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SAS® Web Report Studio: Exploring OLAP Data

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ABSTRACT

Did you know that you can explore OLAP data in SAS® Web Report Studio? SAS Web Report Studio, the zero download query, analysis, and report tool included with the SAS® Enterprise BI Server, allows access to data designed to serve your OLAP reporting needs. Capabilities such as direct OLAP access and ad hoc querying are described.

INTRODUCTION

For many years, SAS has provided cube storage and data exploration capabilities through various tools allowing business knowledge workers to perform rapid ad hoc data exploration, and SAS Web Report Studio is now the primary OLAP (online analytical processing) client on the Web in SAS 9.2. SAS Web Report Studio facilitates data exploration as well as standard reporting. In the past, tools used to create standard reports were often different from those tools used to perform ad hoc data exploration. In fact many organizations deployed tools from different vendors to meet both of these usage categories. Users needing both had to deal with inconsistencies in user interfaces, administrators had multiple tools to deploy and manage, and there were multiple vendors to work with. Similarly, typical report writing tools often do not access OLAP cubes, so results can be inconsistent between ad hoc and canned reports, and reporting tools often could not leverage the advanced calculations afforded by the SAS® OLAP Server, such as relative time-based calculations. SAS Web Report Studio overcomes these challenges.

SAS Web Report Studio was designed to bring both reporting and data exploration into a single Web-based tool to provide more consistency to SAS customers. SAS Web Report Studio uses general query and reporting terms when accessing and navigating OLAP data to provide a level of consistency regardless of the data source, tabular or cube, and to reach a broader set of potential information producers and consumers. The benefits are it is easier to learn and use for those needing to perform both styles of reporting, requiring less training, it is easier to deploy and manage, and it allows reports initiated as ad hoc reports to be repurposed as standard, parameterized and/or distributed reports if needed without starting over. Further, customers achieve consistency in report output when ad hoc and standard reports can both leverage the same source of data, increasing confidence in the numbers. This paper assumes that the reader has a basic understanding of OLAP cubes and SAS BI software, and it focuses on the SAS Web Report Studio capabilities for accessing, exploring and building shared reports that are based on cube data from the SAS OLAP Server.

ACCESSING CUBE DATA

An OLAP cube is a data structure that provides access to detailed data that has been summarized into multidimensional views and hierarchies. Accessing data from an OLAP cube is typically fast because most resource-intensive calculations are performed as part of the generation of the summarized data. SAS Web Report Studio can be used to quickly explore summarized data and perform ad hoc query analysis. SAS Web Report Studio enables users to access summarized data directly from OLAP cubes and from information maps that are based on OLAP cubes.

DIRECT ACCESS TO CUBES

OLAP cubes are stored in a repository along with information maps, tables, and various other types of data. SAS Web Report Studio gives authorized users the ability to navigate and search within a repository for cubes. The graphical user interface shown below is available within SAS Web Report Studio to allow easy access to cubes.
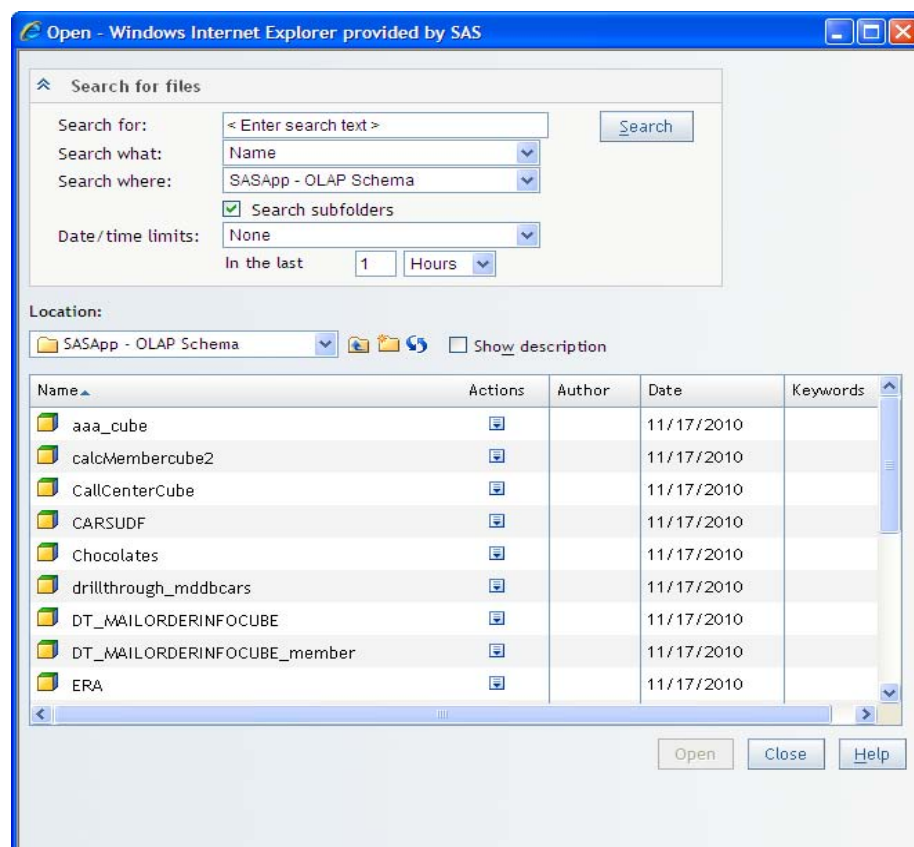
SAS Web Report Studio: Exploring OLAP Data, continued

Figure 1: File Open Dialog Box

ACCESSING CUBE DATA FROM INFORMATION MAPS

SAS® Information Map Studio is used to create information maps. Information maps provide business views of physical data structures based on various data sources, including multidimensional data or cubes. An information map hides the complexity of querying language semantics from the user while providing access to constructs such as predefined filters, prompts, and MDX (multidimensional expressions). By accessing cubes from within an information map, users can save and reuse filters, prompts, and MDX.

Users can access information maps based on cubes directly from the repository or indirectly after opening a report. To access an information map directly from the repository, use the graphical user interface shown in Figure 1: File Open Dialog Box Box to navigate to and open the targeted OLAP information map.

Predefined Filters and Prompts

A filter is a set of rules that define how data should be subset. A filter definition can be defined and saved within an information map. A prompt enables the user of a filter to specify filtering criteria when a query is executed. Once a predefined filter or prompt is created within an information map, it can be shared by anyone using that information map within SAS Web Report Studio to explore data.

Data Items Based on Complex MDX

An expression is a combination of data items, literals, functions, and mathematical operators that are used to derive a value or specify a condition that determines how data is processed. Complex MDX can be created in the information map business view and referenced as a data item. A data item is used to represent an OLAP hierarchy, OLAP measure, or an expression defined within an information map.

Data items can be shared by all users of an information map, allowing the usage of complex MDX by multiple consumers. By using data items representing MDX, custom queries that answer tough business questions can be created once, and used in numerous data exploration scenarios by different users.

SAS Web Report Studio: Exploring OLAP Data, continued

QUERYING CUBE DATA

The highly interactive SAS Web Report Studio application gives the users different ways to create the initial multidimensional view of data. Users can rely on the application to dynamically create the initial view, or choose to control it by selecting all data that will be reflected in the initial view.

From a Dynamically Generated Query

A SAS Web Report Studio user can quickly begin to explore data by opening an information map or an OLAP cube directly from within SAS Web Report Studio. With a double-click operation on an information map or cube located in the repository shown in Figure 1: File Open Dialog Box Box, a crosstabulation table that is based on either a system generated or default business query is presented to the user. The dynamically generated business query allows the user to begin performing ad hoc query analysis based on a logical starting point that is determined beforehand by an administrator.

From an Explicitly Generated Query

For a user who needs more control over the initial creation of the business query, SAS Web Report Studio gives the user the ability to explicitly generate the query that will be executed. Users can explicitly create a query by creating a new report or opening an existing one. Once in the report, the user chooses the Select Data option from the Options menu in the left panel, which brings up the Select Data dialog box shown below.
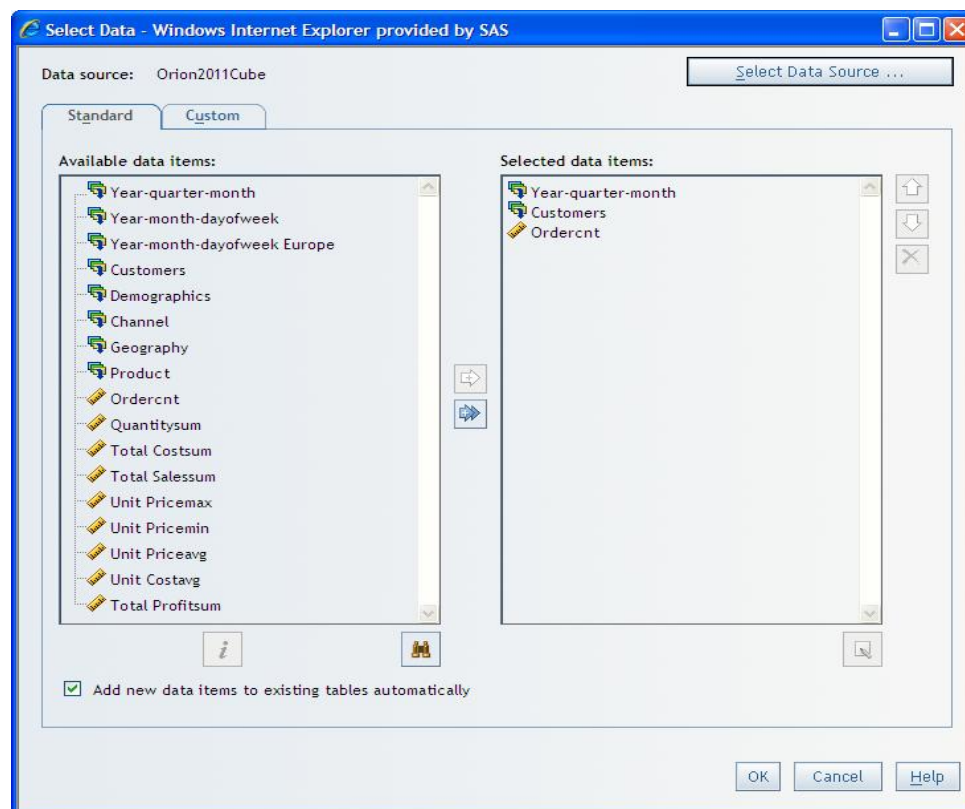
Figure 2: Select Data Dialog Box

If this is a new report, the user clicks **Select Data Source**, which opens the repository navigator as shown in Figure 1: File Open Dialog Box Box. An information map or a cube is located in the repository and selected. If this is an existing report, the information map or cube should already be present. The user can choose the data items that will be part of the business query by selecting one or more data items and using the arrows to move the data item or items to the right-hand side selection area. The selected data items will be part of the business view that is presented to the user.

EXPLORING AND ANALYZING DATA

After accessing the summarized data and generating the business queries, users can elect to explore the data in business views using a crosstabulation table or various graph representations. The graph representations include a

SAS Web Report Studio: Exploring OLAP Data, continued

bar chart, line plot, bar-line chart, progressive bar chart, pie chart, scatter plot, bubble plot, tile chart, and a geographical map. Once a business view is presented, users can explore and analyze the data using standard OLAP operations.

MANIPULATING THE DATA

When exploring data within SAS Web Report Studio, users are able to change the underlying business query. Hierarchies and measures can be added to the current business view by dragging an item from the left panel and dropping it at the desired location in the business view as shown in Figure 3: Changing the Business View.
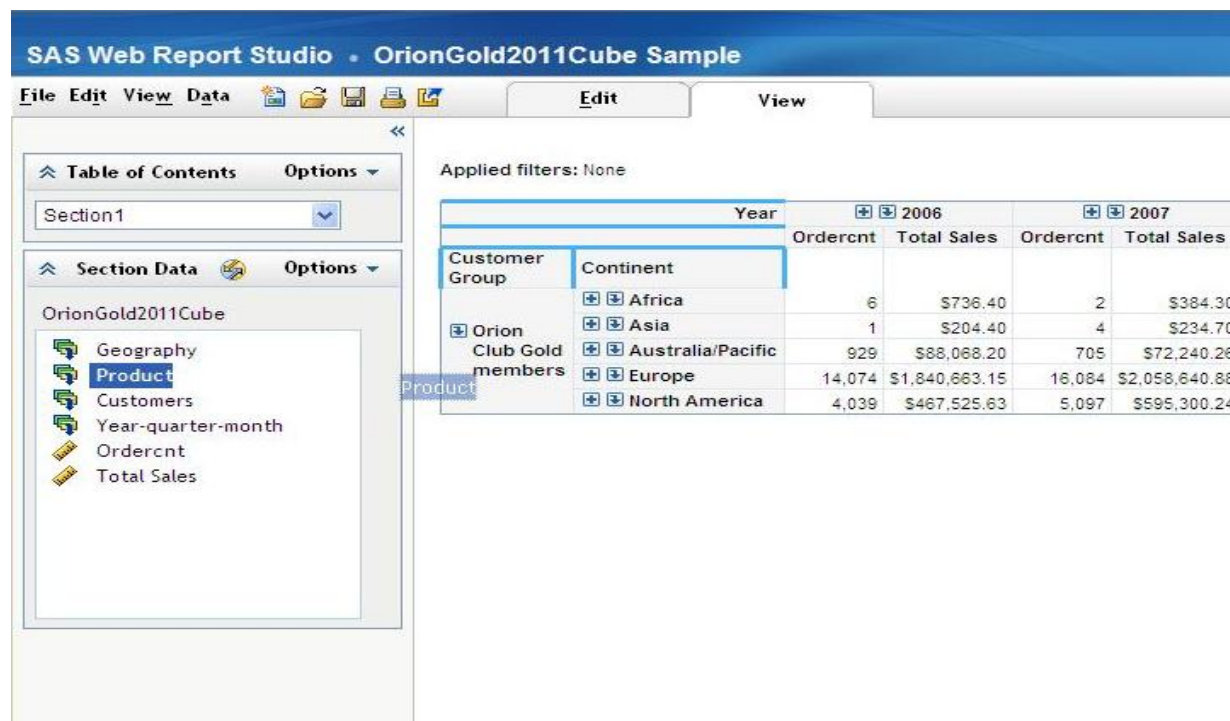
Figure 3: Changing the Business View

The data can also be manipulated by performing standard OLAP operations such as hide, swap, and isolate on hierarchies and/or members.

Hide an Item

To hide a hierarchy, right-click the hierarchy that needs to be hidden, and then select **Hide** from the list of options. Figure 4: Hide Operation shows the user hiding the customer group hierarchy so that they can analyze the data at a higher-level of aggregation. In this example, once the customer group is hidden, the summarized data will reflect total sales for all products regardless of customer group.

SAS Web Report Studio: Exploring OLAP Data, continued

Figure 4: Hide Operation

Swap a Hierarchy
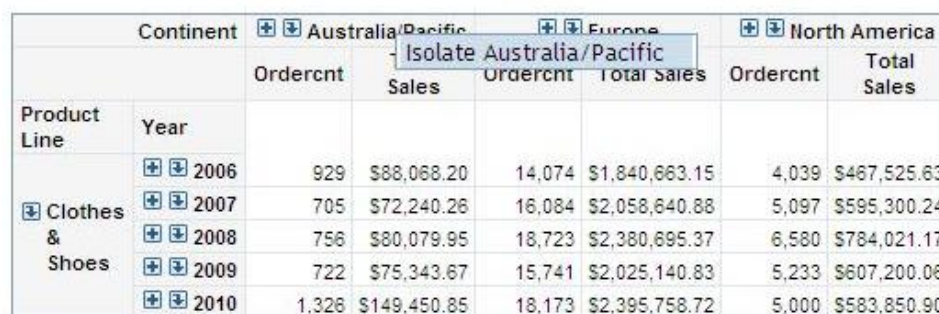
SAS Web Report Studio allows users to quickly swap one hierarchy with another. To replace a hierarchy with one that doesn't appear in the current business view, right-click the hierarchy that will be replaced and click **Change**, selecting the hierarchy that will be added. Figure 5: Swap Hierarchy Operation shows the user replacing Product with Customers.

Figure 5: Swap Hierarchy Operation

Isolate a Member

Users can navigate to a desired location and then isolate a member that they want to focus on. To isolate a member within SAS Web Report Studio, right-click the target member value and select the **Isolate** option. In Figure 6: Isolate Member Operation, the user isolates the **Australia/Pacific** member so that they can focus on total product sales in that region.

Figure 6: Isolate Member Operation

Exclude Missing Values

When analyzing OLAP data, some member combinations may need to be excluded because they are not meaningful. For example, snowshoes would not be sold in Florida, making it desirable to exclude members related to this query from the results. SAS Web Report Studio gives users the option to include or exclude missing values by selecting the **Include Members with Only Missing Values** option on the **Data** menu. By default, missing values are included. When unselected, if all members for a given level have no data, then that level is not returned in the results. In Figure 7: Include Missing Values, missing values are included resulting in the display of South America with no data values and member Children for Asia with no data values.

SAS Web Report Studio: Exploring OLAP Data, continued

Year		2009		2010	
		Ordercnt	Quantity Sum	Ordercnt	Quantity Sum
Continent	Product Line				
Asia	Children	.	.	.	.
	Clothes & Shoes	29	45	25	48
	Outdoors	187	316	181	297
	Sports	7	14	11	17
Europe	Children	12,709	21,381	16,100	27,660
	Clothes & Shoes	46,415	78,355	52,941	90,474
	Outdoors	19,201	33,080	21,553	36,698
	Sports	50,711	83,620	60,346	100,489
North America	Children	3,277	5,545	4,453	7,613
	Clothes & Shoes	14,035	23,414	14,145	23,584
	Outdoors	6,584	10,995	8,140	13,584
	Sports	20,317	34,859	23,031	39,789
South America	Children	.	.	.	.
	Clothes & Shoes	.	.	.	.
	Outdoors	.	.	.	.
	Sports	.	.	.	.

Figure 7: Include Missing Values

If missing values are asked to be excluded, all of South America and Children in Asia will not be returned in the
results as shown in Figure 8: Exclude Missing Values.

Year		2009		2010	
		Ordercnt	Quantity Sum	Ordercnt	Quantity Sum
Continent	Product Line				
Asia	Clothes & Shoes	29	45	25	48
	Outdoors	187	316	181	297
	Sports	7	14	11	17
Europe	Children	12,709	21,381	16,100	27,660
	Clothes & Shoes	46,415	78,355	52,941	90,474
	Outdoors	19,201	33,080	21,553	36,698
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North America	Children	3,277	5,545	4,453	7,613
	Clothes & Shoes	14,035	23,414	14,145	23,584
	Outdoors	6,584	10,995	8,140	13,584
	Sports	20,317	34,859	23,031	39,789

Figure 8: Exclude Missing Values

DRILLING AND EXPANDING

Users can drill up and down through the hierarchies within an OLAP cube. A typical drill down operation enables a
user to navigate from a more summarized hierarchy level to more granular levels and members, ending at the lowest

SAS Web Report Studio: Exploring OLAP Data, continued

level child members. The drill down operation is triggered from the downward arrow icon positioned to the immediate left of a member within a hierarchy level.

Figure 9: Drilled Crosstabulation Table

In the crosstabulation table above, the user has drilled into the North American continent for the year 2009. A breadcrumb is presented to the user after a drill operation completes. The breadcrumb provides a fast way to drill up through previously traversed levels and members. Users click the desired hierarchy level within the breadcrumb to navigate to a new location within the cube.

The ability to expand to the lowest child member for a single hierarchy level is also supported in SAS Web Report Studio. To expand a single level, the user clicks the plus icon positioned to the left of a hierarchy level. In the example below, the expand indicator (plus sign) for **2009Q1** was clicked resulting in the display of all months that make up **2009Q1**.

Figure 10: Expand on 2009Q1

The display of a minus icon to the left of a hierarchy level is an indication that a level has been expanded. To collapse after expanding a level, click the minus icon. Expand all and collapse all functionality is supported. To expand all levels, right-click the hierarchy level that needs to be expanded and select the **Expand All** menu option.

SAS Web Report Studio: Exploring OLAP Data, continued

Figure 11: Expand All Selection

In the crosstabulation table shown in Figure 12: Expand All Operation on 2009, all of the quarters for the year 2009 have been expanded. Notice that each quarter that makes up 2009 has a minus icon allowing individual levels to be collapsed. All of the quarters can be collapsed at once by right-clicking on the **Quarter** level and selecting the **Collapse All** menu option.

Figure 12: Expand All Operation on 2009 Quarters

PIVOTING

The data presentation can be changed by rotating a crosstabulation table in order to swap rows and columns. This rotation operation, also known as pivoting, is accessible by selecting the **Rotate Table** menu option after right-clicking the crosstabulation table. Figure 13: Rotate Operation shows the **Rotate Table** operation.

SAS Web Report Studio: Exploring OLAP Data, continued
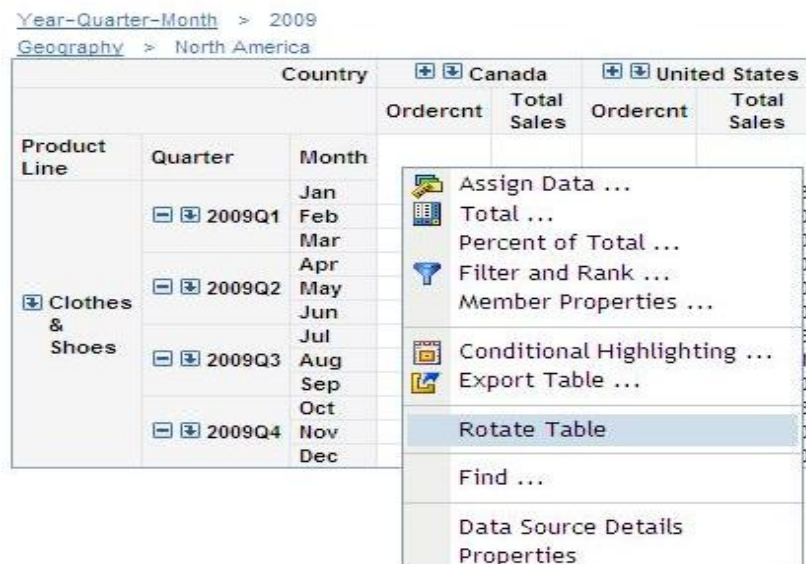
Figure 13: Rotate Operation

SLICING AND DICING

SAS Web Report Studio users are able to restrict returned data to a specific dimension or set of members by defining filters. Filtering OLAP data is referred to as slicing. SAS Web Report Studio users can slice data by creating both member filters and row or column filters. Member filters are created in the Filter and Rank dialog box by selecting to subset one or more members within a hierarchy as shown in Figure 14: Filtering to Display Q1 2010 and Q4 2010. Filter operations are accomplished by navigating to the desired hierarchy level and/or member, and then using the arrows to move the selected values to the right panel of the dual selector shown in the Filter and Rank dialog box.
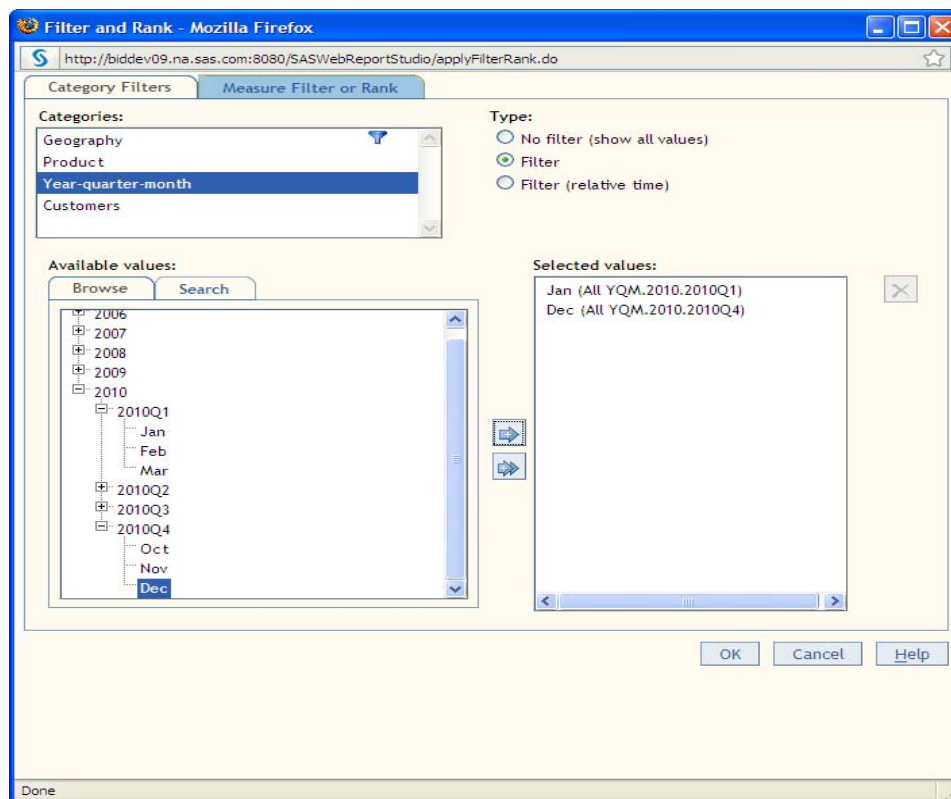
Figure 14: Filtering to Display Q1 2010 and Q4 2010

To create a row or column filter, right-click on a visible OLAP measure and select the **Filter by this Column** (or the **Filter by this Row**) menu option as shown below.

Figure 15: Row/Column Filter Menu

This will bring up a dialog box that allows the user to define a subset of data that is specific to a row or column selection. In the example shown below, the column filter is defined to show all of the rows where Total Sales in Europe are less than 1,000,000.
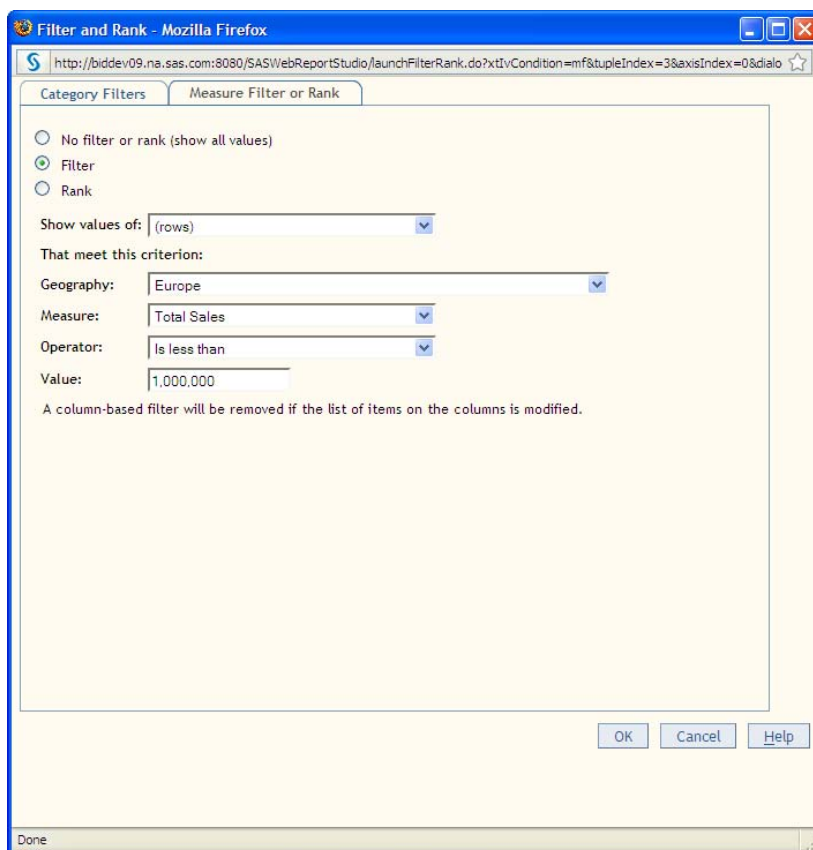

Figure 16: Defining a Column Filter

SAS Web Report Studio supports a hidden data concept, which allows data items not present in a business view to participate in a query. This is done by assigning data items to a hidden role. Once hidden, filters can be applied to the hidden data and its members. For example, the chart in Figure 17: Total Sales by Continent with No Filter on Time shows the Geography dimension along the category axis and the Total Sales measure on the series axis. The Time dimension exists, but it is assigned to the hidden role. By default, the displayed data will show query results for all years.

SAS Web Report Studio: Exploring OLAP Data, continued
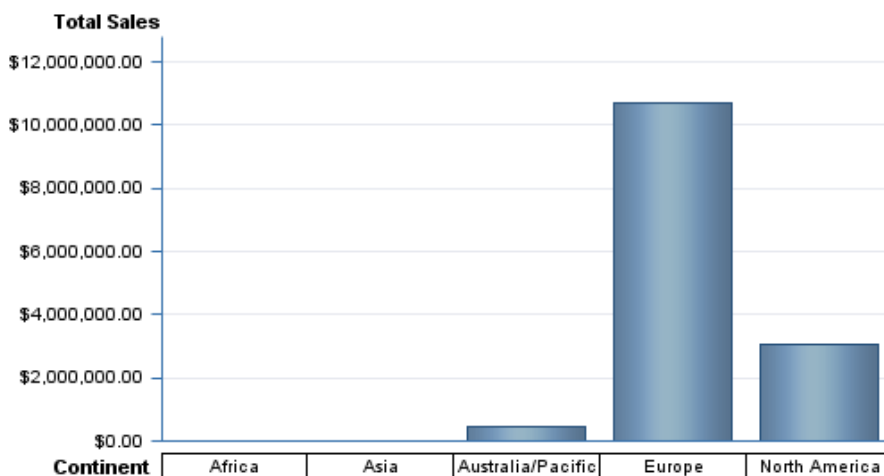
Figure 17: Total Sales by Continent with No Filter on Time

The user now decides that they only want to see Total Sales for December 2010. This can be accomplished by placing the Year-Quarter-Month hierarchy in a hidden role and assigning a filter. In the figure below, Year-Quarter-Month has been moved into the Hidden role.
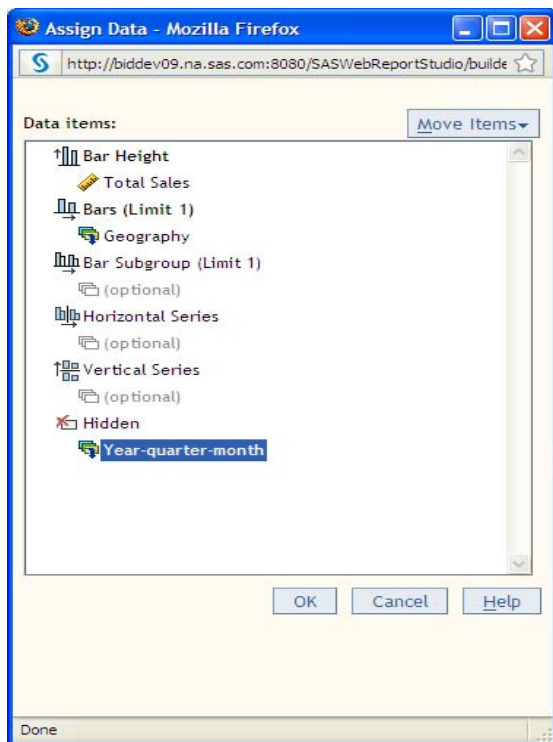

Figure 18: Year-quarter-month Moved to Hidden (Slicer)

Next, as shown in Figure 19: Creating of a Filter on December 2010, a filter is defined as shown below to reflect that only Total Sales for December 2010 should be displayed.

SAS Web Report Studio: Exploring OLAP Data, continued
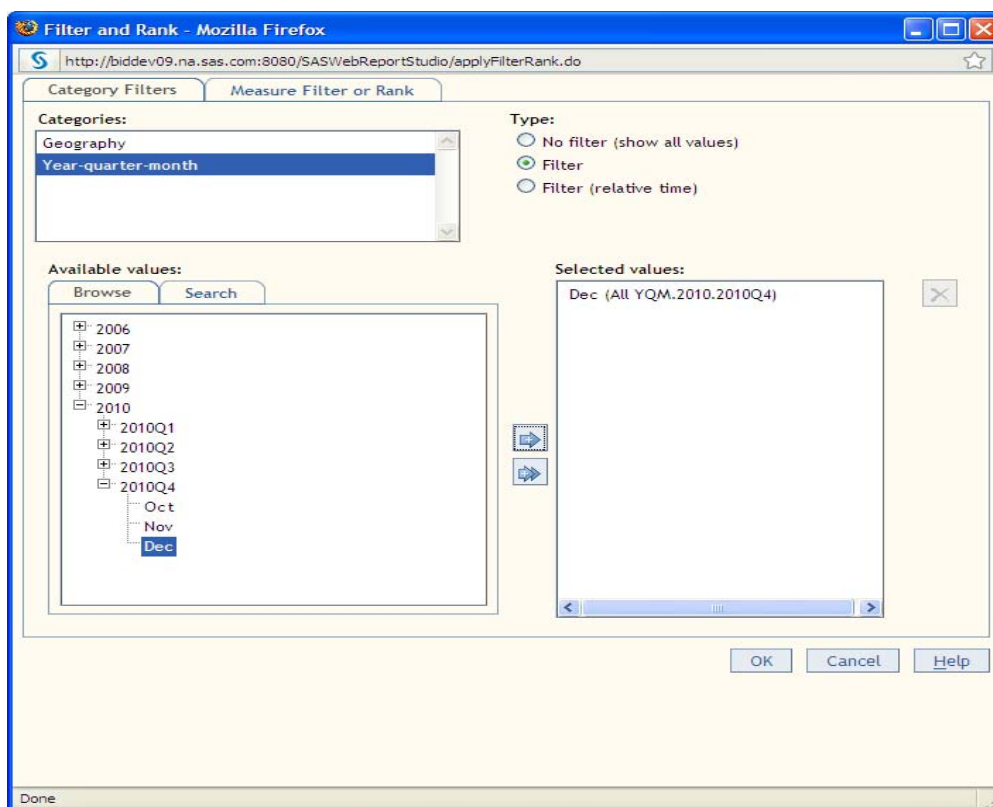
Figure 19: Creation of a Filter on December 2010

In Figure 20: Total Sales by Continent with December 2010, note that the Total Sales values are considerably less than those shown in Figure 17: Total Sales by Continent with No Filter on Time. This is because of the applied filter on the hidden data item. Note that the **Applied filters** area gives a visual indication that the data has a subset applied to it.
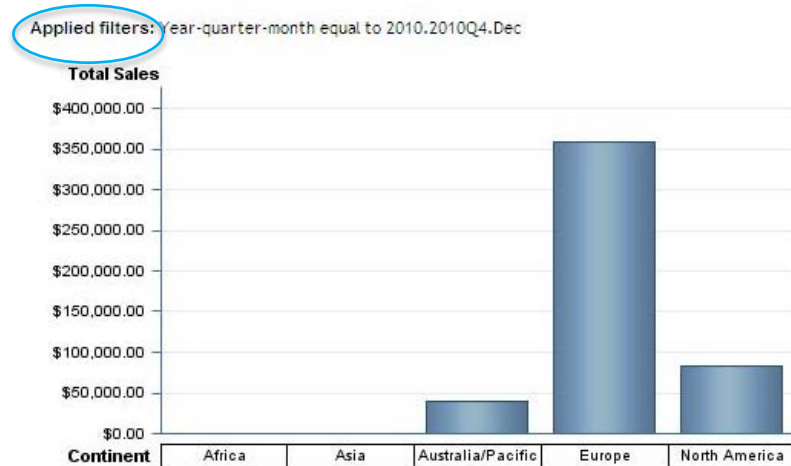

Figure 20: Total Sales by Continent with December 2010

Dicing within multidimensional data is the concept of viewing the data from different angles. SAS Web Report Studio users can navigate through different views of the data (dice) by performing drill, pivot (rotate), slice (application of filters at any level), isolate, and change operations. Each operation results in a different view of the cube.

SAS Web Report Studio: Exploring OLAP Data, continued

DRILL THROUGH

Multidimensional views can be set up to allow users to see the detail data that is summarized into the aggregated values that are stored in the cube. If an administrator has set up a cube with detail data, SAS Web Report Studio allows users to drill-through from the aggregated data values to the detail data. If detail data is available, the aggregated values in the crosstabulation table will be underlined. Clicking a cell value will bring up the detailed data display. Users can also right-click the row or column heading of the innermost hierarchy level and select **Show Detail Data**.

In addition to supporting drill-through to detailed data, SAS Web Report Studio gives empowered users the ability to explore and analyze complex multidimensional data and then link to relational detailed data reports passing along context. When report linking has been set up, the values in a crosstabulation table will be underlined. If both report linking and drill-through are enabled, the aggregated values that are linked will not be underlined. Instead, users can right-click a cell value and then select either **Click to view linked content** or **View Detail**.

DISPLAYING MEMBER PROPERTIES

Member properties are attributes of dimension members that provide an additional level of information for users of the cube. For example, in an Employee dimension organized by country, state, city, and name, the employee name level could have member properties phone number and education level. Within SAS Web Report Studio, users can display and filter on the member properties associated with members inside the OLAP cube. If member properties are defined in the cube, the user can pick the specific properties that should appear. To turn on the member property display, select the **Member Properties** option that is available when right-clicking on a crosstabulation table. In the dialog box that appears check the member properties that should display.

RANKING

A user can limit data displays to the top (or bottom) *n* members by using the SAS Web Report Studio ranking functionality. After launching the Filter and Rank dialog box shown below, the user chooses the **Measure Filter or Rank** tab. The user is given the option of choosing to rank by numerical value or percent, and ties can be excluded. The option to exclude ties is also available.
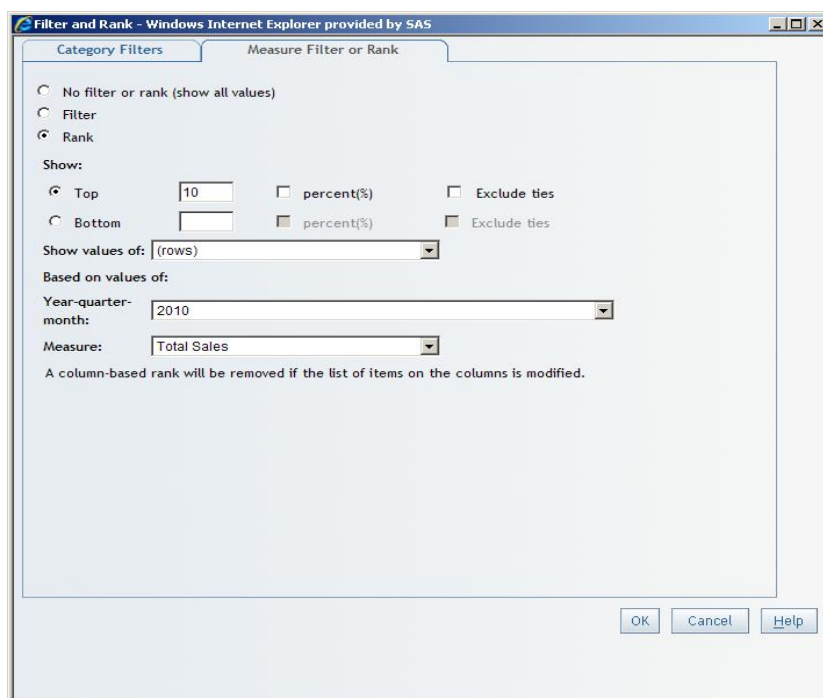

Figure 21: Filter and Rank Dialog Box

DISPLAYING TOTALS AND SUBTOTALS

SAS Web Report Studio supports both visual and parent totals and subtotals. Parent totals and subtotals are calculated based on all relevant that is present in the cube. Visual totals and subtotals are a summation of the subset

SAS Web Report Studio: Exploring OLAP Data, continued

of data that has been retrieved for the result set of the business query execution. Use the Total dialog box to choose between visual and parent totals.
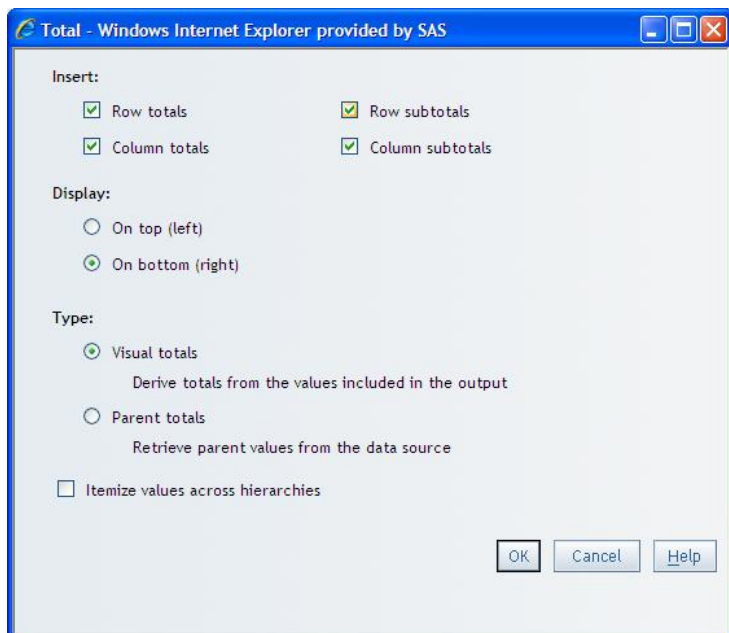

Figure 22: Total Dialog Box

CALCULATED MEMBERS

When a necessary calculation does not exist in an OLAP cube or information map, SAS Web Report Studio gives users the option to create a custom calculation. One or more OLAP measures can be used to create a new calculation that can be used in the generated business query. If the OLAP cube contains a time hierarchy, SAS Web Report Studio supports the creation of a custom calculation based on relative time. SAS Web Report Studio supports the creation of the following standard relative time-based functions:

- Difference (consecutive periods)
- Difference (parallel periods)
- Percent change (consecutive periods)
- Percent change (parallel periods)
- Rolling Total (period to date)

SYNCHRONIZED VIEWS

When analyzing data in SAS Web Report Studio, users have the option of synchronizing the operations that are applied to crosstabulation tables and graphs. Crosstabulation tables and graphs that are synchronized share member filters, sort, drill, and expand operations.

FORMATTING AND PUBLISHING OLAP REPORTS

If OLAP data is for ad hoc reporting, why would users ever need to publish predefined reports consumed by many on a regular basis using OLAP cubes? Sometimes, ad hoc reports serve as initial prototypes for canned reports, accelerating the report development process by putting at least the initial design in the hands of the business user who is defining the report requirements. At other times, an ad hoc business question reveals something of interest that needs to be monitored periodically by a broader group. In both situations, you can use SAS Web Report Studio to subsequently add more formatting, supporting information and prompts often expected of published reports. For example, it is imperative that a published report includes a descriptive report title, and it may need page settings or to link to another well formatted detailed report. Customers performing ad hoc analysis and building standard reports using the same cubes as data sources can ensure that all users see consistent answers and there's no need to start

SAS Web Report Studio: Exploring OLAP Data, continued
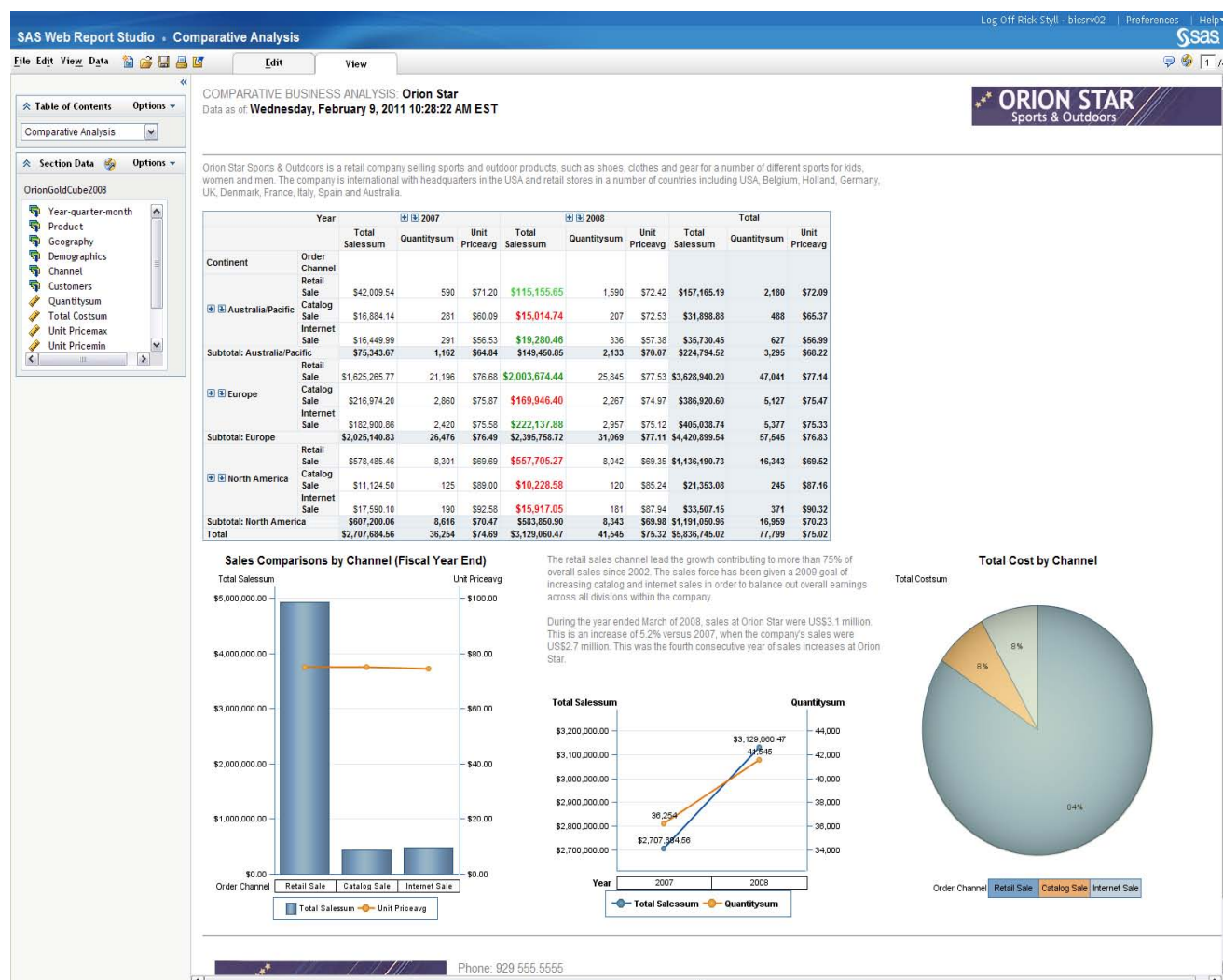
over when publishing results becomes a requirement.

Figure 23: An OLAP Report

Some reporting tools create static results when publishing, which often leads to multiple reports that are too similar. OLAP based reports are interactive, so report consumers can slice, and dice the formatted information to answer even more specific business questions without requesting a new report or attempting to build one from scratch. Not all users may be willing to create a new report from scratch, but giving them a good starting point in the form of an interactive predefined report will invite more report consumers to start analyzing their data without assistance or someone doing it for them. Published reports based on cubes are more interactive and responsive, resulting in fewer predefined reports, more report consumer satisfaction, and ultimately increased adoption of fact based information.

If your organization needs publish some of the OLAP based reports, SAS Web Report Studio includes several capabilities that will help. The key capabilities that will help report consumers start to leverage the OLAP data as well include:

- Prompts
- Conditional highlighting
- Group breaks
- Comments
- Multiple report sections
- Linking to formatted reports

SAS Web Report Studio: Exploring OLAP Data, continued

HIERARCHICAL PROMPTS

Report consumers may already be accustomed to answering prompts when consuming reports based on relational tables to filter the initial view of a live predefined report. In SAS Web Report Studio, you can provide that familiar prompting experience for reports based on OLAP data as well, letting report consumers get to the right data at the right level up front. In both SAS Web Report Studio 4.2 and 4.3, OLAP prompts must be defined in an information map, where prompts based on tables can be defined in the information map and the report.
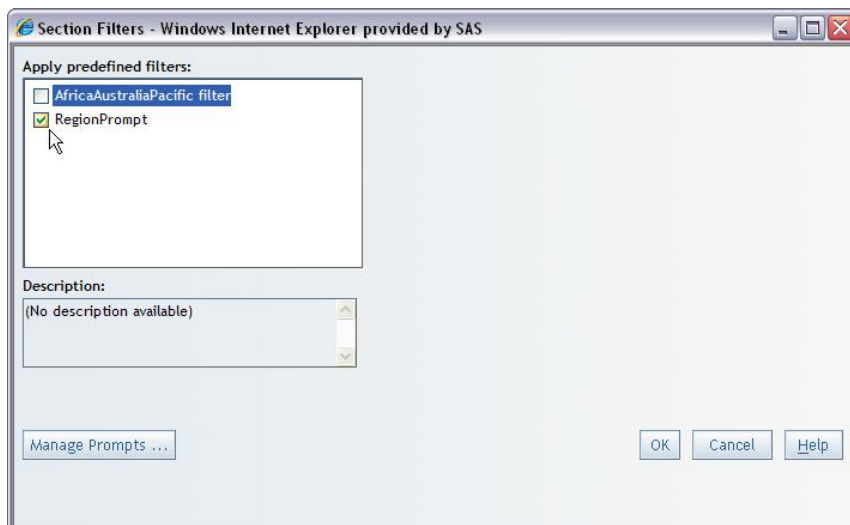
Figure 24: Section Filters Dialog Box

Unlike prompts based on table, OLAP prompts are based on a hierarchy to give report consumers the option to choose the members they want at any level.
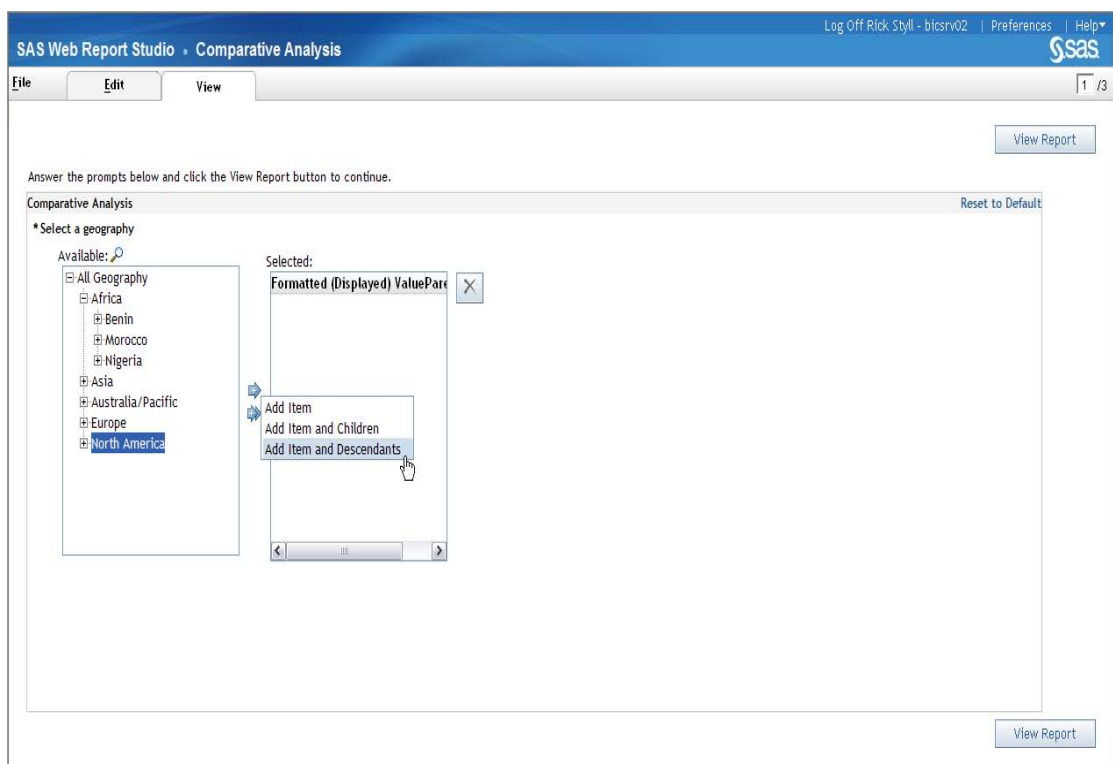
Figure 25: OLAP Prompts

The search icon 🔎 allows users to find members at any level quickly.

SAS Web Report Studio: Exploring OLAP Data, continued
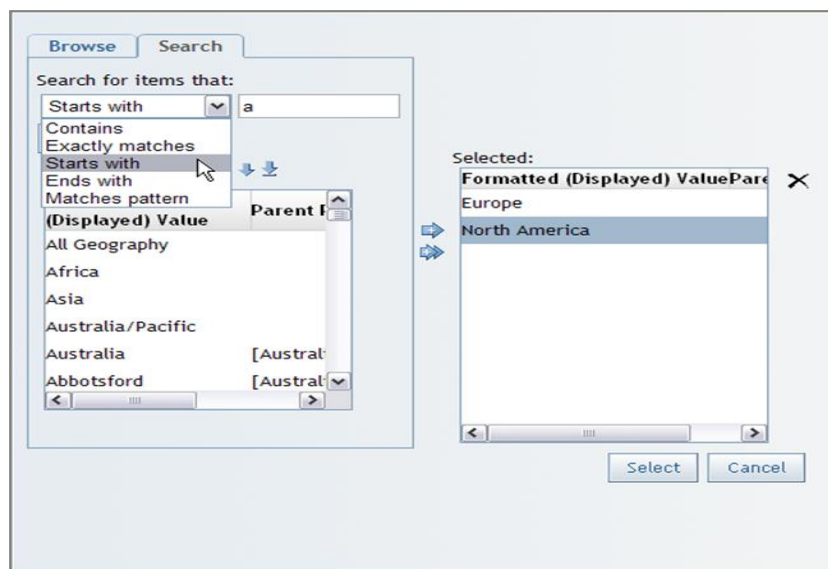
Figure 26: Search Dialog Box

CONDITIONAL HIGHLIGHTING

One of the best ways to help report consumers notice the most relevant information in crosstabulation tables is to apply a conditional highlighting rule that changes the appearance of a measure data item's cell. Specific to OLAP data, you can define a rule and highlight to apply to all levels or specific levels of a hierarchy.

Figure 27: Conditional Highlighting in a Report

Users invoke conditional highlighting in SAS Web Report Studio 4.2 and 4.3 by right clicking the crosstabulation table.

Figure 28: The Conditional Highlighting Menu Option

One or more rules and highlights can be defined and rules are either assigned to all levels or selected levels of a hierarchy.

SAS Web Report Studio: Exploring OLAP Data, continued
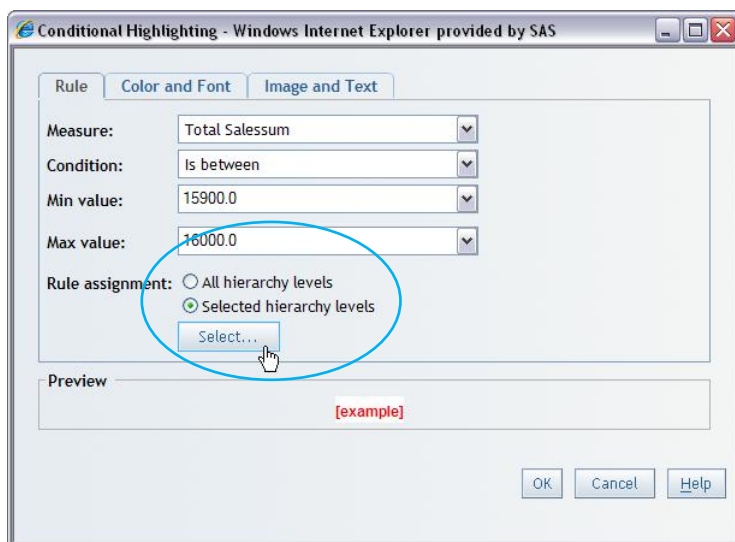
Figure 29: Rule Tab on the Conditional Highlighting Dialog Box

Users can highlight cells by changing the font, the font style, or both, if the rule evaluates to true.
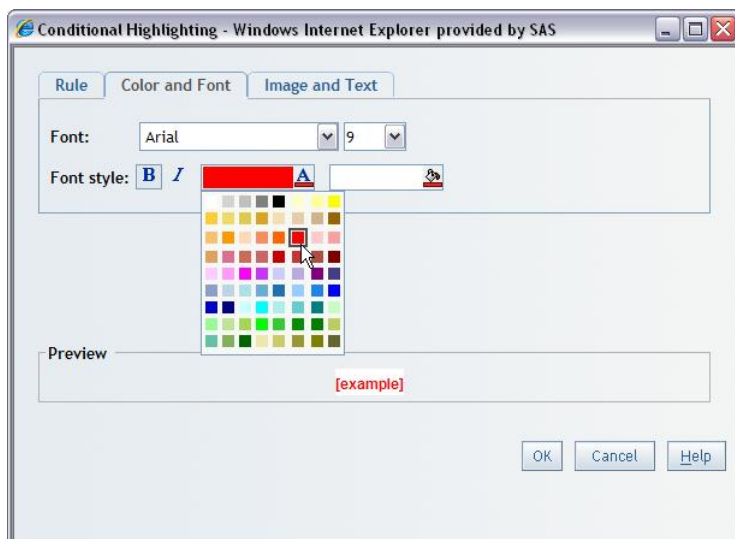
Figure 30: Color and Font Tab on the Conditional Highlighting Dialog Box

Users can highlight the cells by displaying text or an image to the left, right or in place of the cell value if the rule evaluates to true.

SAS Web Report Studio: Exploring OLAP Data, continued
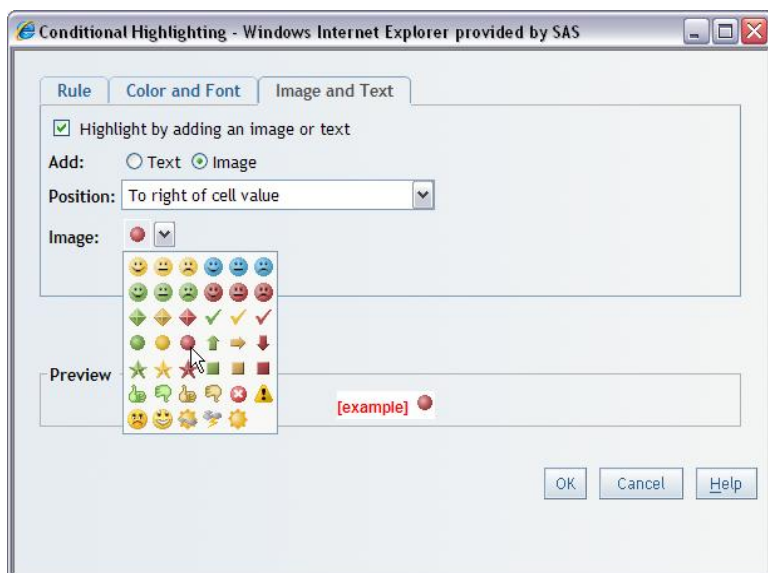
Figure 31: Image and Text Tab on the Conditional Highlighting Dialog Box

GROUP BREAKS

Group breaks allow report producers to repeat all report objects once for each member for a given level for one or more dimensions. The group-break members display above the report objects, and producers can choose to display one or more aggregated measures to the right of each group-break member. Report consumers can navigate the report output using the Table of Contents panel that is generated by the group-break members.

Figure 32: Displaying Group Break Members

SAS Web Report Studio: Exploring OLAP Data, continued
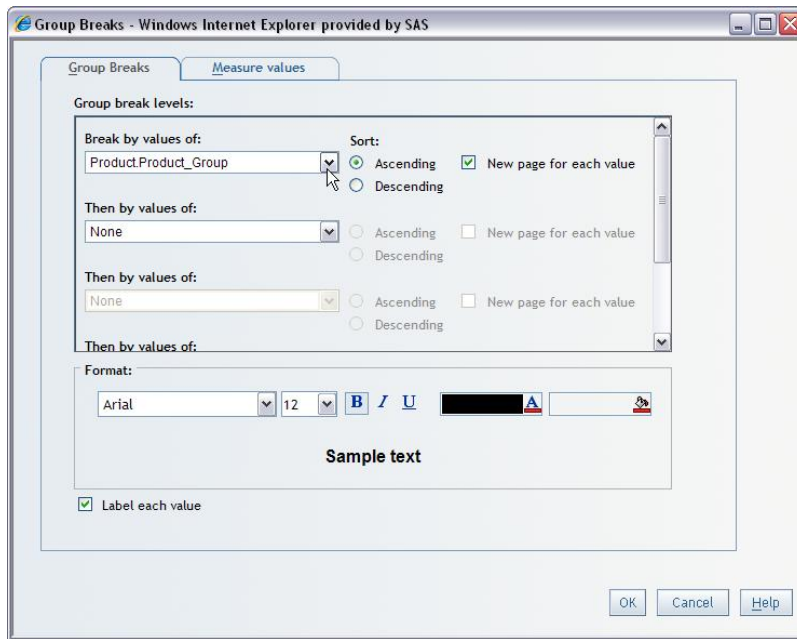
Figure 33: Group Breaks Dialog Box

Comments

Decisions are usually made by groups of users, so interpretations of the results, questions and recommendations is important to capture to help speed the decision making process. SAS Web Report Studio 4.2 added the ability to add comments to a report and 4.3 added the ability to append comments to the PDF output for printing. Users can add and reply to comments, add file attachments, and search for comments.
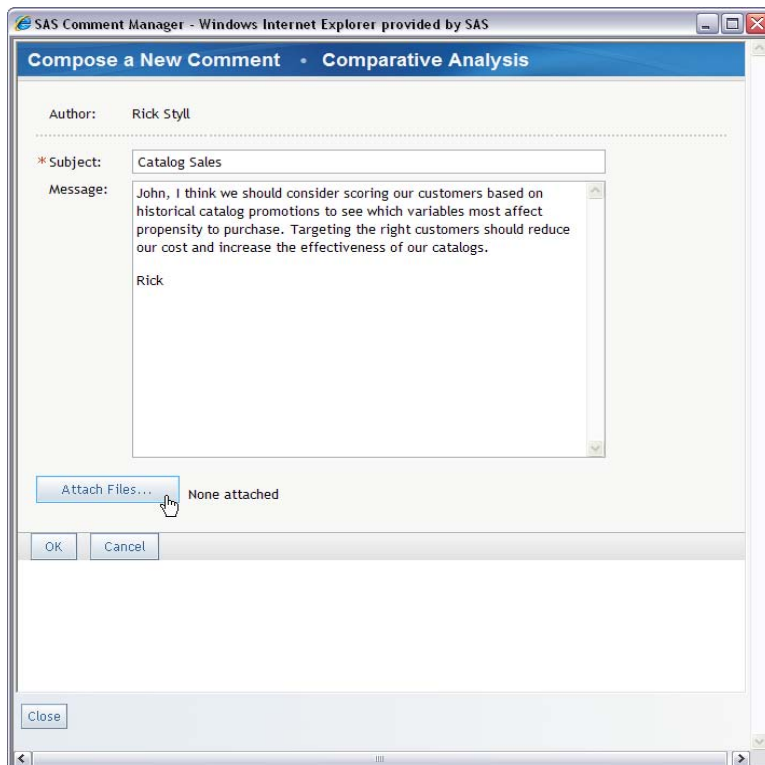
Figure 34: SAS Comment Manager
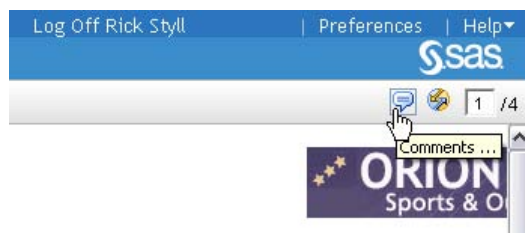
SAS Web Report Studio: Exploring OLAP Data, continued

Figure 35: Comments Icon in SAS Web Report Studio

MULTIPLE REPORT SECTIONS

SAS Web Report Studio lets you combine multiple reports from various data sources into a single report using multiple report sections. An ad hoc OLAP report likely references a single cube. However, when publishing, a report producer may choose to provide multiple views of data at various levels in a single report, giving report consumers a single report to find and remember that includes all the relevant information for a given subject. If report producers need to show multiple views of the same cube, SAS Web Report Studio 4.3 provides a copy section option, which makes it easier to capture the results at progressive stages during the analysis process.
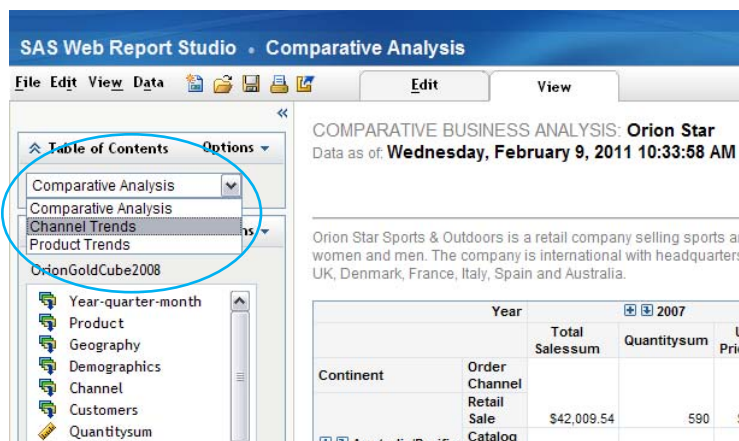

Figure 36: Table of Contents Panel with Multiple Report Sections Available

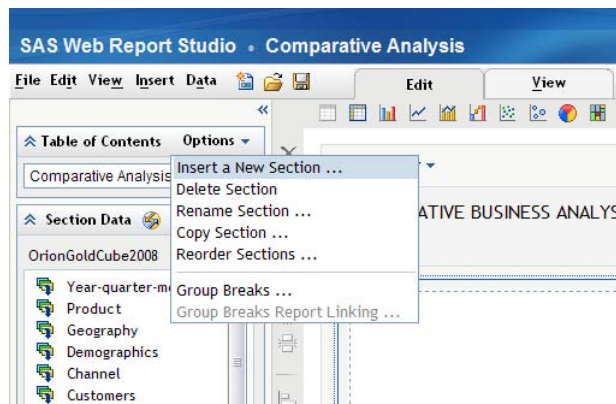Using the Edit tab, report producers can create, delete, copy, and reorder sections.

Figure 37: Insert a New Section Menu Item

SAS Web Report Studio: Exploring OLAP Data, continued

LINKING TO MORE INFORMATION

One of the greatest benefits of using cubes rather than relational sources of data for report consumers is the ability to navigate from aggregated results all the way down to the lowest level of detail for the most relevant slice of data. Most OLAP tools allow users to drill through to the underlying detail automatically. SAS Web Report Studio supports drill through to detail and additional ways to guide users to related information starting with summarized results. The drill-through results are presented as a single list table with little control over the results.

Figure 38: Show Detail Data Menu Item

Figure 39: View Detail Dialog Box

However, if a report is to be published for broader consumption, you should consider leveraging SAS Web Report Studio's report linking capability to allow report consumers to see well formatted supporting information related to a specific measure value or category member in a crosstabulation table or chart.

Report links allow a report consumer to access to a report or Web page that is related to a report that they are currently viewing. For example, you might be looking at a bar chart, which has sales information for each geographical region of your company. If you click the bar for the Northeast region, then a report link associated with the graph could take you to a different report that provides information about employees in each region. And, if the destination report contains a prompted filter, then it could open a table containing information about the Northeast region only. This is often referred to as contextual linking. A link at the top of a destination report enables you to return to the previous report. If a destination report contains multiple sections, then you are able, when defining the link, to choose the initial section of the destination report that you want to open. Note that report producers can create links from group-break values (discussed above) as well. Report linking guides report consumers to the right detailed reports that are easy to understand without having to find and open detail reports directly.

SAS Web Report Studio offers multiple types of link destinations to guide users to not only well formatted details, but also powerful analytical results. The following contextual linking destinations can provide more related information to report consumers:

- Another SAS Web Report Studio report
- A report section (of the same report or a different report)
- Stored processes

SAS Web Report Studio: Exploring OLAP Data, continued

Stored process destination reports provide a powerful way to combine the speed of summarized OLAP reports and the predictive analytical capability of SAS stored processes.

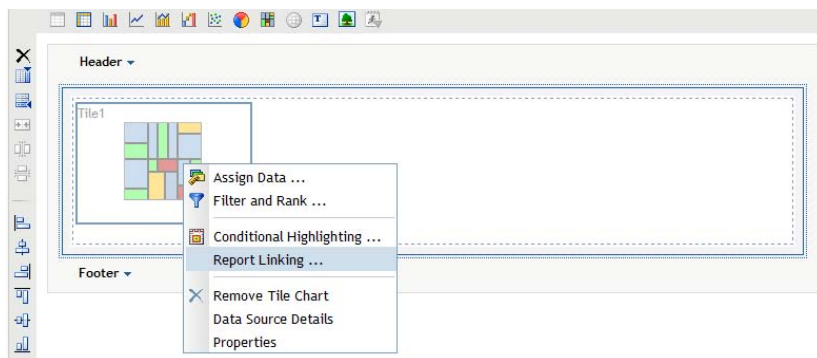Report linking is invoked from the context menu in Edit mode.
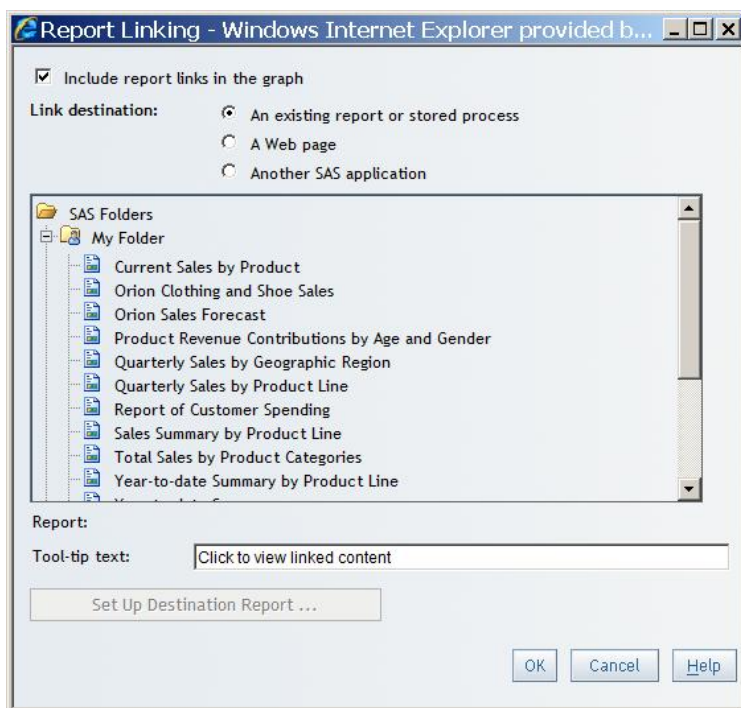

Figure 40: Report Linking Menu Item

Figure 41: Report Linking Dialog Box

When the report producer clicks **Set Up Destination Report**, the following dialog box appears. If the destination report has prompts, report producers can set up links between source report data items (displayed or hidden) and destination report prompts to be passed as parameters.

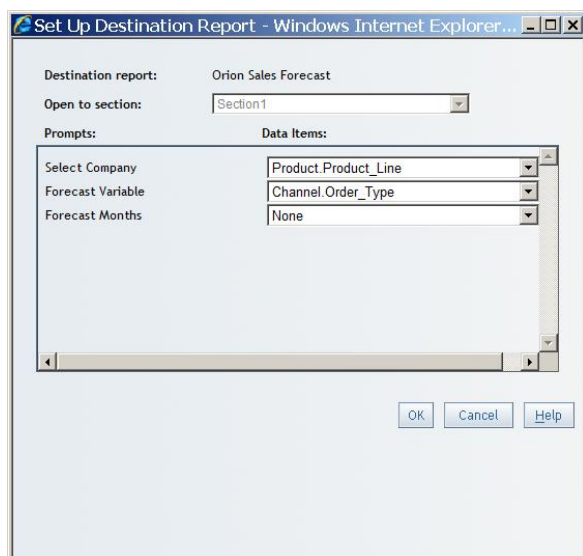SAS Web Report Studio: Exploring OLAP Data, continued

Figure 42: Set Up Destination Report Dialog Box

CONCLUSION

SAS Web Report Studio provides an easy and fast way to explore your data and share the results. You can get a quick view by directly opening OLAP cubes or information maps based on cubes, or you can build a query first by selecting data items, pre-defined filters, and prompts, then assign data items to one or more tables and charts explicitly before viewing the results. Users can create custom calculations not typically associated with non-OLAP data, for example a percentage change between two periods. Results are highly interactive and responsive, as users can drill and expand multiple objects, including crosstabulation tables and various chart types, in either a synchronized fashion or in each object independently. If the results need to be published for consumers to run periodically, SAS Web Report Studio provides additional features to facilitate consumption and understanding of OLAP reports, such as hierarchical prompts, conditional highlighting, text objects, group breaks, report comments, and contextual links to other reports. Having one tool that can be used for both ad hoc data exploration and well formatted standard reports that are based on cubes ensures consistent results that are interactive. SAS Web Report Studio helps you get the broadest use from your OLAP cube data.

RECOMMENDED READING

- SAS Institute Inc. 2010. *SAS Web Report Studio 4.3: User's Guide*, Cary, NC: SAS Institute Inc. Available at http://support.sas.com/documentation/onlinedoc/wrs/.

- SAS Institute Inc. 2010. *SAS 9.2 Intelligence Platform: Web Application Administration Guide*, Cary, NC: SAS Institute Inc. Available at http://support.sas.com/documentation/onlinedoc/intellplatform/.

- SAS Institute Inc. 2010. *SAS Information Map Studio 4.2: Getting Started with SAS Information Maps*, Cary, NC: SAS Institute Inc. Available at http://support.sas.com/documentation/onlinedoc/ims/.

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