

AZOTEL S04-03 v100 (2013-06)

S04 - SIMPLer Operatons SIMPLer Flexible Reporting Guide

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1 Introduction

The purpose of this guide is to explain the procedure involved in generating reports from the SIMPLer databases using an external reporting package. In this guide, we will use the commercial reporting package – Crystal Reports – to illustrate how easily all manner of reports can be generated.

We recommend that you use this document in conjunction with Azotel document 10025 SIMPLer Database Structure, which documents SIMPLer's database structure.

While we only describe the procedure involved with generating external reports using Crystal Reports, the idea is the same if you want to use an alternative reporting package. For example, Jasper Reports is a free open source alternative that can be downloaded from <http://jasperforge.org>.

For additional assistance with Crystal Reports, please refer to the manual that was provided with the package. For assistance in regard to the SIMPLer database structure, please contact Azotel and we will be happy to help.

2 Initial Set Up

2.1 Install Crystal Reports

Install Crystal Reports and accept all default options.

2.2 Install PostgreSQL ODBC Driver (psqlODBC)

In order for Crystal Reports to pull data from the SIMPLer server, a special ODBC driver must be installed. The driver can be found at the following location:

<http://www.postgresql.org/ftp/odbc/versions/msi/>

	psqlodbc 08_03_0200.zip	2008-05-04 16:50:54	4.1 MB
	psqlodbc 08_03_0300.zip	2008-09-26 14:40:21	4.1 MB
	psqlodbc 08_03_0400.zip	2008-11-07 15:19:01	4.1 MB
	psqlodbc 08_04_0100.zip	2009-07-21 13:51:21	4.2 MB
	psqlodbc 08_04_0200.zip	2009-12-26 15:44:31	4.2 MB
	psqlodbc 09_00_0100.zip	2010-10-07 16:26:10	3.8 MB
	psqlodbc 09_00_0101_x64.zip	2010-10-16 15:28:54	3.8 MB
	psqlodbc 09_00_0101.zip	2010-10-16 15:28:54	3.8 MB

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Copyright © 1996 – 2010 PostgreSQL Global Development Group

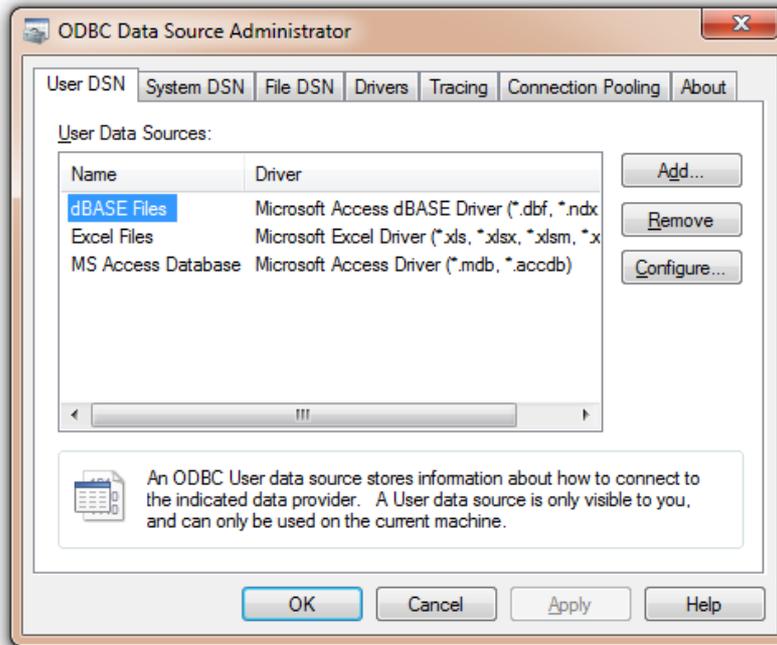
Download the most recent version, choose a mirror to download from, unzip and execute the 'psqlodbc.msi' installer package.

Once installed, open up a command prompt and execute the following command:

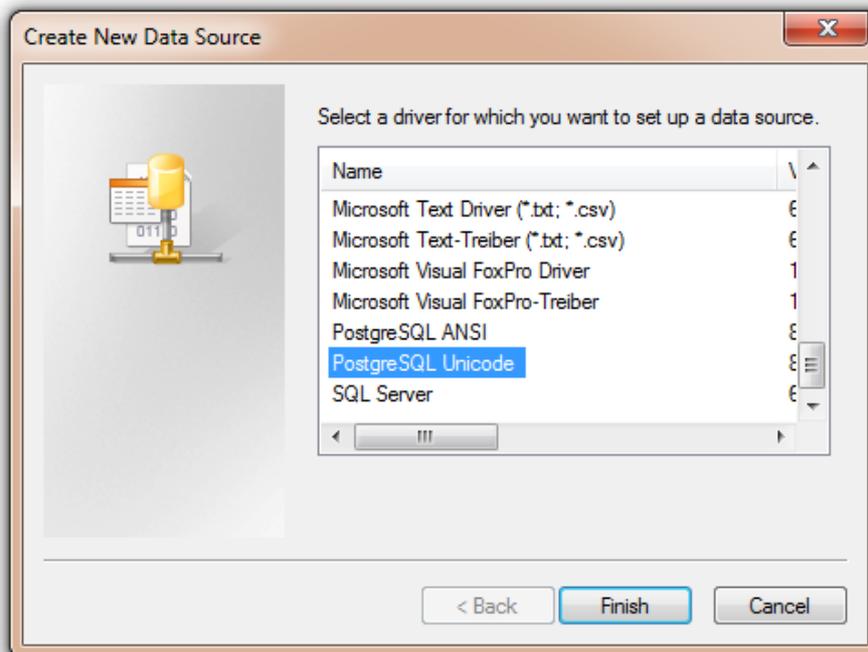


```
C:\Windows\system32\cmd.exe
C:\>C:\Windows\SysWOW64\odbcad32.exe
C:\>
```

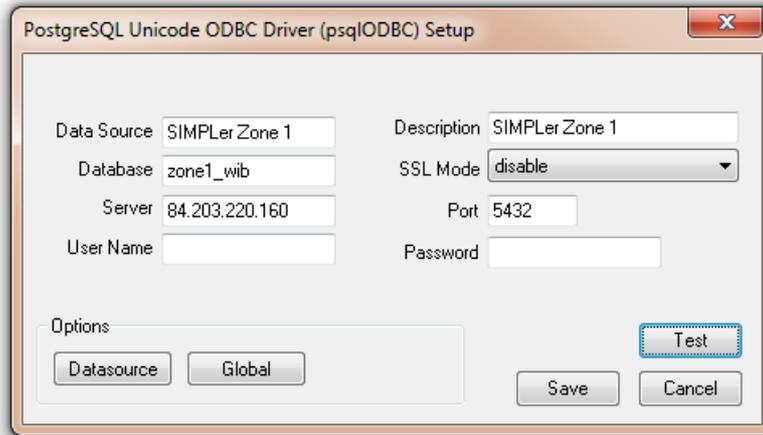
A new window will appear displaying the data sources that are currently defined on the system. The psqlODBC driver can now be used to create a new data source for the SIMPLer server.



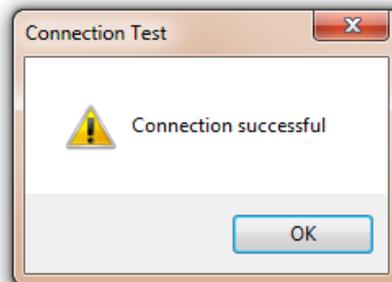
Click the "Add..." button.



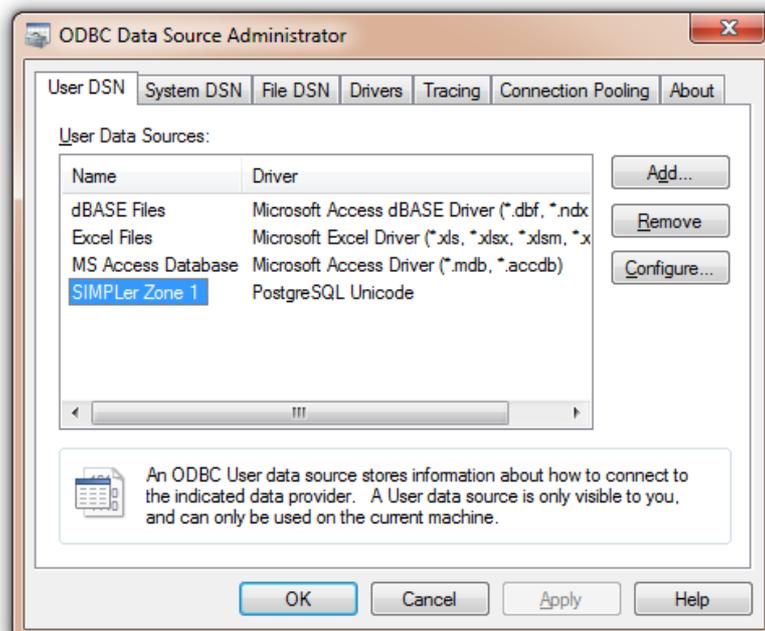
Scroll down the list to find the "PostgreSQL Unicode" driver, highlight it, and click "Finish". A new dialog box will pop up allowing the user to define the data-source. The details need here can be obtained by your Azotel contact.



The Server IP should be 10.8.0.1 as access to the DB is only allowed over the secure VPN tunnel. Once the details have been entered, click the “Test” button to check the connection with SIMPLer.



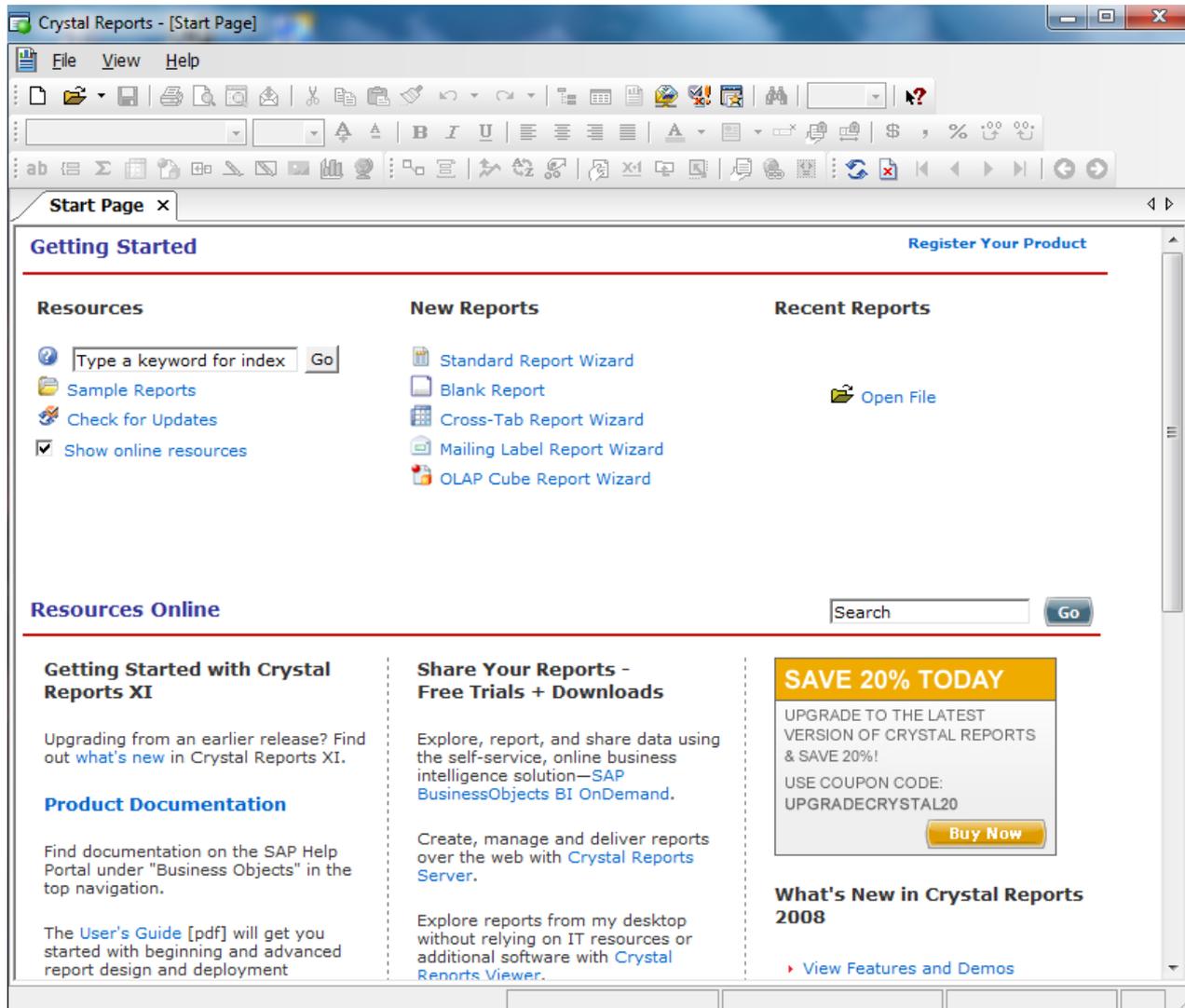
If the connection has been successful, click “Save”. The new data-source should be listed now, similar to below.



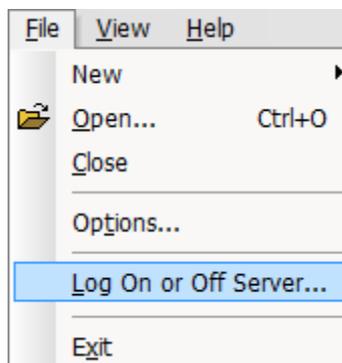
Finally, click “OK”.

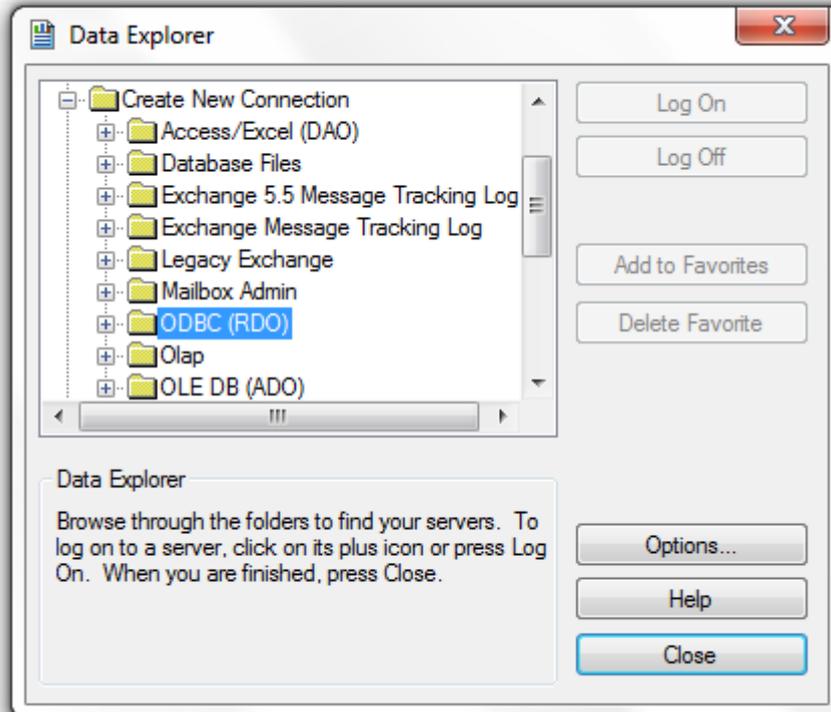
2.3 Configure Crystal Reports

Open Crystal Reports. The user will be presented with the “Start Page”.

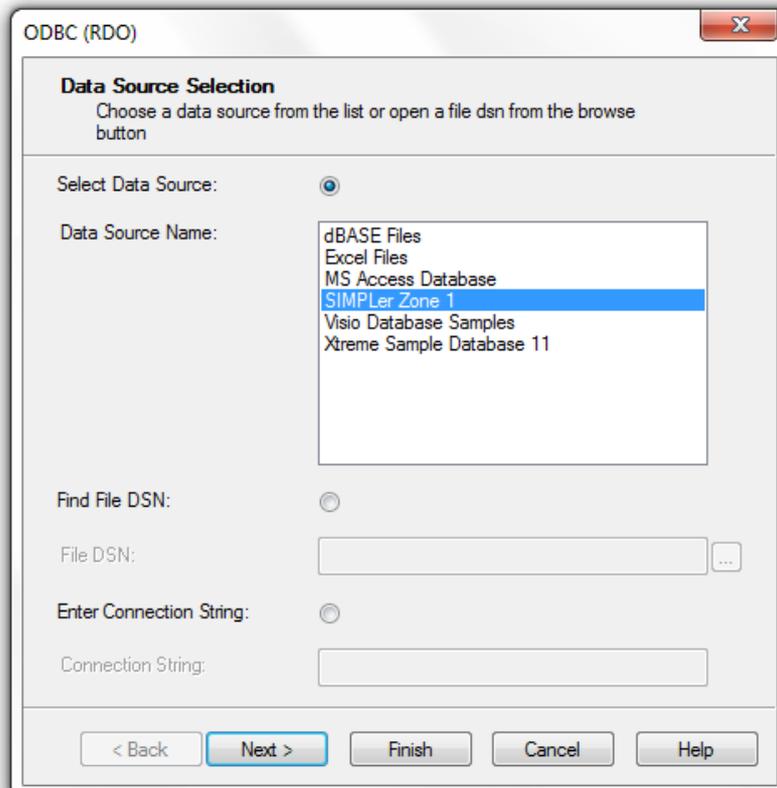


To configure a connection to the SIMPLer server, click on “File” and choose “Log On or Off Server” from the dropdown menu.

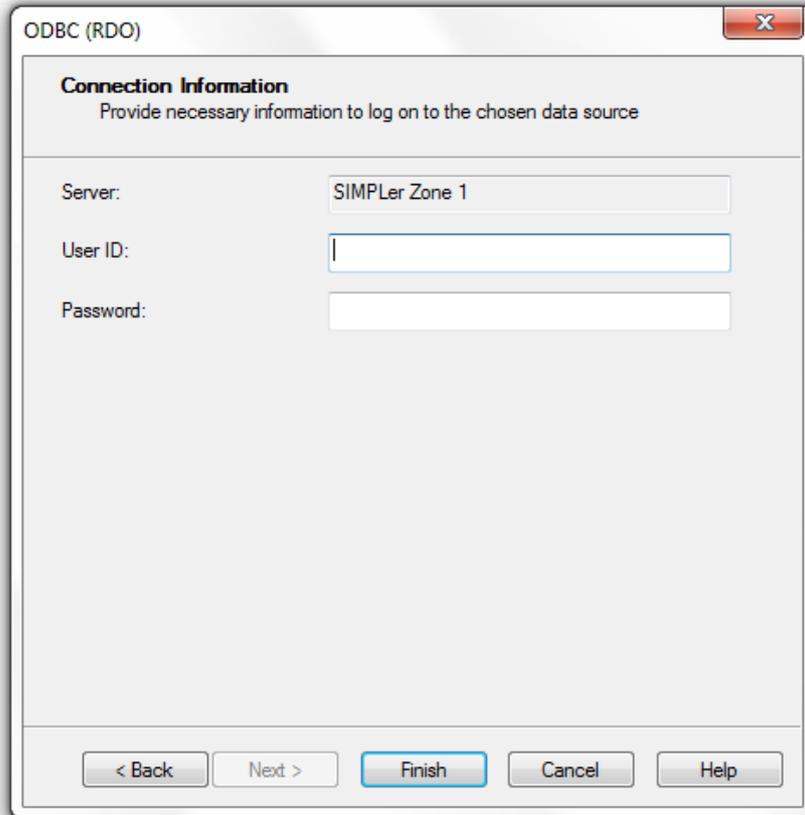




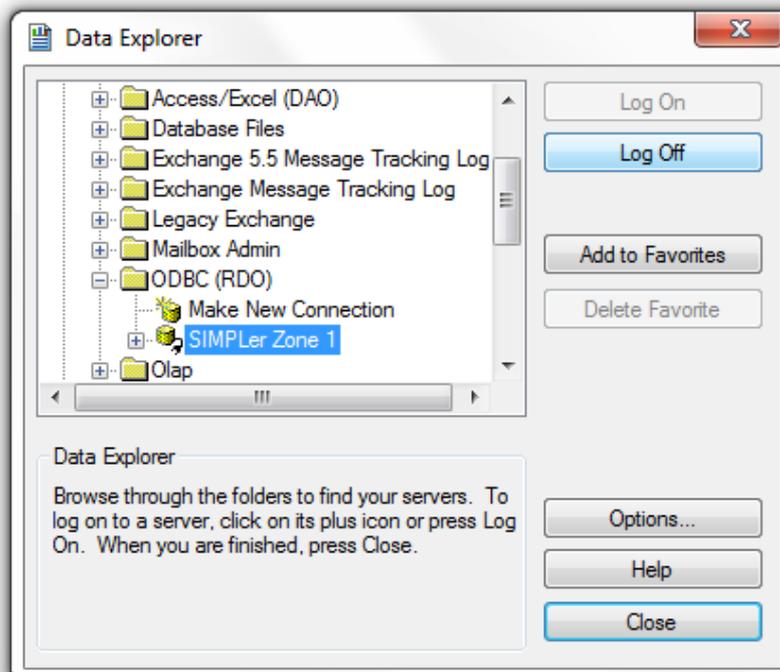
Click on the + sign beside “Create New Connection” and then click on the + beside “ODBC (RDO)”.



Choose the Data Source that was created in section 2.2, and click “Next >”.



Enter the database login credentials as provided by your Azotel Contact, and click “Finish”.



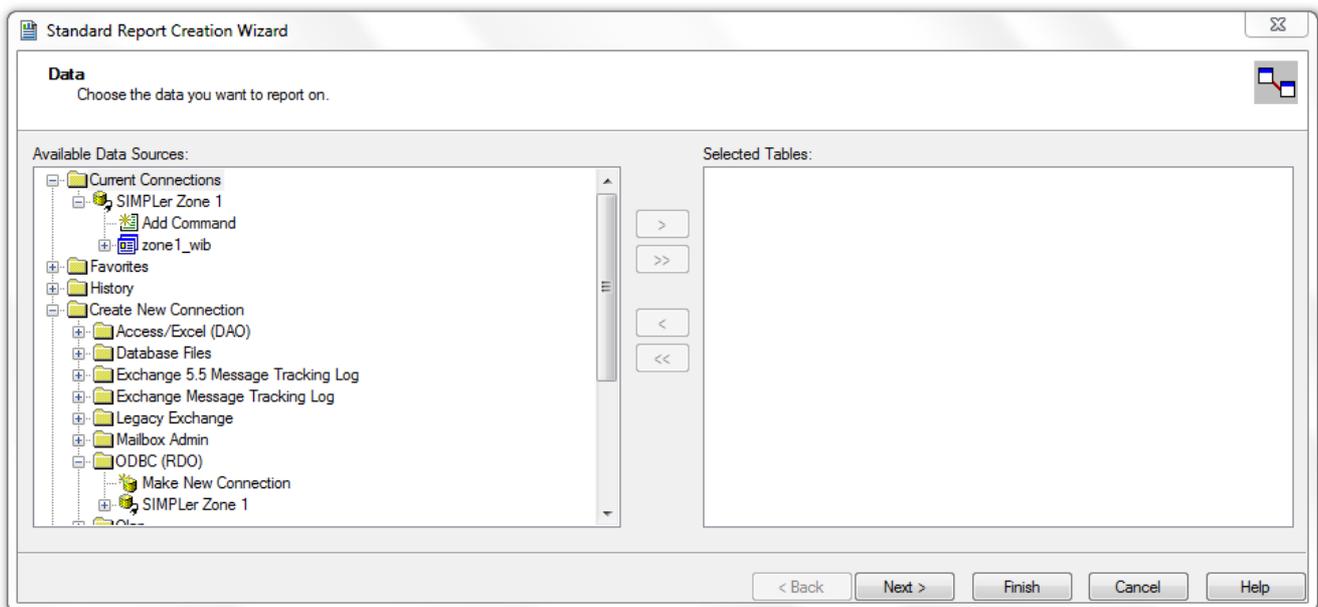
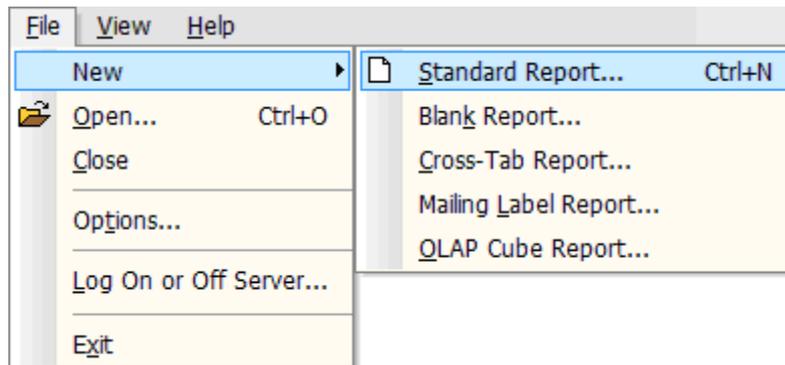
The new data source will appear in the Data Explorer window and is now available to Crystal Reports.

3 Creating a Report

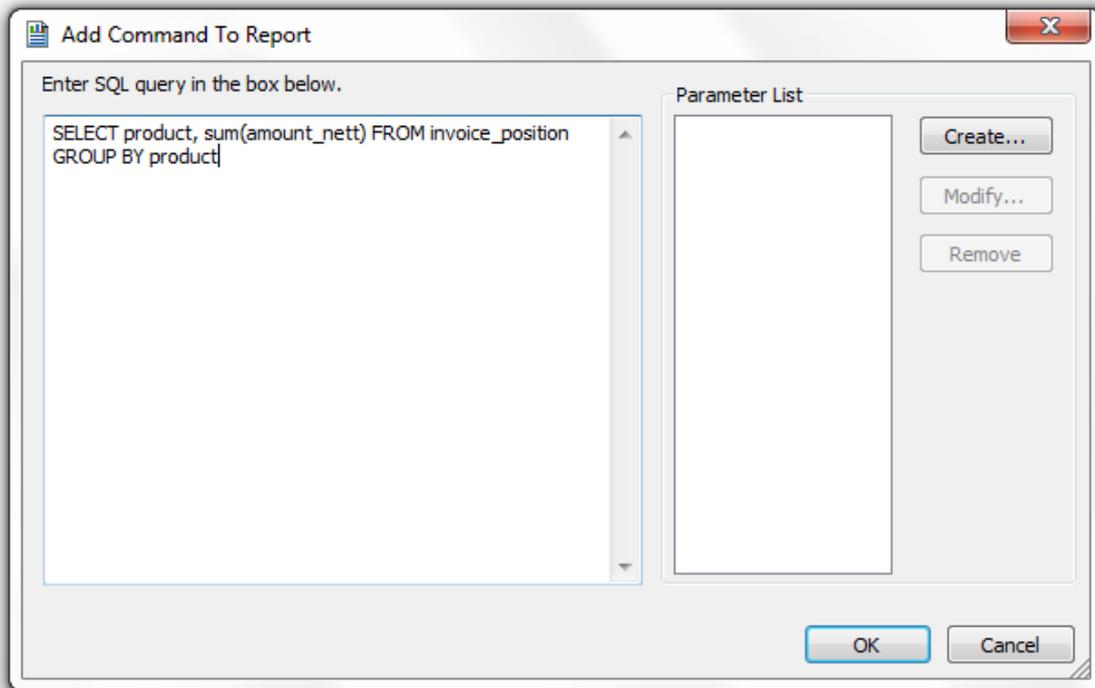
The following section provides a walk through of how to create a simple report in Crystal Reports. The report we will generate will show how much revenue has been obtained per product.

3.1 Gathering the Data

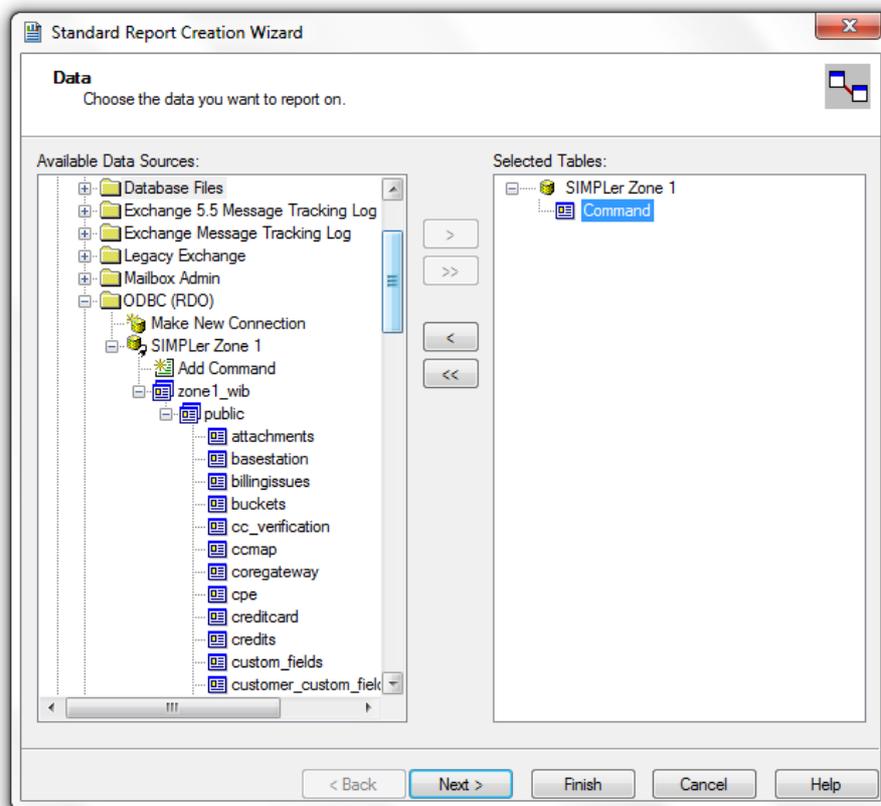
From anywhere in Crystal Reports, click on “File”, go to “New” and then choose “Standard Report”. This will open up the Standard Report Wizard.



Choose the appropriate data source such as “SIMPLer Zone 1” in the screenshot above either under “Current Connections” or “ODBC (RDO)”. Clicking on the + sign beside the entry will bring up the list of tables in this database. However, we are going to create our report by inputting SQL directly to Crystal Reports. To do this, double click on the “Add Command” item underneath “SIMPLer Zone 1”.

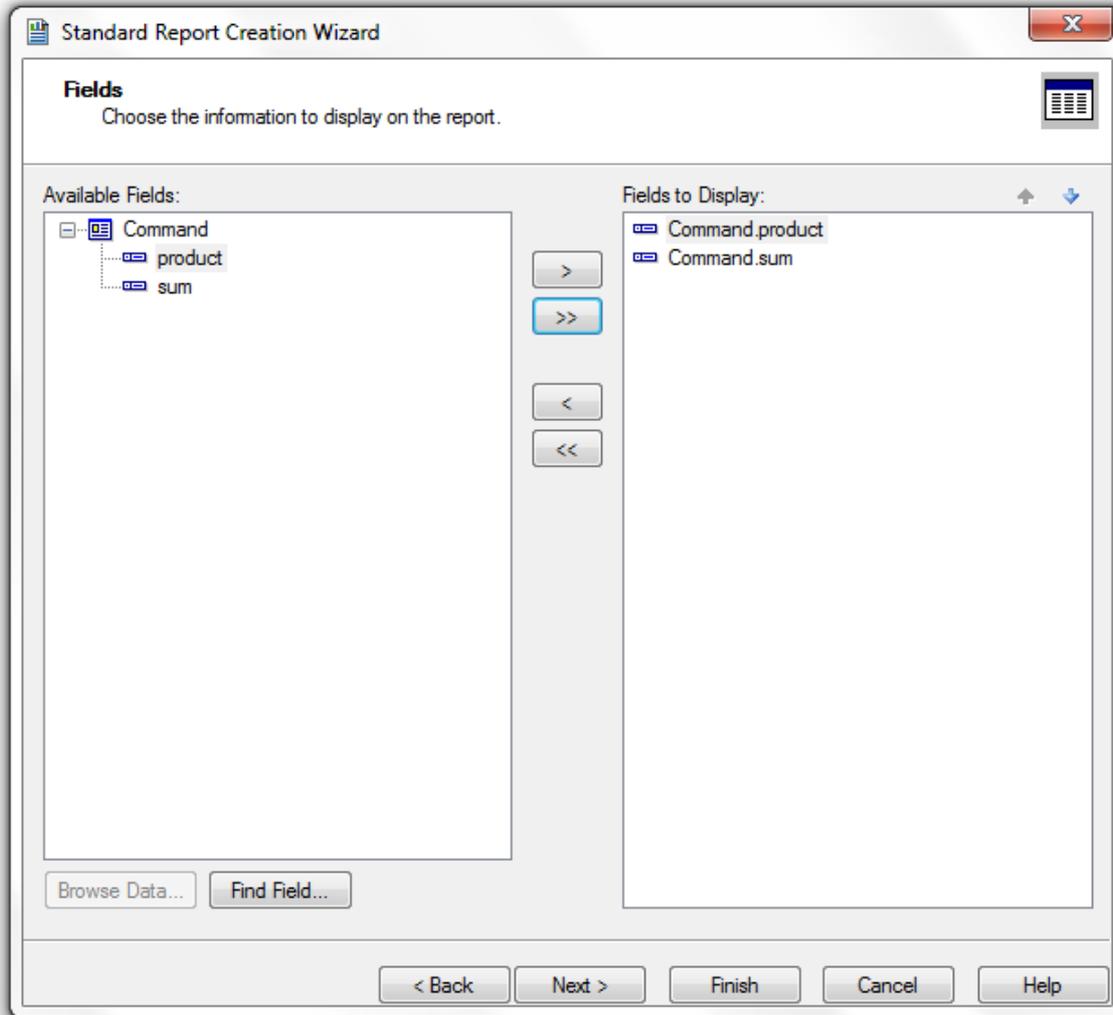


Enter in the SQL query as it appears in the screenshot above i.e. `SELECT product, sum(amount_net) FROM invoice_position GROUP BY product`. This query will retrieve the sum of the amounts of each invoice item grouped by the product it refers to. Click OK to confirm.



The custom command has appeared now in the "Selected Tables" area. Click "Next >" to continue.

Next, we need to select the database columns that will be displayed on the report. Since we only SELECTed two columns from the database, we only have two to choose from. We want to display both the product's description and the total revenue from it so copy both fields to the right hand side by clicking the ">>" button.

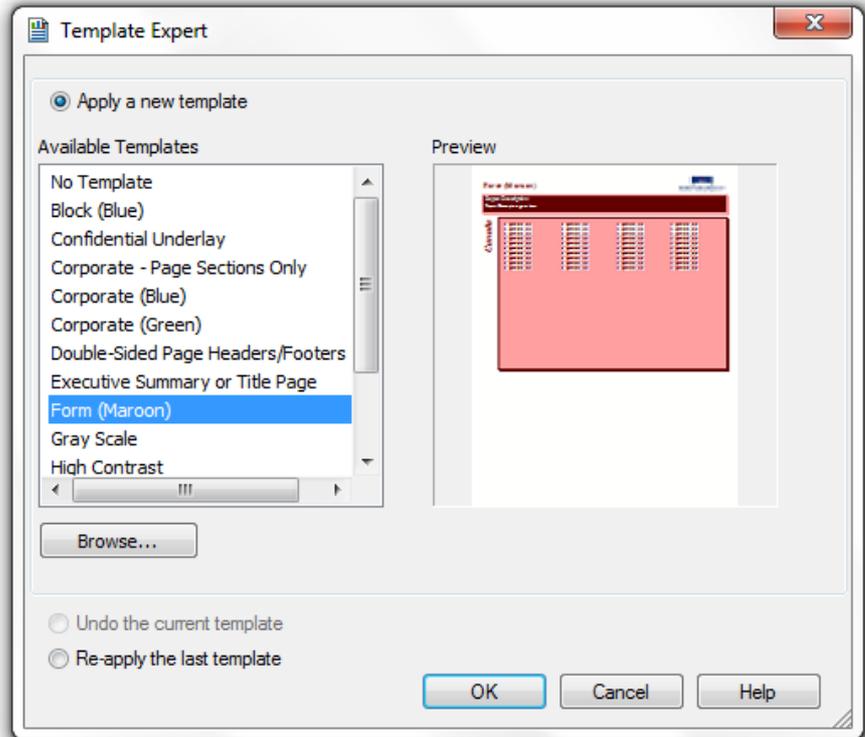
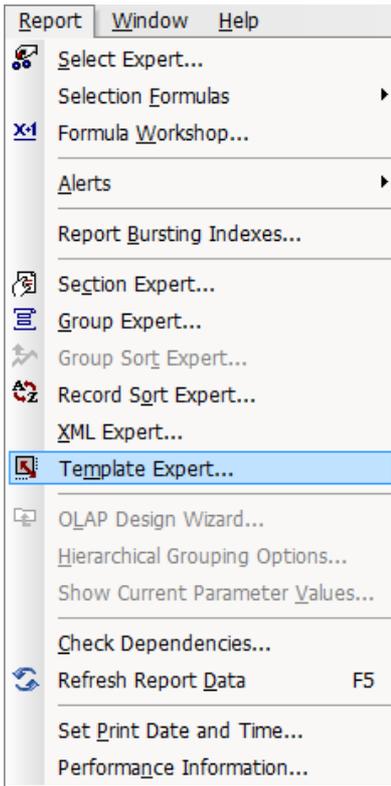


We don't need to give any more details to generate this report so click "Finish".

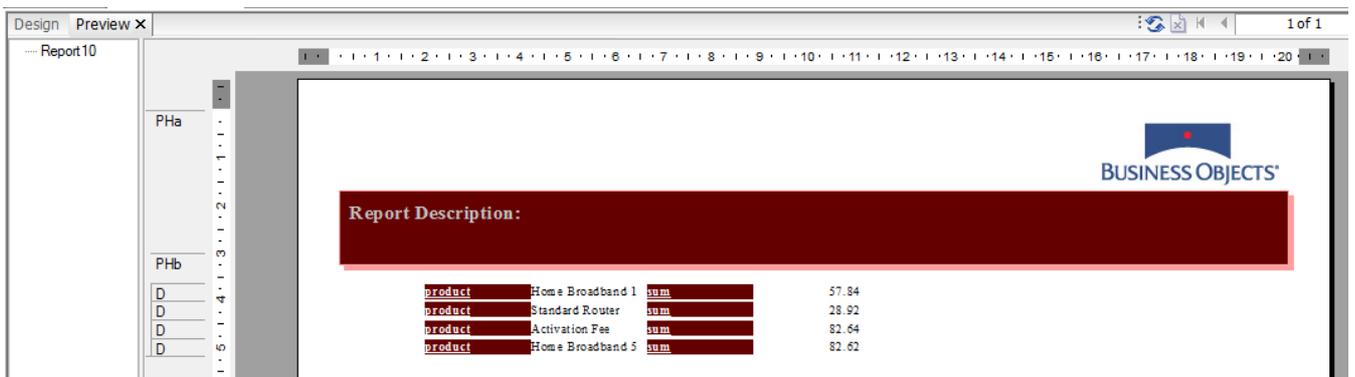
We will now be presented with a preview of the report.

01/11/2010	
<u>product</u>	<u>sum</u>
Home Broadband 10M b	57.84
Standard Router	28.92
Activation Fee	82.64
Home Broadband 5M b	82.62

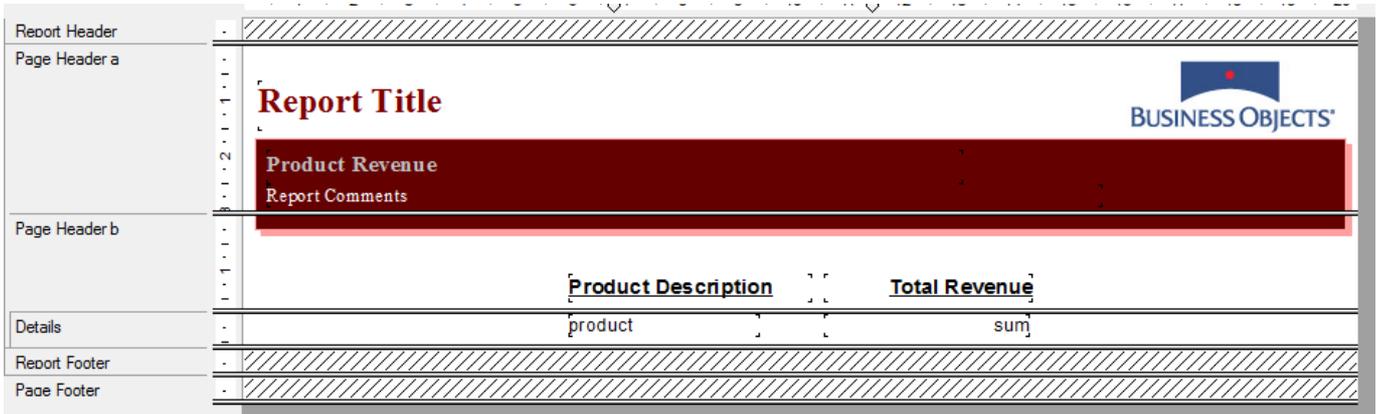
It doesn't look very impressive just now but we can start making it look more professional very easily. Crystal Reports comes with some templates to help improve the appearance of its reports. To use a template, go to the "Report" menu and click "Template Expert..".



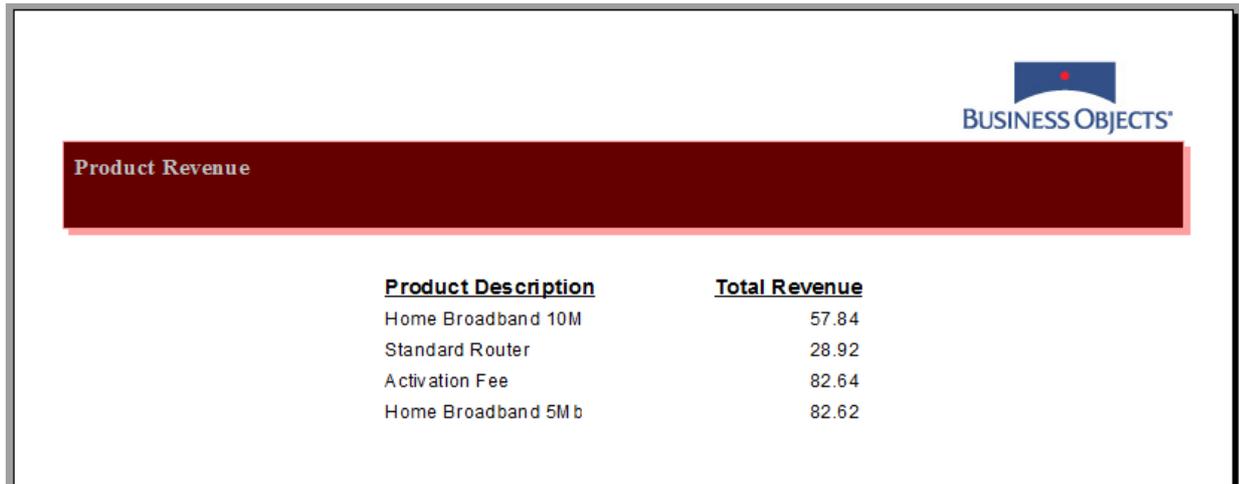
Choose a template from the list and click OK.



The next thing we can do is fix up the labels. Click on the "Design" tab to make changes to the layout of the report. By changing the fonts, and moving the label to the "Page Header b" section, we can improve the look and end up with something similar to the screenshot below.



Switching back to “Preview” mode gives us the following.

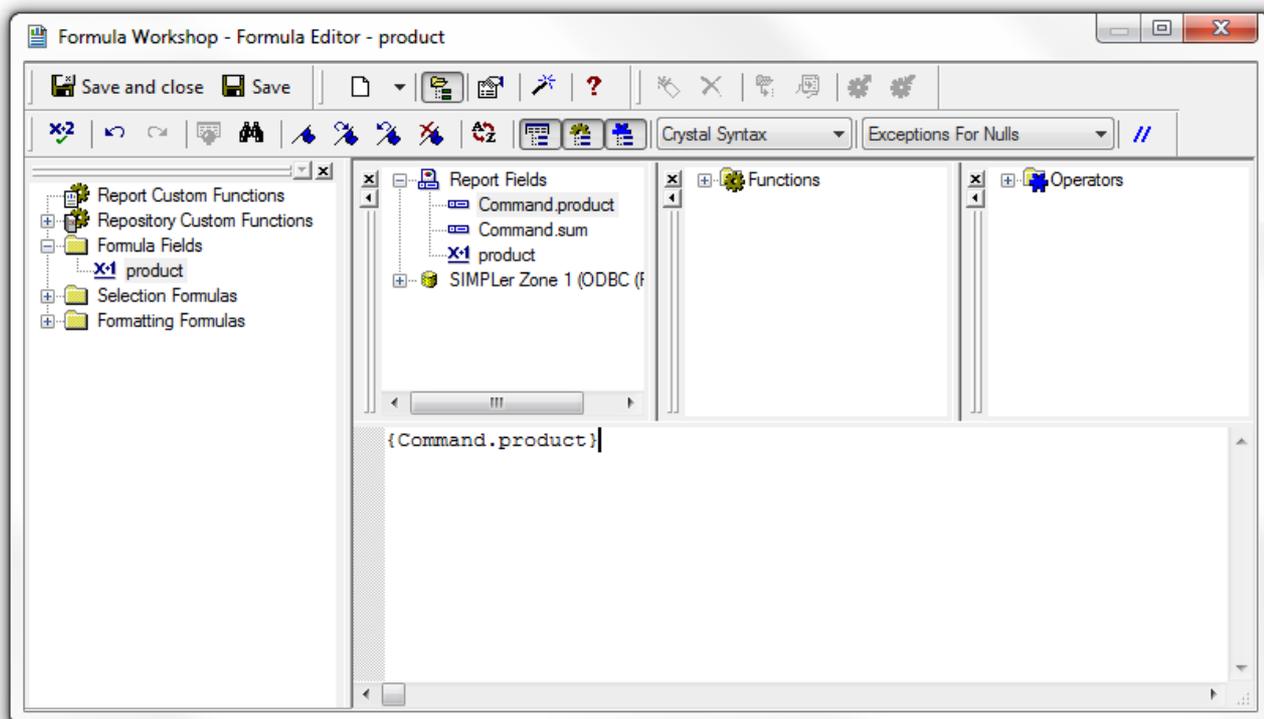


<u>Product Description</u>	<u>Total Revenue</u>
Home Broadband 10M	57.84
Standard Router	28.92
Activation Fee	82.64
Home Broadband 5Mb	82.62

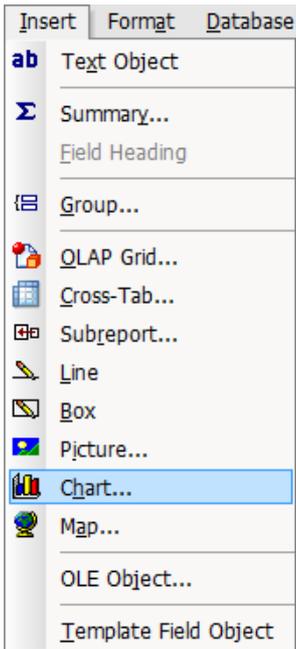
3.2 Adding Graphics

In Crystal Reports it is very easy to add graphs and chart to your report. This next section will describe how to present a pie-chart of the data we have gathered.

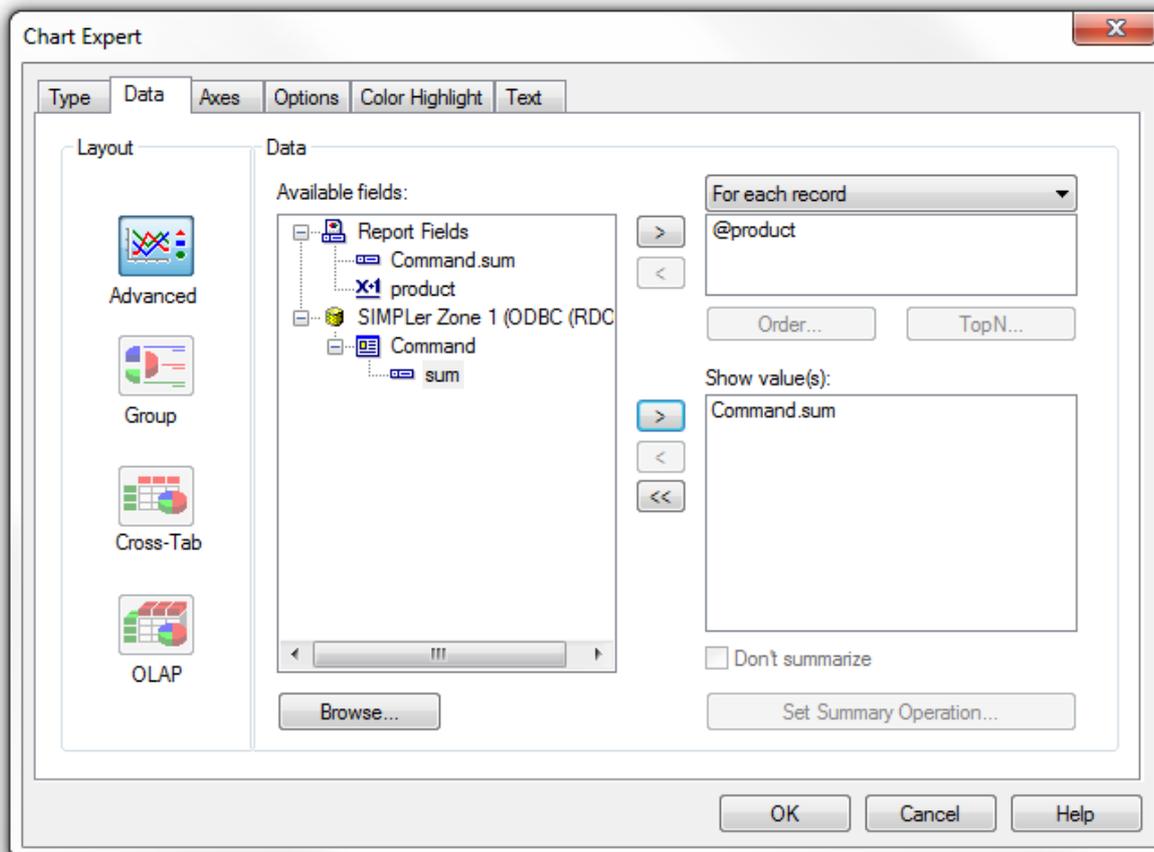
Firstly, to use the “Product Description” field in our chart, we need to make it usable. Crystal Reports doesn’t allow columns of type “memo” to be used in some cases. To get around this restriction, we can create a formula field that will return the column that we need. To do this, right click on “Formula Fields” in the “Field Explorer” window, and click “New..”. Enter a name for this – we can just call it “product”. The “Formula Workshop” window will appear.



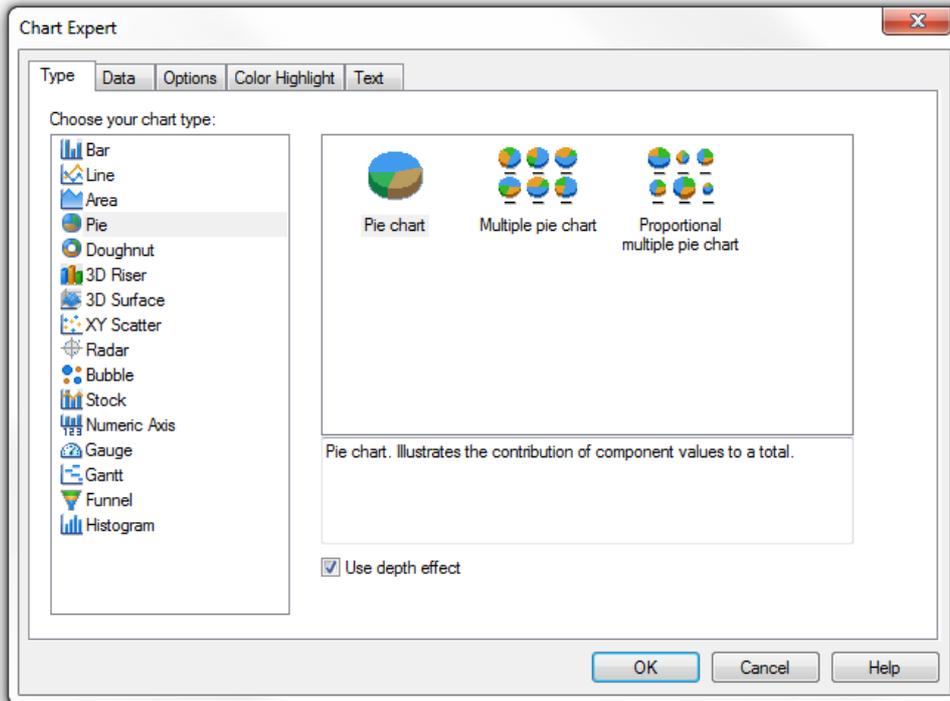
Double click on “Command.product” which can be found under “Report Fields”. This will tell Crystal Reports to return this value for this field. Click “Save and close”. Now we can create our chart. Click on the “Insert” menu and select “Chart..”.



Crystal Reports will then allow the user, using an orange box, to choose the position of the chart. Place the chart in a suitable location such as underneath the data. The “Chart Expert” window will now appear.



From here we can tell Crystal Reports using the rule: for each record of **product**, show the value of **sum**. Next we can choose which type of chart we want to display.



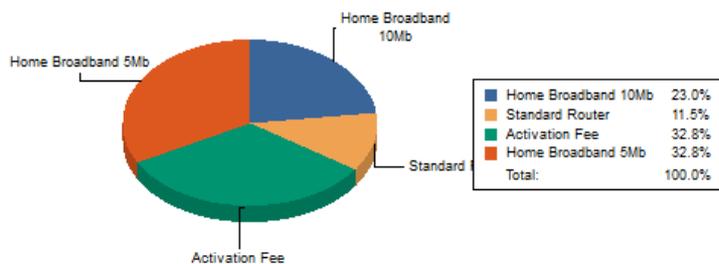
For the purposes of this example, we will choose a pie chart, with depth effect. Click OK to finalise the chart settings. Our report now appears like this:



Product Revenue

<u>Product Description</u>	<u>Total Revenue</u>
Home Broadband 10M	57.84
Standard Router	28.92
Activation Fee	82.64
Home Broadband 5M b	82.62

sum / records



Of course, the chart is much more customisable than just this. We could, add a more descriptive title, change the colours of the pie slices, add a border etc.

4 More Advanced Reporting

4.1 Revenue per Site Example

As a more complicated example, we will create a report that will:

- List each site defined in SIMPLer
- Display how many customers each site has
- Display how much revenue is generated from each site

Having examined the database schema, we can see that four tables are needed to generate this information: site, customers, subscription, and products.

We will approach this problem in three stages. First we will create a query to get a list of the sites and the number of customers associated with that site:

```
SELECT
    siteid,
    COUNT (c.*) AS number_of_customers
FROM
    site s,
    customers c
WHERE s.siteid = c.siteid
GROUP BY s.siteid;
```

Query 4.1 – Site IDs vs. Number of Customers

Next, we will create a query to get a list of the sites and the revenue generated by that site:

```
SELECT
    siteid,
    SUM (p.productprice) AS revenue
FROM
    site s,
    customers c,
    subscription su,
    products p
WHERE
    s.siteid = c.siteid AND
    c.customerid = su.customerid AND
    su.productid = p.productid
GROUP BY s.siteid;
```

Query 4.2 – Site IDs vs. Revenue

Finally, we can combine the two queries as follows:

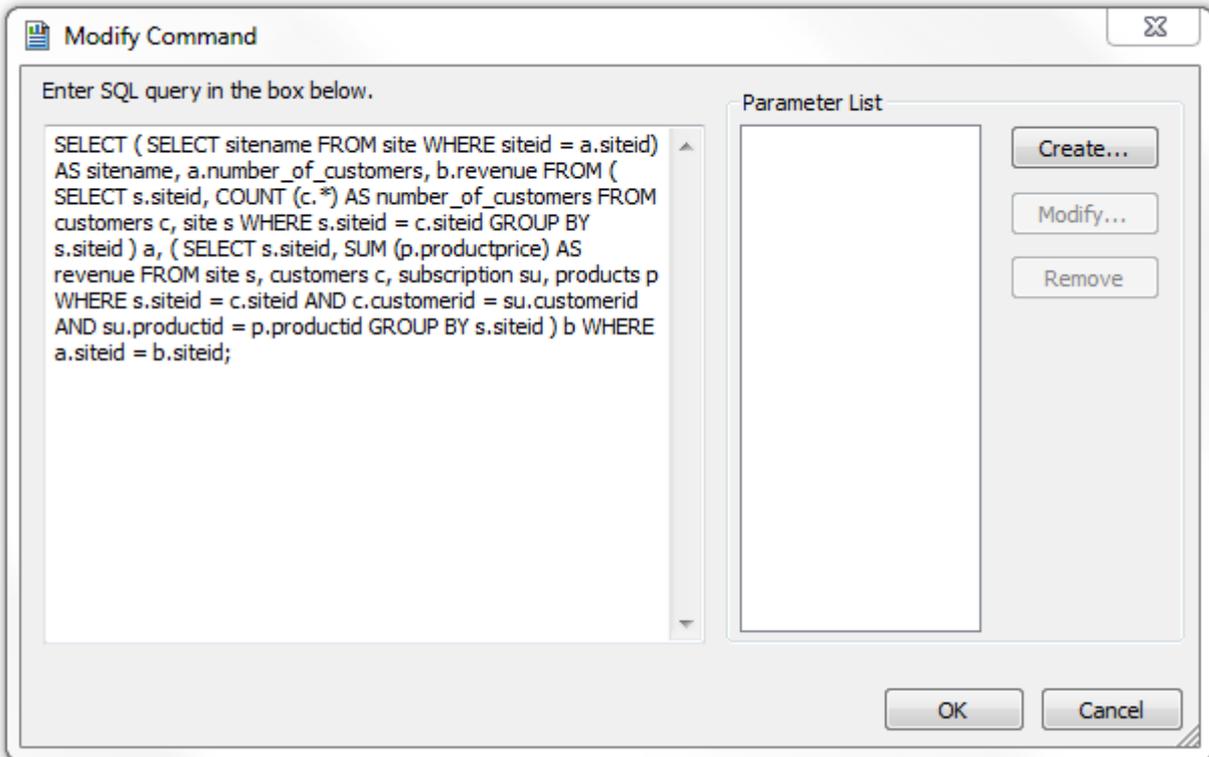
```

SELECT (
    SELECT sitename FROM site WHERE siteid = a.siteid) AS sitename,
    a.number_of_customers,
    b.revenue
FROM (
    SELECT
        siteid,
        COUNT (c.*) AS number_of_customers
    FROM site s, customers c
    WHERE s.siteid = c.siteid
    GROUP BY s.siteid
) a, (
    SELECT
        siteid,
        SUM (p.productprice) AS revenue
    FROM
        site s,
        customers c,
        subscription su,
        products p
    WHERE
        s.siteid = c.siteid AND
        c.customerid = su.customerid AND
        su.productid = p.productid
    GROUP BY s.siteid
) b
WHERE a.siteid = b.siteid;

```

Query 4.3 – Site Names vs. Number of Customers & Revenue

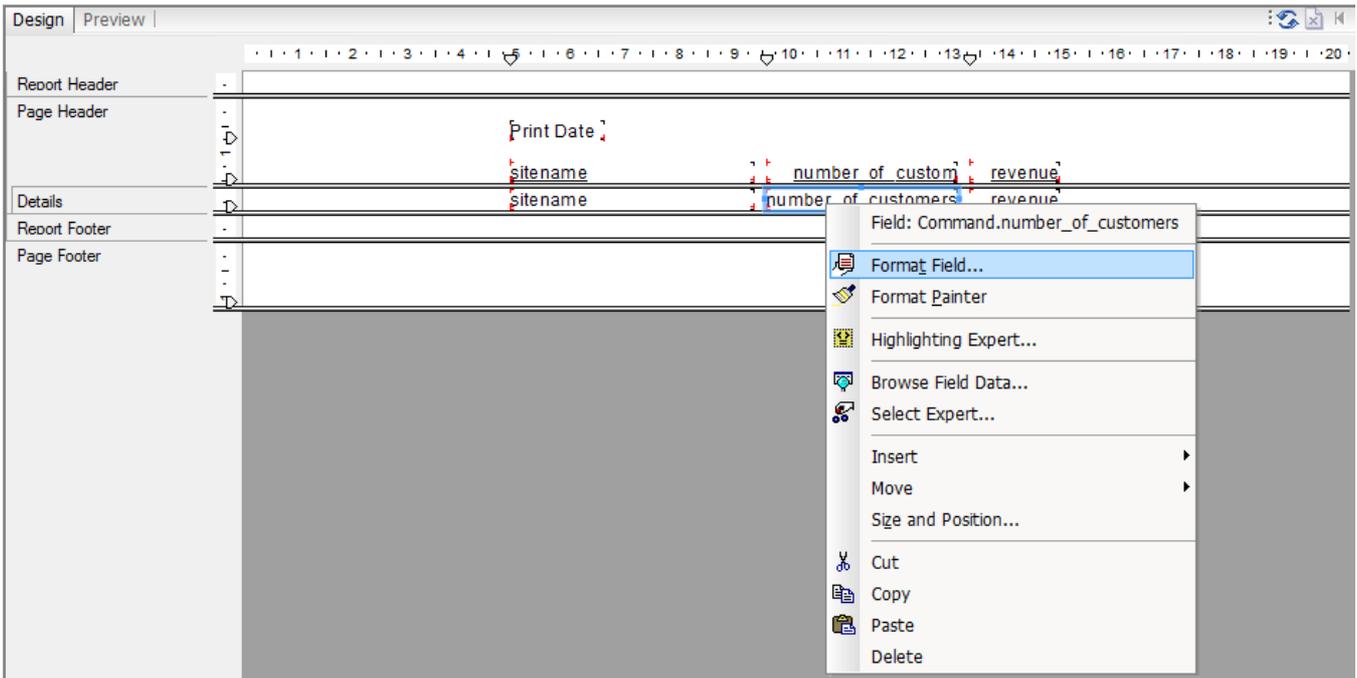
Create a new report using the “Standard Report Wizard”, select the correct data source, and add a new command using the combined SQL query (4.3) above.



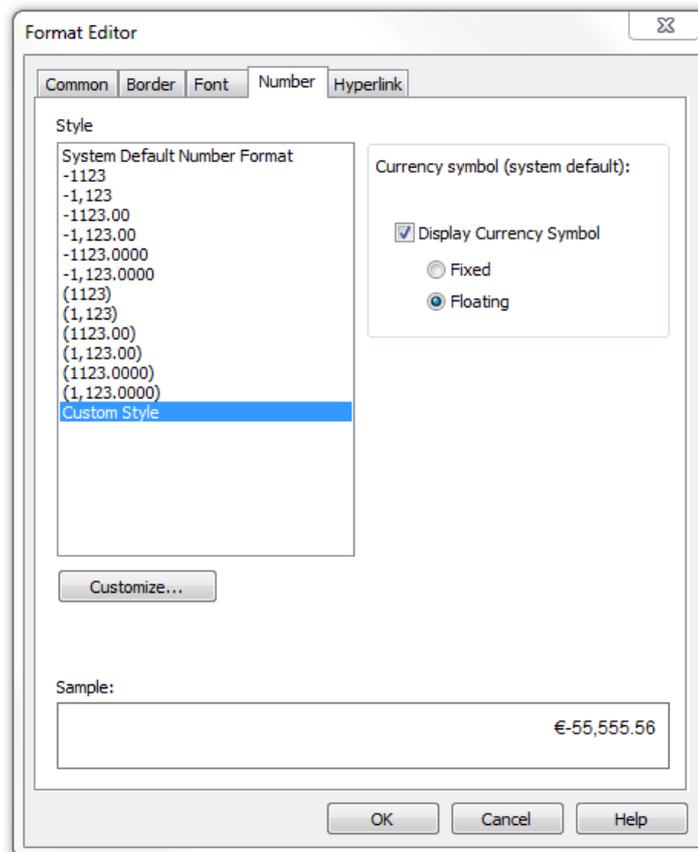
Add all available fields to the report, i.e. sitename, number_of_customers and revenue. No other set up for this report is need so just click “Finish”.

09/11/2010			
<u>sitename</u>	<u>number_of_customers</u>	<u>revenue</u>	
Caesar's Point	2.00	57.84	
Bull Mountain	1.00	41.31	
Apple Hill	3.00	82.62	

Note that we are again presented with a very basic report. The first two things that stand out are that the “number_of_customers” column is displayed as a decimal and the “revenue” column has no currency sign to signify that it is a monetary value. We can fix this by clicking on the “Design” tab, right clicking on the “number_of_customers” or “revenue” entry in the “Details” section, and choosing “Format Field”.



In the case of the “number_of_customers” field, choose the “(1,123)” style. For the “revenue”, simply tick the “Display Currency Symbol” checkbox. Crystal Reports will automatically use the system default currency, but this can be overridden by clicking on the “Customize...” button.



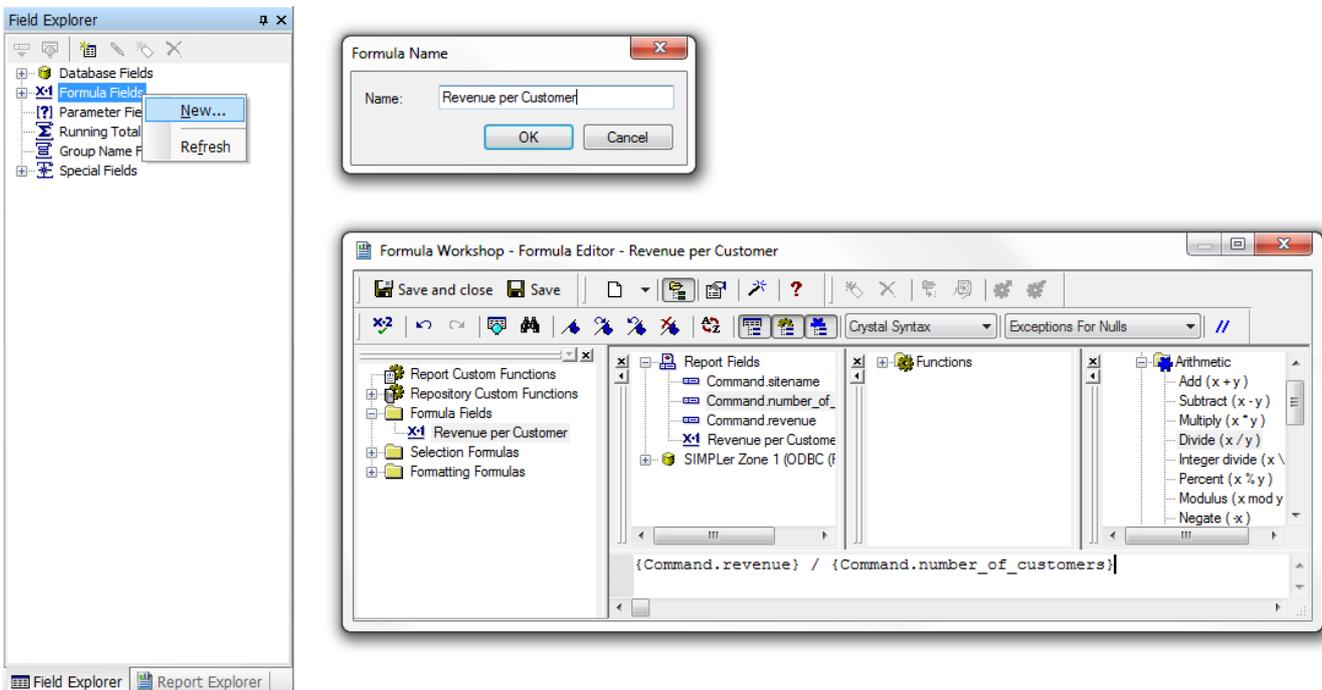
Return to the “Preview” mode to ensure that the changes were successful. Next, we will use a template as a quick way to add some colour and some headings to the report. In this walkthrough we will use the “Corporate (Green)” template.

Go back in to “Design” mode and play around with the section sizes until they are appropriate. You will notice that there are no column headings now, but we can easily add them by right clicking on the column entry and choosing Insert > Field Heading.

This will place a heading in the Page Header section, but we must also copy it to the Report Header section. Finally if we change the font size and colour of the headings, we can create something like this:

Site	# Customers	Revenue
Caesar's Point	2	€57.84
Bull Mountain	1	€41.31
Apple Hill	3	€82.62

An obvious extra useful column here would be how much revenue is generated per customer for each site. We can easily add this to our report. Right click on the “Formula Fields” item in the “Field Explorer” and click “New..”.

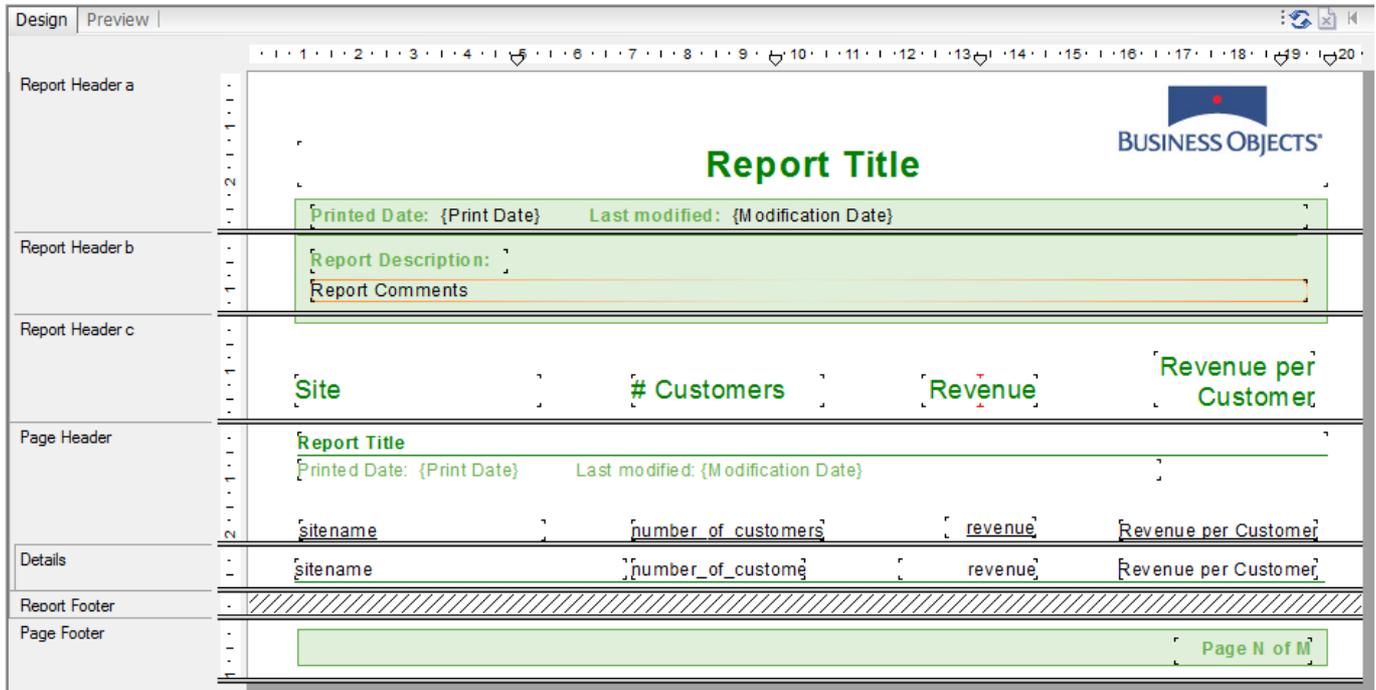


Choose a name for the formula like ‘Revenue per Customer’. The Formula Workshop windows will appear next. Enter the formula you wish to use – in this case it will be:

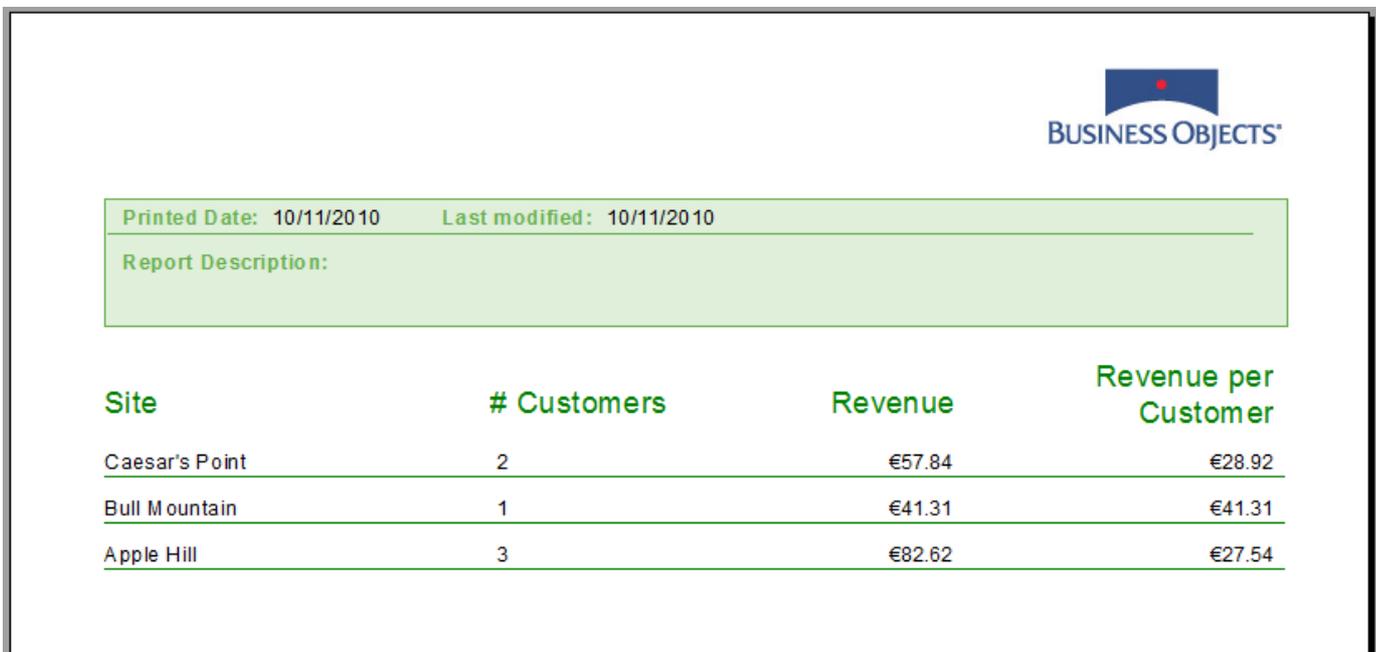
{Command.revenue} / {Command.number_of_customers}

You can use the sub windows to enter this formula automatically. To do this, double click on “Command.revenue”, then double click on “Divide (x / y)”, and finally double click on “Command.number_of_customers”. Click “Save and close” to finalise your changes.

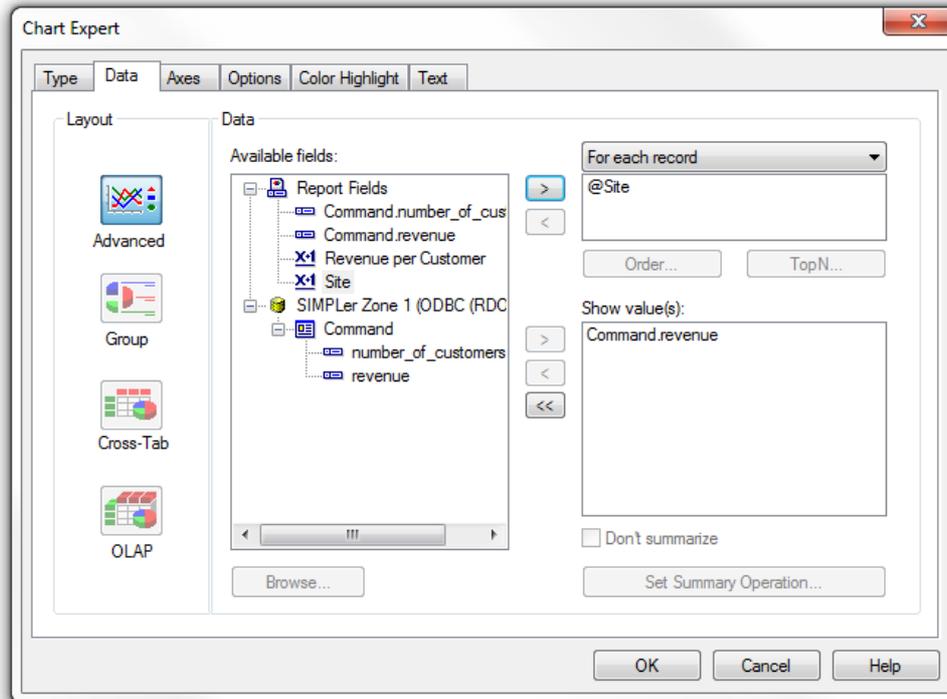
“Revenue per Customer” now appears under Formula Fields. When in Design Mode, we can drag this field in to our report. If we do this, add a heading similar to the other headings, and add a currency symbol as before, we will get something like this:



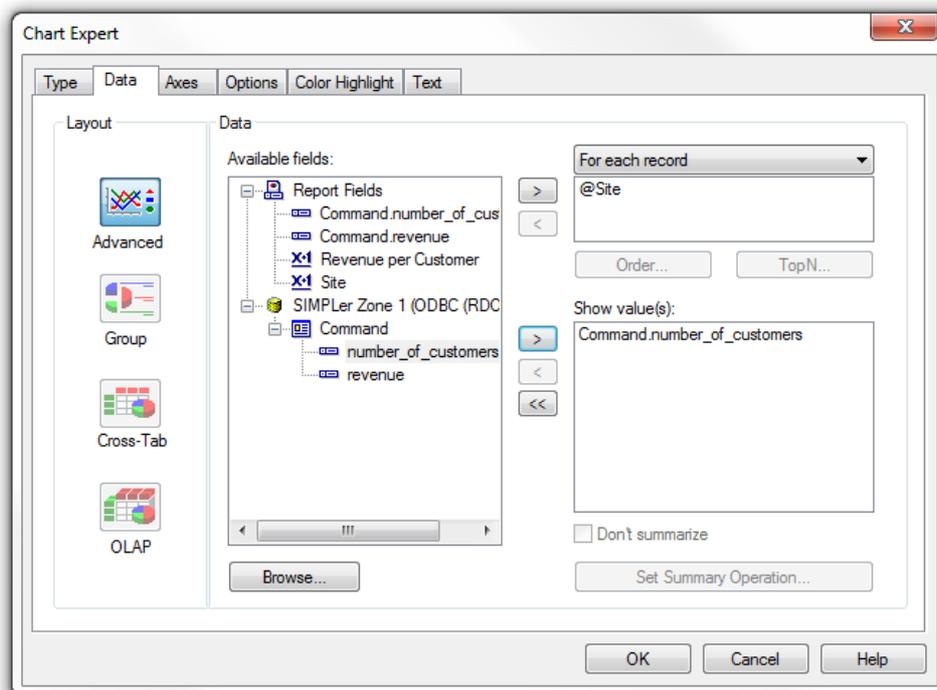
Which is “Preview” mode looks like this:



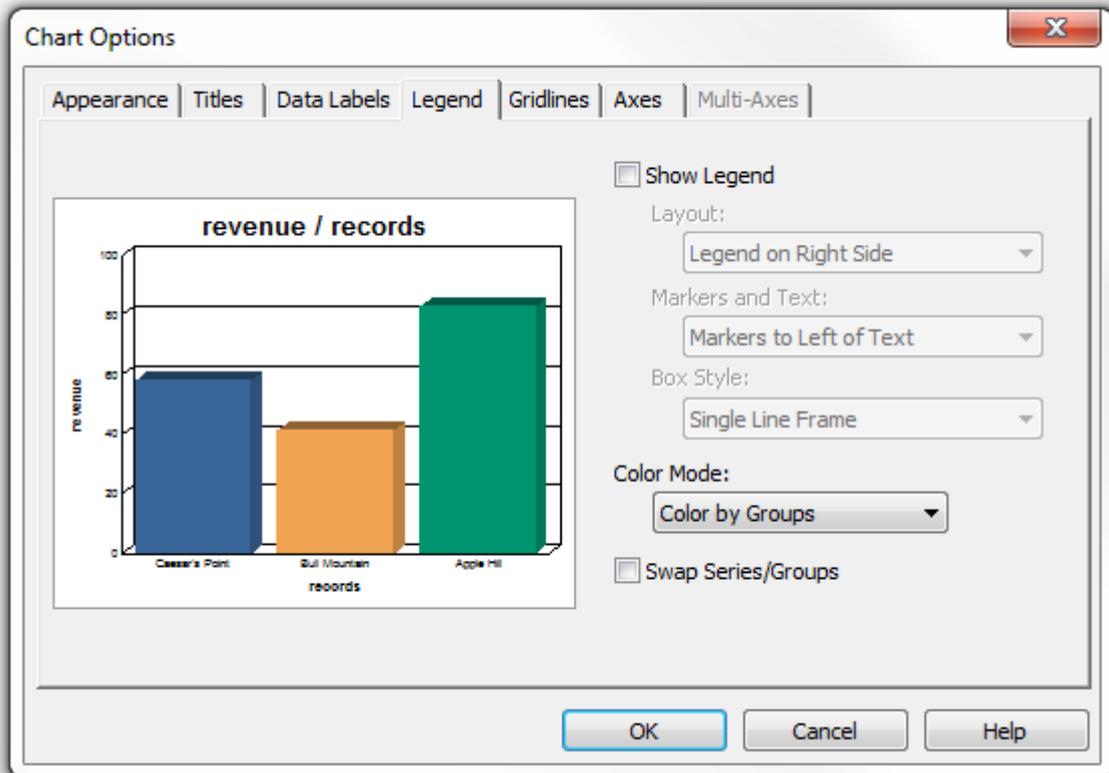
Now, in order to visualise the data, we will add a couple of graphs. First we need to add a formula field for “Site” just like we did for the previous report. Once that is done, we can create the graph. Click on the “Insert” menu, followed by “Chart..”. Select an appropriate place on the report to put the chart.



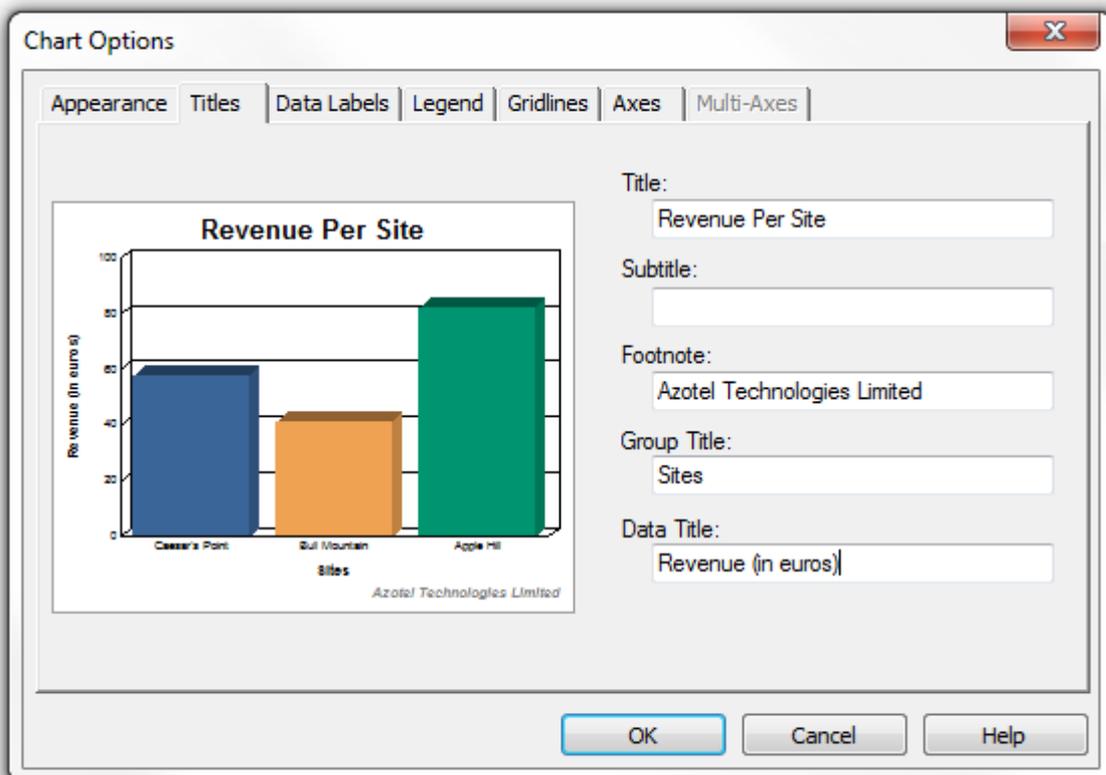
For the first graph we will create a bar chart of revenue per site. Use the chart expert as shown above to create this graph. Click OK, and repeat the steps to insert a graph. We will also create a graph of number of customers per site.



For the second graph, just replace “Command.revenue” with “Command.number_of_customers”. Click OK. Back in preview mode, we can resize the graphs and place them side by side. We can also remove the legend as it is not really necessary in this case. To do this, right click on a graph, and choose the “Chart Options..” item. Go to the “Legend” tab and untick the Show Legend checkbox.



While in the Chart Options window, we can also fix up our titles. Go to the Titles tab, and add whatever titles are appropriate for your graph.



Click OK to confirm your changes. One final thing we can do to this report is to give it a description. Go to the Design tab and double click on where it says Report Description. This will allow you to edit this text box. Fill in the description and click off the text box to save the changes.



4.2 Flexible Dates

Suppose we want to generate a report of all customers who have joined in the last month. The Crystal Report tool needed for this is the "Select Expert". Here are the steps involved to do this.

Open up the Standard Report Creation Wizard.

When choosing the data that you wish to report on, select only the "customers" table.

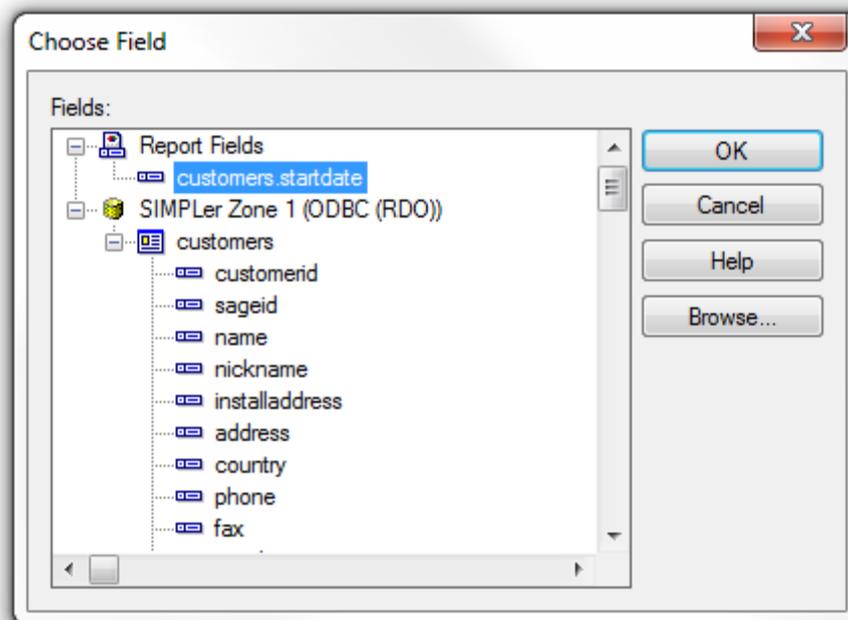
Choose the customer fields that you wish to display. In this example we will just choose "name" and "start_date".

Choose a template if required, and click Finish.

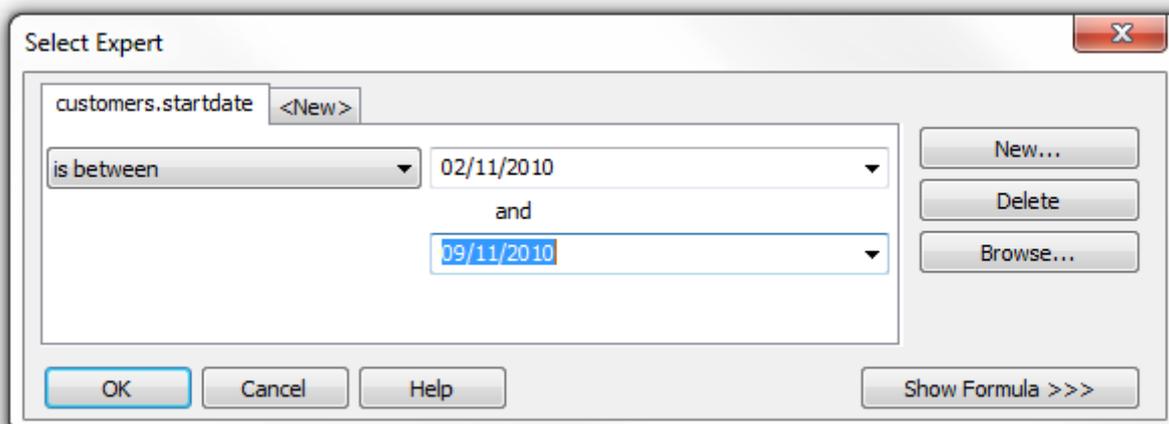


Stephen Cooper	03/11/2010
Thomas Bale	03/11/2010
Boris Wilson	03/11/2010
Lisa Lynch	01/11/2010
Peter Jones	01/11/2010
Dean Murphy	01/11/2010

To view a list of customers who only joined during a certain period, click on the “Report” menu and choose “Select Expert” from the drop down list.

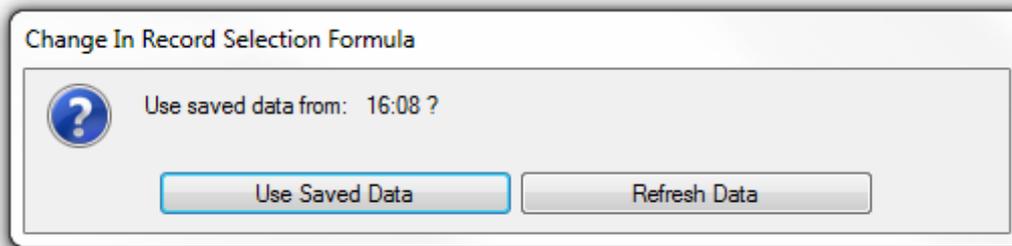


Choose the “startdate” column and click OK.



Choose the criteria for the “startdate” column. In the screenshot above we have chosen the customer’s start date to be between the 2nd of November and the 9th of November. Click OK to confirm.

A dialog box will appear asking do we want to refresh the data from the database.



Clicking on the "Refresh Data" button we cause the query to be executed on the server again, while clicking "Use Saved Data" will not.

We can now see that the returned records have been filtered to just include those that meet our criteria.

		
Stephen Cooper	03/11/2010	
Thomas Bale	03/11/2010	
Boris Wilson	03/11/2010	

Annex A: References

A.1 Document References

10025 SIMPLer Database Structure

A.2 Link References

<http://www.azotel.com> – Azotel Website

<http://crystalreports.com/> – SAP Crystal Reports Website

<http://jasperforge.org/> – Jasper Reports Website

<http://www.crystalreportsbook.com/forum/> - Useful Forum for Crystal Reports

Annex B: Definitions & Abbreviations

B.1 Definitions

B.2 Abbreviations

SIMPLer Subscriber Information Management Platform from Azotel

Annex C: Change History

Change history				
Date	Author(s)	Subject/Comment	Old	New
10/11/10	keithbro	Initial Version	n/a	001
18/06/13	Paul	Changed doc's title, copyright and correct year, doc num on all pages	001	100