates to your reports to give them a consistent look.

## 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.

For examples related to different kinds of businesses, see the product blueprints at ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)). For information about specific installation choices and environments, see the *Architecture and Deployment Guide*, or the Proven Practices and the IBM Cognos Implementation Roadmaps on the IBM Cognos Resource Center Web site ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)). For information about audit samples, see the *Administration and Security Guide*.

### Where to Find the Samples

The samples are included with the product and the samples for each studio are described in the related user guide and online help. To use the samples, you must set up and configure them or contact your administrator to find out where they are installed. For instructions on how to set up and configure samples, see the *Installation and Configuration Guide* or the *Administration and Security Guide*.

### What Samples Exist

The samples consist of

- two databases that contain all corporate data, the related sample models for query and analysis, and sample cubes, reports, queries, query templates, and dashboards
- a metrics database and the associated metrics, including a strategy map for the consolidated company

**Note:** You must have Metric Studio installed to use the metrics database and associated metrics.

- interactive reports that let you hover over report features to learn how the features work and why they were included

**Note:** These reports are stored in the **Interactive Samples** folder of the IBM Cognos 8 installation.

## Security

You can add security to the samples using an employee list included with the product. The list is in the form of an LDIF file that can be imported into any directory server, such as the Sun Java System Directory Server.

**Note:** You can download a version of the Sun Java System Directory Server from the Sun Web site (<http://www.sun.com/download/>). For more information, see the *Installation and Configuration Guide*. For information about conformance, see the IBM Cognos Resource Center Web site ([http://www.ibm.com/software/data/support/cognos\\_crc.html](http://www.ibm.com/software/data/support/cognos_crc.html)).

## Samples in the Go Data Warehouse (analysis) Package

The following reports are some of the reports found in the GO Data Warehouse (analysis) package.

### Return Quantity by Product Line

This crosstab report shows return quantities of product lines for all subsidiaries.

### Return Quantity by Product Line Chart

This pie chart report shows return quantities of product lines for all subsidiaries.

### Returns by Product Type

This report shows product type return quantities and lost revenue as a result of returns for all subsidiaries. The Getting Started guide provides a step-by-step example of how to create this report.

## Sample in the Go Sales (query) Package

The following report is found in the GO Sales (query) package.

### Gross Profit for Bella Eyewear Brand

This report shows the gross profit for the Bella eyewear brand. It uses a text filter to retrieve the brand, and a concatenation to get the unique combination of product name and color.

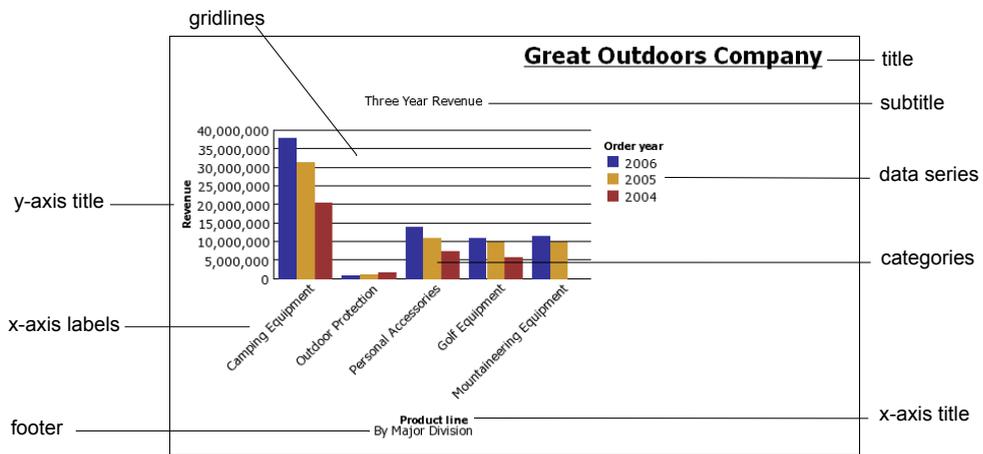
# Appendix C: Chart Types

Charts are a graphical way of presenting data. 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.

Some chart types are not supported for Microsoft Excel output or appear differently. For more information, see "[Limitations When Producing Reports in Microsoft Excel Format](#)" (p. 97).

## Chart Elements

The following example shows the most common chart elements. You can add extra elements such as baselines and notes using Report Studio.



## Axes

Axes are lines that provide a frame of reference for measurement or comparison.

The y-axis refers to measures of quantitative data, such as sales figures or quantities. Charts may have more than one y-axis.

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

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

## Gridlines

Axes are lines that provide a frame of reference for measurement or comparison. Major gridlines extend from the tick marks on an axis and run behind the data markers.

## Data Series

A data series is a group of related data points plotted in a chart. Each series has a unique color or pattern and is described in the legend.

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

### Legend

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

### Categories

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

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

### Columns, Lines, and Areas

Charts use columns, lines, and areas as visual representations of data points. Other examples of visual representations include horizontal bars, points, and bubbles.

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

## Pie Charts

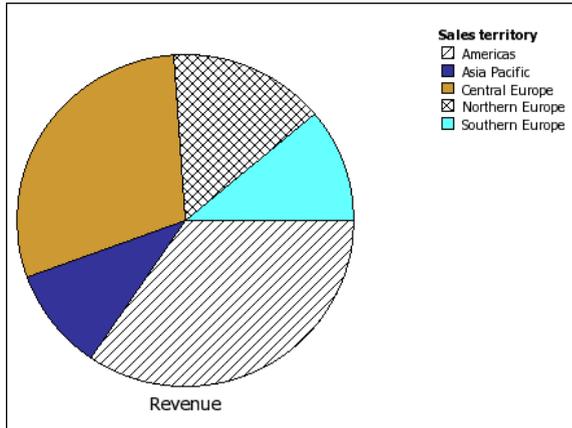
Pie charts are useful for highlighting proportions.

Pie charts use segments of a circle to show the relationship of parts to the whole. To highlight actual values, we recommend that you use another chart type, such as a stacked chart.

Pie charts plot a single data series. To avoid multiple pies when plotting multiple data series, we recommend that you use a 100 percent stacked chart.

Reports in PDF or HTML format are limited to show a maximum of 16 pie or gauge charts. 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 Central Europe region.



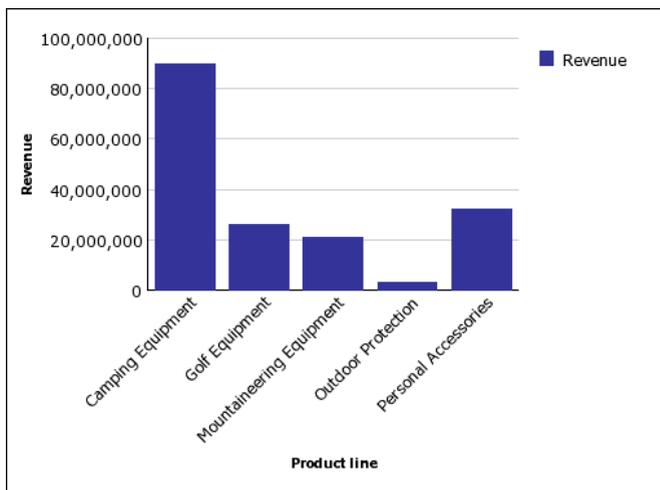
Pie charts can plot data using [standard](#), [100 percent](#), and [three-dimensional](#) configurations.

## Column Charts

Column charts are useful to compare discrete data or to show trends over time.

Column charts use vertical data markers to compare individual values.

The following example uses actual values to show the revenue for each product line.



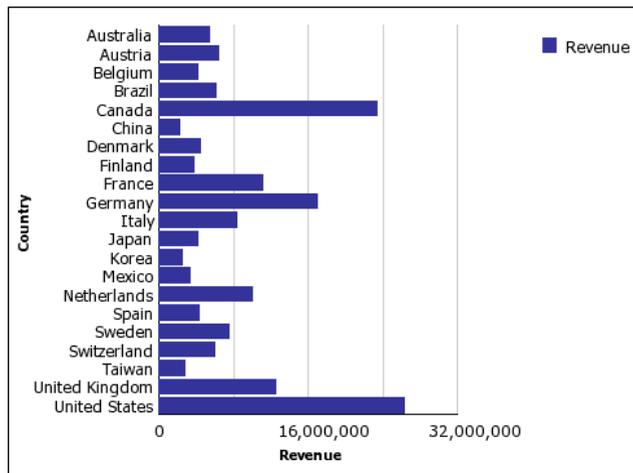
Column charts can plot data using [standard](#), [stacked](#), [100 percent stacked](#), and [three-dimensional](#) configurations.

## Bar Charts

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

Bar charts use horizontal data markers to compare individual values.

The following example shows actual revenue for every country.



Bar charts can plot data using [standard](#), [stacked](#), and [100 percent stacked](#) configurations.

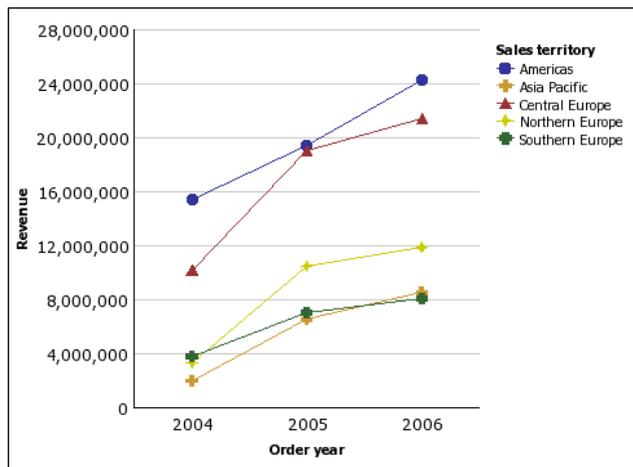
## Line Charts

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

Line charts plot data at regular points connected by lines.

We do not recommend that you use stacked line charts because they are difficult to distinguish from unstacked line charts using multiple data series.

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



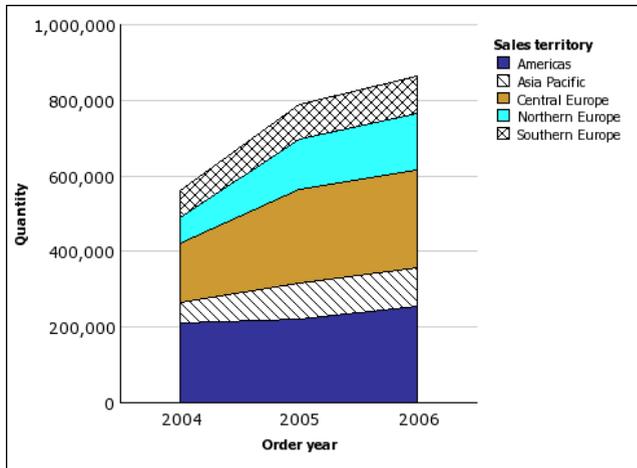
Line charts can plot data using [standard](#), [stacked](#), [100 percent stacked](#), and [three-dimensional](#) configurations.

## 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 that have the areas below the lines filled with colors or patterns. We do not recommend that you use standard area charts in a chart that has multiple data series because it is possible for areas with lower values to be covered by others.

The following example shows the quantity of products sold over a two-year period in multiple territories.

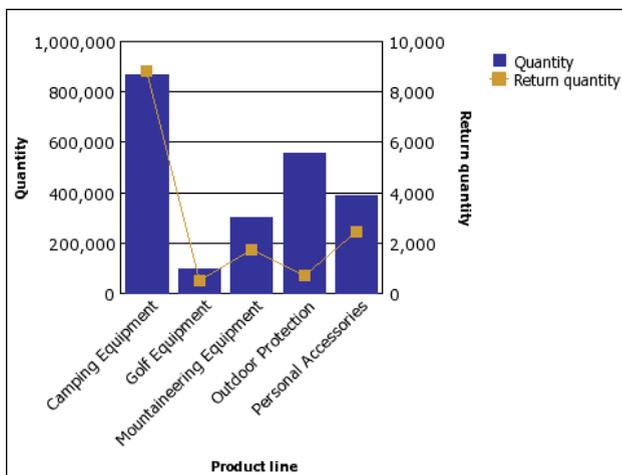


Area charts can plot data using [standard](#), [stacked](#), [100 percent stacked](#), and [three-dimensional](#) configurations.

## 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.

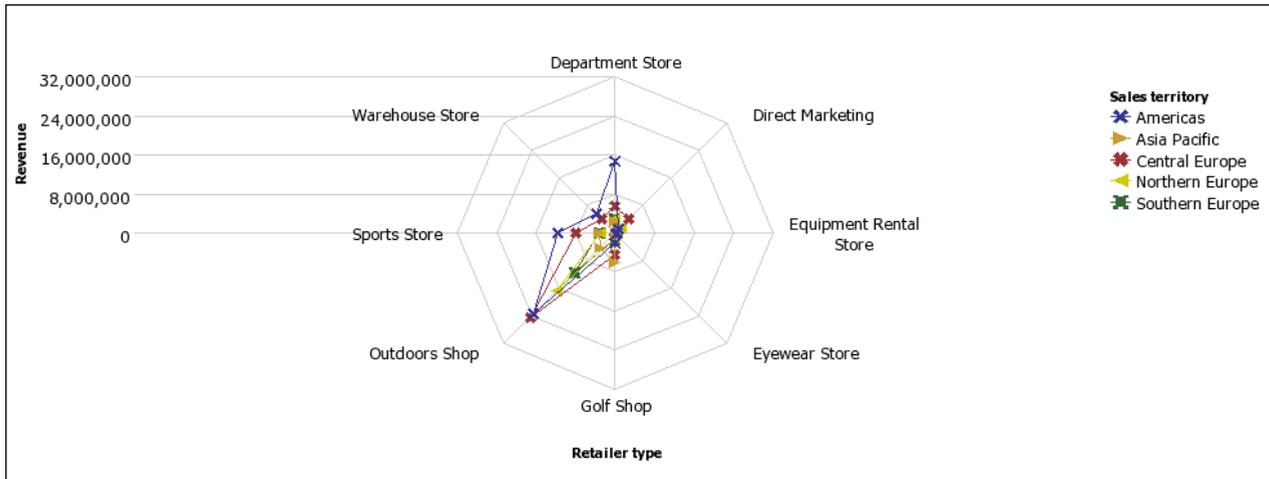


## Radar Charts

Radar charts are useful as a comparative tool and for charts with few data series.

Radar charts integrate multiple axes into a single radial figure. Data is plotted on each axis and joined to adjacent axes by connecting lines.

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



Radar charts can plot data using [standard](#) and [stacked](#) configurations.

## 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

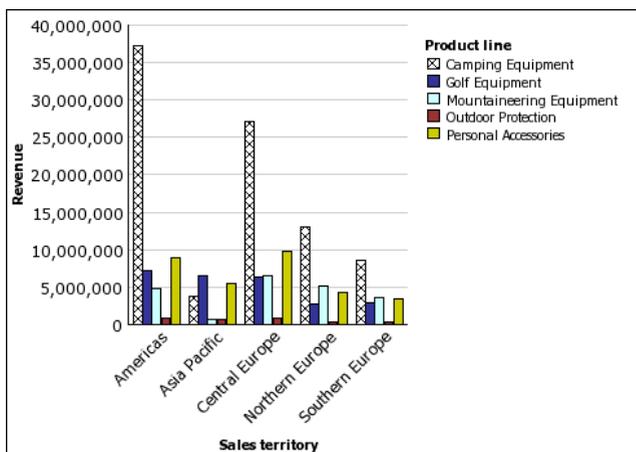
Standard or absolute charts are useful for comparing specific values and for representing discrete data, such as different regions or individual employees. For example, a standard column chart that plots regional sales emphasizes the actual value that each region achieves in sales.

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 area and radar charts that have multiple data series, areas with lower values may be covered by others.

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



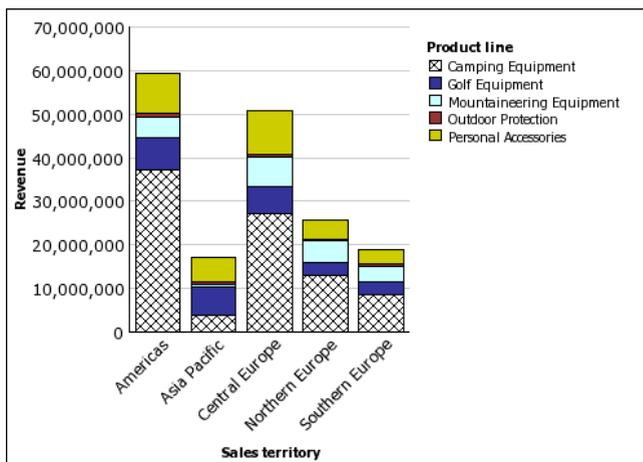
## Stacked Charts

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.

We recommend that you do not use the stacked configuration in line charts that have multiple data series because it is difficult to distinguish between standard and stacked configurations.

The following example shows the high proportion that camping equipment contributed to the actual revenue in most markets.



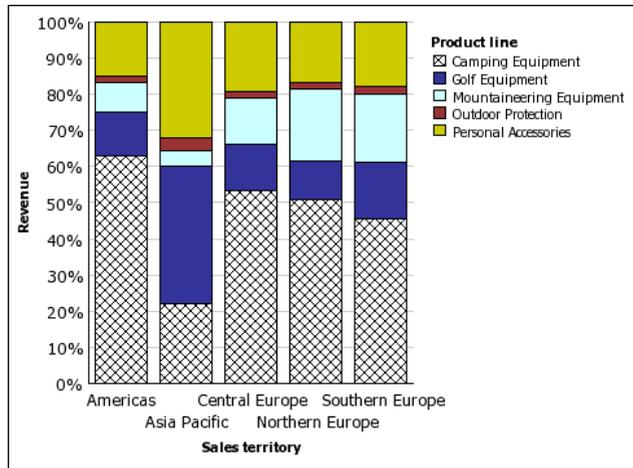
## 100 Percent Stacked Charts

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, we recommend that you use another chart configuration.

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



### Three-dimensional Charts

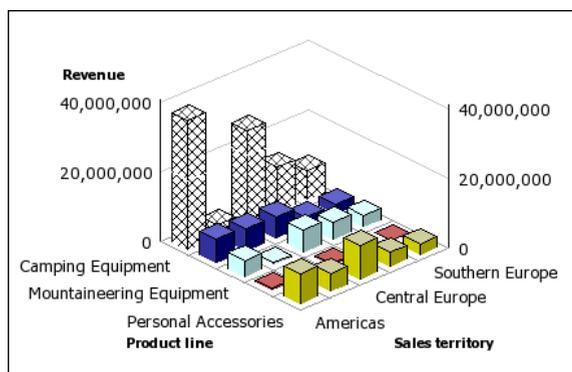
Three-dimensional charts are useful for creating charts with high visual content, such as graphics for use in presentations.

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

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

We recommend that you 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.

The following example shows actual revenue for each product line in each territory. Note the skipping of the labels on the x and y axes.



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# Appendix D: Limitations When Producing Reports in Microsoft Excel Format

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There are limitations when producing reports in Microsoft Excel format.

## Unable to Load Images from the IBM Cognos 8 Content Store in a Report

If a report contains an image whose URL points to the IBM Cognos 8 content store, Microsoft Excel 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 2000 and 2002.

## Blank Worksheet Is Opened

If Microsoft Excel cannot download a worksheet within a timeout period, Excel may instead open a blank worksheet.

## Warning Message Appears When Excel Opens an IBM Cognos 8 Report

Each time Microsoft Excel opens an IBM Cognos 8 report, the following message appears:

Some of the files in this Web page aren't in the expected location. Do you want to download them anyway? If you're 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 8 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 8 report in Excel. If you see this error message, click **Yes** to open the report.

## Error Message Appears in an Excel 2000 Single Sheet Report

If you create a report in the Excel 2000 Single Sheet format, [RSV-RND-0017] may appear on the last line of your report because Report Studio could not generate all the data in your report in this format. If you see this error message, we recommend checking your report carefully for changes.

## 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 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 Excel reports in Office 2000 HTML format use relative paths to the spreadsheets. The relative URL paths are no longer available when you open a saved XLS report.

Instead, click **Open** first and then choose to save the report.

## Unable to Load Excel Report in Netscape 7.01

This version of IBM Cognos 8 does not support loading Microsoft Excel reports in Netscape 7.01.

## Unsupported IBM Cognos 8 Formatting

About 30% of the formatting functions available in IBM Cognos 8 are not supported in Microsoft Excel. 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 8)
- Calendar (Excel does not allow changing the calendar)
- Era Name
- First Day Of Week
- Show Era

## Cell Contains Series of #

Cells in Microsoft Excel 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

Microsoft Excel 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 Width

Microsoft Excel 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 following formats and Microsoft Excel versions.

Format	Version
Excel 2000 single sheet	Microsoft Excel 2000, 2002, 2003
Excel 2000	Microsoft Excel 2003
Excel 2002	Microsoft Excel 2002, 2003

## Number Format Becomes Currency Format 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.

## Report Shows 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 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 a Report on a Remote Server

You cannot access a report in 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 8 does not support the following formatting functions available in Excel:

- 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 Microsoft Excel limitations.

## **Hyperlink Buttons Are Not Supported in Excel**

Microsoft Excel does not support hyperlink buttons.

## **Unable to View Reports in Excel Format Sent as Email Attachments**

IBM Cognos 8 can send 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.



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# Appendix E: Format Rules for Calculations Returning Number Data Types

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When you create a calculation that returns a number, the formatting of the resulting column is based on

- the calculation operation
- the format of the parent column or columns
- the number of decimals specified when a value is typed in the **Number** box

**Note:** All non-numeric format elements are ignored when creating the calculation format.

## Sum, Difference, Maximum, Minimum

The following applies when the calculation operation is sum, difference, maximum, or minimum:

- If all calculation parents are percentages, the resulting column also has a percentage format.
- If all calculation parents are currency formats with the same currency code, the resulting column has the currency format with that currency code.
- For all other cases, the resulting column has the number format.
- The number of decimals of the resulting column is set to that of the parent that has the largest number of decimals.
- All other formatting that is identical in all parents is passed to the resulting column.

## Product

The following applies when the calculation operation is product:

- If all calculation parents have the number format, the resulting column also has the number format.
- If the calculation parents are a mix of number and percent formats, the resulting column has the percent format.
- If the calculation parents are a mix of currency and number or percent formats, the resulting column has the currency format if all currency formats have the same currency code. Otherwise, the resulting column has the number format.
- If all calculation parents are percentages, the resulting column also has a percent format.
- If the calculation parents are a mix of more than two format types, or some parents are unformatted, the resulting column has the number format.

- The number of decimals in the resulting column is set to that of the parent that has the largest number of decimals or to the number typed in the **Number** box, whichever number is higher.
- All other formatting that is identical in all parents is passed to the resulting column.

## Division, Average

The following applies when the calculation operation is division or average:

- If all calculation parents have the number format, the resulting column also has the number format.
- If the calculation parents are a mix of number and percent formats, the resulting column has the percent format.
- If the calculation parents are a mix of currency and number or percent formats, the resulting column has the currency format if all currency formats have the same currency code. Otherwise, the resulting column has the number format.
- If all calculation parents are percentages, the resulting column also has a percent format.
- If the calculation parents are a mix of more than two format types, or some parents are unformatted, the resulting column has the number format.
- The number of decimals in the resulting column is set to a maximum of three.
- All other formatting that is identical in all parents is passed to the resulting column.

## Percent, Percent Difference, Percent Total

The following applies when the calculation operation is percent, percent difference, or percent total:

- The resulting column has the percentage format.
- The number of decimals in the resulting column is set to two.

## Percentile, Rank, Quartile, Quantile

The following applies when the calculation operation is percentile, rank, quartile, or quantile:

- The resulting column has the number format.
- The number of decimals of the resulting column is set to two.

## Round, Round Down

The following applies when the calculation operation is round or round down:

- The resulting column has the same format as the parent.

## Absolute

The following applies when the calculation operation is absolute:

- The resulting column has the same format as the parent.

## Power, Sqrt

The following applies when the calculation operation is power or sqrt:

- The resulting column has the number format.
- The resulting column has the same format as the parent, such as number of decimals, sign, and scale.



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# Glossary

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## **attribute**

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 dimensional models, attributes provide 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.

## **condition**

An expression that yields a boolean value. Conditions are used in query expressions, query filters, and boolean report variables that can be used for conditional formatting, styles, data sources, layouts and blocks.

## **content locale**

A code that is used to set the language or dialect used for browsers, report text, and so on; and the regional preferences, such as formats for time, date, money, money expressions, and time of day.

For IBM Cognos products, you can specify a locale for the product interface (product locale) and for the data in the report (content locale).

## **cube**

A physical data source containing a multidimensional representation of data. A cube contains information organized into dimensions and optimized to provide faster retrieval and navigation in reports. In IBM Cognos Planning, a cube (see also D-Cube) corresponds to a tab on Contributor client user interface.

## **data source**

A relational database, dimensional cube, file, or other physical data store that can be accessed through IBM Cognos 8.

## **data tree**

Within a studio, contains objects such as query subjects, query items, dimensions, levels, and members. A data tree is used as a palette of the available data that can be inserted into calculations, filters, display areas, and other authoring gestures.

## **dimension**

In IBM Cognos Planning, the rows, columns, and pages of a cube are created from dimensions. Dimensions are lists of related items such as Profit and Loss items, months, products, customers, and cost centers. Dimensions also contain all the calculations. One dimension can be used by many cubes.

In IBM Cognos 8 BI, a dimension is 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 IBM Cognos Planning, drill down is a technique used to analyze D-Cube data that was imported by a D-Link. You can drill down on any single cell in a D-Cube. If the cell contains data transferred by a D-Link, drill down opens a view of the source data. If the data was imported from another D-Cube, drill down opens the appropriate selection from the source D-Cube. If the data was imported from an external source (a mapped ASCII file or an ODBC database), drill down extracts the relevant data from the source file and displays it in a special drill-down results dialog box.

In IBM Cognos 8 BI, drill down refers to the act of navigating from one level of data to a more detailed level. The levels are set by the structure of the data. See also drill up.

### **drill up**

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

See also drill down.

### **group**

In security, a list of users or other groups that can be used to assign access permissions and capabilities.

Groups can be referenced from other authentication sources or can be local to IBM Cognos 8. Local groups are managed from the administration portal. The list of groups that an authentication user is a member of is part of the user's passport for an IBM Cognos 8 session.

In reporting, grouping is the action of organizing common values of query item together and only displaying the value once. Headers and footers often appear after each instance of a common value in a grouped column

### **hierarchy**

A hierarchy represents a collection of dimensional members organized into a tree structure, with each member having one or more parent members and an arbitrary number of child members.

The root of a hierarchy has no parent, and leaf members of a hierarchy have no children.

### **layout**

In reporting, layout defines the appearance of the report, including formatting, style, and design.

In report specifications, layout is the portion of the specification that defines how the data returned by queries is presented.

### **level**

A level is a set of members that have common attributes. For example, a geographical dimension might contain levels for country, region, and city. Levels are used to define the structure of hierarchies in a dimension.

**measure**

A performance indicator that is quantifiable and used to determine how well a business is operating. For most business purposes, the aggregate values of a measure are more useful than individual values. For example, measures can be Revenue, Revenue/Employee, and Profit Margin %. In relational modeling, this is also called a "fact."

**member**

A member is a unique item within a hierarchy. For example, Camping Equipment and 4 Man tent are members of the Products hierarchy.

See also member unique name.

**model**

A physical or business representation of the structure of the data from one or more data sources. A model describes data objects, structure, and grouping, as well as relationships and security.

In IBM Cognos 8 BI, a design model is created and maintained in Framework Manager. The design model or a subset of the design model must be published to the IBM Cognos 8 server as a package for users to create and run reports.

In IBM Cognos Planning, a model is a group of D-Cubes, D-Lists, D-Links, and other objects stored in a library. A model may reside in one or more libraries, with a maximum of two for Contributor.

**package**

A subset of a model, which can be the whole model, to be made available to the IBM Cognos 8 server.

For Metric Studio users, see metric package.

**prompt**

A report element that asks for parameter values before the report is run.

**query**

A specification for a set of data retrieved from a data source. A report specification can contain one or more queries.

In Query Studio, the type of object created and edited. A query is a subtype of report.

In Transformer, models can contain multiple queries as data sources. A query or data source appears as a cylinder icon in the Data Sources list.

**query item**

A representation of a column of data in a data source. It contains a reference to a database column, a reference to another query item, or a calculation. Query items may appear in a model or in a report.

**query subject**

One of the types of objects inside a model. A query subject can be defined as a collection of references to items of other query subjects, or expressed as an SQL expression that represents selected query

items. These query items will be retrieved from objects such as tables, synonyms, views, and so on. Query subjects contain query items.

### **report**

A set of data deliberately laid out to communicate business information. Depending on the context, "report" may refer to report specification or report output.

Report (more precisely, report specification) is the generic term for the objects created or edited by Query Studio, Report Studio, and Analysis Studio.

### **summary**

In reporting and analysis, summaries are aggregate values that are calculated for all the values of a particular level or dimension. Examples of summaries include total, minimum, maximum, average, and count.

### **template**

A reusable report layout or style that can be used to set the presentation of a query or report.

### **work area**

The area within a studio that contains the report, analysis, query or agent currently being used.

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