



Proven Practice

Dynamic Dashboarding

Product(s): Cognos 8

Area of Interest: Report Design

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1 Introduction

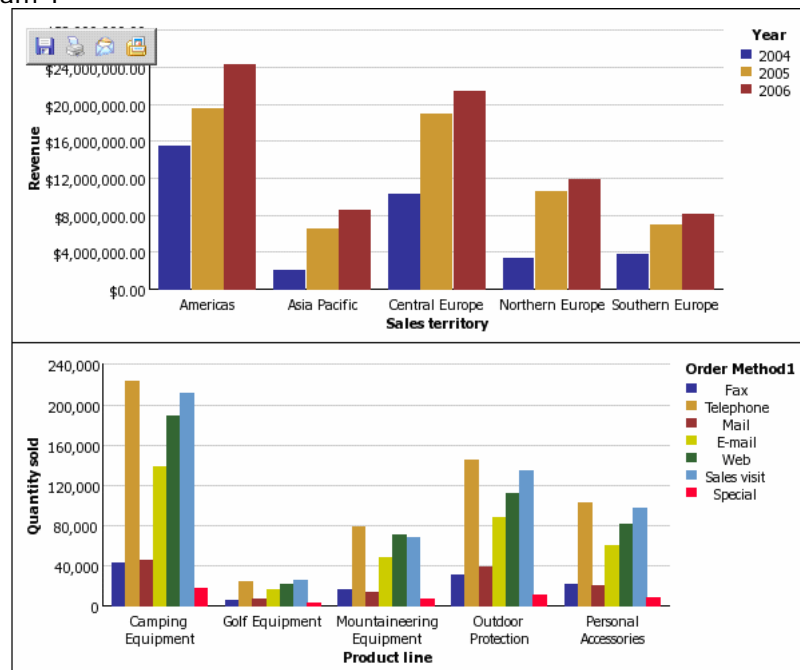
1.1 Purpose

This document will show how to create a dynamic dashboard application using Cognos 8 Report Studio. A dynamic dashboard is a report where all the charts/objects in the report are filtered when a user drills down on any individual chart/object in the report.

2 Design Problem

By default, when creating a dashboard application the charts are independent of one another. This means that when drilling down on one chart the particular data element the user selected to concentrate on for that chart is not used as a filter for the other charts on the dashboard. The report below shows a 2 chart dashboard. One of the charts displays Revenue by Year and Region, where the other chart displays Quantity Sold by Order Method and product (diagram 1).

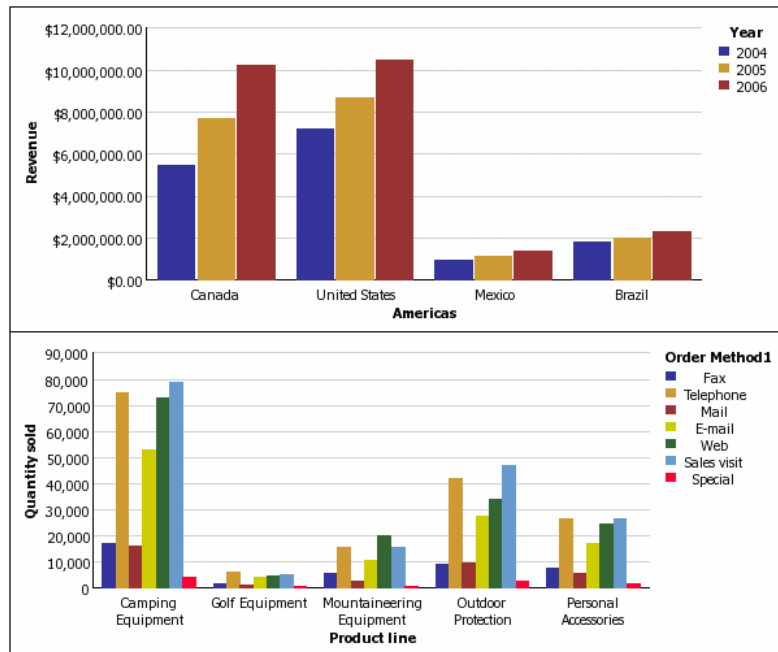
Diagram 1



If the user drills down on the Sales Territory Americas the 2nd chart does not change. Realistically, in a dynamic dashboard when Americas is drilled down on, the desired behavior is that the 2nd chart would then be updated to show the Quantity sold, by Product Line and Order Method for only for the Sales Territory Americas which was drilled down on from the 1st chart. The result would resemble diagram 2.



Diagram 2



The key requirement for this all to be seamlessly possible is that this all must be done within one Query without creating a master detail relationship or using prompting.

3 How it works

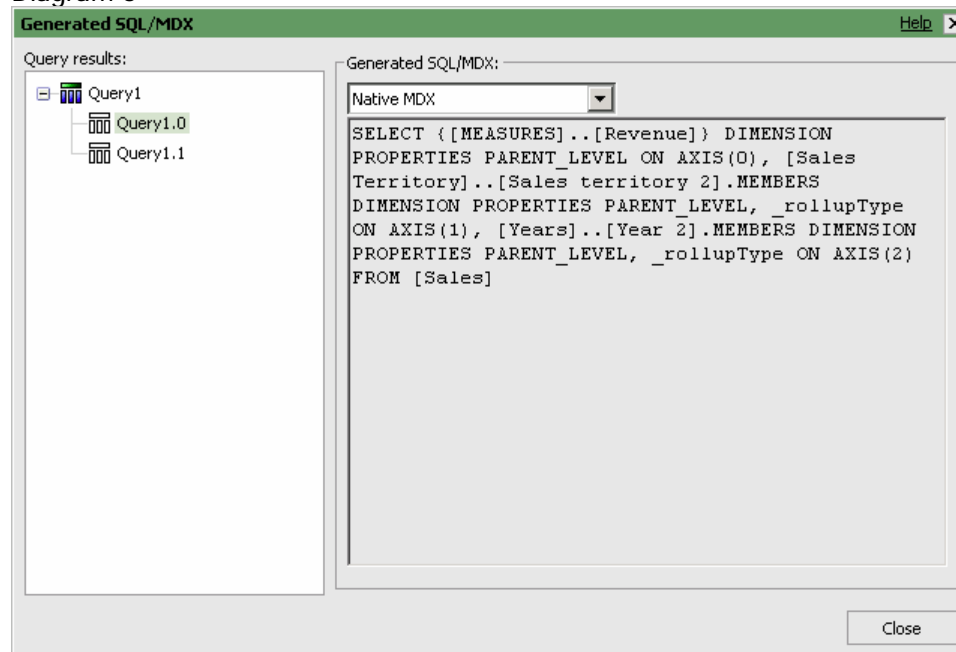
The question is likely to be asked, with all the data items in the report put into a single query, why does the report not filter all charts when drilling down on a single item?

The answer is that while a single query is used to collect all the data items, the report engine determines exactly the minimal set of query items needed to create each chart. If you look at the generated SQL/MDX you'll notice that while there is a single query there are two sub queries 1.0 and 1.1 (diagram 3).

The reason this happens is that while you have all the data items in a single query, Cognos 8 actually looks at what is required for each chart/object and determines what would be required to display the data for that object. In this case the charts don't display the same data items so Cognos 8 further segments the query to create sub queries that will only use the elements that are displayed on the object. This streamlining process ensures that more efficient queries can be submitted to the underlying data source. However, for our dash boarding application the linking of these queries is in fact required and we must undertake some changes to make this behavior occur.



Diagram 3



In order to create the report required it is link the dimensions from each chart that will participate in the drill up or down. In the example above (diagram 1) the first chart displays data for Sales Territory by Year and the second chart displays data for Product Line by Order Method. In order to make the second chart change with drill actions from the first chart we need to include the dimensions from chart 1, Sales Territory and Year, in the definition of chart 2. Likewise, the dimensions from the second chart, Product Line and Order method, need to be included in the first chart so that it will also update when a drill action is performed on chart 2.

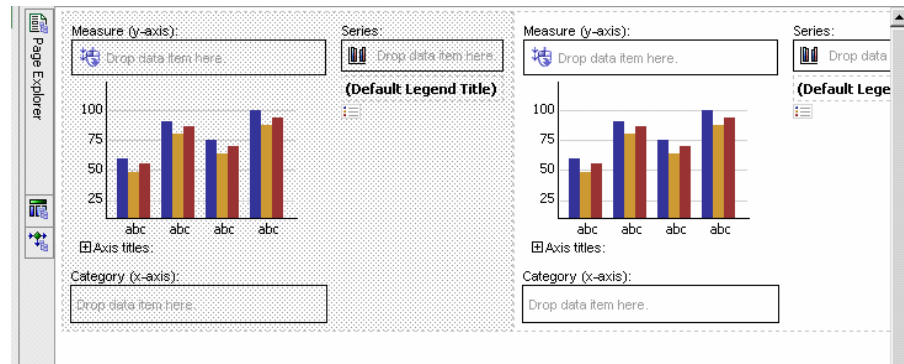
In the second chart, the measure Quantity Sold is used along with Product Line and Order Method. The values for each intersection are the Quantity Sold for the respective Product Line and Order Method combinations. While the other dimensions are not referenced, the Quantity sold values are actually an aggregation across all the other dimensions as well, including Sales Territory and Year. So rather than pulling the value for Quantity Sold for Product Line and Order Method from the cube we can create the calculation to perform the aggregation on the fly across the other dimensions and thereby include the Sales Territory and Year dimension information in the second chart. In this way when a user drills down on a particular Sales Territory in the first chart the measure value in the second chart will be recalculated based on the new set of Sales Territories.

4 Creating the report

4.1 Creating the basic report

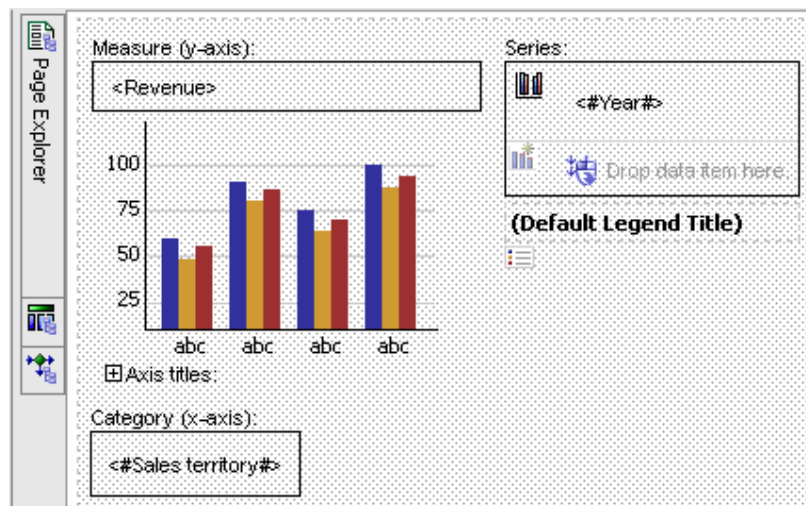
1. Open Report Studio and when prompted select the Great Outdoors Company package.
2. Select a new blank report to use as the report template.
3. Drag and Drop 2 separate chart objects from the insertable objects pane onto the report page (diagram 4).

Diagram 4



4. From the Insertable Object pane expand the Years dimension, then the Years hierarchy and drag the Year level onto the Series drop zone for the first chart.
5. Next from the Insertable Object pane expand the Sales Territory dimension, then the Sales Territory hierarchy and drag the Sales territory level onto the Category (x-axis) drop zone.
6. Finally, drag Revenue from the Measures dimension onto the Measures drop zone (y-axis). The Chart should now look like diagram 5.

Diagram 5



7. Now change the query for the second chart to use Query 1 (the query associated with the first chart object). To do this, select the second chart and in the Data section of the properties pane change the query property from Query 2 to Query 1.
8. Now we will add the data items for the second chart. Drag Order Method1 from the Order Method dimension to the series, Product Line from the Products dimension to the Category, and Quantity Sold from the Measures dimension to the Measure. You should now have a report that has 2 charts that resembles diagram 6. When executed, the result should look like diagram 7.

Diagram 6

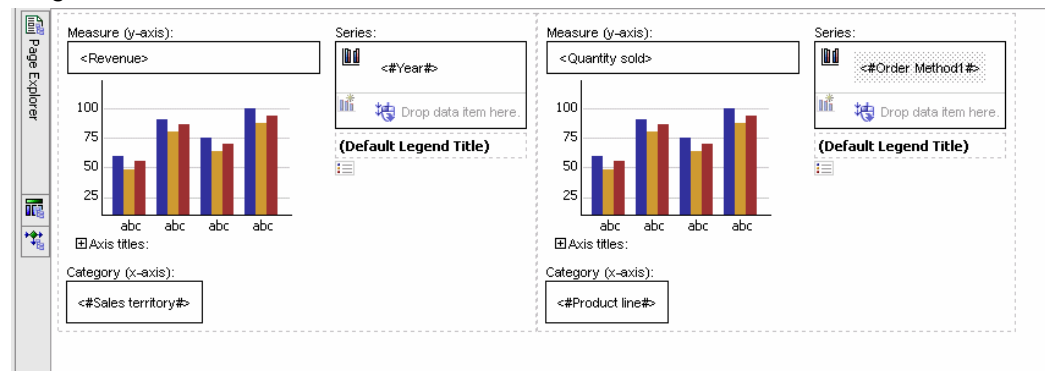
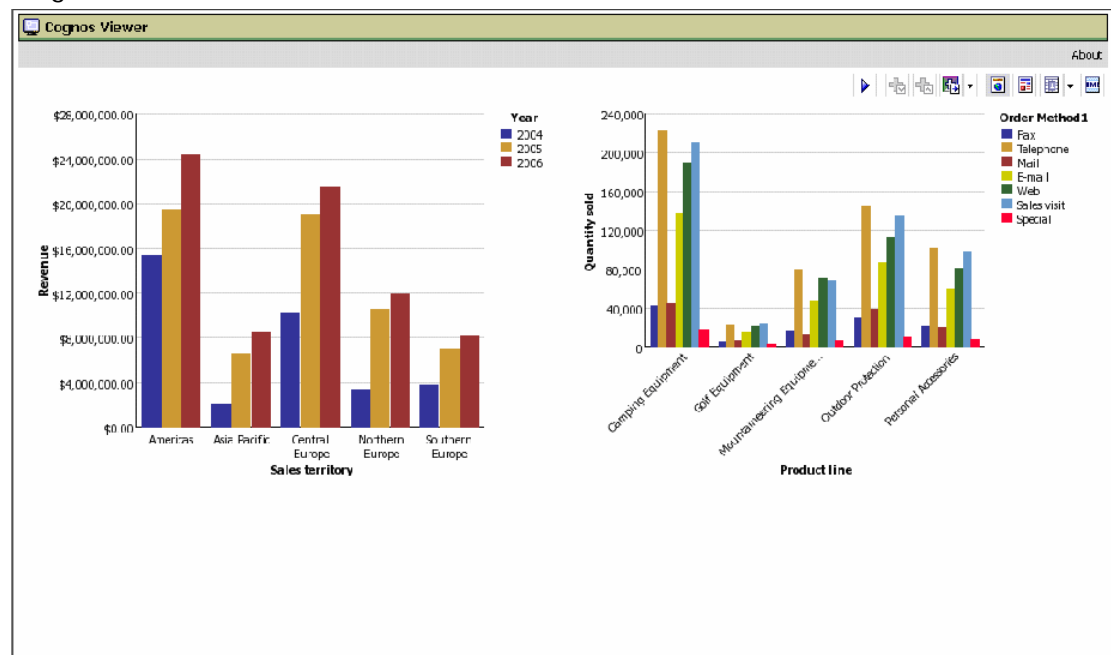


Diagram 7



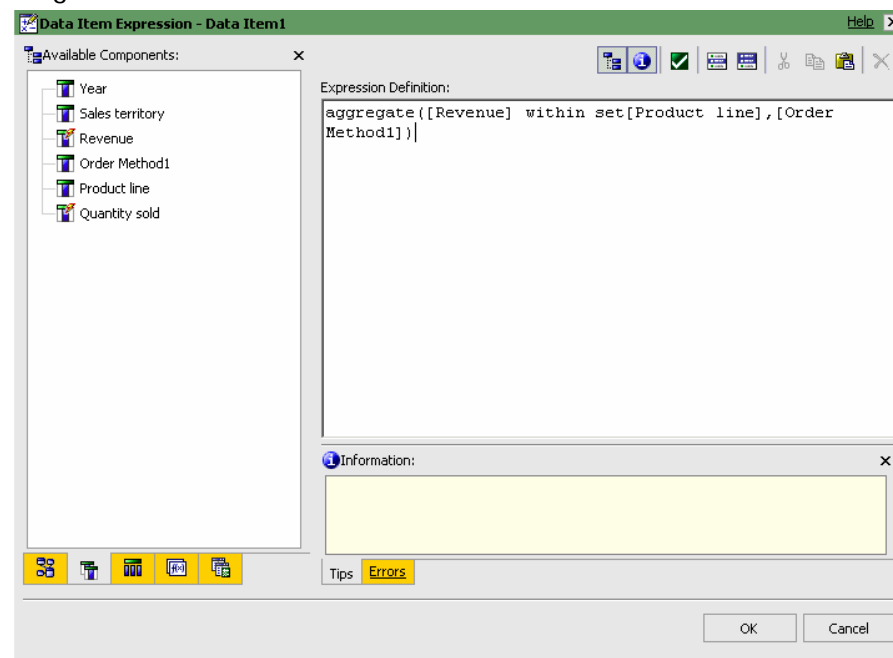
4.2 Making the report drillable

Now that the basic report has been created, we now need to make it dynamically drillable. Simply turning on Drill-up and Drill-down behaviour for the report will not give us the linked drill behaviour we are looking for. As discussed in [Section 3 How it works](#), the difficulty is that while all the data elements exist within one report spec, the Cognos 8 engine splits the main query into sub queries by default. In order to make the dashboard dynamically drillable the two charts must be linked together. The steps that follow will show how the calculations can be created to link the drill actions for the two chart objects together.

1. Open the Query Explore fly out window and select Query 1.
2. Drag and drop a Data Item object from the insertable objects pane into the data elements pane of the query. A Data Item Expression window should appear.
3. Enter the syntax below in the Expression Definition pane for the new data item, where Revenue, Product Line and Order Method1 are all pulled from the Data Items tab of the Insertable Objects pane (diagram 8).

```
aggregate([Revenue] within set[Product line],[Order Method1])
```

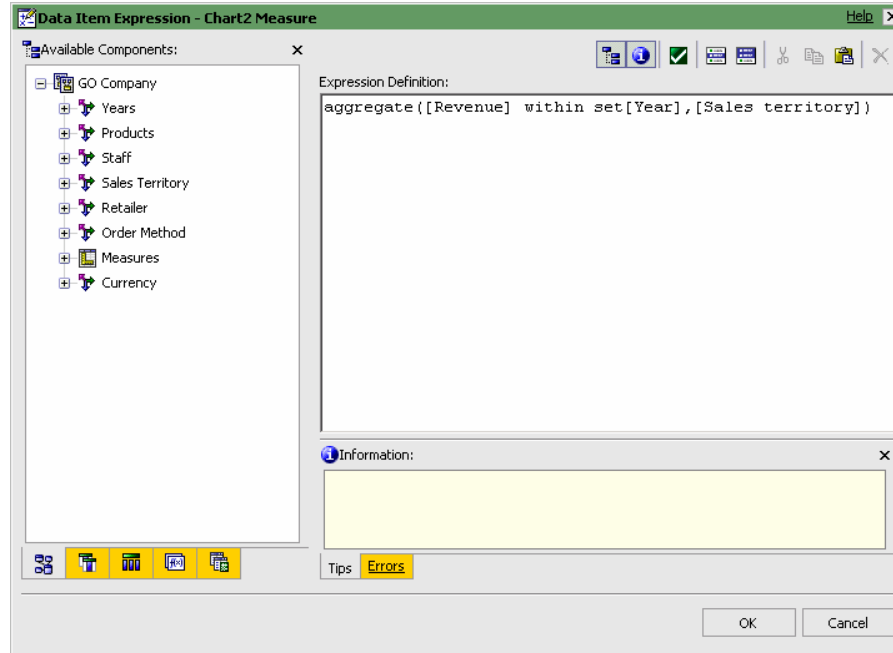
Diagram 8



4. Rename the data item to be Chart1 Measure
5. Follow Steps 2-4 above renaming the data item to Chart2 Measure and inserting the following syntax (diagram 9).

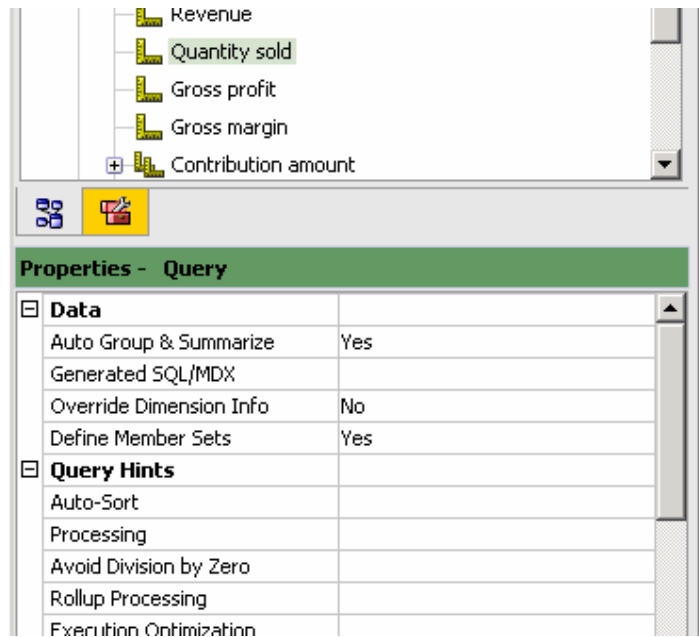
```
aggregate([Revenue] within set[Year],[Sales territory])
```

Diagram 9



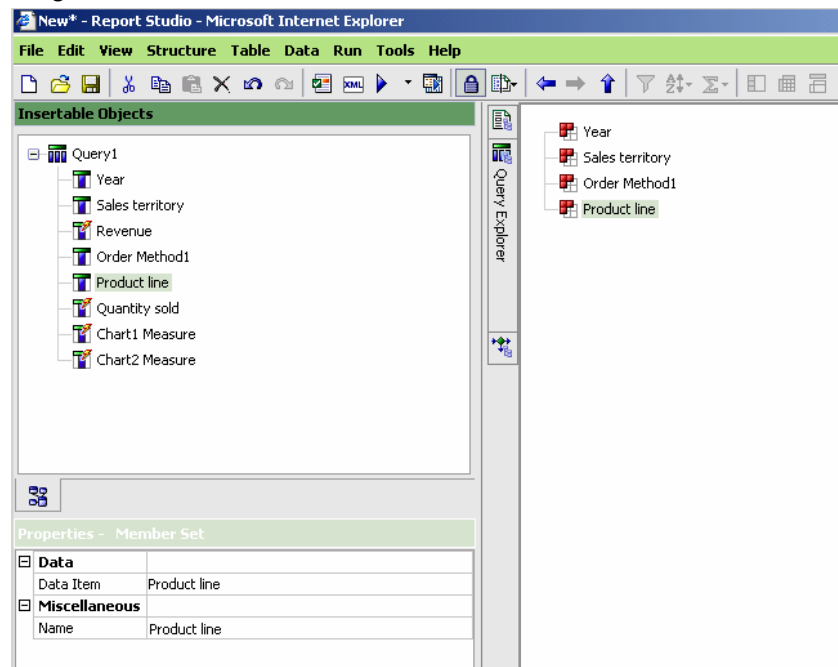
- Next, select Query1 from the Query Explorer fly out menu. In the Properties pane under the Data section, change the entry for Define Member Sets from No to Yes (diagram 10).

Diagram 10



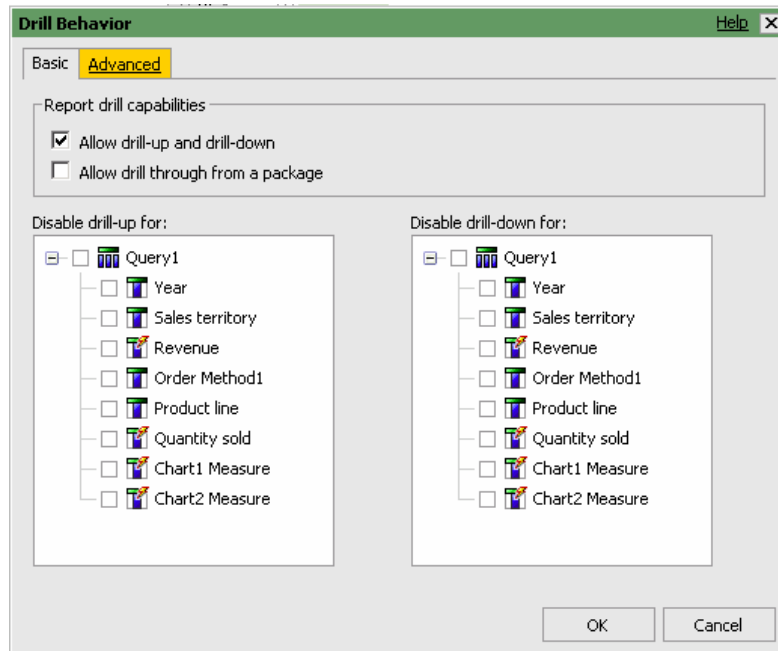
7. There will now be a new tab in the query view called Member Sets. Select this tab and then drag and drop Year, Sales Territory, Order Method1 and Product Line from the insertable objects pane into the workspace on the right. The member sets should look like diagram 11.

Diagram 11



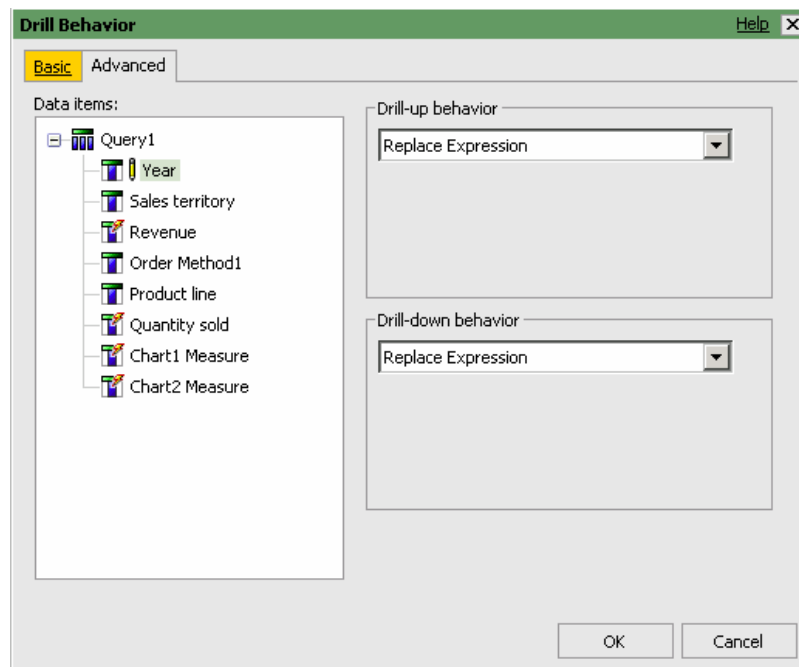
8. Turn on the drill behaviour by selecting Drill Behaviour from the Data menu. In the Drill Behaviour dialog box check the "Allow drill-up and drill-down" check box (Diagram 12).

Diagram 12



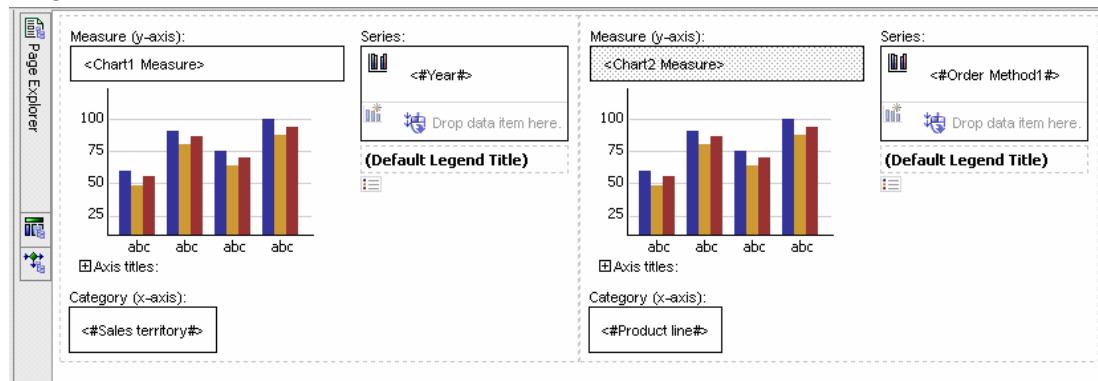
9. Select the Advanced tab and highlight the Year data item. Then change the Drill-up and Drill-down behaviour to Replace Expression (diagram 13).

Diagram 13



10. Repeat step 9 for the Sales territory, Order Method1, and Product line data items. Then click ok to return to the query definition.
11. The last step is to replace the existing measures in the charts with the new calculated data items that link the dimensions together. From the Page Explorer fly-out select page1. In both charts highlight the measure revenue and then use the delete key on the keyboard to remove these items. From the Data Items tab of the Insertable Objects pane drag Chart1 Measure into the Measures drop zone for the first chart, and Chart2 Measure into the Measures drop zone for the second chart (diagram 14).

Diagram 14



12. Run the report and notice when you drill down on any Dimension both charts change to reflect the new scope (diagram 15-16).

Diagram 15

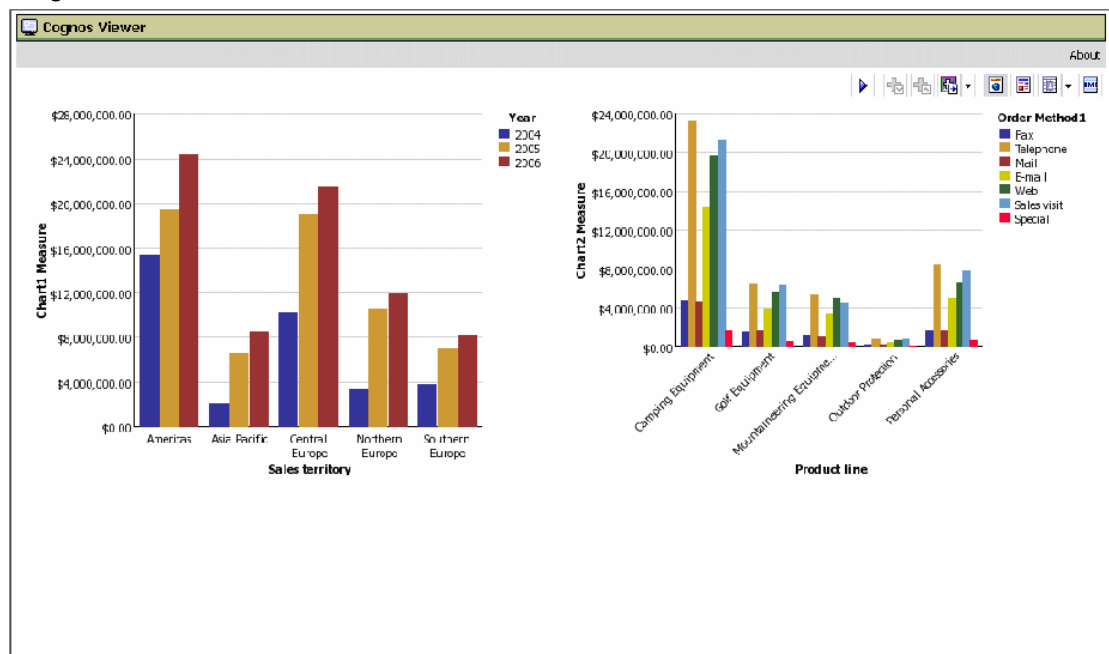


Diagram 16

