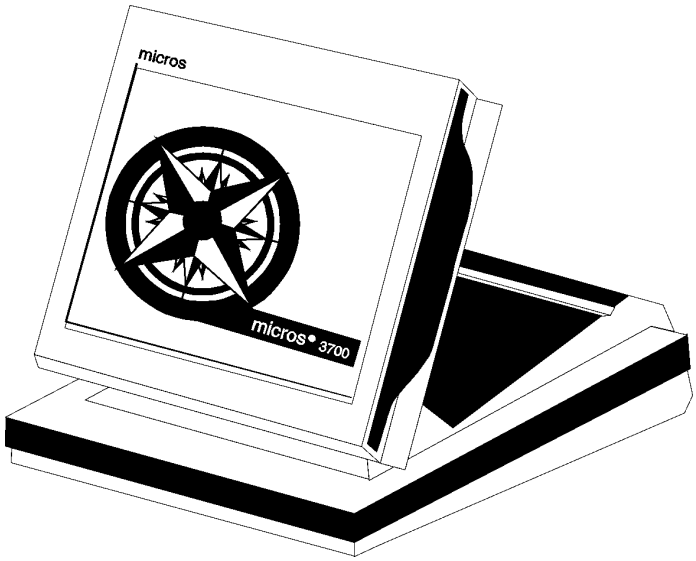
micros® Systems, Inc.

Custom Reports Design Manual

3700 POS

Restaurant Enterprise Series



Part Number:100134-508 (2nd Edition)

Declarations

Warranties

Although the best efforts are made to ensure that the information in this manual is complete and correct, MICROS Systems, Inc. makes no warranty of any kind with regard to this material, including but not limited to the implied warranties of marketability and fitness for a particular purpose. Information in this manual is subject to change without notice. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or information recording and retrieval systems, for any purpose other than for personal use, without the express written permission of MICROS Systems, Inc.

MICROS Systems, Inc. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

Trademarks

Crystal Reports is a registered trademark of Crystal Computer Services, Inc.

FrameMaker is a registered trademark of Adobe Corporation.

Microsoft, Microsoft Excel, Win32, Windows, and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries.

SQL Server is a registered trademark of Microsoft in the U.S. and other countries.

Sybase® SQL Anywhere™ is a registered trademark of Sybase, Inc.

Design and Production

This manual was written with FrameMaker 5.0 for Windows.

Printing History

New editions of this manual incorporate new and changed material since the previous edition. Minor corrections and updates may be incorporated into reprints of the current edition without changing the publication date or the edition number.

Edition	Month	Year	Software Version
1st	September	1996	1.00
2nd	April	1998	2.00

Table of Contents

Preface

In this preface, you will find information about this manual. Refer to the preface if you have any questions about the organization, conventions, or contents of this manual.

In this chapter

Welcome to the Custom Reports Design Manual

The purpose of this manual is to provide MICROS dealers and customers with the basic information necessary to produce custom reports. This manual is intended to be used in conjunction with the *3700 Reports Manual* and the *3700 SQL / Database Access Manual*.

How This Manual is Organized

Chapter 1: Introduction

This chapter is an introduction to the basics of creating a custom report. It includes definitions and tips for a successful project.

Chapter 2: Changes Using POS Configurator

This chapter covers changes to reports that can be made through POS Configurator. These changes include adding or removing reports from Autosequences and Reports, rearranging reports in Autosequences and Reports, and changing the title of a report that is printed through an autosequence.

Chapter 3: Using Existing Templates

This chapter describes how to create a custom report that is based on an existing report template.

Chapter 4: Using a Blank Template

This chapter describes how to create a custom report using a blank template.

Who Should Use This manual?

This manual is intended for use by:

- ❑ MICROS Installers/Programmers
- ❑ MICROS Dealers
- ❑ MICROS Customer Service
- ❑ MICROS Training Personnel
- ❑ MIS Personnel

This manual assumes that you have the following knowledge or expertise:

- ❏ Working knowledge of the Windows interface.
- ❏ Operational understanding of PCs.
- ❏ Understanding of basic network concepts.
- ❏ Extensive experience with Windows 3.x; preferably experience with Windows95.
- ❏ Experience with Windows NT.
- ❏ Advanced knowledge of relational database concepts.
- ❏ Understanding of POS terminology and concepts.
- ❏ Exposure to MICROS POS system (2400, 2700, 4700, 8700) or other POS; preferably experience programming 2700 Systems.

Related Manuals

This section provides a list of the related MICROS documentation as well as a list of suggested reading materials.

MICROS Documentation

The 3700 Restaurant Enterprise Series library includes:

- ❏ *3700 Administration Applications Manual* 100134-503
- ❏ *3700 Custom Reports Design Manual* 100134-508
- ❏ *3700 Feature Quick Reference Manual* 100134-506
- ❏ *3700 Feature Reference Manual* 100134-501
- ❏ *3700 Hardware Installation Guide* 100134-514
- ❏ *3700 Hardware User's Maintenance Guide* 100134-512
- ❏ *PC Workstation Model 32 Setup Guide* 100016-085
- ❏ *3700 Reports Manual* 100134-511
- ❏ *3700 System Interface Module User's Guide* 100134-516
- ❏ *3700 Site Preparation Guide* 100134-513
- ❏ *3700 Site Survey Manual* 100134-505
- ❏ *3700 SQL / Database Access Manual* 100134-507
- ❏ *3700 POS Configurator User's Guide* 100134-504
- ❏ *3700 User's Manual*100134-502

Suggested Reading

- ❏ Crystal Reports documentation
- ❏ Microsoft Windows 95 Resource Kit
- ❏ Microsoft Windows NT Server 3.51 documentation
- ❏ Microsoft Windows NT 3.51 Resource Kit
- ❏ Microsoft SQL Server 6.0 documentation
- ❏ Sybase SQL documentation

Conventions and Symbols

This section describes the conventions and symbols that are used throughout the printed 3700 documentation.

Conventions

The following conventions are used throughout this manual.

Convention	Meaning
[Key]	Keys on a PC or PC Workstation. Example: [Enter]
'Message'	Messages that may appear during the programming process. Example: 'Select Menu Item Range'
`Courier`	Information to be entered by a User. Example: `copy a:\readme.txt c:\micros`
|	Indicates the sequence of menu items to be selected. Example: File | Sales | Condiments

Symbols

The following symbols are used throughout this manual.

Note

This symbol is used to bring special attention to a related feature.

Caution

This symbol indicates that care should be exercised when programming a feature or performing an action.

WARNING

This symbol indicates that an action may have adverse results if extreme caution is not taken when performing the action.

Tip

This symbol is used to point out suggestions that can save you time and difficulty.

What's New?

What's new in v1.02

What's new in v2.00

Reader Response

As you read this, the documentation staff at MICROS is hard at work preparing the next edition of this manual. Your feedback could be instrumental in changing that next edition.

Tell us what you think— we'd like to hear from you!

We are very interested in hearing from you about:

- ❏ Good ideas -

  Tell us about some part of this manual that you think works well– we'll be sure to maintain it.

- ❏ Ideas that need work -

  Tell us about an area that needs to be improved– we'll punch it up.

- ❏ Information not included -

  Did we miss something? Let us know so we can add it.

- ❏ Information that's not clear -

  Did you find something hard to follow? We'll rethink it and rewrite it.

- ❏ Information that's not correct -

  Did something get past our arduous tech edit process? Help us fix it.

How to reach us

Postal Address

If you can offer any criticisms or suggestions about this manual, please mail a note or postcard to:

MICROS Systems, Inc.
12000 Baltimore Blvd.
Beltsville, MD 20705 USA

Attn: Documentation Group Manager,
Table Service Restaurants Group

E-mail Address

As an alternative, you may address criticisms and suggestions regarding this manual by electronic mail to:

3700doc@micros.com.

Please use the name of the manual as the subject line.

Chapter 1

Introduction

This chapter provides an overview of the basic information necessary to create a custom report.

In this chapter

Overview

Because all MICROS reports are created using Crystal Reports, many changes can be made to the report templates quickly and easily. Fields can be moved around and reformatted. Columns can be eliminated to produce a more concise report with only the information you need.

Using Crystal Reports, you can make any of the following changes to the standard reports:

- ❏ Adjusting formatting
- ❏ Removing columns
- ❏ Adding subtotals or grand totals
- ❏ Adding formulas
- ❏ Adding columns that are included in the view

You can also create a new report using a blank template. Blank templates can be linked to an existing view, to two joined views, or to a single database table to create reports.

Some custom report projects, however, require much more than just making changes to a template. For example, some reports might require information that is not included in the database. Before producing such a report, you would have to add tables to the database to store the additional data. Adding tables to the database is a change to the database schema, and is not supported by MICROS.

The following are considered major changes. They are not covered in this manual, and are not supported by MICROS.

- ❏ Adding or modifying a view
  Views are available for all the totals tables. Additional views should be unnecessary.
- ❏ Adding or modifying a stored procedure
  Stored procedures are available to update each of the totals tables. Additional stored procedures should be unnecessary.
- ❏ Changing the database
  Adding tables to the database or adding columns to tables can only be done by MICROS personnel.

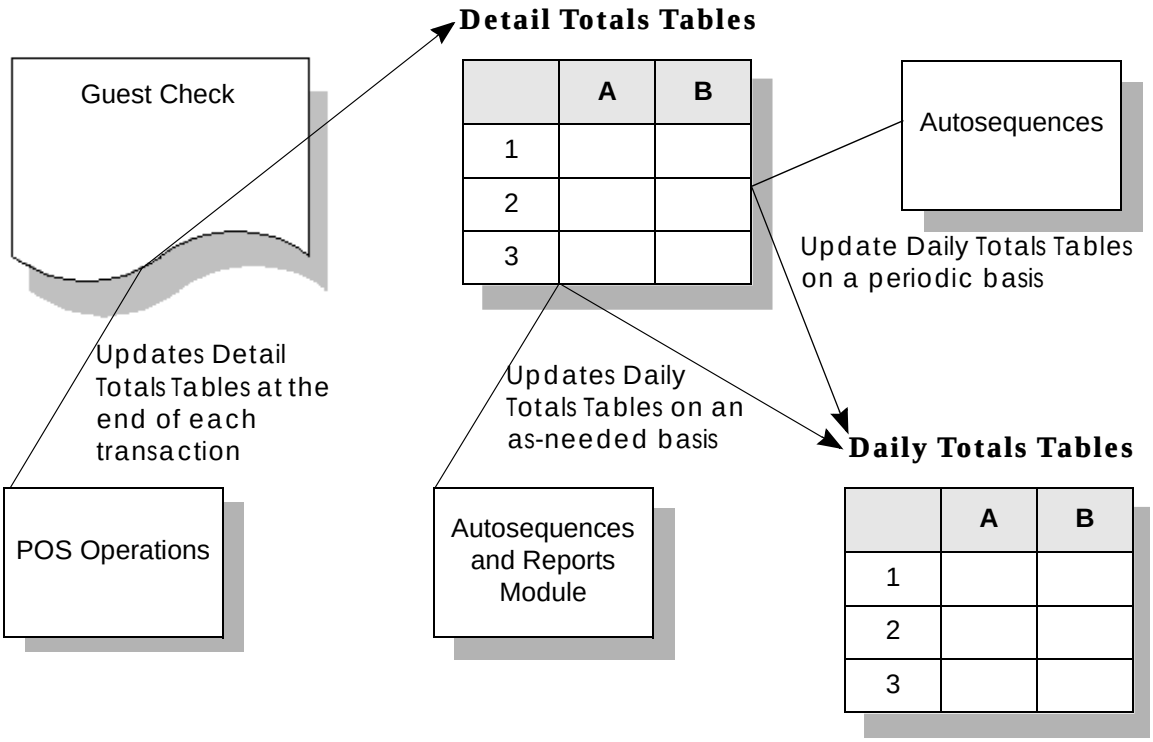
Basic Concepts and Terminology

Totals

Every transaction that takes place in the 3700 System is recorded in the Detail Totals Tables. Because these tables record so much information, they become large very quickly and take up a considerable amount of disk space. Because of this, detail information is usually only kept for a few days.

Information that will be kept for a longer period of time (beyond a few days) is moved to the Daily Totals Tables. Most reports are based on data in these tables. Data is moved and/or consolidated to the Daily Totals Tables by stored procedures.

Whenever a report is run, the stored procedure associated with the report first updates any of the daily totals tables used by the report. This ensures that the report always uses up-to-date data.



Data is kept in the daily totals tables for a programmable amount of time. You can specify if a table should store daily totals, and how long data should be kept in each table. This information is programmed in POS Configurator on the Historical Totals form.

Stored Procedures

Stored procedures are collections of SQL statements that perform specific functions. Stored procedures are precompiled and stored in the database.

Stored procedures post totals to the totals database tables and are used internally for POS operations.

Most standard templates are linked to one or more stored procedures.

Views

A view is a logical table composed of columns from one or more database tables. Views behave in the same manner as tables, but do not really contain any data.

Views allow you to accomplish the following:

- ❑ Combine information from multiple tables to facilitate access
- ❑ Limit access to data in a table
- ❑ Define common queries that are central to the database and improve the speed of data access

The information in a view is not stored separately in the database. Instead, each time you refer to the view, the associated SELECT statement is executed to retrieve the appropriate data.

Most standard templates are linked to one or more views.

Tips for a Successful Project

The following tips provide guidelines for you to use with any custom report projects. Using these guidelines will help you produce a custom report more efficiently, and with a minimum of difficulty.

- Never change an existing template. Before you begin any customization, always copy and rename the template you are working with.

  This is always a good practice, whether you are starting with a MICROS template, or any other template. If you start with a working version of a report and make a copy, you know you can always return to the working version, no matter what obstacles you encounter while developing a new report.

  MICROS will set all standard reports at object number 9999 and below. Any custom reports should be given an object number above 9999. This will ensure that MICROS can add changes to reports without overwriting a custom report.

WARNING

If you change a standard MICROS template, reports associated with the template may not work properly.

- Look for an existing report that is similar to the report you want to create, and use that report template as a starting point. Using a similar report template can significantly reduce the time required to develop a custom report.
- Look for an existing report that includes the type of information you wish to include in the custom report. Use the view and stored procedure associated with this report to create a new report using either a modified template or a blank template.

  For more information see “Using Existing Templates” on page 3-1 and “Using a Blank Template” on page 4-1.
- Use a template naming convention so you can quickly identify the template associated with a report.
- Time periods for custom reports can only be programmed to start and end in 15 minute intervals starting on the hour. For example, a time period must start at 9:00 and end at 9:15 or start at 9:30 and end at 9:45. A time period cannot start at 9:05 and end at 9:20.

- Crystal Reports Pro, by default, shows field placeholders on report templates. These placeholders indicate what type of field it is (numeric, text, etc.) and show the size of the field. To see the actual field or formula names, under File | Options, select the option Show Field Names.

Special Considerations for 40-Column Reports

Due to the limitations of Crystal Reports Pro, 40-column reports require extra attention. These reports do not print as they display on-screen. Use the following suggestions to help compensate for this limitation:

- In File | Options| Layout, set Grid Size to 0.083 inches. This grid size most closely matches the character size, and makes aligning fields easier.
- Use a report width of 2.875 inches to produce a printed report 3.0 inches wide.
- Do not use the last space on the right of the report. It will not print.
- Make the separator lines that divide sections of a report 4.0 inches wide, even though the printed report is only 3.0 inches wide. If the separator lines are shorter than 4.0 inches, they will not print across the full width of the report.
- Fields must be two to three characters wider than the text they contain, or the text will be cut off when the report is printed.

Using Crystal Reports Pro

Report templates can only be modified using Crystal Reports Pro. Crystal Reports Pro is not included in the 3700 System, but can be purchased separately. MICROS supports Crystal Reports version 5.0.

Install Crystal Reports Pro on a PC with a working version of the 3700 System. This insures that you have the additional software needed to access the MICROS database, and that the software is configured properly.

If you are not using a template set up by MICROS, you will have to log on to the database server before you can access the database.

To log on to the database server, select Database | Log On Server. Select ODBC - micros and enter the appropriate username and password.

You will also need to log on to the database server when you add a view or stored procedure to an existing MICROS template. Any time you add a view or stored procedure to a report, the Log On Server window will open automatically. You can then select ODBC - micros and enter the appropriate username and password.

Chapter 2

Changes Using POS Configurator

This chapter describes report-related changes that can be made through POS Configurator.

In this chapter

Overview

Reports are usually printed using the Autosequences and Reports module. You can customize what appears in this module through programming options in POS Configurator.

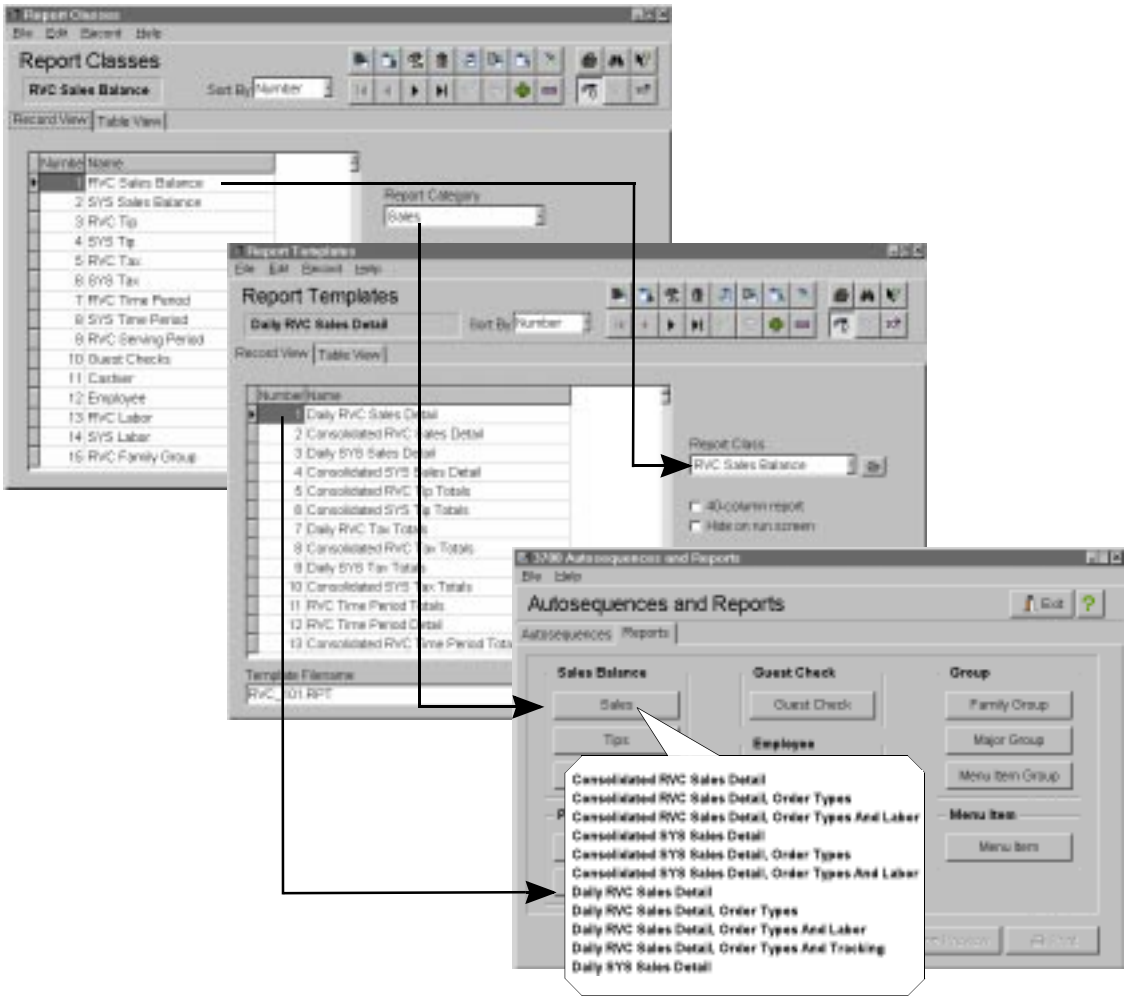
POS Configurator allows you to make the following changes to Autosequences and Reports:

- ❑ Add a report
- ❑ Remove a report
- ❑ Change where a report appears
- ❑ Change the report title presented to users

This information is useful when you want to rearrange or change existing reports, or any time you create a new report and want users to be able to access the report through Autosequences and Reports.

Assigning a Report to a Form

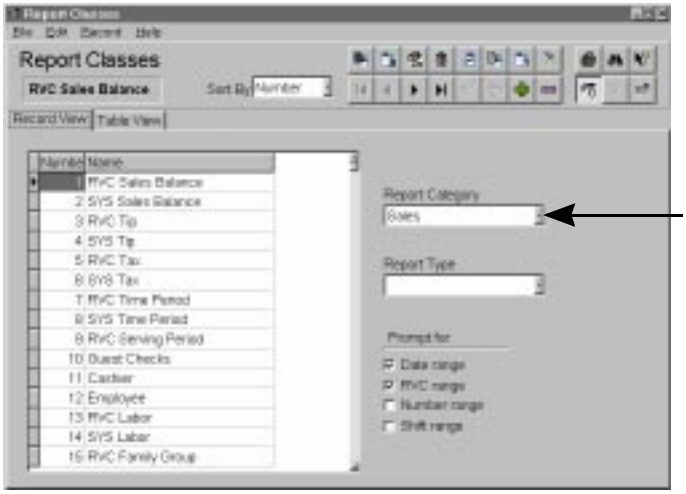
All reports that can be run manually appear in the Reports section of the Autosequences and Reports module. Each button on the Reports form is associated with a list of related reports. You can change the report class linked to a button in POS Configurator.



Changing the Button Associated With an Entire Report Class

To change the button associated with an entire report class:

1. Open the Report Classes form and select the report class to be changed.
2. In the Report Category field, select the name of the button that will be associated with this report class.
3. Save the change.



Changing the Button Associated With a Single Report

A simple way to change the button associated with a single report is to change the report class the report is assigned to. However, since the report class also determines what range a user is prompted for when the report is created, this may not be a suitable option. If an existing report class uses the necessary report category and has the same range prompts as the report you are reassigning, use this report class. On the Reports form, change the report class assigned to the report.

If no suitable reports class already exists, you can create one to assign to the report. Use the following steps:

1. Open the Report Classes form and create a new class with the necessary report category and prompt range.
2. Save the changes.
3. On the Reports form, assign the new report category to the report.
4. Save the change.

Removing a Report

You can remove a report from the Reporting section of the Autosequences and Reports module, so it can never be run directly—the report does not appear in the Reporting section. The report can still be accessed by any autosequences that include the report.

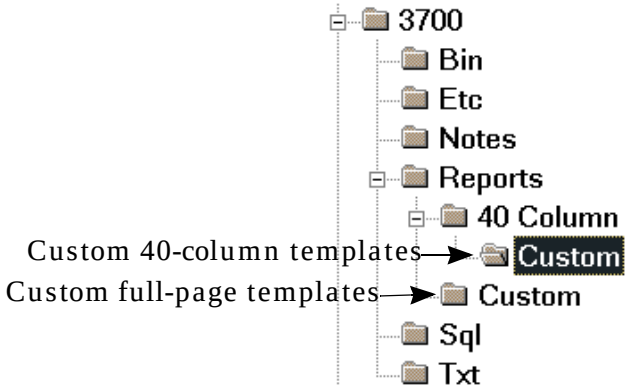
To remove a report from the Reporting section of Autosequences and Reports:

1. Make a note of the report name, and the template filename and report class associated with it on the Report Templates form. You will need this information to provide direct access to this report in the future.
2. In the Report Templates form, highlight the report name and click the delete record button on the toolbar.

Adding a Report

You can add reports to the Reporting section of Autosequences and Reports. You can add either new reports or standard MICROS reports that were removed.

Templates for new reports should be stored in one of the custom reports directories. The directory for custom full-page reports is \3700\reports\custom. The directory for custom 40-column reports is \3700\reports\40 column\custom. If the custom directory you need does not already exist, you should create it and move any new report templates to the directory before adding the report to Autosequences and Reports.



To add a report to the Reporting section of Autosequences and Reports:

1. Determine the report class that will be associated with this report. If no appropriate class exists, create a new class on the Report Classes form.
2. Open the Report Templates form and click Insert a Record on the toolbar.
3. Enter the report name and select a report class.
4. If you are adding a 40-column report formatted for a MICROS roll printer, select the 40-column report option. This option affects only the directory the system checks for the template; it does not effect the formatting of the report.

5. In the Title field, enter the name of the report as it will display in the Autosequences and Reports module.

   The title entered in this field does not change the title printed on the report. To change the title that prints on a report that is printed through an autosequence, see “Changing a Report Title” on page 2-8. Titles printed on reports that are printed manually cannot be changed through POS Configurator.

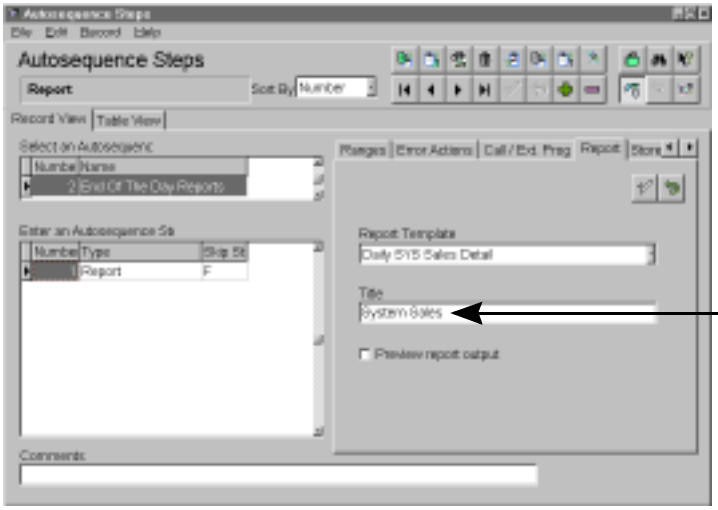
6. In the Template Filename field, enter the name of the template. If you are adding a standard MICROS report that was removed earlier, enter only the filename. If you are adding a custom report that is in a custom report directory, enter `\custom\<filename>.`

7. Save the changes.

Changing a Report Title

Using POS Configurator, you can change the title that prints on a report that is run by an autosequence. Changing the title on a report that is run manually requires changing the report template. See “Using Existing Templates” on page 3-1 for more information.

Specify a new report title in Autosequence Steps | Report. Any text entered in the Title field will be printed as a title when the report is produced. If this field is left blank, the default title will be used.



Chapter 3

Using Existing Templates

This chapter describes how to produce a customized report by making changes to an existing report template.

In this chapter

Overview

If the report you want to create is similar to an existing report, you can develop a new report faster using the existing report template as a starting point. Always remember to copy and rename the existing report template before you begin making any changes.

Changing an existing report can be a simple process of rearranging the existing fields to match the format of a pre-existing report, or removing fields on a template to create a more concise report. Or the changes may be more complex, involving adding formulas or setting up commissions.

Rearranging Existing Fields

If a report contains the information users need, but the arrangement needs to be changed to match a pre-existing report that users are already familiar with, you may be able to develop the report you need just by rearranging the existing fields.

Here are some tips on rearranging existing fields:

- You can move a field, as well as any associated column title and subtotal or total, all at the same time. Hold down [Ctrl], select all the fields you want to move, and they can be moved as a group. This can save you from having to re-align and position each field.
- Each Crystal Reports template is divided into sections that are identified on the left side of the window. Different templates include different sections. Usually, fields only move within a section. Positioning a field in a different section will affect where the field prints, as well as how many times the field prints, and possibly the totals that are reported. For example, if you move a field into the page footer section, it will print on the bottom of each page of the report.

  A grand total can only be placed in the Grand Total section. A subtotal or summary can only be placed in its original section or in the header of its original section.

  For more information on the sections of a Crystal Reports template, see the Crystal Reports documentation.

Removing Columns

You may wish to produce a concise version of a report by removing unnecessary data. For example, you may be able to cut paper waste by designing a report that includes just a few fields of information for each employee, and fits all employees on one page, rather than running a report that produces a page for each employee.

Actually removing a field or a column in a report template is a simple matter—select the field and press [Delete]. What is more difficult is making sure that all references to the field are also deleted.

If you intend to remove a field from a report, you need to make sure you find any references to the field anywhere on the report, and edit them as necessary.

Example
Consider a column of tracking total information. You want to eliminate the first tracking total, so you delete the trk_cnt_01 and trk_ttl_01 fields. But these fields are still included in the subtotal at the bottom of the column, and in the totals at the end of the report. So even though the tracking total is not printed on the report, the count and value amount are included in the subtotal and total fields.

In order to completely eliminate the first tracking total from the report you need to edit the formulas used to calculate the subtotal and total amounts, eliminating the tracking total from those values.

Tip

If, after you remove a column from a report, the report no longer balances, check the template for any references to the deleted column. The column may still be included in a formula or summation.

Adding Subtotals and Grand Totals

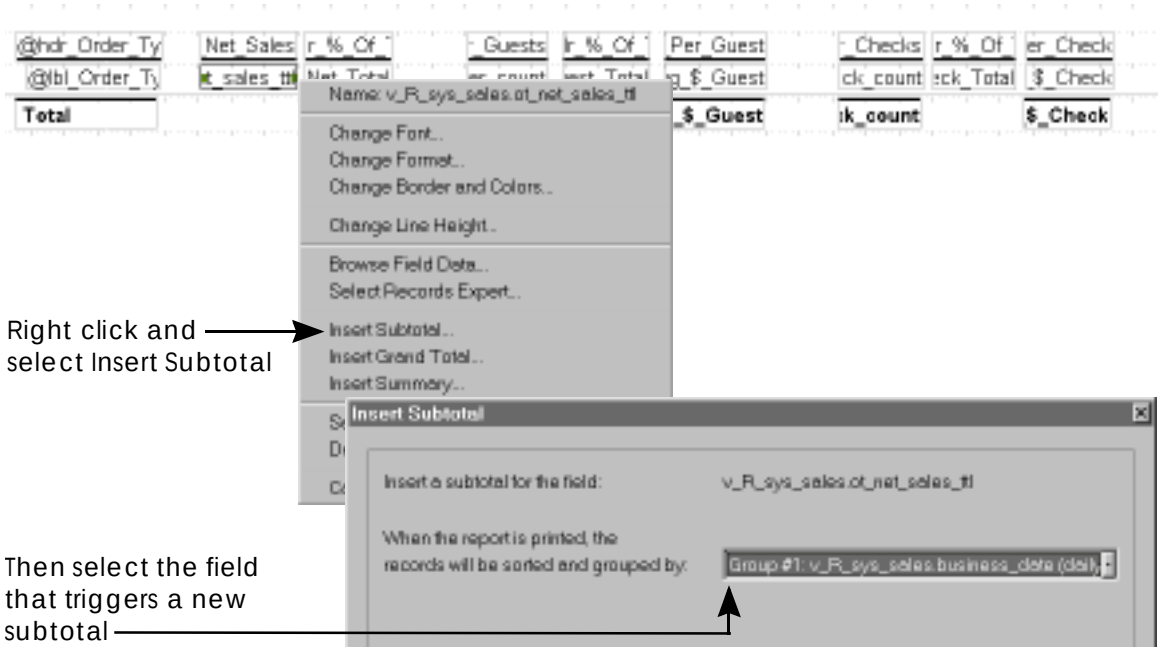
Subtotals and grand totals can be added to any numeric field on a report. A subtotal is the total of a limited data set. For example, a subtotal might be the total for a specified field for one business day. A grand total is the total for the specified field for the entire report.

Keep in mind that subtotals and grand totals are provided for single fields only. You cannot add a subtotal to a column made of different fields by using the subtotal function. For example, the subtotals provided at the bottom of each column of tracking totals are calculated using a formula. Since each tracking total has a different field name, the subtotal function could not be used.

Using Crystal Reports Pro, open the template using File | Open. Then complete the following steps to add a subtotal to a field:

1. Right-click the field to be subtotaled.
2. Select Insert Subtotal. A dialog box opens.
3. Select the field that starts a new subtotal. Whenever this field changes, a new subtotal will be generated. Revenue Center number and employee number often signal the start of a new subtotal.

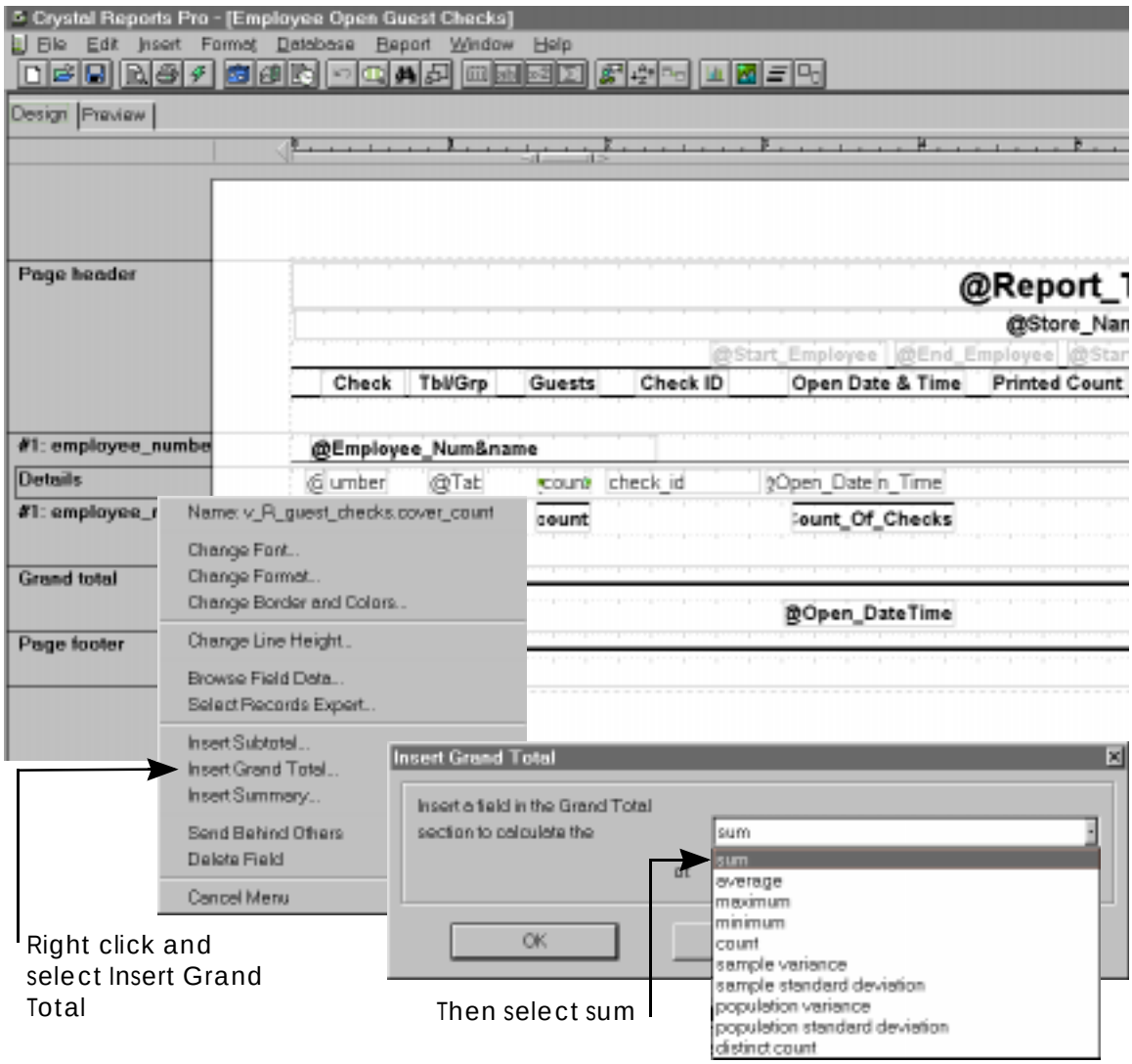
   A summation field is added to the report in the specified section. For example, in the report below, the subtotal will be added to the business_date - A section.



Complete the following steps to add a grand total to a field:

1. Right-click the field requiring a grand total.
2. Select Insert Grand Total. A dialog box opens.
3. Select the arithmetic function to be performed on this field. For a grand total, select sum.

   A grand total section is added to the report, and a summation field is added to the section, directly below the original field.



Adding Formulas

Formulas serve two purposes in Crystal Reports. They can perform arithmetic functions on multiple fields or columns. They also make it possible to format and arrange text. For example, most date or time fields on reports are actually formulas that take the standard date/time string from the database, select the needed portion of the string (such as the month and day) and format it appropriately (as spelled out or abbreviated words, or as numbers).

Using Crystal Reports Pro, open the template using File | Open. Then complete the following steps to create a formula:

1. Select Insert | Formula Field.
2. Type a name for the formula in the Formula Name field and click OK.
3. The Edit Formula window opens. This is where you define the formula. You can add field or formula names, functions, or operators to the formula by double-clicking on them. You can also type the formula text in manually.

Two common uses of formulas are for percentages and for dates and times. Each of these uses is discussed below.

Tip

SQLCall is a user-defined function written by MICROS that can be included in any formula.

This function allows you to execute a SQL statement and returns the first column of the first row of the result set.

Adding a Percentage

Crystal Reports can calculate percentage values automatically, but the percent sign (%) can be added to the figure only by using a formula.

The following example of a percentage formula is taken from the %Labor/Sales field on the System Sales Detail Report.

```
if {v_R_sys_sales.ot_net_sales_ttl} <> 0 then
   ToText({@ttl_Total_1}% {v_R_sys_sales.net_sales_ttl},2)+ “%”
else
   “0.00%”;
```

In this formula, the net sales total is first compared to zero. If it equals zero, the text string 0.00% prints on the report. This prevents divide by zero errors.

If net sales total does not equal zero, the formula @ttl_Total_1 (which represents the total regular and overtime wages for labor category one) is expressed as a percentage of net sales total, with two places to the right of the decimal point. This figure is changed to text and the percent sign (%) is appended to it. This text string prints on the report.

Use the following steps to create a basic percentage:

1. Test the percentage denominator to be sure it is not equal to zero. Provide an else statement to print "0.00%" if the denominator is 0. See the example below:

   ```
   if {percentage_denominator_field_name} <> 0 then
   .
   .
   .
   else
      "0.00%"
   ```

2. Use the following formula to calculate the percentage and display it with the percent sign (%):

   ```
   ToText({percent_numerator}%{percent_denominator},x) + "%"
   ```

   where percent numerator and denominator are either database fields, formulas, or arithmetic computations, and *x* is the number of places to the right of the decimal point to be displayed.

Converting a Date and Time

The standard date time string in the database is in the following format:

YYYY/MM/DD HH:MN:SS:MS

Where...	Represents...
YYYY	Year, as a four-digit number
MM	Month, as a two-digit number
DD	Day, as a two-digit number
HH	Hour, in 24-hour format, as a two-digit number
MN	Minute, as a two-digit number
SS	Second, as a two-digit number
MS	Millisecond, as a two-digit number

Since this format is not usually appropriate on a report, most date or time fields are created using formulas. You can create new formulas that will capture the part of the date/time string that you need and format it appropriately.

Several user-defined functions are available to simplify the date and time conversion process. These user-defined functions are listed in the Functions box on the Edit Formula window, under the heading Additional Functions. The following table describes each function and gives an example of the output.

User-Defined Function Name	Function	Sample Output
DateString[a]	Takes a date in the format M/D/Y and adds single quotes.	'6/15/96'
DTSToDate	Converts the standard date/time string to a date.	6/15/96
DTSToSeconds	Converts the time from a standard date/time string to the number of seconds past midnight.	64880
DTSToTimeString	Converts the standard date/time string to a time string only.	18:01:20:00
PrintedDateString*	Returns the current day and date, preceded by the text string "Printed on".	Printed on Saturday, June 15, 1996
PrintedShortDateString*	Returns the current date and time preceded by the text string "Printed on".	Printed on 6/15/96 - 8:43 AM

a. These user-defined functions were written by MICROS.

User-Defined Function Name	Function		Sample Output
PrintedCustomDateString (“ddd’,’MMM dd yy”)[a]	Returns the current date and time. This function uses local system values for day, month, and year, so the date will be in the appropriate language. You can customize the date format by changing the variables included inside the parentheses(). The following variables can be used in this function. These variables are case sensitive.		Printed on Sat, Jun 6 96 - 8:43 AM
	d	Day of month as digits with no leading zero for single-digit days.	3
	dd	Day of month as digits with leading zero for single-digit days.	03
	ddd	Day of week as a three-letter abbreviation.	Mon.
	dddd	Day of the week as a full name.	Monday
	M	Month as digits, with no leading zero for single-digit months.	3
	MM	Month as digits, with leading zero for single-digit months.	03
	MMM	Month as a three-letter abbreviation.	Mar
	MMMM	Month as a full name.	March
	y	Year as last two digits, with no leading zero for years less than 10.	3
	yy	Year as last two digits, with leading zero for years less than 10.	03
	yyyy	Year as full four digits.	2003

a. These user-defined functions were written by MICROS.

Tip

When using the function DTSToDate you may receive the error message 'A string is required.' when previewing a report, even though you have specified a date/time string in the formula.

To correct the error, in File | Report Options, change the option Covert Date-Time field to Date. (If the option is selected, clear it; if the option is cleared, select it.) You will be prompted with the message, 'The database file *view_name* has changed. Proceed to fix up the report?' Select Yes. The formula(s) containing DTSToDate will then display properly.

Since the user-defined functions automate much of the date and time conversion process, you may be able to create simple formulas that provide the date format you need.

For example, the following formula provides a date and time stamp for a report:

```
PrintedCustomDateString (“ddd’,’MMM dd yy”)
```

This formula uses the current date and time and prints the following field on the report:

Printed on Sat, Jun 6 96 - 8:43 AM

You may, however, need to create a more specialized date or time. The following example takes the time from the standard date/time string and converts it to AM/PM format (for example 1:08am or 2:39pm). It is taken from the Time portion of the Open Date & Time field on the Employee Open Guest Checks Report.

```
StringVar AmPm := "am";
NumberVar Hours := ToNumber(ToText({v_R_guest_checks.check_open_date_time})[12
to 13]);

if Hours = 12 then
  AmPm := "pm"

else if Hours > 12 then
 (Hours := Hours - 12;
  AmPm := "pm")

else
  AmPm := "am";
ToText(Hours,0) +
ToText({v_R_guest_checks.check_open_date_time})[14 to 16] + AmPm;
```

Tip

Use existing formulas in the standard reports as models. Formulas can seldom be taken as they are from one template and pasted into another. They almost always include specific field or formula names. But you can often use existing formulas by making minor adjustments.

Crystal Reports does not include any way to manage formulas, or a formula library. You can, however, copy and paste formulas from one template to another. If you often create reports with similar formulas, you may want to store frequently-used formulas in an ASCII text file that you can copy and paste from easily.

Adding Tracking Totals

The 3700 system can record 64 tracking totals for each tracking group. However, due to space limitations, only 42 tracking totals are reported on the standard reports. The information in tracking totals 43-64 is only available through a customized report.

If you need to use all 64 tracking totals you may be able to do so in one of the following ways:

- Eliminate any unnecessary information from the existing template. This may free enough room for the additional tracking totals.
- Using an existing template, create a two-page report and move the tracking group information to the second page.
- Create a new, separate report just for tracking group information.

When you have room on the report for additional tracking totals, adding the fields is a simple procedure. See “Choosing and Formatting Fields” on page 4-6 for a complete description.

Adding or Modifying Tracking Total Subtotals and Totals

In the 3700 System, tracking totals are used solely to track and report information generated or posted by POS transactions. All formatting and arithmetic functions are performed by Crystal Reports.

The standard reports provide subtotals for each of the following groups of tracking totals:

- ❑ Tracking totals 1-14
- ❑ Tracking totals 15-28
- ❑ Tracking totals 29-42

You may wish to add formatting such as headings or blank lines, to add additional subtotals, or to change the way a subtotal is calculated. For example, in the standard reports, all tracking totals are added together when subtotals and totals are calculated. You may wish to have some tracking totals subtracted from the total, rather than added to it.

Formatting Changes

You can move or rearrange fields as described on page 3-3 to create blank lines or to make groups of tracking totals.

Using Crystal Reports Pro, open the renamed template using File | Open. Then complete the following steps to add a heading for a group of tracking totals:

1. Select Insert | Text Field.
2. In the Edit Text Field box, type the heading and click Accept.
3. Position the field on the template and click to place it.

When the field is in place, you can select the field, click with the alternate mouse button, and apply formatting options such as fonts, borders, or colors.

Subtotal Changes

Tracking total subtotals are created using formulas. You can change what is included in a subtotal, or specify that a tracking total be subtracted from a total rather than added, by editing the formula that produces the subtotal.

Example: Adding a Subtotal

Each standard report with tracking totals provides a subtotal for tracking totals 1-14. This example describes how to add a subtotal for tracking totals 1-7. In this example, only the tracking total amount is added. The tracking total count would be added in the same manner.

On the System Sales Detail Report, the formula for the subtotal of tracking totals 1-14 (@col1_ttl) includes the following text:

```
{v_R_sys_trk.trk_ttl_01} +
{v_R_sys_trk.trk_ttl_02} +
{v_R_sys_trk.trk_ttl_03} +
{v_R_sys_trk.trk_ttl_04} +
{v_R_sys_trk.trk_ttl_05} +
{v_R_sys_trk.trk_ttl_06} +
{v_R_sys_trk.trk_ttl_07} +
{v_R_sys_trk.trk_ttl_08} +
{v_R_sys_trk.trk_ttl_09} +
{v_R_sys_trk.trk_ttl_10} +
{v_R_sys_trk.trk_ttl_11} +
{v_R_sys_trk.trk_ttl_12} +
{v_R_sys_trk.trk_ttl_13} +
{v_R_sys_trk.trk_ttl_14};
```

To create a subtotal for tracking totals 1-7:

1. Move tracking totals 8-14 down one line to make room for a subtotal after tracking total 7.
2. Select @col1_ttl. Click the alternate mouse button to display a menu. Select Edit Formula. Highlight the entire formula and press [Ctrl]-c to copy it.
3. Select Insert | Formula. Type a name for the new formula and click OK.
4. In the Edit Formula window, place the cursor in the Formula Text box and press [Ctrl]-[v] to paste the text from the original formula here.
5. You can now edit the formula text, deleting everything after {v_R_sys_trk.trk_ttl_07}.

Example: Subtracting a Tracking Total

You may want to subtract a certain tracking total from a subtotal, rather than adding it. This is done by editing the formula that creates the subtotal or total.

Again using the formula for the subtotal of tracking totals 1-14 (@col1_ttl) from the System Sales Detail Report, this example describes how to subtract tracking total 2, rather than adding it.

The text of the formula is as follows:

```
{v_R_sys_trk.trk_ttl_01} +
{v_R_sys_trk.trk_ttl_02} +
{v_R_sys_trk.trk_ttl_03} +
{v_R_sys_trk.trk_ttl_04} +
{v_R_sys_trk.trk_ttl_05} +
{v_R_sys_trk.trk_ttl_06} +
{v_R_sys_trk.trk_ttl_07} +
{v_R_sys_trk.trk_ttl_08} +
{v_R_sys_trk.trk_ttl_09} +
{v_R_sys_trk.trk_ttl_10} +
{v_R_sys_trk.trk_ttl_11} +
{v_R_sys_trk.trk_ttl_12} +
{v_R_sys_trk.trk_ttl_13} +
{v_R_sys_trk.trk_ttl_14};
```

To subtract tracking total 2, change the plus (+) before {v_R_sys_trk.trk_ttl_02} (at the end of the first line) to a minus (-), and click Accept.

This is a simple example. You may have much more complex changes to make. However, the principles remain the same. For more information on the Operators in Crystal Reports and how they are used, see the Crystal Reports Help.

Setting Up Commissions

Some businesses pay a commission to employees for certain sales. For example, a restaurant might pay a 5% commission on all sales of bottled wines. You can modify existing templates to automatically calculate the commission amount, and add the amount to the employee's Tips Due. Commission information is usually included on an employee report, such as the Daily Employee Detail Report.

Calculating and deducting commissions involves the following steps:

1. In the tracking group linked to employees, include a tracking total for each item with an associated commission. This could be individual menu items, or a major group or family group. See Online Help for more information on setting up tracking totals.

2. Create a text field with the word Commissions and place it on the report. (Select Insert | Text Field.) On the Daily Employee Detail Report, the field might go in the blank line under Total Tips.

3. Select Insert | Formula Field to set up the formula that will calculate the commissions.

   The following sample formula calculates the commission on sales of bottled wines. Bottled wines are programmed as a major group, and are recorded in tracking total 64.

   ```
   if {v_R_employee_trk.trk_ttl_64} <> 0 then
    ToText((5 % {v_R_employee_trk.trk_ttl_64}),2) + "%"
   else
    "0.00%";
   ```

4. Modify the Tips Due field to add the commission.

   Using the previous example, the formula might be modified to the following:

   ```
   if {@Print_Flag} then
    ToText({v_R_employee.chgd_tips_ttl} +
   {v_R_employee.tip_svc_ttl} -
   {v_R_employee.tips_paid_ttl} +
   ({v_R_employee_trk.trk_ttl_64} * .05),2)
   else
    "";
   ```

Creating Graphs

The graph functions provided by Crystal Reports are very limited. You can create a graph only from information in a summation field. For example, on the Consolidated System Sales Detail Report, you cannot create a graph to show net sales or gross receipts by business day. The only fields on this report that can be used to create a graph are Total Order Type Net Sales, Guests, Checks, and Tables.

To add a graph to a report, complete the following steps:

1. Select Insert | Graph/Chart Expert.
2. Complete each step in the Graph/Chart Expert window. The fields a graph can be based on appear on the Data tab in the Graph On field. Graph labels on the Text tab are optional.
3. When you have completed the necessary fields, click Done. The graph will be automatically placed in either the header or footer of the report. It can then be placed appropriately.

Chapter 4

Using a Blank Template

This chapter describes how to create a new report by using a blank template.

In this chapter

Overview

If you want to create a report with a very different format from any of the existing report templates, it may be easier and quicker to begin with a blank template than to use an existing report template.

Using a blank template involves the following steps:

1. Copy and rename the blank template.
2. Link a view or a database table to the template.
3. Link a stored procedure to the template.
4. Choose the appropriate fields, place them on the report, and apply formatting as necessary.

You can also link multiple views to a template, and then use fields from any of the linked views in the report.

Each of these steps, as well as linking multiple views, is covered in detail in this chapter.

Copying and Renaming the Blank Template

A blank template, blank.rpt, is provided for full-page and 40-column reports. The full-page template is in the directory \3700\Reports. The 40-column template is in the directory \3700\Reports\40 column.

Copy the blank template into the appropriate custom directory (either \3700\Reports\Custom or \3700\Reports\40 column\Custom) and rename the file. Use a naming convention that will help you identify the file easily.

WARNING

Always copy and rename the blank template before making any changes.

Each blank template includes basic information that is generally included in a report, and that is passed to the report template from Autosequences and Reports when a report is run. Each of these fields is a formula. The following fields are included:

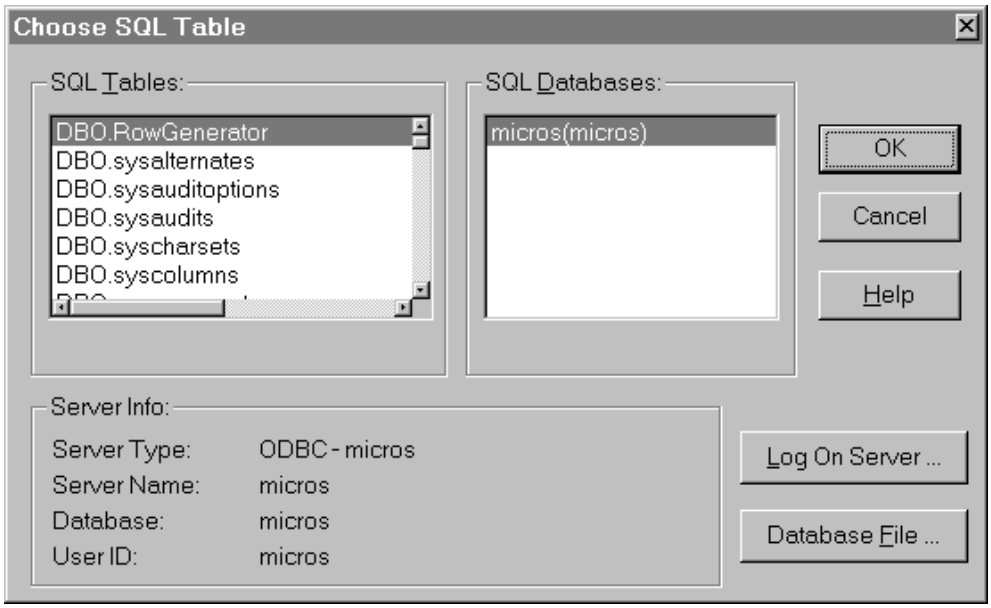
- @Report_Title
- @Store_Name
- @Date_Range
- @Start_Date
- @End_Date
- @Start_RVC
- @End_RVC
- @Report_Employee
- @Current_Time
- @Template_Name
- @Page_Num

Some of these fields appear on the template as hidden, and will not actually print.

Linking a View or a Database Table to the Template

Using Crystal Reports Pro, open the renamed template using File | Open. Then complete the following steps:

1. Select Database| Add Database to Report.
   A window opens prompting you to select a database table.
2. Click the SQL Table button.
   If you are not already logged on to the database server, you will be prompted to do so at this point. Select ODBC-micros, click OK, and enter the appropriate user ID and password.
3. In the SQL Tables window, select the view or database table you wish to use, and click OK.



4. The Visual Linking Expert opens, showing the view or table you selected. Click OK.

Linking a Stored Procedure to the Template

The view or database table associated with a report determines the stored procedure(s) you will need to use.

Most views have an associated stored procedure that was created to update the database tables used. The Views chapter of the *3700 SQL / Database Access Manual* lists views and their associated stored procedure(s).

If the report uses a database table directly, rather than a view, you will need to determine which stored procedure updates that table. The *3700 SQL / Database Access Manual* lists each stored procedure and tells what that procedure updates.

WARNING

If you do not associate the correct stored procedure with the report template, you will not get accurate, up-to-date information when you run the report.

The mechanics of linking a stored procedure to a template are almost exactly the same as linking to a view or database table. Follow the steps on page 4-4, and select a stored procedure rather than a view or database table.

Once you have linked the stored procedure to the template you can place the procedure as a hidden field anywhere on the template. The procedure must appear as a field on the template to be called when the report is run. See “Choosing and Formatting Fields” on page 4-6 for information on inserting the field and formatting it to be a hidden field.

Tip

For stored procedures to appear in the list of SQL Tables in Crystal Reports, the option Stored Procedures must be selected on File | Options | SQL.

Choosing and Formatting Fields

After the view or database table and any associated stored procedures are linked to the report template, you can begin placing and arranging fields on the template.

In Crystal Reports Pro, select Insert | Database Field. A window displays all the fields (or columns) in the view or table the report uses. Highlight a field and click Insert. The cursor changes to a rectangle. Click anywhere on the report template to place the field. You can also highlight a field name and drag and drop it in place.

To select and place several fields at once, hold down [Ctrl] while selecting the field names, then click Insert or drag and drop.

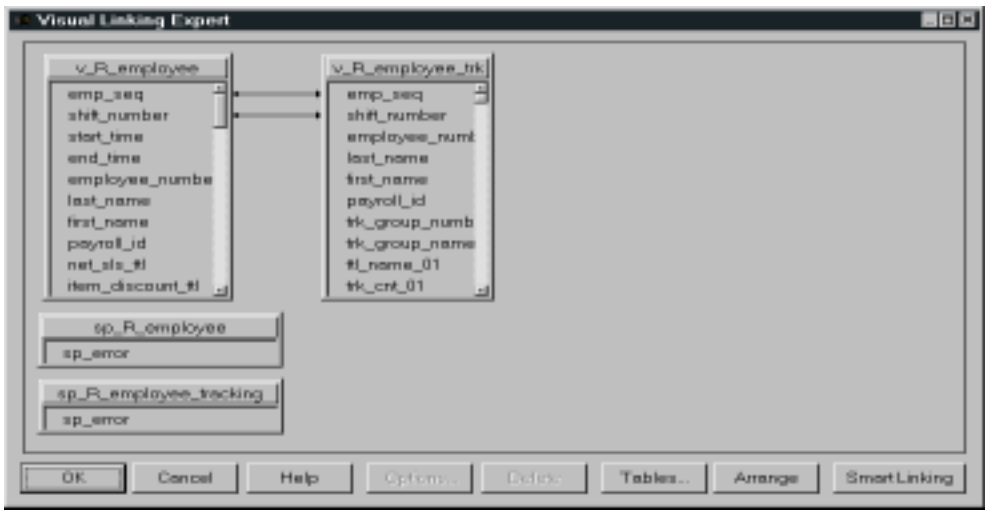
Once a field is placed on the report template, select the field and click the right mouse button to select formatting options. You can change the font, size, or style, can add a border, shading, or a drop shadow to the field, or you can specify if the field should be hidden. For more details on formatting options and how to apply them, see the Crystal Reports Help.

Linking Multiple Views to a Template

If you want to create a report that uses data taken from more than one view, you can do so by linking an additional view to the report template.

To link another view to a report template complete the following steps:

1. In Crystal Reports Pro, open the report template.
2. Select Database | Visual Linking Expert. A window displays any view, database tables or stored procedures that are already linked to the report.
3. Click Tables at the bottom of the window.
4. Click Add SQL/ODBC.
5. Make sure MICROS is highlighted in the SQL Databases window, and select the view you wish to add from the SQL Tables window.
6. Click Add, then Done.
7. The table you selected displays in the Visible Tables window. Click OK.



If you selected Perform Smart Linking in the Visual Linking Expert window, Crystal Reports Pro will try to determine what the links should be between the two views. These links are shown as arrows going from a field in one view to a field in another view.

Setting up the links between views is important. If it is not done properly, the data in the finished report will be incorrect. Do not assume that the links created by Smart Linking are correct. Often Smart Linking creates more links than necessary, and sometimes the links are wrong. You may need to change them manually.

There are no absolute rules that determine how two views should be linked, but the following principles may be helpful:

- The linked fields should be of the same type. If one is a sequence number, the other should be a sequence number.
- The linked fields should usually have the same name.
- The linked fields are almost always the primary key of a totals table. Primary keys are identified in the *3700 SQL / Database Access Manual*.

For some views, a link on one set of fields is enough. Other views may require more than one link, depending on how the data is set up. Each set of views that are linked are unique, and only an in-depth knowledge of the database will provide the necessary answers.

You can also use different types of links, depending on the views you are linking. Most views that are linked in the standard reports either have equal links or left outer joins. The discussion of different types of links and their uses is beyond the scope of this manual. For more information on types of links see Crystal Reports Pro Help.

Index

Note: A Master Index is located in the *3700 Feature Quick Reference Manual.*

All page numbers are hotspots.

Numerics

A

B

C

D

F

G

H

L

O

P

R

S

T

U

V