ComponentOne

Olap for WinForms

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Corporate Headquarters ComponentOne LLC 201 South Highland Avenue 3rd Floor Pittsburgh, PA 15206 · USA

Internet: <u>info@ComponentOne.com</u>

Web site: <u>http://www.componentone.com</u>

Sales

E-mail: sales@componentone.com Telephone: 1.800.858.2739 or 1.412.681.4343 (Pittsburgh, PA USA Office)

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ComponentOne Olap for WinForms Overview

Create grids, charts, and ad-hoc reports that can be saved, exported, or printed in no time with **ComponentOne Olap for WinForms**. Use a single control, C1OlapPage, which provides a complete OLAP user interface, or customize your application with the C1OlapPanel, C1OlapGrid, C1OlapChart, and C1OlapPrintDocument controls.

Olap for WinForms Quick Start

This section presents code walkthroughs that start with the simplest **C1Olap** application and progress to introduce commonly used features.

Creating OLAP Views

Run the application and you will see an interface similar to the one in Microsoft Excel. Drag the "Country" field to the "Row Fields" list and "ExtendedPrice" to the "Value Fields" list, and you will see a summary of prices charged by country as shown below:

Porm1					
💕 🛃 🕅 Grid 🔹 🔀 Chart 👻 Repo	rt •	,			
Choose fields to add to table:		Olap Grid Olap C	hart Raw Data		
C Address	^	A	ExtendedPrice	Total	^ ^
City	Е	Argentina	8,119	8,119	
✓ Country		Austria	128,004	128,004	
CustomeriD		Belgium	33,825	33,825	
CustomerName		Brazil	106,926	106,926	
Discount		Canada	50,196	50,196	
ExtendedPrice	Ŧ	Denmark	32,661	32,661	-
Drag fields between areas below:		Finland	18,810	18,810	
V Eilter Column Eieldr		France	81,358	81,358	
Column rieus	_	Germany	230,285	230,285	
		Ireland	49,980	49,980	
		Italy	15,770	15,770	
		Mexico	23,582	23,582	
Row Fields E Values	_	Norway	5,735	5,735	
Country ExtendedPrice		Poland	3,532	3,532	
		Portugal	11,472	11,472	
		Spain	17,983	17,983	
		Cuadaa	54.405	54 405	•
	_				2,155 Records:

Click the "Olap Chart" tab and you will see the same data in chart format, showing that the main customers are the US, Germany, and Austria.

Now drag the "Salesperson" field into the "Column Fields" list to see a new summary, this time of sales per country and per sales person. If you still have the chart tab selected, you should be looking at a chart similar to the previous one, except this time the bars are split to show how much was sold by each salesperson:



Move the mouse over the chart and you will see tooltips that show the name of the salesperson and the amount sold when you hover over the chart elements.

Now create a new view by swapping the "Salesperson" and "Country" fields by dragging them to the opposite lists. This will create a new chart that emphasizes salesperson instead of country:



The chart shows that Margaret Peacock was the top salesperson in the period being analyzed, followed closely by Janet Leverling and Nancy Davolio.

Creating OLAP Reports

This is an interesting chart, so let's create a report that we can e-mail to other people in the company. Click the "Report" button at the top of the page and you will see a preview showing the data on the first page and the chart on the second page. In the Print Preview dialog box, click the "Page Setup" button and change the page orientation to landscape. The report should look like this:



Now you can print the report or click the "Export to PDF" button to generate a PDF file that you can send to others or post on the web.

Close the preview window and save this view by clicking the "Save" button. You can create and save as many views as you like.

Copying Data to Excel

The built-in reports are convenient, but in some cases you may want to copy some or all the data to Excel so you can perform additional analyses including regressions, create customized reports by annotating the data or adding custom charts.

The C1OlapGrid supports the clipboard by default, so you can simply select the data you are interested in, press Control + C, then paste it directly into an Excel sheet. The row and column headers are included with the data.

Summarizing Data

Before we move on to the next example, let's create a new view to illustrate how you can easily summarize data in different ways.

First, uncheck the check box next to the **County** field to remove countries from the view.

This time, drag the "Salesperson" field to the "Row Fields" list and the "OrderDate" field to the "Column Fields" list. The resulting view contains one column for each day when an order was placed. This is not very useful information, because there are too many columns to show any trends clearly. We would like to summarize the data by month or year instead.

One way to do this would be to modify the source data, either by creating a new query in SQL or by using LINQ. Both of these techniques will be described in later sections. Another way is simply to modify the parameters of the "OrderDate" field. To do this, right-click the "OrderDate" field and click **Field Settings**. Then select the "Format" tab in the dialog box, choose the "Custom" format, enter "yyyy", and click **OK**.

The dates are now formatted and summarized by year, and the OLAP chart looks like this:



If you wanted to check how sales are placed by month or weekday, you could simply change the format to "MMMM" or "dddd".

Drilling Down on the Data

As we mentioned before, each cell in the OLAP grid represents a summary of several records in the data source. You can see the underlying records behind each cell in the OLAP grid by right-clicking it with the mouse.

To see this, click the "Olap Grid" tab and right-click the first cell on the grid, the one that represents Andrew Fuller's sales in 1996. You will see another grid showing the 40 records that were used to compute the total displayed in the Olap grid:

🖳 Form1									
💕 🖬 🔳	Grid 🔹 🔀 Chart 🔹 🗓 Re	port -							
Choose field	is to add to table:		Olap Gri	d Olap Cha	art Raw Data				
Custome	erName	^			1996		1997	1998	3 Т
Discoun	t		Andrew	Fuller	21	1,757	70,444		74,337
Ext	Detail View: 40 records						00	x	1,103
Ø Orc	Address	City		Country	CustomerID	Customer	Name	*	6,563
Ord	24, place Kléber	Strasb	ourg	France	BLONP	Blondesd	dsl père et fils		8,590
Pos	24, place Kléber	Strasb	ourg	France	BLONP	Blondesd	dsl père et fils	E	4,136
	Heerstr. 22	Leipzi	9	Germany	MORGK	Morgenst	tern Gesundkost		4,144
Drag fie	Heerstr. 22	Leipzi	9	Germany	MORGK	Morgenst	tern Gesundkost		8,195
V Filte	Berguvsvägen 8	Luleå		Sweden	BERGS	Berglund	s snabbköp		8,805
	Berguvsvägen 8	Luleå		Sweden	BERGS	Berglund	s snabbköp		9,692
	Berguvsvägen 8	Luleå		Sweden	BERGS	Berglund	s snabbköp		0,624
	59 rue de l'Abbaye	Reims		France	VINET	Vins et al	cools Chevalier		
	Via Ludovico il Moro 22	Berga	mo	Italy	MAGAA	Magazzin	i Alimentari Riuniti		
Row	Via Ludovico il Moro 22	Berga	mo	Italy	MAGAA	Magazzin	i Alimentari Riuniti		
Salespe	89 Chiaroscuro Rd.	Portla	nd	USA	LONEP	Lonesom	e Pine Restaurant	-	
								E. I	
			4					-	•
									2,155 Records .:

Key Features

The following are some of the main features of **ComponentOne Olap for WinForms** that you may find useful:

• Olap for WinForms provides ultimate flexibility for building OLAP applications

Drop one control, C1OlapPage, on your form and set the data source to start displaying your data in a grid or chart–it's that easy! But suppose you need to show multiple charts or grids. No problem. **Olap for WinForms** also provides the C1OlapPanel, C1OlapChart, and C1OlapGrid controls to give you the flexibility you need. See the <u>C1Olap Architecture</u> (page 9) for an overview of each of the controls.

• Choose from five chart types and twenty-two palette options to enhance your charts C1OlapChart provides the most common chart types to display your information, including: Bar, Column, Area, Line, and Scatter. You can select from twenty-two palette options that define the colors of the chart and legend items. See <u>Using the Chart Menu</u> (page 13) to view all of the chart types and palettes.

• **Print, preview, or export data to PDF** You can create and preview reports containing data, grids, or charts and then print or export them to PDF. See <u>Creating OLAP Reports</u> (page 3) and the <u>Olap for WinForms Task-Based Help</u> (page 24) for more information.

Remove a field or data in a field from the grid or chart view You can easily filter a field so it doesn't appear in your grid or chart view. Simply drag the field to the Filter area of a C1OlapPanel; see <u>Removing a Field from a Data View</u> (page 24) for more information. If you wan

area of a C1OlapPanel; see <u>Removing a Field from a Data View</u> (page 24) for more information. If you want to filter on data in a field, for example, if you want to find all employees whose last names start with "Sim", you can use the **Field Settings** dialog box. See <u>Filtering Data in a Field</u> for detailed steps.

Display information in a grid or chart view
 Olap for WinForms provides a C1OlapGrid and C1OlapChart control to display data. These controls are built into the C1OlapPage control, but they are also available as separate controls so you can customize your OLAP application. See the <u>C1Olap Architecture</u> (page 9) for an overview of each of the controls.

Decide how information is displayed at run time Use the C1OlapPanel to determine which fields of your data source should be used to display your data and how. Drag fields between the lower areas of the C1OlapPanel to create a filter, column headers, row headers, or get the sum of values from a column or row. For more information, see <u>C1OlapPanel</u> (page 10).

What is C1Olap

ComponentOne Olap for WinForms (C1Olap) is a suite of .NET controls that provide analytical processing features similar to those found in Microsoft Excel's Pivot Tables and Pivot Charts.

C1Olap takes raw data in any format and provides an easy-to-use interface so users can quickly and intuitively create summaries that display the data in different ways, uncovering trends and providing valuable insights interactively. As the user modifies the way in which he wants to see the data, **C1Olap** instantly provides grids, charts, and reports that can be saved, exported, or printed.

Introduction to Olap

OLAP means "online analytical processing". It refers to technologies that enable the dynamic visualization and analysis of data.

Typical OLAP tools include "OLAP cubes" and pivot tables such as the ones provided by Microsoft Excel. These tools take large sets of data and summarize it by grouping records based on a set of criteria. For example, an OLAP cube might summarize sales data grouping it by product, region, and period. In this case, each grid cell would display the total sales for a particular product, in a particular region, and for a specific period. This cell would normally represent data from several records in the original data source.

OLAP tools allow users to redefine these grouping criteria dynamically (on-line), making it easy to perform ad-hoc analysis on the data and discover hidden patterns.

Date	Product	Region	Sales
Oct 2007	Product A	North	12
Oct 2007	Product B	North	15
Oct 2007	Product C	South	4
Oct 2007	Product A	South	3
Nov 2007	Product A	South	6
Nov 2007	Product C	North	8
Nov 2007	Product A	North	10
Nov 2007	Product B	North	3

For example, consider the following table:

Now suppose you were asked to analyze this data and answer questions such as:

- Are sales going up or down?
- Which products are most important to the company?
- Which products are most popular in each region?

In order to answer these simple questions, you would have to summarize the data to obtain tables such as these:

Sales by Date and by Produ-

Date	Product A	Product B	Product C	Total
Oct 2007	15	15	4	34
Nov 2007	16	3	8	27
Total	31	18	12	61

Product	North	South	Total
Product A	22	9	31
Product B	18		18
Product C	8	4	12
Total	48	13	61

Sales by Product and by Region

Each cell in the summary tables represents several records in the original data source, where one or more values fields are summarized (sum of sales in this case) and categorized based on the values of other fields (date, product, or region in this case).

This can be done easily in a spreadsheet, but the work is tedious, repetitive, and error-prone. Even if you wrote a custom application to summarize the data, you would probably have to spend a lot of time maintaining it to add new views, and users would be constrained in their analyses to the views that you implemented.

OLAP tools allow users to define the views they want interactively, in ad-hoc fashion. They can use predefined views or create and save new ones. Any changes to the underlying data are reflected automatically in the views, and users can create and share reports showing these views. In short, OLAP is a tool that provides flexible and efficient data analysis.

C1Olap Architecture

C1Olap includes the following controls:

C1OlapPage

The C1OlapPage control is the easiest way to develop OLAP applications quickly and easily. It provides a complete OLAP user interface built using the other controls in **C1Olap**. The C1OlapPage object model exposes the inner controls, so you can easily customize it by adding or remove interface elements. If you want more extensive customization, the source code is included and you can use it as a basis for your own implementation.

The diagram below shows how the C1OlapPage is organized:



In Visual Studio, the control looks like this:

ToolStrip	C10Ia	pChart		
🚰 🔒 🔲 Grid 👻 🕂 Chart 👻 🔚 Report 👻]
Choose fields to add to table:	Olap Grid Olap	Chart Raw Data		Raw Data
CategoryName		CategorySales	Total	lable
CategorySales	Beverages	104,738	104,738	
	Condiments	50,953	50,953	
	Confections	78,129	78,129	
	Dairy Products	117,797	117,797	C10lanGrid
	Grains/Cereals	52,902	52,902	Croidpond
	Meat/Poultry	80,160	80,160	
Drag fields between areas below:	Produce	47,492	47,492	
✓ Filter	Seafood	62,435	62,435	
	Total	594,605	594,605	
Row Fields Σ Values				
CategoryName CategorySales			.;;	
Status State				

C10lapPanel

The C1OlapPanel control is the core of the **C1Olap** product. It has a **DataSource** property that takes raw data as input, and an **OlapTable** property that provides custom views summarizing the data according to criteria provided by the user. The **OlapTable** is a regular **DataTable** object that can be used as a data source for any regular control.

The C1OlapPanel also provides the familiar, Excel-like drag and drop interface that allows users to define custom views of the data. The control displays a list containing all the fields in the data source, and users can drag the fields to lists that represent the row and column dimensions of the output table, the values summarized in the output data cells, and the fields used for filtering the data.

At the core of the C1OlapPanel control, there is a C1OlapEngine object that is responsible for summarizing the raw data according to criteria selected by the user. These criteria are represented by C1OlapField objects, which contain a connection to a specific column in the source data, filter criteria, formatting and summary options. The user creates custom views by dragging **C1OlapField** objects from the source **Fields** list to one of four auxiliary lists: the **RowFields**, **ColumnFields**, **ValueFields**, and **FilterFields** lists. Fields can be customized using a context menu.

Notice that the **C1Olap** architecture is open. The C1OlapPanel takes any regular collection as a **DataSource**, including data tables, generic lists, and LINQ enumerations; it then summarizes the data and produces a

regular **DataTable** as output. **C1Olap** includes two custom controls that are optimized for displaying the OLAP data, the C1OlapGrid and C1OlapChart, but you could use any other control as well.

The C1OlapPanel looks like this:

Drag fields between areas t	below:
🝸 Filter	Column Fields
IIII Daw Galda	∑ \/shuas
How Fields	Z values

C1OlapPanel Area	Description
Filter	Specifies the field to filter.
Row Field	The items in the field specified become the row headers of a grid. These items populate the Y-axis in a chart.
Column Fields	The items in the field specified become the column headers of a grid. These items are used to populate the legend in a chart.
Values	Shows the sum of the field specified.

If you right-click fields in the **Filter**, **Column Fields**, **Row Fields**, or **Values** area at run time, a context menu appears, allowing you to move the field to a different area. You can also remove the field or click **Field Settings** to format and apply a filter to the field. See <u>Filtering Data in a Field</u> (page 24) for more information.

Drag fields between a	Germany		
🝸 Filter	🛄 Column Fi	elds	Ireland
	Category		Italy
	3	Move to	Filter
		Move to	Row Fields
		Move to	Values
Row Fields	Σ Value	Remove	e Field
Country	Sales	Field Se	ttings
			Switzerland UK

C1OlapGrid

The C1OlapGrid control is used to display OLAP tables. It extends the **C1FlexGrid** control and provides automatic data binding to C1OlapPanel objects, grouped row and column headers, as well as custom behaviors for resizing columns, copying data to the clipboard, and showing details for any given cell.

The C1OlapGrid control extends the **C1FlexGrid** control, our general-purpose grid control. This means the whole **C1FlexGrid** object model is also available to **C1Olap** users. For example, you can export the grid contents to Excel or use styles and owner-draw cells to customize the grid's appearance.

To populate C1OlapGrid, bind it to a C1OlapPanel that is bound to a data source.

For more information on the **C1FlexGrid** control, see the **ComponentOne FlexGrid for WinForms** documentation.

C1OlapChart

The C1OlapChart control is used to display OLAP charts. It extends the **C1Chart** control and provides automatic data binding to C1OlapPanel objects, automatic tooltips, chart type and palette selection.

The C1OlapChart control extends the **C1Chart** control, our general-purpose charting control. This means the whole **C1Chart** object model is also available to **C1Olap** users. For example, you can export the chart to different file formats including PNG and JPG or customize the chart styles and interactivity.

To populate C1OlapChart, bind it to a C1OlapPanel that is bound to a data source.

For more information on the **C1Chart** control, see the **ComponentOne 2D Chart for WinForms** documentation.

C1OlapPrintDocument

The C1OlapPrintDocument component is used to create reports based on OLAP views. It extends the **PrintDocument** class and provides properties that allow you to specify content and formatting for showing OLAP grids, charts, and the raw data used to create the report.

For more information, see the ComponentOne Reports for WinForms documentation.

Using the C1OlapPage ToolStrip

The C1OlapPage control provides a ToolStrip you can use to: load or save a C1OlapPage as an .xml file, display your data in a grid or chart, or setup and print a report. The following table describes the buttons in the ToolStrip.

Button		Description
Load		Allows you to load a previously saved C1Olap view definition file (*.olapx) into the C1OlapPage.
Save		Allows you to save a C1Olap view definition file (*.olapx).
Grid	Grid 👻	Allows you to choose the columns and rows to display in the C1OlapGrid.
Chart	🕂 Chart 👻	Allows you customize the chart used to display your data. You can determine: the chart type, the palette or theme, whether the title will appear, whether the chart is stacked, and whether gridlines appear.
Report	🔚 Report 🔻	Allows you to: specify a header or footer for each page of the report; determine what to include in the report, the Olap grid, chart, or raw data grid; specify the page layout, including orientation, paper size, and margins; preview the report before printing; and print the report.

Using the Grid Menu

The **Grid** menu provides three options:

Grid 👻		
4	Show Totals Row	
~	Show Totals Column	
~	Show Zeros	

Show Totals Column	Shows a column to the right of the last column in your grid which totals all the data in the row.
Show Totals Row	Shows a row at the bottom of your grid which totals all the data in the column.
Show Zeros	If checked, shows any cells containing zero in the grid.

Simply uncheck any of these items to hide the totals column, totals row, or any zeros in the grid.

Using the Chart Menu

From the **Chart** menu, you can determine: the chart type, the palette, whether to show the chart title above the chart, whether to show a stacked chart, and whether to show chart gridlines.

🔀 Chart 👻 🔚 Report 👻	
	Chart Type 🛛 🕨
	Palette 🕨
~	Show Title
×	Stacked
~	Show Gridlines

Chart Type	Click Chart Type to select from five common chart types shown below.
Palette	Click Palette to select from twenty-two palette options that define the colors of the chart and legend items. See the options in the Palette topic below.
Show Title	When selected, shows a title above the chart.
Stacked	When selected, creates a chart view where the data is stacked.
Show Gridlines	When selected, shows gridlines in the chart.

Chart Types

ComponentOne Olap for WinForms offers five of the most common chart types. The following table shows an example of each type.

Bar



Sales by Employee





Sales by Employee



Palette

The C1OlapChart palette is made up of twenty-two options that define the colors of the chart and legend items. The following table shows the colors for each palette option.









Verve

Sales by Employee



Using the Report Menu

From the **Report** menu, you can preview or print the report, set up the pages of the report, add header and/or footers, and specify which items to show in the report.

🔚 R	leport 👻
4	Print Preview
4	Print
2	Options

Print Preview	Select Print Preview to preview your report before printing or to export to a PDF file.
Print	Click Print to print the C1OlapGrid, C1OlapChart, or both.
Options	Click Options to open the Document Options dialog box for

Document Options

The Page Tab

On the **Page** tab you can specify the Orientation, Paper Size, and Margins.

Document Opti	ons	
Document Option Page Header Orientation: Paper size: Margins:	Footer Report Content Footer Report Content Portrait Center (8.5 x 11 in) Top: 1.00 Left: 1.00 Right: 1.00 Center (1.00 Center (1.0	
	Bottom: 1.00	
	ОК	Cancel

The Header/Footer Tab

On the Header/Footer tab, you can add a header and/or footer to each page of the report.

Document Options	
Page Header/Footer Report Content Presets - * 57 • 57 • 58 • 58 • 58	
Header: &[ViewTitle] &[Date]	Page &[Page]
	Separator Font
Footer:	
	Separator Font
	OK Cancel

Click one of the buttons on the toolbar to insert fields into the header or footer.

Button	Field
Presets	Choose from three predefined options containing groups of fields to be inserted in the header or footer.
Page Number	&[Page]
Current Date	&[Date]
Current Time	&[Time]
Document Name	\$[DocName]
View Description	&[ViewTitle]
Author Name	&[UserName]

Check the **Separator** box to show a separator line below the header or above the footer. Click the **Font** button to change the font, style, size, or effects.

The Report Content Tab

On the **Report Content** tab, you can determine whether to include the Olap Grid, Olap Chart, and/or the Raw Data Grid in your report. You can also scale the items as desired and extend the last column of the grids.

Document Options		
Page Header/Footer Re	port Content	
Olap Grid	Olap Chart	Raw Data Grid
Include in report	Include in report	Include in report
Scaling:	Scaling:	Scaling:
 Actual size 	 Actual size 	 Actual size
 Fit to one page 	 Fit to one page 	 Fit to one page
 Fit to page width 		 Fit to page width
Extend last column		Extend last column
		OK Cancel

Olap for WinForms Task-Based Help

The task-based help assumes that you are familiar with programming in Visual Studio .NET and know how to use bound and unbound controls in general. Each topic provides a solution for specific tasks using the **ComponentOne Olap for WinForms** product. By following the steps outlined in the help, you will be able to create projects demonstrating a variety of **Olap for WinForms** features.

Each task-based help topic also assumes that you have created a new .NET project.

Run-Time Tasks

The following topics describe how end users of your applications can interact with **ComponentOne Olap for WinForms** at run time.

Removing a Field from a Data View

In the C1OlapPanel control or the C1OlapPanel area of the C1OlapPage control, you can filter out an entire field so that it doesn't appear in your C1OlapGrid or C1OlapChart data view.

- 1. In the **Drag fields between areas below** section of the panel, select the field to filter out of the view.
- 2. Drag it to the **Filter** area of the panel. The data in this field will be removed from the C1OlapGrid or C1OlapChart data view.

Filtering Data in a Field

In the <u>C1OlapPanel</u> control or the <u>C1OlapPanel</u> area of the <u>C1OlapPage</u> control, you can filter the data in a field from the **Drag fields between areas below** section of the panel. Each field has two filters: the value filter, which allows you to check specific values in a list, and the range filter, which allows you to specify one or two criteria. The two filters are independent, and values must pass both filters in order to be included in the Olap table.

Using the Value Filter

- 1. Right-click a field in the Filter, Column Fields, Row Fields, or Values area.
- 2. Click Field Settings in the context menu. The Field Settings dialog box opens.
- 3. Click the **Filter** tab. This is the value filter. You can clear the selection for any of the fields that you do not want to appear in the Olap table.

🖶 Field Settings: Country	
Filter Subtotals	
 ✓ (Select All) ✓ Argentina 	<u> </u>
✓ Austria	≣.
✓ Brazil	
 ✓ Canada ✓ Denmark 	
Finland	
	×
	OK Cancel

Once you have selected the fields to appear in the table, you can specify a range filter by clicking the **Text Filter** or **Numeric Filter** button at the bottom of the window.

Note: If the field you are filtering contains numeric data, Numeric Filter appears instead of Text Filter.

Using the Range Filter

- 1. Right-click a field in the Filter, Column Fields, Row Fields, or Values area.
- 2. Click Field Settings in the context menu. The Field Settings dialog box opens.
- 3. Click the **Filter** tab and specify the value filter, if desired. You can clear the selection for any of the fields that you do not want to appear in the Olap table.
- 4. Click the **Text Filter** or **Numeric Filter** button to set the range filter.
- 5. Select one of the following items.

Clear Filter	Clears all filter settings.
Equals	Opens the Custom Filter dialog box so you can create a filter where items equal to the specified value are shown.
Does Not Equal	Opens the Custom Filter dialog box so you can create a filter where items that are not the same as the specified value are shown.
Begins With	Opens the Custom Filter dialog box so you can create a filter where items that begin with the specified value are shown.
Ends With	Opens the Custom Filter dialog box so you can create a filter where items that end with the specified value are shown.
Contains	Opens the Custom Filter dialog box so you can create a filter where items that contain the specified value are shown.

Does Not Contain	Opens the Custom Filter dialog box so you can create a filter where items that do not contain the specified value are shown.
Custom Filter	Opens the Custom Filter dialog box so you can create a filter with your own conditions.

6. Add an item to filter on in the first blank text box.

Custom Filter	
Show items where the value:	
Fauak	
€ And ⊖ Or	
None 💙	
	OK Cancel

- 4. Select And or Or.
- 5. Add a second filter condition, if necessary. If you select an option other than **None**, the second text box becomes active and you can enter an item.
- 6. Click **OK** to close the **Custom Filter** dialog box and click **OK** again to close the **Field Settings** dialog box.

Specifying a Subtotal Function

When creating custom views of data, you may want to perform a different aggregate function other than "Sum" on your column or row. For example, you may want to find the average or maximum values in your data. This can easily be done through the **Field Settings** dialog box.

To specify the function performed on data, follow these steps:

- 1. Right-click a field in the Values area of the C1OlapPanel.
- 2. Click Field Settings in the context menu. The Field Settings dialog box opens.
- 3. Click the **Subtotals** tab.
- 4. Select one of the following options:

Sum	Gets the sum of a group.
Count	Gets the number of values in a group.
Average	Gets the average of a group.
Maximum	Gets the maximum value in a group.
Minimum	Gets the minimum value in a group.
First	Gets the first value in a group.
Last	Gets the last value in a group.

Variance	Gets the sample variance of a group.
Standard Deviation	Gets the sample standard deviation of a group.
Variance Population	Gets the population variance of a group.
Standard Deviation Population	Gets the population standard deviation of a group.

5. Click **OK** to close the **Field Settings** dialog box. Notice how the values in the summary table change.

Formatting Numeric Data

You can format numeric data as currency, as a percentage, and so on or create your own custom format.

To format numeric data, follow these steps:

- 1. Right-click a field in the Values area of the C1OlapPanel.
- 2. Click **Field Settings** in the context menu. The **Field Settings** dialog box opens.
- 3. Click the **Format** tab.
- 4. Select one of the following options:

Numeric	Formats the data as a number like this: 1,235. You can specify the number of
	decimal places and whether to use a 1000 separator (,).

- **Currency** Formats the data as currency. You can specify the number of decimal places.
- Percentage Formats the data as a percentage. You can specify the number of decimal places.
- **Scientific** Formats the data in scientific notation. You can specify the number of decimal places.
- **Custom** Enter your own custom format for the data.
- 5. Click **OK** to close the **Field Settings** dialog box. Notice how the values in the summary table change.

Creating a Report

In the C1OlapPage control, you can set up and print a report using the **Report** menu.

To create the report, follow these steps:

- 1. Click the drop-down arrow next to **Report** on the C1OlapPage ToolStrip.
- 2. Select **Options**. The **Document Options** dialog box appears.
- 3. On the Page tab, select a page Orientation, Paper size, and set the Margins as desired.
- 4. Click the **Header/Footer** tab.
- 5. Place the cursor in the header or footer text box where you want to add text or a predefined header/footer item.
- 6. Click one of the buttons on the toolbar to insert the desired field.
- 7. Click the **Report Content** tab.
- 8. Check the check box next to the items you want included in the report. You can also select a radio button to change the scaling of the grid or chart.
- 9. Click **OK** to close the **Document Options** dialog box.

Printing a Report

To print the report using the C1OlapPage control, follow these steps:

- 1. Click the drop-down arrow next to **Report** on the C1OlapPage ToolStrip.
- 2. Select **Print**. The **Print** dialog box appears.
- 3. Choose a printer from the **Name** drop-down list and click **OK**.