crystal decisions ™

Crystal Reports 7

Cross Tabs – Enhanced Feature

Overview

This document is intended to assist users in understanding the new features of the Cross-Tab Expert, in addition to some report design tips to making better use of cross-tabs in your reports. This document should be consulted in addition to the _Seagate Crystal Reports 7 – User's Guide_, which ships with the product and outlines how to use Cross-Tabs.

Contents

How Crosstabs work

A cross-tab is used to see large quantities of data summarized into a compact, easy-to-read column and row format. For example, a cross-tab might be created to display data on what orders were generated by each country, to compare totals quickly and easily.

Previously, to create a report of this nature, a group on country, and summary fields for the sales figures would need to be created, and then comparisons could be made between the groups. However, large amounts of data, spanning many pages, make this cumbersome. With a cross-tab, columns for each country can be placed across the page and the orders for each country can be placed in rows down the page, with the summary field at the intersection of each column and row.

With the new features of the Cross-Tab function, pages are automatically split at the end of the appropriate column, and row headings can be repeated at the beginning of each new page. This allows even very large reports to span many pages width-wise, and still be easily read and interpreted.

The Cross-tab Expert takes three or more fields and arranges them in the following order: at least one field for the column headings, at least one field for the row headings, and at least one for the summarized data.

By specifying a column heading, Seagate Crystal Reports groups data based on that field, and for each group one column is created. By specifying a row heading, Seagate Crystal Reports groups data based on that field, and for each group one row is created. The summarized data based on both groups is placed in the intersection of the column and row. In this way many columns and rows are created, even though only one field is defined as being a column/row heading, and multi-page width reports can be achieved.

Because cross-tabs create groups, and for each cell of the report a summarization of that group has to be created, the more data that is included in the cross-tab, the longer the processing time will be. Figuring on a 50,000 record database, with all of those records being included in the cross-tab (with one row, one column and one summary defined), the report will need approximately 1.5 minutes to run (on a P166 with 48 MB of RAM).

Cross-tabs are processed as part of the second pass, which means that first-pass formulas can be used as summarized fields, for instance:

```
{Product.Quantity} * {Product.Price}
```

or

```
{Orders.Order Amount} * 1.15
```

would be valid first-pass formulas to reference in a cross-tab.

Fortunately, due to where cross-tabs are processed in the second pass, graphs can be created on them, either in the Report Expert, or after the cross-tab has been created. Formulas can also be used to concatenate text for easier reading.

How it Works

To create a cross-tab for an existing report, click Insert | Cross-Tab. You can then enter the fields desired for the Row and Column Headings, and the field to be the Summarized Field.

If other fields are added to the Row/Column Headings, the Cross-Tab Expert will create subtotals for each level. If the subtotals (or labels for the additional sections) are not desired, the Suppress Subtotal check box can be clicked. At this point, the Suppress Label can also be clicked, if the labels for the additional Rows/columns are not desired.

Formulas can also be used for Row/Column Headings, or Summarized Fields. Cross-tabs can use pre-existing formulas, or a new formula can be created once the Cross-Tab Expert has been opened. Only first-pass formulas (see the User's Guide for more information on the two-pass reporting process) can be read by the Cross-Tab Expert however, so no formula that starts with "WhilePrintingRecords;" can be read. For example, if name information is wanted for a Row/Column Heading, and that information is separated into First and Last Name fields, a formula can be used to concatenate the two fields, and then the formula can be used for the Heading.

Group Options are available for Row/Columns, including Ascending, Descending, and Specified Order. As in the Specified Order option within the report designer, this option can be used to create different groups than what are normally available. For instance, a group could be created for regions in Pacific, Mountain, Central, and Eastern Time, instead of seeing those regions as the individual provinces/states. For more information on creating Specified Order Groups, please see the User's Guide.

Background color for the Rows/Columns can be changed in this initial dialogue box; if the color of the Total row/column needs to be changed, that must be done from the Advanced button (see below).
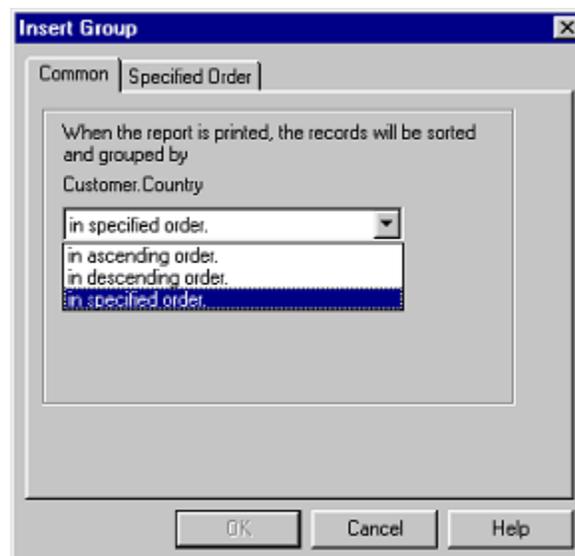
Under the Advanced Button there are a number of options: expanding or contracting the margin around cross-tab data (Show Cell Margins); suppression

of blank rows/columns; keeping columns together (i.e. not having one column split over two pages); repeating the Row Headings on each page for easier reading; suppression of the Row/Column Grand Total; and background color for the Totals columns.
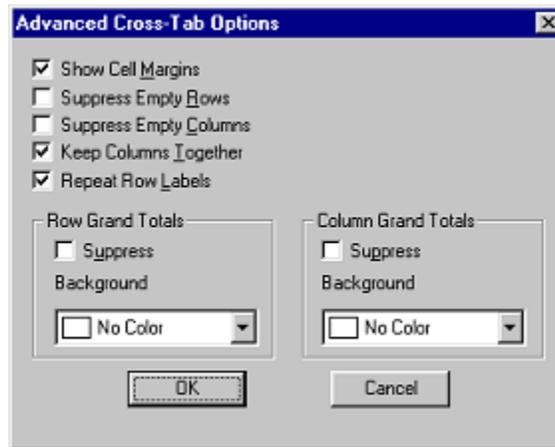
Once the cross-tab has been created, it can be edited through either the Format | Format Cross-Tab menu, or by right-clicking in the upper-left corner of the cross-tab, and choosing Format Cross-Tab. (Note: in order to select the cross-tab, the mouse must be above the first row, and to the left of the first column before clicking.)

Graphs (charts) can be created on cross-tab data. If creating it through the Report Expert there is a Graph tab available; if inserting it after the cross-tab is created, make sure to select the cross-tab before using the Insert | Chart menu options.

A Tutorial

The following is a tutorial that will take you through creating a cross-tab, which will show the sales data for each customer, by country and region.

1. Click the *New* button on the Standard Toolbar.

2. Click *Cross-Tab*.

3. Click *Data File* then choose the *Xtreme.mdb* from the main program directory and click *Add*.

4. Select the *Customer*, and *Order* tables, then click *OK* and then click *Done*.

5. Ensure that the linking between the two tables is by Customer ID, then click the *Cross-Tab* tab.

6. Under Report Fields, click *{Customer.Country}* then click *Add Column*.

7. Under Report Fields, click *{Customer.Region}* then click *Add Column*.

8. Under Report Fields, click the plus sign (+) beside the Orders table to open the fields, and click *{Orders.Customer ID}*, then click *Add Row*.

9. Under Report Fields, click *{Orders.Order Amount}*, then click *Set Summarized Field*.

10. Click Preview Report.

11. Scroll through the report, noticing that there are page breaks, but no repeated row headers.

12. To limit the records to North America, you can do this either through the regular record selection or the Expert: for the purposes of this step, use the Expert: click **Report | Report Expert**, or click the Report Expert button on the Standard Toolbar, then click Yes to accept the warning.

13. Click the Select tab.

14. In the Available Fields box, click {Customer.Country}, then click Add.

15. From the drop down box, change "any value" to "one of".

16. Add Canada, Mexico and USA to the list box.

17. Click Preview Report, and choose Refresh Data.

18. To select the cross-tab, scroll to the top left corner, and click the blank area, above the first row, and to the right of the first column. The cross-tab will have a blue line around it when it is selected.

19. Right-click in the same area, and click **Format Cross-Tab**

20. Click the Advanced button.

21. Click the check box on for Repeat Row Labels, then click OK.

22. Click OK in the Cross-Tab box, and preview the report—the second page-width will have the row headers on it as well.

23. Return to the Cross-Tab box, and click the {Customer.Country} field in the Columns area, then click Suppress Subtotal on.

24. Click OK twice, and notice that the Totals columns for the individual countries are gone, but the grand total is still present. (Note: to suppress the grand total at the far right of the page, return to the Cross-Tab box, click Advanced then click Suppress Row Grand Totals; if the totals at the bottom of the page are not desired, click Suppress Column Grand Totals in the same box.)

25. Go to the Design screen, and un-suppress the Report Footer (right-click on the Report Footer name at the left edge of the screen and right-click and click Don't Suppress).

26. Drag the cross-tab to the Report Footer — it is better placed there because the Page Header information is underneath the cross-tab currently.

27. Create a text box (the "AB" button on the toolbar) with a title, such as: "North American Customer Sales, by Country and Region".

28. Make it a bigger font and stretch the text box across the page.

29. Preview the report. To compare your results with our "suggested sample" report, load the report **Crosstab_Tutorial.RPT,** that was included with this archive.

Tips, Tricks and Limitations

There is more information in Chapter 22 of the *Seagate Crystal Reports 7 – User's Guide*, but the following is a brief list of helpful hints to keep in mind when creating cross-tabs in your reports:

1. If creating a report that only has a cross-tab in it (no details information) can be better to put the cross-tab in the Report Footer, rather than the Report Header—this way the Page Header information will appear at the top of the page, above the cross-tab.

2. *New Feature:* Color can be added to the Totals columns through the "Advanced" button (trying to select the Summarized field and clicking background color will be unsuccessful).

3. Background coloring can be used as follows:

    *   For the Row Headings, click the field in the Rows area, and set the color

    *   For the Column Headings and all of the values under those headings, click the field in the Columns area, and set the color. If you have more than one field for Columns, using background color for the first in the list will color the titles and the subtotals, coloring the second field in the Columns area will color all other columns (except for the Grand Totals).

    *   To color the Grand Totals columns for either the Rows or Columns, click the "Advanced" button and choose color for the appropriate.

NOTE	Column color selection overrides Row color selection.

4. *New Feature:* If the first page's row headings are desired on subsequent pages, click the "Advanced" button within the Cross-Tab expert, then click the check box: Repeat Row Headings.

5. *New Feature:* Cross-tabs can take advantage of another new feature of this version, the Highlight Expert (under the Format menu). Here conditions can be set such as font color, background color, and border/underline style that will be applied to each summarized item in the cross-tab. This allows for much greater formatting options than were available in the past.

6. When creating a new formula within the Cross-Tab box, ensure that it is a first-pass formula ({field}*{field} for example). If it is not a first-pass formula (ie. if it uses "WhilePrintingRecords"), you will not be able to access it within the Cross-Tab box — either to use it for a Row/Column or Summarized Field, or to edit it. If a formula has been created with an error in it that has caused it not to show up in the Cross-Tab box, it can be edited from the Design screen by clicking the Insert Fields button, Formula tab.

7. *Enhanced Feature:* Under the Group Options button, the ability to use Specified Order is now present—the same functionality as in regular reporting where the user can create a group or groups based on given criteria. If there are any remaining records, the user can choose to discard these records, group them in one group with a title (default of "Others"), or to leave them in their original groupings.

8. Only one field can be compared for the Specified Order option under Group Options. For instance, {field} greater than 5000, {field} is between 5000 and 1000 are both possible, but {field1} greater than 5000 and {field2} greater than 5000 is not possible.

9. *Enhanced Feature:* If a date field is being used for either the Row or Column, other group options can be applied. For instance, the data can be grouped by: day, week, two weeks, half-month, monthly, quarterly, half-yearly, and yearly, as well as time options such as AM/PM, hours, minutes or seconds.

10. *New Feature:* With this version, there has been functionality added that allows cross-tabs to be created with only one heading—either a row or column heading. However, it is not possible to create a cross-tab with only summarized fields.

11. *New Feature:* In the Cross-tab expert, there is the option of going directly to Design, rather than Preview using the Preview Design button.

12. *New Feature:* Column/Row suppression. There are several options for this:

- Subtotal Suppression (in cases where there is more than one field in the Row/Columns area, and subtotals would normally be generated)

- Label Suppression (only available once subtotal suppression has been activated - this feature turns off the row that shows labels for the columns)

- Row Grand Total and Column Grand Total suppression (found under the Advanced button)

- Suppression of Rows/Columns that have nulls or zeros throughout all cells for that row/column (also found under the Advanced button)

13. *New Feature:* TopN is now available for cross-tabs: select the cross-tab (from Design view is easiest), then choose the Report|TopN/Sort Group Expert and select TopN, BottomN or Sort All, the number of records you want to see (the summarized field will already be selected) and choose OK.

14. Keep in mind that Seagate Crystal Reports 7 treats pages length-wise, not width-wise, so page numbers will only appear on pages going down the screen (left-hand most pages), not across the screen. There is currently no way to have page numbers on all pages of a cross-tab report that spans more than one page horizontally, unless a "mock" cross-tab is used.

15. When a cross-tab is desired in a section of the report that already has a formula, database field or text object in it, it is best to "Insert a Section Below" of the same type, and place the cross-tab in its own section. This way spacing problems can be avoided as the cross-tab "grows".

Contacting Crystal Decisions for Technical Support

We recommend that you refer to the product documentation and that you visit our Technical Support web site for more resources.

Self-serve Support:

http://support.crystaldecisions.com/

Email Support:

http://support.crystaldecisions.com/support/answers.asp

Telephone Support:

http://www.crystaldecisions.com/contact/support.asp