

Quick Report Wizard – Part I

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Technical Note 09-28

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Abstract

Reports represent one of the most important functions in data management. A Quick Report is the ideal way to offer your users the possibility of creating their own reports to extend the custom reporting capabilities of your application. This Technical Note revisits creating a custom interface for Quick Reports using 4D v11 SQL commands.

Part I of this Technical Note focuses on the interface and functionality of the Quick Report Wizard. Part II will focus on the implementation and programming of the sample database.

Introduction

You may ask what the purpose of recreating the interface of the Quick Report would be. There are several advantages of doing so. In particular, you can control the elements and their function as well as present your user with the appropriate information in the context of the report. Some users may feel intimidated by the prospect of building a report from scratch; in this case you may build some of the elements of the report and have them complete it. All the options available to a user in the 4D v11 SQL built-in Quick Report can be duplicated using the QR commands.

Types of Reports

There are essentially two types of Quick Reports; List Reports and Cross-Tab Reports. This Technical Note addresses both.

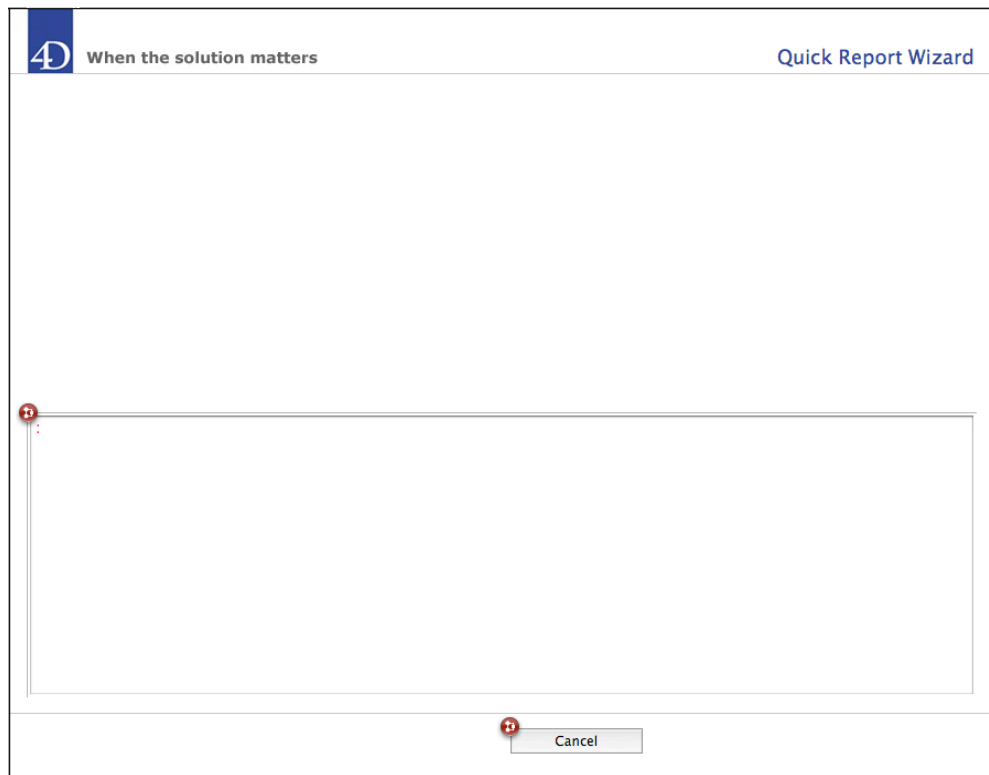
List Reports display records in a list with break levels where additional mathematical operations can be performed. Cross-Tab Reports display information as a two-dimensional table. You can display data from a data source as categories that are functions of two other data sources.

Quick Report Plug-in

In order to create a Quick Report interface we need to use the Report Plug-in Area. The functionality of this plug-in is similar to any other 4D v11 SQL plug-in. The main difference is that it is not an external plug-in; it has been integrated into 4D v11 SQL. As a result, there is no need to install it in the Plugins folder and removing it is not an option.

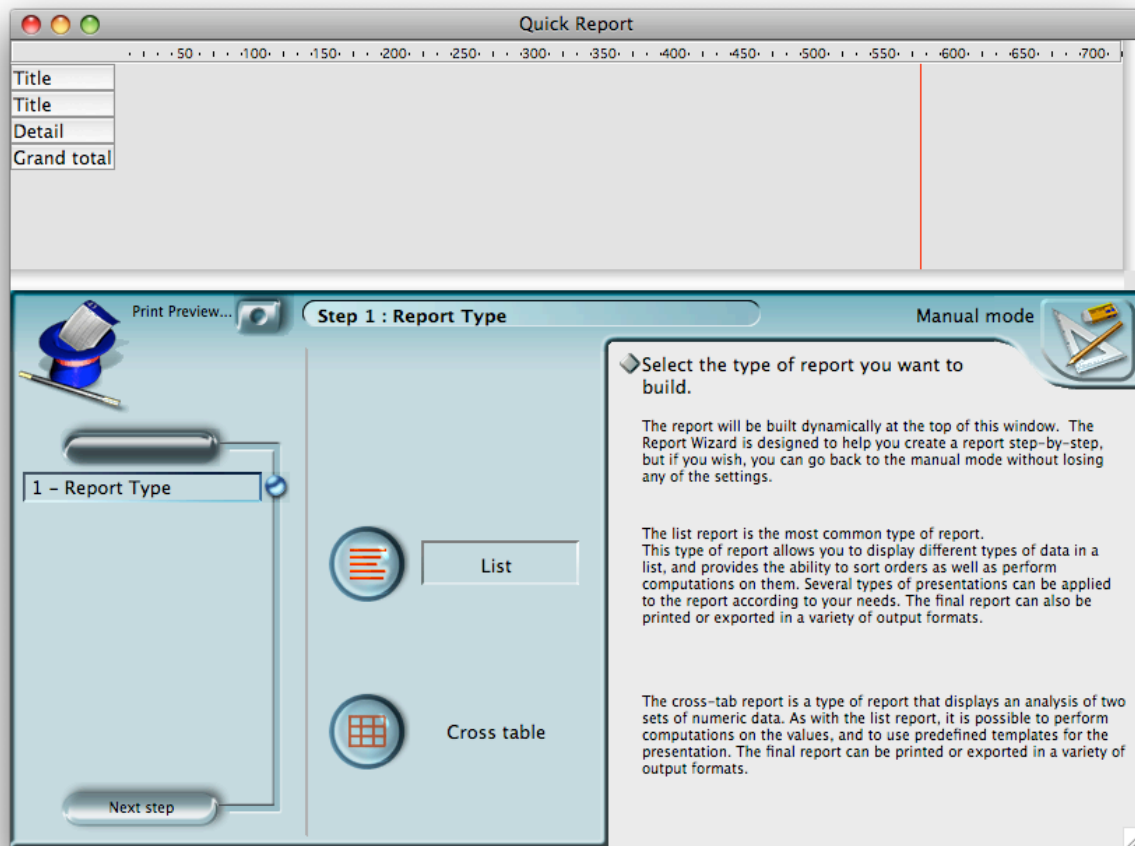
The Report Plug-in is similar to other 4D v11 SQL Plug-ins that have been integrated into 4D, such as Web Area or 4D Chart. To use the Report Plug-in, all you have to do is create a form and add the Report Plug-in. In this Technical Note,

the Report Plug-in is displayed using the command DIALOG do build the custom interface.



The Quick Report Environment

Selecting Quick Reports... from the Tools menu displays the Quick Report environment. The User has a choice to build the report by making decisions about the type of report, the data, the formatting, etc. This is referred to as the Manual mode. The other possibility is to select the Wizard and follow a number of steps to obtain similar results in a more structured approach. This Technical Note recreates the functionality of the Quick Report environment using the Wizard model. A series of steps guides the user to obtain the type of reporting they require.



Quick Report Commands

4D v11 SQL offers over 40 commands to programmatically create and control all the functions of a Quick Report. For more detailed information about these commands, you can consult the Quick Report section of the 4D v11 SQL Language Reference Manual or <http://www.4d.com/docs/V6U/V6U00039.HTM>.

This Technical Note makes use of these commands to duplicate and enhance the functionality of a Quick Report Generator.

List Reports in the Sample Database

The sample database included with this Technical Note allows you to create the two types of reports described previously. Let's examine the process for creating a List Report step by step. In addition, the commands and methods utilized are also described to give you a better idea of the process of building your own Quick Report Wizard.

When you start the Quick Report Wizard database, a single dialog contains all the interface elements necessary to create the report. The first screen allows you to select the type of report, the main table and the records you want to include in your report.

Quick Report Wizard

Select the type of report you want to print:

☒ **List Report**
To print a List Report only the fields that are going to be printed.

Company	Rank	Revenue (Millions)
Exxon Mobil	1	442,851
Wal-Mart Stores	2	405,607
Chevron	3	263,159
ConocoPhillips	4	230,764
General Electric	5	183,207

☐ **Cross-Tab Report**
To print a Crosstab Report, three sets of values need to be defined: the row, the column and one for computing the data.

	Jan	Feb	Total
Exxon	200	330	530
Chevron	150	100	250
Grand Total	350	430	780

For the selected table: [Clients]

☒ **All Records**

Report Layout Preview:

Title
Title
Detail
Grand total

Buttons: Cancel, Next

Let's start with the List Report as our choice for type. The table is Clients and the number of records is All Records (50 Clients). When we click Next, the first step in our process appears.

To define the type of report use the `QR SET REPORT KIND` command.

To define the table use the `QR SET TABLE` command.

Step 1: Select your fields and the sorting order

This is a crucial step in creating a List Report; you need to select the data to be used in generating your report. A list of the fields in the main table allows you to drag-and-drop the fields in the Quick Report Area. You can also display a contextual **Add** menu in the Quick Report Area to insert fields. All the fields for the selected table appear as choices. There may be cases where you do not

want to display all the fields. If that is the case, you can create a virtual structure to hide tables or fields.

When using the drag-and-drop option, the value can be determined using `DRAG AND DROP PROPERTIES` and detect where the object has been dropped using the `QR Get drop column` command. The result is a Longint.

If the number is negative, it indicates it was performed in an existing column; therefore, you need to use `QR GET INFO COLUMN` to retrieve its value and `QR SET INFOR COLUMN` to update it.

If the number is positive, it indicates the value was dropped in an empty column. You can use `QR INSERT COLUMN` to insert its value.

In addition to the main table, a drop down menu allows you to select ONE Table or MANY Tables with all their corresponding fields. You can use a ONE Table and use fields from MANY Tables. The Report Plug-in is able to detect the fact that you selected a Many field. 4D v11 SQL parses the Many fields, detects the deepest one (performs a `RELATE MANY SELECTION`) and runs the report based on that table.

When the solution matters Quick Report Wizard

Select your fields and the sorting order: List Report

You can insert, move, or replace your columns with fields or fomulas.

Fields

Drag-and-drop the following fields into your report or into the Sorting order area. Use the contextual menu to insert formulas.

- [Clients]State
- [Clients]Zip
- [Clients]Country
- [Clients]Phone
- [Clients]Fortune500_Rank
- [Clients]Fortune500_Year

Current table only

Sorting order

Drop those columns here that you wish to sort. Double-click on the name to undo the drop.

- [Clients]Fortune500_Rank

You can also move or hide your columns and rows.

	[Clients]Company_Nam	[Clients]Fortune500_Ran	[Clients]Revenue_inMillio
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			
[Clients]Fortune500_Rank changed			
Grand total			

1 Cancel Back Next

Step 2: Define the values inside your break levels

The following tags can be inserted inside a cell for break levels:

- #S** Used to insert the SUM calculation in your break cell,
- #N** Used to insert the MIN calculation in your break cell,
- #X** Used to insert the MAX calculation in your break cell,
- #A** Used to insert the AVERAGE calculation in your break cell,
- #C** Used to insert the COUNT calculation in your break cell.
- ##N** Used to insert the current value of the column whose number is N.

This tag does not work for picture values.

You can combine these tags in a unique sentence or use them on the same line.

The screenshot shows the 'Quick Report Wizard' dialog box, specifically the 'When the solution matters' step. The title bar includes a '4' icon and the text 'When the solution matters'. The main heading is 'Quick Report Wizard'. Below this, the instruction 'Define the values inside your break levels:' is followed by a 'List Report' link. A paragraph explains that users can define computations on break levels or grand total lines by selecting a cell and clicking an icon in the computation toolbar, or by embedding values using specific codes. A list of codes is provided: # (Value that generated the break level), ##z (Current value of the z th column, with example Ex: ##5 for column 5), ##S (Sum), ##A (Average), ##X (Max), ##C (Count), and ##N (Min). Another paragraph mentions a 'repeated value' button. Below this is a preview of a report table with columns: Title, Company_Name, Fortune500_Rank, and Revenue_inMillions. The rows include 'Detail', '[Clients]Fortune500_Rank changed', and 'Grand total'. The 'Grand total' row has a cell containing the code '##C'. At the bottom left, a red circle with the number '2' indicates the current step. At the bottom right are 'Cancel', 'Back', and 'Next' buttons.

4 When the solution matters Quick Report Wizard

Define the values inside your break levels: List Report

You can define a computation on each break level or grand total line by selecting the cell and clicking on the appropriate icon in the computation toolbar. You can also embed these values inside a cell. Embed values by writing a sentence that uses the following codes:

#	Value that generated the break level	##S	Sum	##X	Max
##z	Current value of the z th column	##A	Average	##C	Count
Ex: ##5	Current value for column 5	##N	Min		

You can also check the 'repeated value' button in order to repeat your values when printing the breaks.

	[Clients]Company_Nam	[Clients]Fortune500_Ran	[Clients]Revenue_inMillio
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			
[Clients]Fortune500_Rank changed			
Grand total	##C		

2 Cancel Back Next

Step 3: Define an action in your break levels

No action is defined in a break level by default. You may add a page break for a break level or add extra spaces.

Select the whole line for the desired break level and display the **Total spacing** dialog from the File or the contextual menu. This dialog allows you to specify an action for when the break is executed. Keep in mind the break does not execute if there's nothing to print.

You can also set the spacing using the `QR GET TOTAL SPACING` and `QR SET TOTAL SPACING` commands.

The screenshot shows the 'Quick Report Wizard' dialog box, specifically the 'Define an action in your break levels' step. The dialog has a title bar with a blue icon and the text 'When the solution matters'. The main area contains instructions and a list of break actions. A 'Break Action' input field is set to '0'. Below this is a preview of a report table with columns for Title, Company Name, Fortune500_Rank, and Revenue_inMillions. The table includes rows for Title, Detail, and Grand total. The bottom of the dialog has a red circle with the number '3' and buttons for 'Cancel', 'Back', and 'Next'.

4 When the solution matters Quick Report Wizard

Define an action in your break levels: List Report

You can define an action such as a form feed or re-print the titles after each break level.

Enter the following values to specify Break actions:

- No action: 0
- Break page: 32000
- Spacing of X points: X (from 1 up to 31999)

Break Action: 0 Get Action Set Action

Title	[Clients]Company_Nam	[Clients]Fortune500_Ran	[Clients]Revenue_inMillio
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			
[Clients]Fortune500_Rank changed			
Grand total			

3 Cancel Back Next

Step 4: Define a format for your cells

List reports without formatting may be acceptable in some circumstances. However, it is a better practice to format the data to improve legibility and understanding. 4D v11 SQL provides you with predefined formats for text, numerical, date and time values.

When defining your own formats you can use the #, 0, * and ^ characters. Each of these will be replaced by the value in your report. For more information about custom 4D formats please review Chapter 7 in the Design Reference , Fields and Active Objects, in the Display Formats section. This document is available at:

<http://4d.com/support/documentation.html>

When your format has been established for a column, each value for that column will be printed using that format in the detail and break levels as well.

For picture fields, check whether you are using the automatic width option and the type of formatting. When automatic width is selected, the width is based on the height of the image. If automatic width is deselected, the height is still calculated based on the height of the image, but the width does not change.

The screenshot shows the 'Quick Report Wizard' dialog box in 4D. The title bar says '4D When the solution matters' and 'Quick Report Wizard'. The main heading is 'Define a format for your cells:'. Below this, there is explanatory text about formatting. A table is displayed with columns for 'Title', 'Company_Name', 'Fortune500_Rank', and 'Revenue_inMillions'. The 'Revenue_inMillions' column is highlighted with a blue background and contains the format string '\$###,##0.00;- \$###,##0.00'. At the bottom, there are 'Cancel', 'Back', and 'Next' buttons. A red circle with the number '4' is in the bottom left corner.

Define a format for your cells:

The Quick Report needs to format your data.
If no format is chosen, it will use the default one in 4D. A format is defined for the whole column. You can use available formats that 4D provides or use your own for text and numerical values.

If you want to define a format for your texts or numerical values, you can use the #, 0,* or ^ characters to define them. The characters defined in your format will be replaced by one of the characters of the value to be printed. Be sure that you have enough characters in your format to print the whole value. The # character will print the character, if any, while the other characters will print the character, if any, or a 0 or a space or a * if there are no more characters available to be printed. Date, time and picture fields have pre-defined formats.

A format will be used for each value for this column, even if you do want to print it into another column when using the ##z defined in the previous step.

Title	[Clients]Company_Nam	[Clients]Fortune500_Ran	[Clients]Revenue_inMillion:
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			\$###,##0.00;- \$###,##0.00
[Clients]Fortune500_Rank changed			
Grand total	##C		

4

Cancel Back Next

Step 5: Define the style attributes for your cells

You can define the style attributes for each cell in your list report. The following attributes are available:

- **Font name:** You can use the `FONT LIST` command to retrieve a list of all the Fonts and Font numbers installed in your system. 4D v11 SQL requires the font number of the selected font.
- **Size:** The size must be between 1 and 128.
- **Bold, Italic and Underline:** Standard font properties.
- **Main Color:** Font color value.
- **Justification:** Left, centered, right or default justification from the system.
- **Background color:** Each cell can have a background and alternate background color. When an alternate background color is defined, the odd lines are printed using the background color and the even lines are printed using the alternate background color.

When the solution matters

Quick Report Wizard

Define the style attributes for your cells: List Report

Styles attributes can be defined for each cell.

You can define your own styles such as font name, size, bold, italic and underline attributes, main color, justification or background color.

The background color can be alternated.
The first color will be used when printing even lines while the alternate background color will be used for odd lines.

Title	[Clients]Company_Nam	[Clients]Fortune500_Ra	[Clients]Revenue_inMillion:
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			###,##0.00;-###,##0.00
[Clients]Fortune500_Rank changed			
Grand total	##C		

5

Cancel Back Next

Step 6: Define a border for your cells

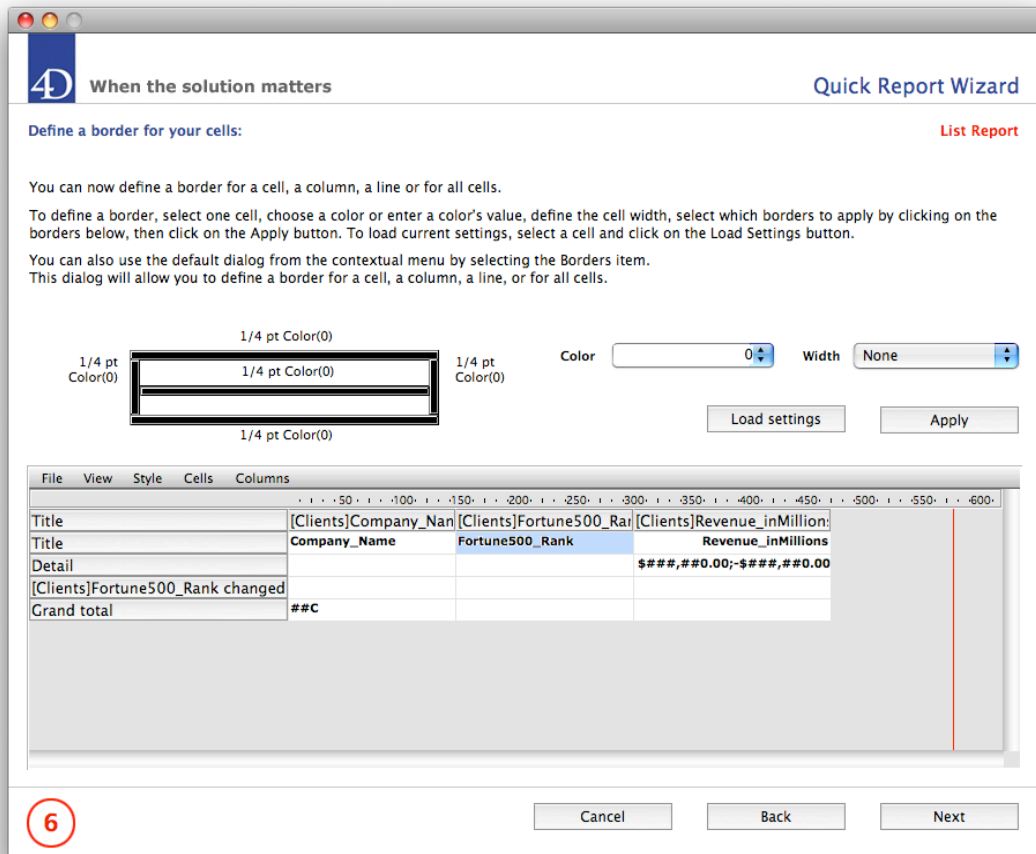
Selecting a cell a row or a column and displaying the contextual menu allows you to define a border.

You can also use the `QR SET BORDER` command. It requires the cell coordinates. The borders can be 2 points, 1 point, ½ point and ¼ point.

Select a cell and click on the **Load Settings** option. The command `QR GET BORDER` is used to get the values and display them around the borders. You can change the values and click on the **Apply** button when you're ready.

The List Report has five different types of borders:

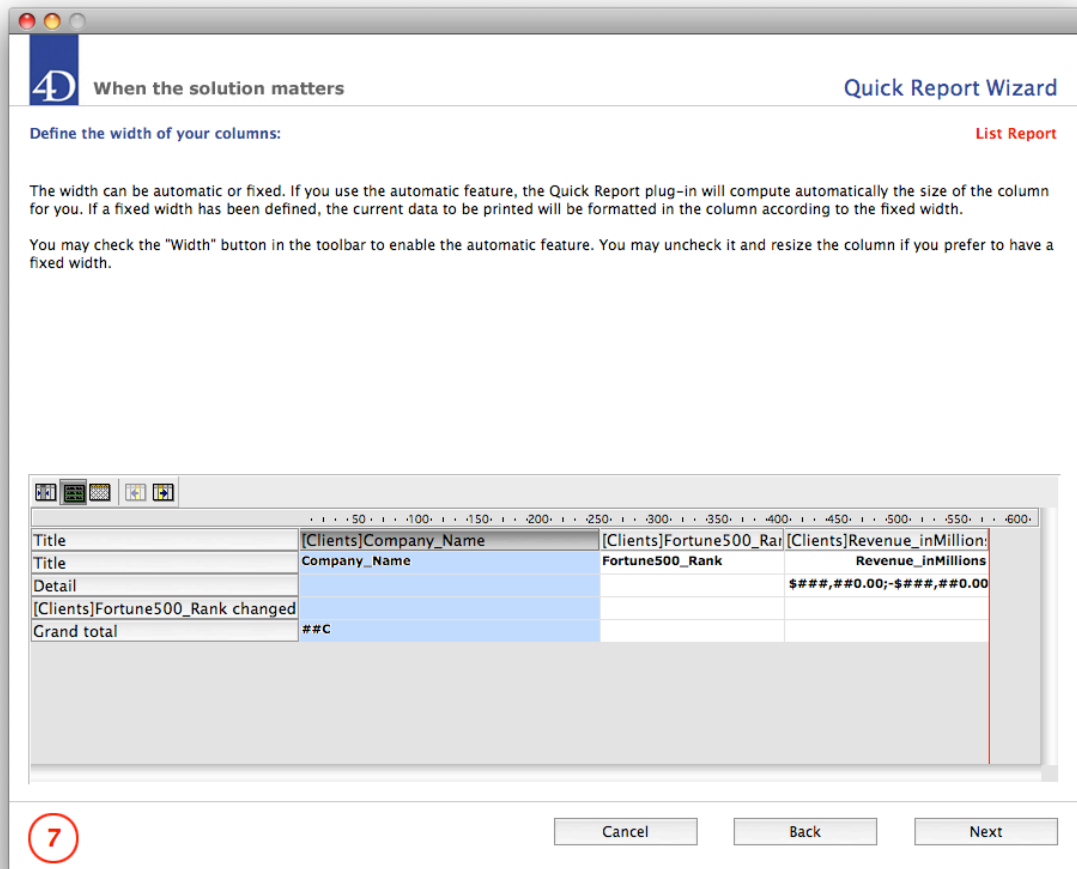
- Top border: This border appears at the top of the object. This border may overwrite the settings of the bottom border of the previous object in the same column.
- Left border: This border is displayed at the left of the cell. This border may overwrite the right border of the next object to the left on the same line.
- Right border: This border displays at the right of the object. This border may be overwritten by the left border of the object to its right on the same line.
- Bottom border: This border is printed at the bottom of the object. This border may be overwritten by the top border of the object defined on the next line in the same column.
- Center border: This border is printed between cells of the same type of object.



Step 7: Define the width of your columns

When establishing how wide your columns are going to print, you can select automatic width or select a fixed width. Automatic width may slow the printing of your List Report, since 4D v11 SQL needs to calculate the maximum width of each column. If you can define how wide your columns should be, especially with text values, it is recommended to do so instead of using automatic width.

In the toolbar you can check or uncheck the automatic width for the column. Programmatically, you can use `QR GET INFO COLUMN` or `QR SET INFO COLUMN` to obtain and set these values.



Step 8 - 9: Define the page header and footer for your report

Essentially the header and footer in a List Report operate the same exact way. Defining a header or footer means that each prints once for each new page printed.

The following information can be entered in the header or footer: Left side text, center text and right side text. For each of these sections, you can also define style attributes for the text.

You can also enter a picture to be printed in the header or footer.

When you want to print the page number you can use: #P. To print the current date you can use: #D. To print the current time you can use: #H.

You can define the header and footer using `QR SET HEADER AND FOOTER`. The `QR GET HEADER AND FOOTER` command allows you to read the header/footer settings. Break values for both commands are 1 for Header and 2 for Footer. You also need to use the `QR SET TEXT PROPERTY` and `QR GET TEXT PROPERTY` to set or read the text

properties of the text in the header or footer. These are the same commands you can use for each cell, except you cannot assign a color to a footer or a header. The break level numbers to be used are -4 for Header and -5 for Footer.

Quick Report Wizard

Define the page header of your report: List Report

You can define the page header by requesting the appropriate dialog in the 'File' menu, item 'Header and Footer' from the menu bar in the Quick Report area, or use the following panel:

Header

Left text: Font: Picture:

Center text:

Right text:

Height: Size: Style: ☒ Bold ☐ Italic ☐ Underline

On the left ☐ On the center ☒ On the right ☐

Preview:

Title	[Clients]Company_Name	[Clients]Fortune500_Rank	[Clients]Revenue_inMillions
Title	Company_Name	Fortune500_Rank	Revenue_inMillions
Detail			###,##0.00;-###,##0.00
[Clients]Fortune500_Rank changed			
Grand total	##C		

8

Step 10: Generate your Report

The options to generate your report are: print to a printer, preview or export to a text file, a 4D Chart or a HTML file. You can use a different template for your HTML export. You can use the following tags to define your HTML template:

```

.....
4D v11 SQL HTML Tags
.....

<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=
#4DQRCharSet-->">
</head>
<body bgcolor="#FFFFFF" text="#000000">

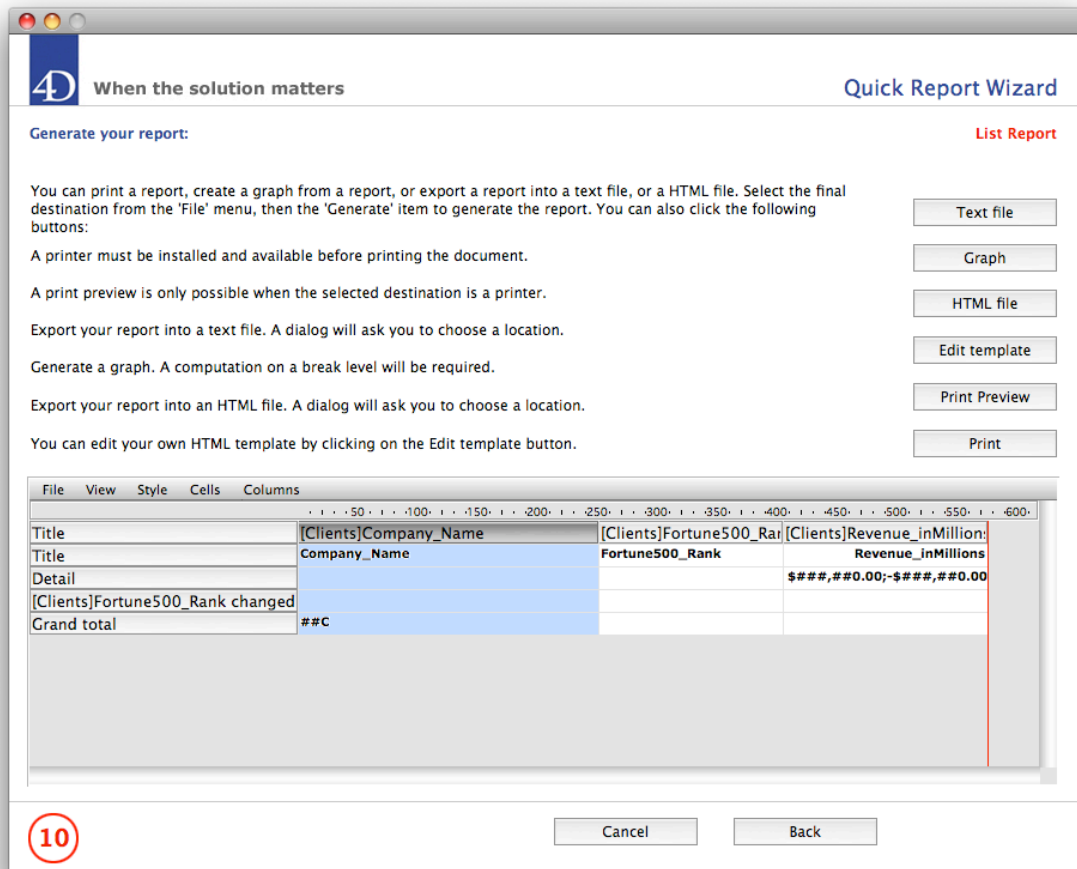
```

```

<table border=1>
  <!--#4DQRHeader-->
    <tr>
      <!--#4DQRCol-->
        <td bgcolor="<!--#4DQRBgcolor-->">
          <!--#4DQRFont-->
          <!--#4DQRFace-->
          <!--#4DQRData-->
          <!--/#4DQRFace-->
          <!--/#4DQRFont-->
        </td>
      <!--/#4DQRCol-->
    </tr>
  <!--/#4DQRHeader-->
  <!--#4DQRRow-->
    <tr>
      <!--#4DQRCol-->
        <td bgcolor="<!--#4DQRBgcolor-->">
          <!--#4DQRFont-->
          <!--#4DQRFace-->
          <!--#4DQRData-->
          <!--/#4DQRFace-->
          <!--/#4DQRFont-->
        </td>
      <!--/#4DQRCol-->
    </tr>
  <!--/#4DQRRow-->
</table>
</body>
</html>

```

You need to use the `QR SET HTML TEMPLATE` command to modify the template. From the Report plug-in, you cannot specify the destination file. Each time that you want to create an HTML file, a dialog asking you where to save the file is presented. However, you can still define by code where to write the file. This is a parameter that you need to provide when you use the `QR SET DESTINATION` command.



Cross-Tab Reports in the Sample Database

Now lets take a look at the process for creating a Cross-Tab Report step by step. A Cross-Tab report can be divided into 3 columns and 3 rows.

	Column 1	Column 2	Column 3
Row 1	A	B	C
Row 2	D	E	F
Row 3	G	H	I

For example cell A can be referred as Column 1 Row 1.

Some commands require a column number and a break level to designate the cell you want to apply the command to. If you want to use these commands, you need to provide the current column ID as the column number and the current row ID as the break level.

For example, in order to use the command `QR SET TOTALS DATA` with cell **G**, 1 should be provided as the column number, and 3 as the break level.

As with the previous report you need to select the type of report. In this case, the Crosstab Report. To define the report type, you can use the `QR SET REPORT KIND` command. You also need to select the Table. To define the current table, use the `QR SET TABLE` command.

A Cross-Tab Report requires 3 data sources. The first data source defines the columns, the second defines the rows and the third is use to compute the intersecting cells. For more information see Chapter 10 in the 4D v11 SQL Design Reference, Quick Reports, available at:

<http://4d.com/support/documentation.html>

4D When the solution matters Quick Report Wizard

Select the type of report you want to print:

☐ List Report
To print a List Report only the fields that are going to be printed.

Company	Rank	Revenue (Millions)
Exxon Mobil	1	442,851
Wal-Mart Stores	2	405,607
Chevron	3	263,159
ConocoPhillips	4	230,764
General Electric	5	183,207

☒ Cross-Tab Report
To print a Crosstab Report, three sets of values need to be defined: the row, the column and one for computing the data.

	Jan	Feb	Total
Exxon	200	330	530
Chevron	150	100	250
Grand Total	350	430	780

For the selected table: [Sales]

☒ All Records

Preview area showing a grid with columns: Title, Title, Detail, Grand total.

Step 1-2-3: Define a format for your cells

These are 3 different steps in the Demo Database to maximize the space. You need to define the data sources for the columns, rows and calculations. You can use the command `QR SET INFOR COLUMN` to define the sources. The command requires the column number, data source, title and properties as parameters. In the variables methods, we can use `QR GET INFO COLUMN` before `QR SET INFO COLUMN`. This call is made to maintain preferences that are not altered by the data source.

The screenshot shows the 'Quick Report Wizard' dialog box, Step 1: 'Select a field for columns:'. The dialog has a title bar with a logo and the text 'When the solution matters'. The main area is titled 'Select a field for columns:' and includes a 'Fields' section. This section contains a list box with the following items: '[Sales]Tracking_No', '[Sales]Sales_ID', '[Sales]Client_ID', '[Sales]Sales_Amount', '[Sales]Sales_Date', and '[Sales]Invoice_No'. Below the list box is a button labeled 'Current table and related fields'. To the right of the list box is a preview table with the following structure:

	Column 1	Column 2	Total
Line 1			
Line 2			
Grand Total			

Below the list box is a text box labeled 'Drop your choice here:' containing the text '[Sales]Sales_Date'. At the bottom of the dialog, there is a red circle with the number '1' and three buttons: 'Cancel', 'Back', and 'Next'.

Step 4: Select a computation for Data Source cell

4D v11 SQL parses each record and tries to resolve expressions defined for columns, rows and data sources. Internal arrays are initialized and new values added to these arrays. Values already present in the arrays only update the Data source. 4D v11 SQL checks the type of calculation defined for the Data Source cell and apply it to each occurrence. If there is nothing to be printed then the cell remains empty. The choices for calculations are Sum, Count, Min, Max and Average; incidentally, these are only available if the type of value defined for the Data Source is compatible with the calculation.

4D When the solution matters Quick Report Wizard

Select a computation for Data Source cell: Crosstab Report

Computation

The field previously defined in the Data area will be used to perform these computations.

The Data Source cell data is the intersection cell between a column and a line.
You need to define a data source and at least one computation for this area.
If you do not provide a computation or nothing can be computed, the cell will be empty.

	Column 1	Column 2	Total
Line 1			
Line 2			
Grand Total			

Select the defined cell and choose the computations you want to perform from the toolbar or from the contextual menu.

File View Style Cells Columns

	[Sales]Sales_Date	Total
[Clients]Company_Name	[Sales]Sales_Amount	Σ Sum
Grand Total	Σ Sum	Σ Sum

4 Cancel Back Next

Step 5: Select a computation for the Total Column:

A Cross-Tab report can have a Total column defined by cells C and F. It is not printed if no calculation has been defined for Cell F. Cell C is used for the title of the column and F for the calculation.

Values for this column are not calculated based on the values for cell E but from the data itself. This means that if you perform an average in Cells E and F, you might think that the value for F is not correct; it's not an average on the values that are printed in E. Values in F are computed from all values defined in each record of the current selection.

You can use the `QR SET TOTALS DATA` command to define a title of the contents of this column.

The screenshot shows the 'Quick Report Wizard' dialog box, specifically Step 5: 'Select a computation for the Total column:'. The window has a title bar with standard macOS window controls and a logo. The main area is titled 'When the solution matters' and 'Quick Report Wizard'. Below the title, it says 'Select the a computation for the Total column:' and 'Crosstab Report'.

The 'Computation' section contains the following text: 'The field defined as data source will be used to perform these computations. Total is the far right column. This column will not be printed if no calculation will be defined'. Below this text is a table with three columns: 'Column 1', 'Column 2', and 'Total'. The 'Total' column is shaded with diagonal lines. The rows are 'Line 1', 'Line 2', and 'Grand Total'.

Below the table, there is a text input field labeled 'Enter a new title for Total:' with the value 'Total' entered.

Below the input field, there is a text box with the instruction: 'Select the defined cell and choose the computations you want to perform from the toolbar or from the contextual menu.'

At the bottom of the dialog, there is a preview of the report. The preview shows a table with three columns: '[Sales]Sales_Date', '[Sales]Sales_Amount', and 'Total'. The 'Total' column is shaded with diagonal lines. The rows are '[Clients]Company_Name', 'Grand Total', and 'Sum'. The 'Sum' row is shaded with diagonal lines.

The bottom of the dialog has a red circle with the number '5' and three buttons: 'Cancel', 'Back', and 'Next'.

Step 6: Select a computation for the Grand Total line

A Cross-Tab report can have a Grand Total line defined by cells G, H and I. It is not printed if no calculation has been defined for Cell H. Cell I is not printed if no calculation is defined by cell F. Cell G is used to insert a label for the Grand Total line. Cell H contains the summary calculation for each column. The way the Grand Total line is calculated is similar to the Total column. Values are calculated from the data and not from the results from cell E. This also applies to cells H and I.

4 When the solution matters Quick Report Wizard

Select a computation for the Grand Total line: Crosstab Report

Computation

The field defined as data source will be used to perform these computations.

Grand Total is the last line that will be printed. It will contain calculations per column.
This line will not be printed if no calculation will be defined.
Calculations between Total and Grand Total will not be printed if no calculation has been defined for Total and Grand Total

Enter a title for Grand Total:

	Column 1	Column 2	Total
Line 1			
Line 2			
Grand Total			

Select the defined cell and choose the computations you want to perform from the toolbar or from the contextual menu.

File View Style Cells Columns

	[Sales]Sales_Date	Total
[Clients]Company_Name	[Sales]Sales_Amount Σ Sum	Sum
Grand Total	Σ Sum	Σ Sum

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Step 7: Select the sorting order

To sort the columns and rows of the Cross-Tab report, you can use the `QR SET SORT` command. It requires an array with column numbers to be sorted. To sort columns pass the value 1. To sort rows pass the value 2. Pass 1 for ascending order and -1 for descending order.

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Select the sorting order: Crosstab Report

Sorting order

You can now define sorting orders for rows and columns. Click on the following buttons to choose the

Rows:

- ☐ Do not sort
- ☒ Sort in ascending order
- ☐ Sort in descending order

Columns:

- ☐ Do not sort
- ☒ Sort in ascending order
- ☐ Sort in descending order

	[Sales]Sales_Date	Total
[Clients]Company_Name	[Sales]Sales_Amount Σ Sum	Sum
Grand Total	Σ Sum	Σ Sum

7 Cancel Back Next

Step 8: Formatting your data

You can use display formats as you would with a List report. Use the command `QR GET INFO COLUMN` to retrieve the current format and `QR SET INFO COLUMN` to assign a new format.

Reference numbers are : 1 for Columns (Cell B), 2 for Rows (Cell D) and 3 for Data Sources (Cell E).

To define a format for your text or numerical values, you can use the characters #, 0, *, or ^. Each character defined in your display format is replaced by one of the characters of the value in the report. Be sure you have enough characters in your format to display the value in its entirety. The # character displays the value's character, if any, while the other characters (0, *, or ^) display the value's character, if any, or a 0, a space, or a * if there are no more characters in the value to be displayed. Date, time and picture fields have pre-defined formats. You cannot create your own format for these types of data.

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Formatting your data: Crosstab Report

Define the format of your cells

You can now define default formats from the contextual menu or enter your custom format below

Rows: applied for row titles

Columns: applied for column titles

Data source: applied for values displayed in cells, grand total and total

The Quick Report needs to format your data. If no format is chosen, it will use the default one in 4D.
A format is defined for the whole column. You can use available formats that 4D provides or use your own for text and numerical values.

[Sales]Sales_Date	Total
[Clients]Company_Name	[Sales]Sales_Amount
Σ Sum	Σ Sum
Grand Total	Σ Sum

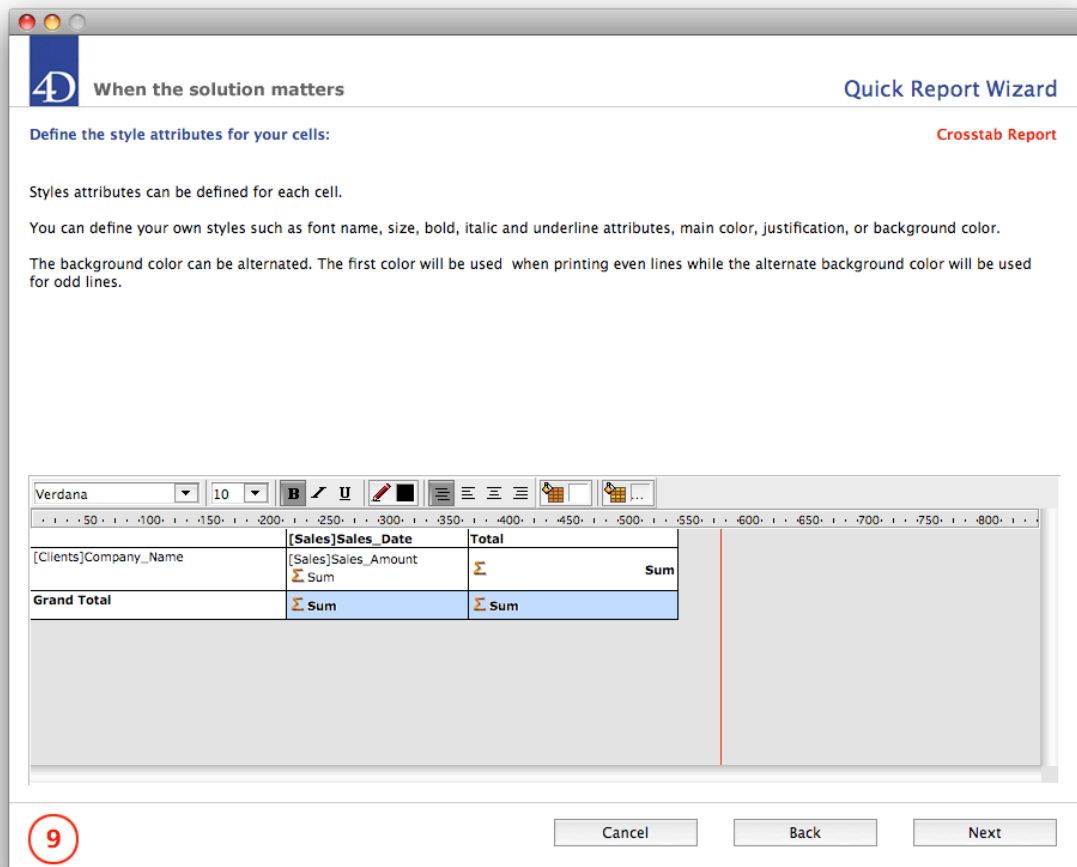
8 Cancel Back Next

Step 9: Define the style attributes for your cells

You can define the style attributes for each cell in your Cross-Tab report, similar to the List Report. The following attributes are available:

- **Font name:** You can use the `FONT LIST` command to retrieve a list of all the Fonts and Font numbers installed in your system. 4D v11 SQL requires the font number of the selected font.
- **Size:** The size must be between 1 and 128.
- **Bold, Italic and Underline:** Standard font properties.
- **Main Color:** Font color value.
- **Justification:** Left, centered, right or default justification from the system.
- **Background color:** Each cell can have a background and alternate background color. When an alternate background color is defined, the odd lines are printed using the background color and the even lines are printed using the alternate background color.

You cannot assign hits directly to cell I. Settings defined for cell H are automatically applied to cell I.



Step 10: Define a border for your cells

Select a cell, a row or a column to display the border dialog from the contextual menu. You can use the QR SET BORDER command to define a border. You need to pass the cell coordinates to apply the border attributes. The border thickness can be 2 points, 1 points, ½ point, ¼ point.

Select a cell and click on the **Load Settings** option. The command `QR GET BORDER` is used to get the values and display them around the borders. You can change the values and click on the **Apply** button when you're ready.

The Cross-Tab Report has five different types of borders:

- Top border: This border appears at the top of the object. This border may overwrite the settings of the bottom border of the previous object in the same column.
- Left border: This border is displayed at the left of the cell. This border may overwrite the right border of the next object to the left on the same line.
- Right border: This border is displayed at the right of the object. This border may be overwritten by the left border of the object to its right on the same line.
- Horizontal Center border: This border is printed horizontally between cells of the same type of cell.
- Vertical Center border: This border is printed vertically between cells of the same type of cell.

You can define a border for all of these cells.

A Cell in the Quick Report area may, in fact, turn into many cells when the report is printed. For example, we know that when printed:

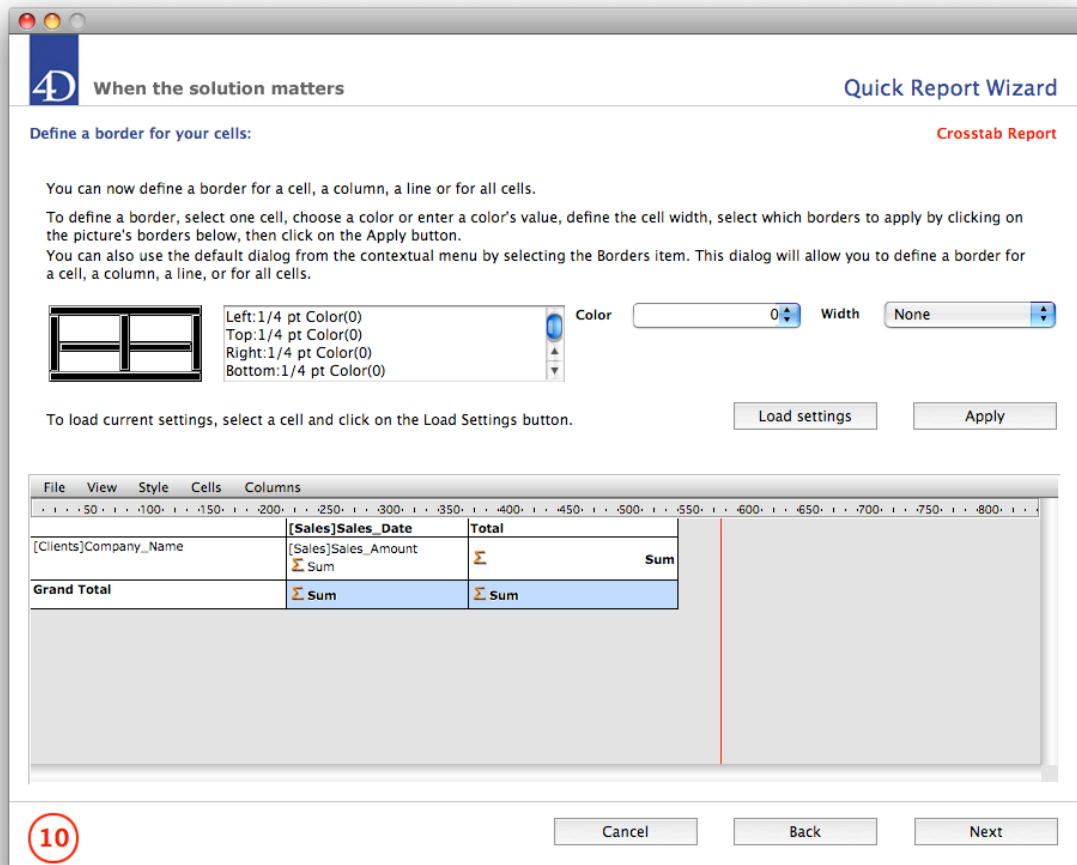
- Cell B is in fact represented by many columns titles. The number of columns depend on the number of values computed for column titles.
- Cell D is also be printed into many row titles. The number of rows depend on the number of values defined for Cell D.
- There are many Cell E that will be printed. That would be a matrix based on the number of items defined for Cell B and D.
- Cell F is similar to Cell D, i.e. many rows defined within Cell F.
- Cell H is similar to Cell B.

When assigning a border to each cell, we are just going to assign a border to this type of cell. It is useless to define a center border for Cell A, C or E since they are printed once.

But Cell B, E and H may contain many columns. It in this case that we can define and use a vertical centered border to separate each column within these cells, while Top, Left, Right and Bottom borders define the limits of each cells.

Thus, Cell D, E and F may contain many rows. We can define and use an horizontal centered border to separate each rows within these cells, while Top, Left, Right and Bottom borders define the limits of each cells.

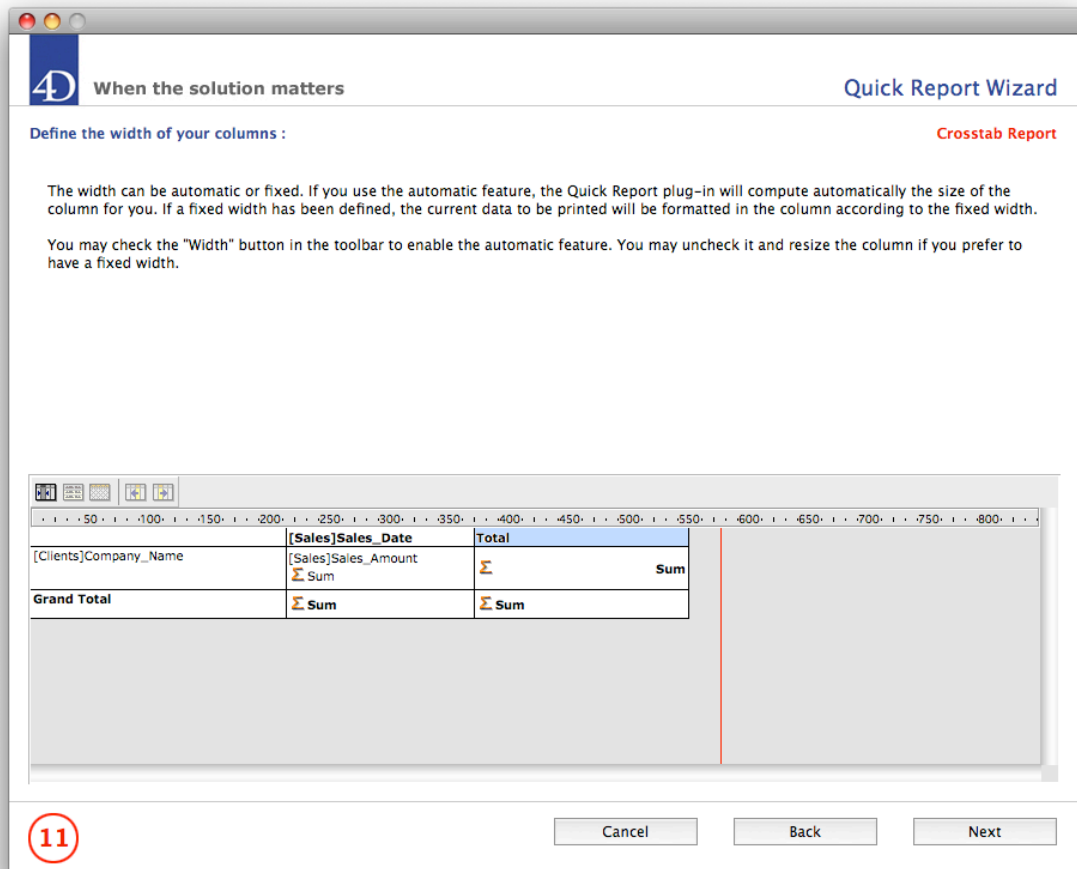
You cannot define a border for Cell I. This cell uses the same settings defined for Cell H.



Step 11: Define the width of your columns

When establishing how wide your columns are going to print, you can select automatic width or select a fixed width. Automatic width may slow the printing of your List Report, since 4D v11 SQL needs to calculate the maximum width of each column. If you can define how wide your columns should be, especially with text values, it is recommended to do so instead of using automatic width.

In the toolbar you can check or uncheck the automatic width for the column. Programmatically, you can use `QR GET INFO COLUMN` or `QR SET INFO COLUMN` to obtain and set these values. Column numbers are 1, 2 or 3.



Step 12 - 13: Define the page header and footer for your report

Essentially the header and footer in a Cross-Tab Report operate the same exact way. Defining a header or footer means that each prints once for each new page printed.

The following information can be entered in the header or footer: Left side text, center text and right side text. For each of these sections, you can also define style attributes for the text.

You can also enter a picture that is printed in the header or footer.

When you want to print the page number you can use: #P. To print the current date you can use: #D. To print the current time you can use: #H.

You can define the header and footer using `QR SET HEADER AND FOOTER`. The `QR GET HEADER AND FOOTER` command allows you to read the header/footer settings. Break values for both commands are 1 for Header and 2 for Footer. You also need to use the `QR SET TEXT PROPERTY` and `QR GET TEXT PROPERTY` to set or read the text

properties of the text in the header or footer. These are the same commands you can use for each cell, except you cannot assign a color to a footer or a header. The break level numbers to be used are -4 for Header and -5 for Footer.

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Define the page header of your report: Crosstab Report

You can define the page header by requesting the appropriate dialog in the 'File' menu, item 'Header and Footer' from the menu bar in the Quick Report area, or use the following panel:

Header

Left text: Font: Picture:

Center text:

Right text:

Height: ☐ On the left

Size: ☒ On the center

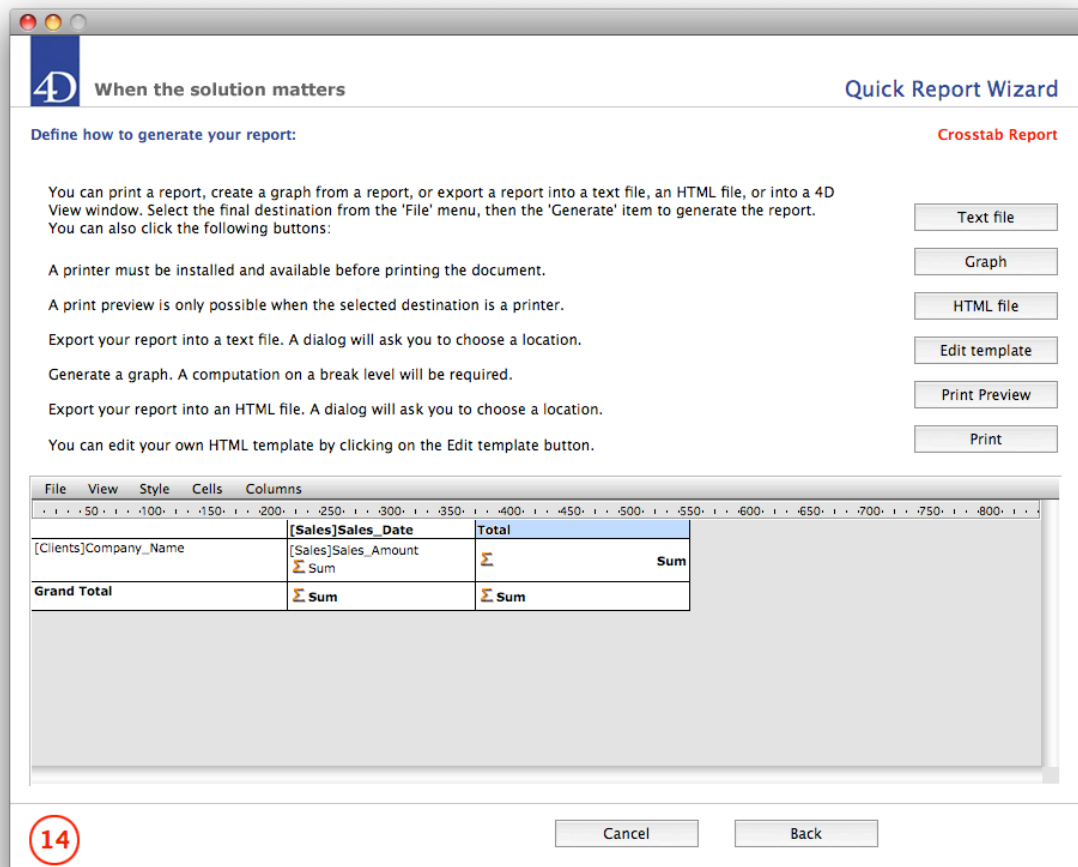
Style: ☒ Bold ☐ Italic ☐ Underline ☐ On the right

	[Sales]Sales_Date	Total
[Clients]Company_Name	[Sales]Sales_Amount	Sum
Grand Total	Sum	Sum

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Step 14: Generate your Report

This step is similar to generating your List Report. The options to generate your report are: print to a printer, preview or export to a text file, a 4D Chart or a HTML file. You can use a different template for your HTML export. For more information about Editing the HTML template, see the List Reports Step 10.



Conclusion

This Technical Note creates a Quick Report Wizard using the built-in 4D v11SQL Quick Report commands. Quick Reports can be used to provide your users with a powerful reporting tool that can complement the custom reports in your application. By replacing the Quick Report capability in 4D v11 SQL Release 4 with a custom Quick Report Wizard, you can accomplish a higher level of control as well as minimize the complexity of presenting information in a number of different formats and styles.