

**Volume**

**4**

## Reporting & Tracking

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**Rintagi**  
Applications

**User  
Guide**



**robocoder***corporation*

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## Data Tier

Rintagi, the renewable open source .NET code generator that embraces late-change-no-penalty, requires a blue-print to generate concise and pertinent reports. Each report is composed of the following tiers:

1. Data Tier: Logical representation of the tables and columns.
2. Client Tier: Layout and format of each output field.
3. Rule Tier: Business rules to extract the appropriate information from the data tier.

Because Rintagi periodically regenerates itself, all of its functionality can be found and reused in the creation of custom reports for development and administrative purposes. Rintagi provides built-in screens for capturing and maintaining information about the tables and columns in the physical database.

Rintagi is not a data modeling tool but it can create and modify database table schema definitions. It shows the database tables selected to be used in the application, as well as, the basic schema information for each table. Indices are set up directly in the physical database. Rintagi recommends virtual foreign keys so that no physical foreign key is required.

Each record represents a physical table in the designated database. The table name is the same as the physical table name. The column names are the same as the physical column names. For details refer to Volume 2, Chapter 1—Data Entry & Management.

## Report Generator

Business users will find that the Report Generator creates reports, documents, charts or dashboards easily. To make the best use of Rintagi, it is recommended that the Report Generator is used to create a basic report that can then be enhanced by technical people.

The Report Generator is organized into many tab folders, and depending on the selection of report type, the available tabs may change.

### Report Generator

Command: Client Tier -> Report -> Report Generator

### Report Generator Types

The types of reports available in the Report Generator are:

1. Dashboard Gauge Only
2. Graphical Chart Only
3. List Report with Chart
4. Summary Table Report with Chart
5. Document Merging

More reporting types are available at the advanced level and will be described in a later chapter.

### ***Dashboard Gauge***

Dashboard gauge is generally used to show the status of a numeric indicator. It usually has a range and the needle value should read within that range. For example:



The four tabs of information required to produce a gauge are:

1. Main
2. Selected
3. Report Type
4. Criteria

## Main Info

Report Generator

Preview New Copy Save Delete ?

Test Gauge

1 2 3 4

Module: Common Area

Main Info

Selected

Dashboard

Criteria

Report Name\*:

Test Gauge

Owned By:

Nelson Lin

Report Type\*:

Gauge Only

This presents a gauge only, mainly for dashboard use.

Data Category:

General: Bank Statement

This contains all the bank statements header and details info.

Description\*:

This is a test

Changeable: ☒

e.g.:

9/25/2008 10:50:04 AM

Test List			
Statement Date	Beginning Balance	End Balance	
3/1/2008	10,000.00	20,000.00	
4/1/2008	20,000.00	50,000.00	

Schema Characteristic	Description
Report Name	The name that uniquely identifies this wizard-generated report.
Description	The description of this wizard-generated report.
Changeable	Leave unchecked when the advanced report writer has been used and this content cannot be changed. This field is read-only; therefore, if this report is saved all advanced changes will be erased and this entry will be checked again.
Owned By	This wizard-generated report is created and owned by this user. The field is read-only and populated automatically by the system of the login user.

Report Type	The report type for this wizard-generated report. When selected, the tab folders may change to allow the appropriate data to be entered.
Data Category	The data category for this wizard-generated report. When selected, the picture on the right will reflect a sample of the expected results.

## Selected

Report Generator

Preview New Copy Save Delete ?

Test Gauge ▼ 1 2 3 4 5 6 7 8 9 10 Module: Common Area ▼

Main Info **Selected** Dashboard Criteria

Available Tables:  
Cmn - BankStmt ▼

Available Columns:  
(BankAcctId)  
(BankStmtDesc)  
(BankStmtId)  
(BegBalance)  
(CompanyId)  
(StmtDate)

Selected Columns:  
End Balance

Selected Column Header Change:

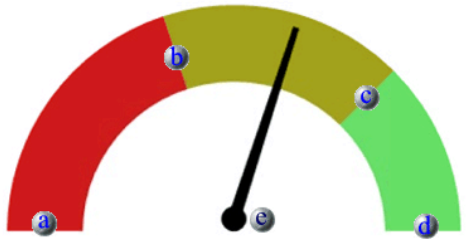
All types of reports require this “Selected” tab folder. Although many columns can be selected from any available table, ultimately only one column can be selected and it should be numeric to be meaningful. If the available column has a corresponding screen with a label, it will be shown; otherwise, the column name as it appears in the database will be enclosed in parentheses here. When a selected column is highlighted, the label can be changed in the “Selected Column Header Change” slot.

## Dashboard

Report Generator Preview New Copy Save Delete ?

Test Gauge Module: Common Area

Main Info Selected Dashboard Criteria



Low Range Min: a  Maximum Value: d

Low Range Max: b  Mid Range Max: c

Needle Value: e

Format:

Schema Characteristic	Description
Low Range Min	The minimum value for the gauge. The Needle value should not be less than this at any time.
Maximum Value	The maximum value for the gauge. The Needle value should not be greater than this at any time.
Low Range Max	The low range maximum value for the gauge. This limits the red area of the gauge.
Mid Range Max	The mid range maximum value for the gauge. This limits the amber area of the gauge.
Needle Value	Select one of the numeric columns selected from previous tab folder. The value of this selected column will be the needle value.
Format	The format type for all the gauge values above.

## Criteria



Report Generator Preview New Copy Save Delete ?

Test Gauge Module: Common Area

Main Info Selected Dashboard **Criteria**

Available Tables:

Cmn - BankStmnt

Available Columns:

(BankAcctId)  
(BankStmntDesc)  
(BankStmntId)  
(BegBalance)  
(CompanyId)  
(EndBalance)  
(StmntDate)

equal

Criteria Columns:

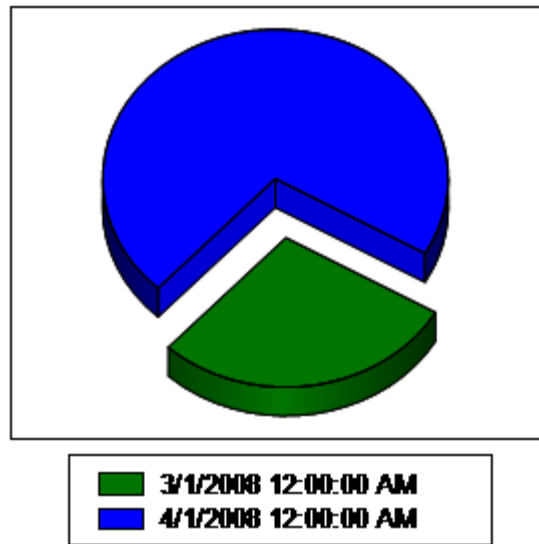
[>=] Statement Date

Criteria Column Header Change:

All types of reports require this “Criteria” tab folder. Select at least one criteria column. If the selected column is a date data type, a calendar will be displayed; otherwise a textbox will be displayed for the criteria value. More advanced display types are available in the advanced sections described in later chapters. Similar to the “Selected” tab folder, the label for each criteria column can be changed. Unlike the “Selected” tab folder, each available column can be selected multiple times. Many criteria can be selected and will be displayed in horizontal alignment although by using the advanced settings they can be arranged in nested tables also.

### ***Graphical Chart Only***

This is most applicable when only a chart is needed. For example:



There are four tabs required to produce a chart. The “Main” and “Criteria” tab folders are the same as previously described.

### Selected

Report Generator
Preview
New
Copy
Save
Delete
?

Test Chart
Module: Common Area

Main Info
Selected
Charting
Criteria

Available Tables:  
Cmn - BankStmnt

Available Columns:  
(BankAcctId)  
(BankStmntDesc)  
(BankStmntId)  
(BegBalance)  
(CompanyId)

Selected Columns:  
Statement Date  
End Balance

Selected Column Header Change:

This tab is similar to the “Selected” tab folder for gauges. Although many columns can be selected from any available table, ultimately only two or three columns can be selected and they should be either numeric or date-sensitive to be meaningful.

## Charting

Report Generator

Preview New Copy Save Delete ?


Test Chart Module: Common Area

Main Info Selected Charting Criteria

Chart Type:  
Pie - Exploded

View in 3D: ☒

Selected Columns:  
[C] Statement Date  
[V] End Balance



☒ N/A  
☐ Category Grouping  
☐ Scalar Value  
☐ Series Grouping

The available chart types are:

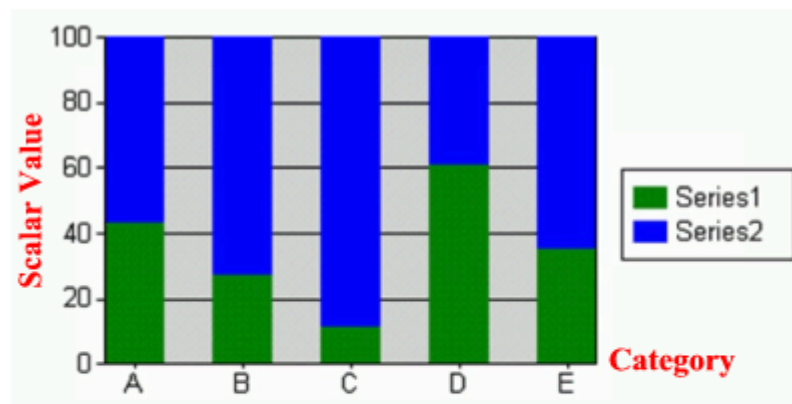
Area - 100% Stacked  
 Area - Plain  
 Area - Stacked  
 Doughnut - Exploded  
 Doughnut - Plain  
 Horizontal Bar - 100% Stacked  
 Horizontal Bar - Plain  
 Horizontal Bar - Stacked  
 Line - Plain  
 Line - Smooth  
 Pie - Exploded  
 Pie - Plain  
 Vertical Column - 100% Stacked  
 Vertical Column - Plain  
 Vertical Column - Stacked

After selecting the chart type, a sample image will appear on the right in two-dimensions (2D). If “View in 3D” is checked, the sample image on the right will change to a 3D image.

Highlight a column to be the x-axis (for horizontal bar graphs the x-axis becomes the y-axis) and check “Category Grouping”. This column should be date sensitive or numeric to be meaningful. A “[C]” will then prefix the column name. Highlight another column to be the y-axis (for horizontal bar graphs the x-axis becomes the y-axis) and check “Scalar Value”. This column should be numeric in data type. A “[V]” will then prefix the column name. These two entries are mandatory for any chart.

If one more column is required in a series (below), highlight the column to be the z-axis and check “Series Grouping”. This column should contain numeric data. An “[S]” will then prefix the column name.

### Series Charting



- ☒ N/A
- ☐ Category Grouping
- ☐ Scalar Value
- ☒ Series Grouping

**List Report with Chart**

A list with sorting, grouping and charting capability is available here. For example:

9/25/2008 10:50:54 AM

Test List		
Statement Date	Beginning Balance	End Balance
3/1/2008	10,000.00	20,000.00
4/1/2008	20,000.00	50,000.00

Seven tabs of information are required to produce a List. The “Main”, “Charting” and “Criteria” tab folders are the same as previously described.

**Layout**

Report Generator

PreviewNewCopySaveDelete?

Test List

Module: Common Area

Main InfoLayoutSelectedSortingGroupingChartingCriteria

Landscape

Portrait

Unit of Measure\*:  
Inches

Top Margin\*:  
1.00

Left Margin\*:  
1.00


Right Margin\*:  
1.00

Bottom Margin\*:  
1.00

8.5" X 11"

In “Layout” choose Landscape or Portrait orientation. Select “Unit of Measure” from the dropdown menu then enter the margins for the layout.

**Selected**

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3/23/2015

Report Generator Preview New Copy Save Delete ?

Test List Module: Common Area

Main Info Layout **Selected** Sorting Grouping Charting Criteria

Available Tables:

Cmn - BankStmt

Available Columns:

(BankAcctId)  
(BankStmtDesc)  
(BankStmtId)  
(CompanyId)

Selected Columns:

Statement Date  
Beginning Balance  
End Balance

Selected Column Header Change:

Select as many columns as you would like to appear in the report. Place the columns to be sorted or grouped at the beginning of the list.

## Sorting

Report Generator Preview New Copy Save Delete ?

Test List Module: Common Area

Main Info Layout Selected **Sorting** Grouping Charting Criteria

Available Tables:

Cmn - BankStmt

Available Columns:

(BankAcctId)  
(BankStmtId)  
(BegBalance)  
(CompanyId)  
(EndBalance)  
(StmtDate)

Sort Columns:

[DSC] (BankStmtDesc)

☐ Ascending ☒ Descending

Even if a column is not selected, it can be a sorting column. Ascending order is the default and the sorting column will be preceded with “[ASC]”. Highlight the sorting column and check “Descending” to change the sorting method. The preceding characters “[DSC]” will precede the sorting column.

## Grouping

Report Generator

Test List 151 Module: Common Area

Main Info Layout Selected Sorting **Grouping** Charting Criteria

Selected Columns:

- [1] Statement Date
- Beginning Balance
- End Balance

☐ N/A  
☒ Group data by [1]  
☐ and then by [2]  
☐ and finally by [3]

Table Name: AdvRule

Column Name	Data Ty
AdvRuleId	Int
AdvRuleProg	NText
RmFuncProc	VarChar
RuleDesc	NVarChar
RuleDescription	NVarChar

More than one column can be grouped per level and there are three levels of groupings available. The image on the right would reflect a sample of the level of grouping that is selected. The grouping column should be preceded with “[1]”, “[2]” or “[3]” depending on the grouping level.

## Summary Table Report with Chart

Aside from grouping and sorting, a summary table offers aggregates such as Count, Sum, Average, Largest, and Smallest to be applied to numeric columns. Charting is optional.

If any of the above aggregates has been applied, the description “Grand Total” will be displayed as default. This description can later be changed to desirable text in the advanced reporting section.

An example is shown below:

9/25/2008 12:30:10 PM

### Test Summary

Statement Date	Beginning Balance	End Balance
3/1/2008	10,000.00	20,000.00
4/1/2008	20,000.00	50,000.00
<b>GRAND TOTAL</b>	<b>30,000.00</b>	<b>70,000.00</b>

Eight tabs are required to produce a Summary Table. All tab folders are the same as previously described except for the “Aggregate” tab.

### Aggregate

Report Generator

Preview

New

Copy

Save

Delete

?

Test Summary

Module: Common Area

Main Info

Layout

Selected

Sorting

Aggregate

Grouping

Charting

Criteria

Selected Columns:

Statement Date

[SUM] Beginning Balance

[SUM] End Balance

☐ N/A

☐ Count

☒ Sum

☐ Average

☐ Largest

☐ Smallest

Select one of the selected columns and check Count, Sum, Average, Largest or Smallest as the aggregate function. The prefix “CNT”, “SUM”, “AVG”, “MAX”, or “MIN” will appear in front of the column, as appropriate. This aggregate will act upon a grouping level and on the grand total level.



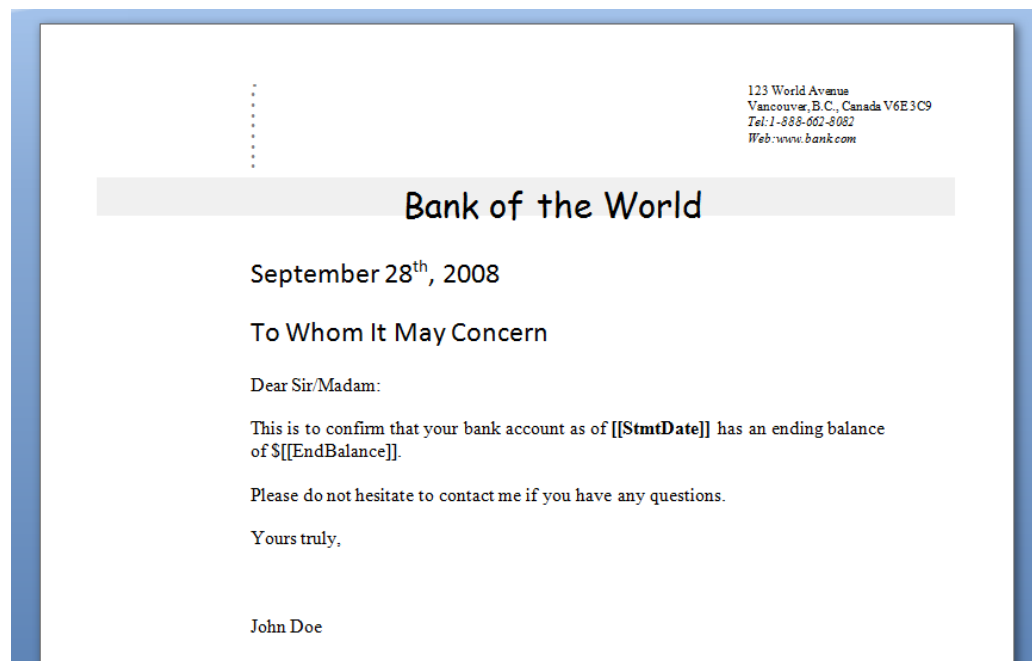
## Document Merging

By enclosing unique column names (as declared in the database) in double brackets (“[[“ and “]]”) within a Rich Text File (.rtf) or ASCII text file (.txt), the values of these columns can be replaced at run time. **Warning: The copy and paste utility may not work here because the entry may contain formatting characters that would make it unrecognizable to the replacement engine.** Always type the opening double brackets “[[“, then field name, then closing double brackets “]]”. When in doubt, always check the underlying text to make sure there is not unwanted characters in the document template.

Rich Text File (.rtf) is most applicable when a large amount of text, graphics and formatting needs to be included in a document and only a small amount of information needs to be merged at run time. The document will pop up as Microsoft Word document and can accept any last minute changes before printing.

ASCII text file (.txt) is mostly used for direct printing to prevent users from changing the contents before print. Example: Check printing where no change to the amount or signature is allowed.

A sample Rich Text File (.rtf) for document merging is shown below:



There are three tabs of information required to produce Document Merging. “Selected” and “Criteria” tab folders are the same as previously described.

## Main Info

Report Generator

Preview New Copy Save Delete ?

Test RTF Module: Common Area

Main Info Selected Criteria

Report Name\*: Test RTF

Owned By: Nelson Lin

Report Type\*: Document Merging  
*This merges selected fields into your choice of rtf and txt documents.*

Document Template: Test.rtf

Data Category: General: Bank Statement  
*This contains all the bank statements header and details info.*

Description\*: This is a test

Changeable: ☐

e.g.:

Statement Date	Beginning Balance	End Balance
3/1/2008	10,000.00	20,000.00
4/1/2008	20,000.00	50,000.00

As soon as “Document Merging” is selected as the report type, a default document template must be requested. Enter the appropriate document template name and import this document via the advanced interface – Report Definition.

## Report Definition

Command: Client Tier -> Report -> Advanced Report -> Report Definition

Report Definition

Export RichText New Co

Test RTF

Main Info Fields Parameters Update Excel

Report Id: 26

Program Name\*: S05Rptwiz42

Report Type\*: RTF Document Merging

Orientation\*: ☐ Landscape ☒ Portrait

Copy from Report:


Modified By: Nelson Lin

Modified On: 9/28/2008 10:42:27 AM

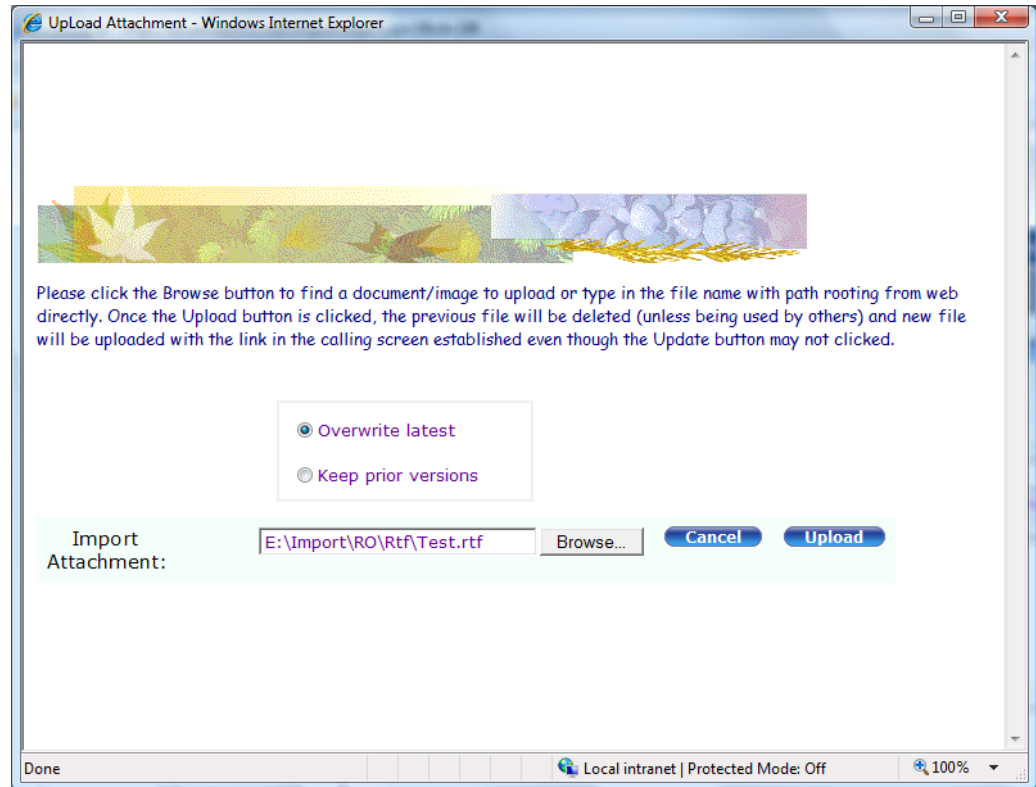
Template Name: Test.rtf

Templates:

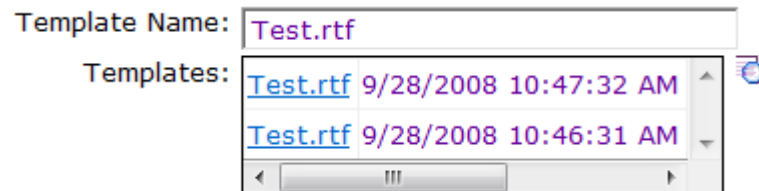
Test.rtf	9/28/2008 10:47:32 AM
Test.rtf	9/28/2008 10:46:31 AM


Click  to launch the document import wizard. This import wizard allows multiple versions of the same document to be kept. **Warning: The default is to overwrite**

**the last version of the same document imported.** Browse for the desired RTF file on local or networked drives and click the Upload button.





Note: the latest uploaded version is always on top:



Scroll to the right to see size and import user information. Clicking the garbage bin image  removes the associated imported document from the database permanently without clicking the Save button.

Template Name:

Templates:

10:47:32 AM	53KB	Nelson Lin	
10:46:31 AM	53KB	Nelson Lin	

## Advanced Document Merging

Rintagi provides maximum flexibility in document merging. For advanced document merging, each record requires its own formatted template with its own logo, format, etc. Additional templates may be imported for this purpose. Although it is mandatory to have a default template name, the imported documents may have different names and they can be totally different documents that are sensitive to different data. For example:

Template Name:

Templates:

<a href="#">Special Cheque.txt</a>	2/7/2008 4:
<a href="#">Payroll Cheque.txt</a>	2/7/2008 4:
<a href="#">Expense Cheque.txt</a>	2/7/2008 4:
<a href="#">AP2ndPg Cheque.txt</a>	2/7/2008 4:
1 2	

It is important to assign a “**TemplateId**” to each of the non-default documents as below:

### Report Template

Command: Code Tables -> Template Type

Report Template					Export	RichText	Undo All	Save	?
					Module: Accounts Payable				
20 1 of 1					Filter All On				
Template ID	Template Name*	Template Prefix*	Default*	Delete	All				
1	Default		<input checked="" type="checkbox"/>	Delete					
2	Payroll Cheque	Payroll	<input type="checkbox"/>	Delete					
3	Expense Cheque	Expense	<input type="checkbox"/>	Delete					
4	Sp.Exp Cheque	Special	<input type="checkbox"/>	Delete					
5	A/P Cheque 1st Page	AP1stPg	<input type="checkbox"/>	Delete					
6	A/P Cheque 2nd Page	AP2ndPg	<input type="checkbox"/>	Delete					
			<input type="checkbox"/>	Delete					

Make sure the “TemplateId” is specified for each row of data returned in the Stored Procedure that is specified in the “Field” tab folder of the Report Definition:

Report Definition		
<div> <div>Export</div> <div>RichText</div> <div>New</div> <div>Copy</div> <div>Undo All</div> <div>Save</div> <div>De</div> </div>		
<div> <div>Cheque Printing</div> <div>Module: Accounts Payable</div> </div>		
<div> <div>Main Info</div> <div>Fields</div> <div>Parameters</div> <div>Update</div> <div>Excel</div> </div>		
<div> <div>Regular Field Clause:</div> <div>EXEC dbo._GetApTxtChequeR @UsrId, @wClause, @ChequeNoFr, @ChequeNoTo, @ChequePrinted</div> </div>		
<div> <div>S.Procedure:</div> <pre> SELECT   @PrevBillId=0,@cnt=0,@L01="",@L02="",@L03="",@L04="",@L05="",@L06="",@L07="",@L08="",@L09="",@   L10="",@L11="",@L12="",@L13="",@L14="",@L15="",@L16="",@L17="",@L18="",@L19="",@L20="" END END CLOSE cur DEALLOCATE cur SELECT @sClause = 'SELECT TemplateId=CASE WHEN z.FirstPage is null or z.FirstPage="Y" THEN k.TemplateId ELSE k.AltTemplateId END' + ',g.CompanyDesc,a.ChequeNo,ChequeNumber=a.ChequeNo,e.CurrencyName,a.PayToName,a.Chequ eDate' + ',M1=substring(convert(varchar,a.ChequeDate,102),6,1)' + ',M2=substring(convert(varchar,a.ChequeDate,102),7,1)' </pre> </div>		
<div> <div>2 1 of 1</div> <div>Filter All On</div> </div>		
Culture*	Default Help Message*	Report Title*
U.S. English	Please select the appropriate criteria and press the Print button to print the selected cheques. No audit trail when printing to non-cheque printer with invalid signature.	Cheque Printing

The document import process is independent of the save mechanism of the Report Definition screen. **Warning: each action is a direct interaction with the database.**

## Client Tier

Rintagi reporting can be divided into four categories:

1. Crystal Reporting – can be viewed on-line as HTML, printed to a server side printer or exported to a tab-delimited file (.txt), Excel spreadsheet (.xls), Adobe Acrobat (.pdf) and Microsoft Word (.doc).
2. Excel Reporting Only – most suitable for displaying large numbers of columns.
3. Global Criteria – Not a report. A set of criteria that affects all screens as a hidden filter.
4. Report Generator utilities as explained in previous chapters:
  - a. Dashboard Gauge,
  - b. RTF Document Merging,
  - c. TXT Document Merging,
  - d. SQL Reporting Service which covers Charts, Lists and Summary Tables.

## Report Definition

Although Rintagi currently provides only the above reporting types, these reports can be extended as Rintagi regenerates and evolves. Rintagi supports each organization in having its own unique Rintagi to generate company-specific codes that run on that company's architecture. Source code will be provided for that purpose.

Report Generator automatically fills all basic Report Definition information. Business users will find most of their report needs met with these basic definitions. More sophisticated report types may require input directly from developers. Rintagi provides a multitude of design options.

In Report Definition there are five tab folders as follow:

1. Main
2. Fields
3. Parameters
4. Update
5. Excel

## Report Definition – Main Info

Command: Client Tier -> Report -> Advanced Report -> Report Definition

Report Definition

Export RichText New Copy Undo All Save Delete

Data Dictionary

Module: Administration

Main Info Fields Parameters Update Excel

Report Id: 57 Template Name: Templates: No Document currently available. Unit\*: Inches

Program Name\*: AdmRptDataDict Top Margin\*: 1.00

Report Type\*: Sql Reporting Service Bottom Margin\*: 1.00

Orientation\*: ☐ Landscape ☒ Portrait Left Margin\*: 1.00

Copy from Report: Right Margin\*: 1.00

Modified By: Anonymous Page Width\*: 8.50

Modified On: Page Height\*: 11.00

Allow Columns Selection: ☐ Generate: ☒ Last Generated:



Where Clause:

Culture*	Default Help Message*	Report Title*	Delete All
U.S. English	Please select the desired system and click one of the buttons to inspect the data dictionary.	Data Dictionary	<a href="#">Delete</a>
Mainland Chinese	请选择所需的系统之一,按按钮检查数据字典。	数据字典	<a href="#">Delete</a>
French	Veuillez choisir le système désiré et cliquer un des boutons pour inspecter le dictionnaire de données.	Dictionnaire de données	<a href="#">Delete</a>

Column	Description
Report Id	An internal identity uniquely representing this report.

Program Name	The unique Program Name (20 characters or less). This name should be preceded with two or three characters that identify the database to which belongs.
Report Type	The type of this report. If RTF/TXT document merging is selected a default Template Name becomes mandatory.
Orientation	Selects portrait or landscape layout for printed report. Not applicable to SQL Reporting as the page width and height will be specified separately.
Copy from Report	The report to copy the columns from, if desired.
Modified By	This report definition was last modified by this user.
Modified On	This report definition was last modified on this date and time.
Template Name	This .txt or .rtf template will be used for RTF/TXT document merging, if any.
Templates	The document templates available for merging. The latest version of the same name will be used.
Unit	The unit of measure for the margins, positions, etc. of this report. Only applicable to SQL Reporting.
Top Margin	The top margin of this report. Only applicable to SQL Reporting.
Bottom Margin	The bottom margin of this report. Only applicable to SQL Reporting.
Left Margin	The left margin of this report. Only applicable to SQL Reporting.
Right Margin	The right margin of this report. Only applicable to SQL Reporting.
Page Width	The page width of this report. Only applicable to SQL Reporting.
Page Height	The page height of this report. Only applicable to SQL Reporting.



	Click here to obtain all of the Stored Procedures from the physical database.
	Click here to synchronize all of the Stored Procedures to the physical database immediately.
Allow Column Selection	Check if columns can be deselected at run time. Relevant to RTF/TXT document merging only.
Generate	Uncheck this if no programs should be generated for this report at this time.
Last Generated	The Stored Procedures were last generated on this date.
Where Clause	Additional conditions to the Where clause in SQL, if applicable.
Culture	The culture for this cultural-specific report name.
Default Help Message	The message (with unlimited characters) to be displayed as a help message in the language specified.
Report Title	The title for this report (50 characters or less) in the language specified.

## Report Definition – Fields

Report Definition Export RichText New Copy Undo All Save Delete ?

Data Dictionary Module: Administration

Main Info Fields Parameters Update Excel

Regular Field Clause: EXEC dbo.\_GetAdmRptDataDictR @wClause, @SystemId

S.Procedure:

```
CREATE PROCEDURE [dbo].[_GetAdmRptDataDictR]
    @wClause nvarchar(4000)
    ,@SystemId tinyint -- not null
    /* WITH ENCRYPTION */
AS
DECLARE @sClause nvarchar(4000)
        ,@fClause nvarchar(4000)
        ,@oClause nvarchar(1000)
        ,@dbDesDatabase varchar(50)

SET NOCOUNT ON
SELECT @dbDesDatabase = dbDesDatabase FROM dbo.Systems WHERE SystemId = @SystemId
SELECT @sClause = 'SELECT
a.TableName, a.ThlObiective, b.ColumnName, c.DataTypeName, b.ColumnLength, b.AllowNull, b.PrimaryKey
```

Column

Description

Regular Field Clause	When left empty, this will be filled with a standard clause to call a pre-defined stored-procedure with a name starts with “_Get”, followed by the unique report name and an “R”. Developer may choose to overwrite this as long as it matches the name in the reporting Stored Procedures and the parameters are met. This should be adjusted accordingly upon adding or removing reporting criteria.
S. Procedure	This content will be executed as Stored Procedure (SQL) on the relevant database(s) when not empty.

## Report Definition – Parameters

Report Definition

Export RichText New Copy Undo All Save Delete ?

Data Dictionary: Administration Module: Administration

Main Info Fields Parameters Update Excel

Parameter Clause: EXEC dbo.\_GetAdmRptDataDictV @wClause, @SystemId

S.Procedure:

```
CREATE PROCEDURE [dbo].[_GetAdmRptDataDictV]
    @wClause          nvarchar(4000)
    ,@SystemId         tinyint -- not null
/* WITH ENCRYPTION */
AS
DECLARE @sClause      nvarchar(4000)
        ,@SystemName  nvarchar(50)
SET NOCOUNT ON
SELECT @SystemName = SystemName FROM dbo.Systems WHERE SystemId = @SystemId
SELECT @sClause = N'SELECT ReportName="DataDict_" + convert(nvarchar,@SystemId)
+ "',SystemName="' + @SystemName + "' + N' System'"
EXEC (@sClause)
```

Column	Description
Parameter Clause	This will be filled with a standard clause when not intended to provide data and at least one report column is a parameter. This is only relevant to SQL Reporting Service.
S. Procedure	When filled this content will be executed as Stored Procedure (SQL) on the relevant database(s). This is only relevant to SQL Reporting Service.

## Report Definition – Update

Report Definition

Export RichText New Copy Undo All Save Delete ?

Data Dictionary Module: Administration

Main Info Fields Parameters Update Excel

Txt Update Clause:

S.Procedure:

This will be filled with a standard clause when unattended and Template has a .bt extension.

Column	Description
Txt Update Clause	This will be filled with a standard clause when not intended to provide data and Template has a .txt extension.
S. Procedure	When filled this content will be executed as Stored Procedure (SQL) on the relevant database(s).

## Report Definition – Excel

Report Definition

Export RichText New Copy Undo All Save Delete ?

Data Dictionary Module: Administration

Main Info Fields Parameters Update Excel

Formatted Xls Clause:

S.Procedure:

This will be filled with a standard clause when unattended and "To Excel Only" is checked.



Column	Description
Formatted Xls Clause	This will be filled with a standard clause when not intended

	to provide data and "To Excel Only" is checked.
S. Procedure	When filled this content will be executed as Stored Procedure (SQL) on the relevant database(s).



## Report Criteria

Many criteria can be added by the developer to facilitate flexible reporting. Rows can be filtered based on selected criteria. Contents of individual columns can be changed or filtered based on login user's rights allowed within the report Stored Procedure in the Regular Field Clause.

Below is an example of multiple criteria for a report:

Usage Report  [View](#) [PDF](#) [Word](#) [Excel](#) [Export](#) [Print](#) HP LaserJet 3300 

---

Summary: ☒ System: [Administration](#) From:  [November 2007](#) To:  [September 2008](#)

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3	31	1	2	3	4	5	6
4	5	6	7	8	9	10	7	8	9	10	11	12	13
11	12	13	14	15	16	17	14	15	16	17	18	19	20
18	19	20	21	22	23	24	21	22	23	24	25	26	27
25	26	27	28	29	30	1	28	29	30	1	2	3	4
2	3	4	5	6	7	8	5	6	7	8	9	10	11




---

Agent:  Customer:   
 Broker:  Investor:   
 Vendor:  Member:





---

User Group:  User: [Nelson Lin](#)

Most of the time users will change only one of many criteria offered each time a report is run; therefore, each time a user successfully runs a report, the criteria being used for that report by that user is memorized and Rintagi will reselect those last criteria when the same user runs the same report again. Additionally, a name can be given to a set of criteria so that the user can search and select from a list of these memorized reports as follows:

Data Dictionary   [View](#) 

---

Name\*: [Administration DB Only](#)    

---

System: [Administration](#)

To add report criteria, the following user interface can be used without coding. There are three tab folders of information required.

## Report Criteria – Main Info

Command: Client Tier -> Report -> Advanced Report -> Report Criteria

Column	Description
Criteria Id	The internal ID that uniquely identifies this report criteria column.
Report	The report that this criteria applies to.
Tab Index	The unique integer for the order of appearance. When a number is entered, all tab order of the criteria will be renumbered at intervals of 10.
Column Name	The unique criteria column name (20 characters or less).
Report Group	The report group that conforms to this criteria.
Permission Table	The permission key columns on this table that will be used to set restrictions on this criterion.
Table Abbreviation	Use "a" if permission column exists in the above permission table, otherwise enter any letter being used as table reference in the _Get?? sp.

Require Validation	When checked, this criterion becomes mandatory.
--------------------	---

## Report Criteria – Represent

Report Criteria

Export RichText New Copy Undo All Save Delete

Report: Data Dictionary

AdmRptDataDict 200: SystemId Module: Administration

Main Info Represent Fields

Data Type\*: TinyInt

Data Type Size:

Display Mode\*: DropDownList

Column Size (px): 150

List Row Size:

DropDown Key Column: SystemId

DropDown Ref Column: SystemName

DropDown Sort Column:

4 1 of 1 Filter All On

Culture*	Column Header	Width	Delete All
U.S. English	System		Delete

Column	Description
Data Type	The data type for this report criteria column.
Data Type Size	The data type size in pixels for this criteria column. This is relevant only for non-standard data types such as char, varchar, etc.
Display Mode	<p>The display mode for this report criteria column.</p> <p>Special case for multi-select non-mandatory listbox when the top empty row is included in the selection:</p> <ol style="list-style-type: none"> <li>listbox showing all rows from underlying table (permission is ALL): <ol style="list-style-type: none"> <li>No row in the underlying table: Pass null;</li> <li>Some rows in the underlying table: Pass null;</li> </ol> </li> <li>listbox showing some rows from underlying table (permission filtered): <ol style="list-style-type: none"> <li>No row in the underlying table: Pass ('0');</li> <li>Some rows in the underlying table: Pass ('0',nn) where nn is a list of all row keys in quotes from listbox;</li> </ol> </li> </ol>
Column Size (px)	The column size in pixels for this criteria column.
List Row Size	This specifies the number of rows only if this criterion is a

	ListBox.
Dropdown Key Column	The column name for the key column of this Dropdown, ListBox, or ComboBox.
Dropdown Ref Column	The column name for the display column of this Dropdown, ListBox, or ComboBox.
Dropdown Sort Column	When this column name is not specified, the reference column above will be used for sorting.

## Report Criteria – Fields

Column	Description
Where Clause	The additional condition required for this criterion. If this is empty the @wClause being passed to the reporting Stored Procedure described below would become: 'WHERE 1=1'; The syntax to overwrite this would be become: 'SELECT @wClause = 'WHERE a.Priority <> 0'.
Regular Criteria Clause	When empty this is automatically filled and the Stored Procedure created when the Save-button is clicked for a Dropdown, ListBox, RadioButton or ComboBox. The developer may choose to overwrite this using another

	Stored Procedure name for the desired display. It is recommended that the Stored Procedure name of the criteria column name begin with the prefix “_GetIn”.
--	---

An example of a Stored Procedure to obtain a list for Dropdown, ListBox, RadioButton, or ComboBox is as follows:

```
ALTER PROCEDURE [dbo].[_GetInCustomerId]
    @wClause    varchar(4000)
/* WITH ENCRYPTION */
AS
DECLARE @sClause    varchar(4000)
        ,@fClause    varchar(4000)
        ,@oClause    varchar(1000)
SET NOCOUNT ON
SELECT @sClause = 'SELECT a.CustomerId, a.CustomerName'
SELECT @fClause = 'FROM ROCmon.dbo.Customer a'
SELECT @oClause = 'ORDER BY a.CustomerName'
EXEC (@sClause + ' ' + @fClause + ' ' + @wClause + ' ' + @oClause)
RETURN 0
```




## Report Columns

The columns to be returned by the report Stored Procedure described in the Regular Field Clause and/or described in the Report Definition should match the columns described here.

### Report Column

Command: Client Tier -> Report -> Advanced Report -> Report Columns



Report Column Export RichText New Copy Undo All Save Delete   

Report: Data Dictionary

AdmRptDataDict 40: TblObjective Module: Administration

Report\*: Data Dictionary

Column Name\*: TblObjective

Column Type\*: Field

Tab Order\*: 40

Column Format:

Padding Size:

With Character:

Data Type\*: NText

Criteria Operator:

Criteria Column:

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Culture*	Column Header	Width	Delete All
U.S. English	Table Described		Delete

Column	Description
Report	The report that this column belongs to.
Column Name	The unique column name to be referenced in the Select Clause.
Column Type	The report column type for this report column. Currently either “Field” or “Parameter”.
Tab Order	The tab order of this report column with respect to other columns. When a number is entered, all tab order of the criteria for the same report will be renumbered at intervals of 10.
Column Format	This is an optional column format for the display of this column. e.g. MMMM d, yyyy specifies the long date format.
Padding Size	The total number of characters so that this column can be right-aligned with specified padding characters to the left.
With Character	The character to be padded to the left of this column if the

	total padding size has been specified. Default is blank.
Data Type	The data type for this report column. Detailed choices can be obtained from Volume 2.
Criteria Operator	The operator to match to a report criteria, if appropriate. If assigned, the @wClause will automatically populate with the formula below.
Criteria Column	The criteria column to match to the above column (Criteria Operator), if appropriate.

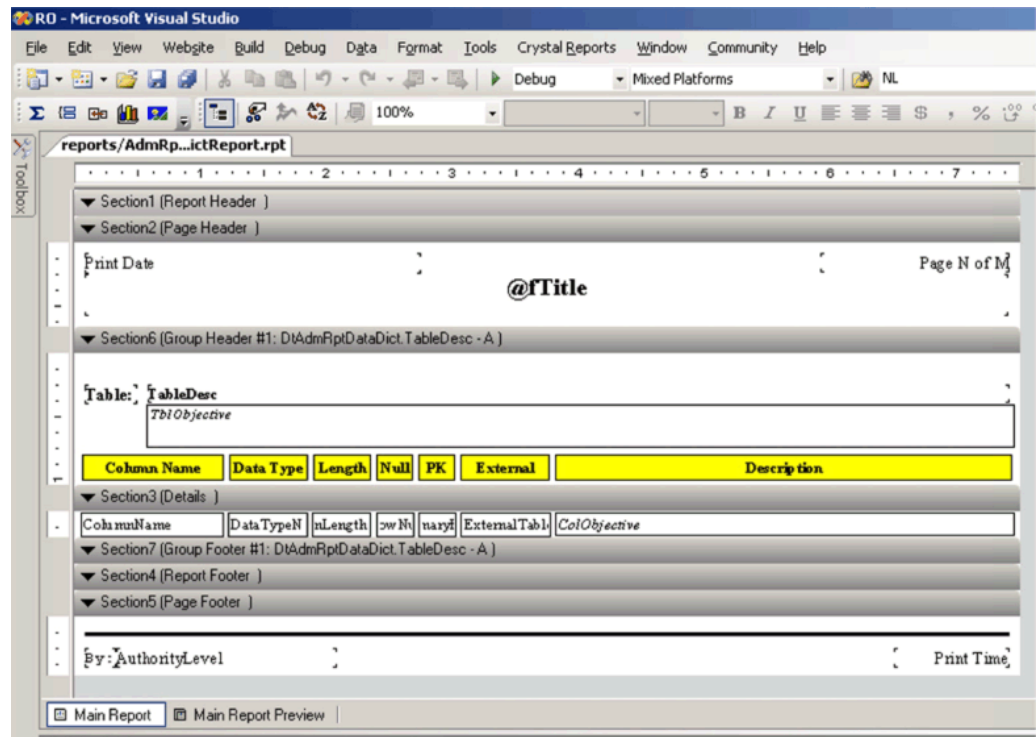
## Layout and Format

The final step in Rintagi reporting is to define the layout and format for each of the columns specified. They can be divided into four categories:

1. Crystal Reporting,
2. Excel Reporting Only,
3. Document merging,
4. Report Generator (excluding document merging).

### ***Crystal Reporting***

The current version of Rintagi expects a Crystal Report (.rpt) with the same name as the report name. Using Visual Studio and Crystal Report designer, the result set from the report Stored Procedure is identified and the layout and format can then be done following the procedures provided by those tools.



### Excel Reporting Only

This exports a report as a formatted Excel spreadsheet. The result set returned by the report Stored Procedure is expected to be XML-based. The report must be interpreted by Excel 2002 or a later version. For example:

```
+ BEGIN
+ INSERT INTO dbo.#xTable (xid, ReportXml)
+ SELECT @rCnt + @offset, <Row> <Cell> <Data ss:Type="String">ITRNS</Data> </Cell>
+ <Cell> <Data ss:Type="String">TRNSTYPE</Data> </Cell> <Cell> <Data ss:Type="String">DATE</Data> </Cell>
+ <Cell> <Data ss:Type="String">ACCN</Data> </Cell> <Cell> <Data ss:Type="String">AMOUNT</Data> </Cell>
+ <Cell> <Data ss:Type="String">DOCNM</Data> </Cell>
+ <Cell> <Data ss:Type="String">MEMO</Data> </Cell> <Cell> <Data ss:Type="String">NAME</Data> </Cell> </Row>
+ INSERT INTO dbo.#xTable (xid, ReportXml)
+ SELECT @rCnt + @offset + 1, <Row> <Cell> <Data ss:Type="String">ISPL</Data> </Cell>
+ <Cell> <Data ss:Type="String">TRNSTYPE</Data> </Cell> <Cell> <Data ss:Type="String">DATE</Data> </Cell>
+ <Cell> <Data ss:Type="String">ACCN</Data> </Cell> <Cell> <Data ss:Type="String">AMOUNT</Data> </Cell>
+ <Cell> <Data ss:Type="String">DOCNM</Data> </Cell>
+ <Cell> <Data ss:Type="String">MEMO</Data> </Cell> <Cell> <Data ss:Type="String">NAME</Data> </Cell> </Row>
+ INSERT INTO dbo.#xTable (xid, ReportXml) SELECT @rCnt + @offset + 2, <Row> <Cell> <Data ss:Type="String">
ENDTRNS</Data> </Cell> </Row>
+ SELECT @rCnt = @rCnt + 3
+ END
+ INSERT INTO dbo.#xTable (xid, ReportXml)
```

### Document Merging

Rintagi provides maximum flexibility in document merging. Each column that needs to be merged can be enclosed by double square brackets "[[and]]". For example:

[[TodayDate]]

## To Whom It May Concern

Dear Sir/Madam:

This is to confirm that **[[MemberName]]** has been an employee of robocoder corporation since *[[StartDate]]*. **[[MemberName]]**'s current position is **[[JobPosition]]** and the annual remuneration is **[[CurrencyName]]\$[[AnnualSalary]]**.

The above is a business letter properly formatted with the appropriate font, (bold, italic, etc.). The column names enclosed in double brackets will be replaced by the result set returned from the report Stored Procedure. The same merge technique applies to flat text files.

### ***Report Generator***

Report Generator items (excluding document merging) are powered by Microsoft SQL Reporting Service. To effectively format and layout the report columns, five interfaces are provided to replace the time-consuming, hand-coding effort in changing the .rdl XML file directly. If desired, native SQL Report Designer can be used to modify the .rdl file directly outside of Rintagi. **Warning: clicking the Save Button when prompted and answering yes in Report Generator will overwrite the .rdl file.**

The five interfaces are:

1. Report Control
2. Report Element
3. Report Chart
4. Report Table
5. Report Style

In order to understand how the above advanced interfaces work, consult the Microsoft SQL Reporting Service manual.

## Report Control

This is essentially the same as “Report Item” in SQL Reporting Service. It is automatically populated by the Report Generator but can be changed, as necessary. The list of controls from which to select is:



## Report Control

Command: Client Tier -> Report -> Advanced Report -> Report Control

Column	Description
Control Id	This internal ID uniquely identifies this report control.
Report	The report this control belongs to.
Control Name	This description uniquely represents this report control.

Parent Control	The parent report control of this control, if applicable.
Report Element	The report element this control belongs to, if applicable.
Table Cell	The table cell this control refers to, if applicable.
Control Style	The style sheet of this report control, if applicable.
Control Type	The report control type as described above.
Top	The relative top position of this report control, if applicable.
Left	The relative left position of this report control, if applicable.
Height	Height of this report control, if applicable.
Width	Width of this report control, if applicable.
Z-Index	This represents the relative depth of this report control, if applicable.
Page Break at Start	This forces a page break at the beginning of the rectangle.
Page Break at End	This forces a page break at the end of the rectangle.
Can Grow	This allows the Textbox to increase in size in order to accommodate the contents.
Can Shrink	This allows the Textbox to decrease in size in order to match the contents.
Keep Together	This keeps the entire data region (all repeated sections)

	together on one page, if possible.
Value	This expression or constant is the value to be displayed in the Textbox.

## Report Element

The Report Element defines the body, page header, and page footer. The Report Generator automatically populates this but it can be changed as necessary.

### Report Element

Command: Client Tier -> Report -> Advanced Report -> Report Element

Report Element

Export RichText Undo All Save

Aging Summary

Module: Accounts Receivable

1 of 1

Filter All

On

Report*	Element Type*	Style	Height*	Columns	Column Spacing	Print on First*	Print on Last*
Aging Summary	PageHeader		1.00			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Aging Summary	Body		7.30			<input type="checkbox"/>	<input type="checkbox"/>
Aging Summary	PageFooter		0.70			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

Column	Description
Report	The report this element belongs to.
Element Type	The type of this element. Select from “Body”, “Page Header” and “Page Footer”.
Element Style	The style sheet for this report element.
Element Height	Height of this report element.

Number of Columns	The number of columns for this report body (default 1).
Column Spacing	The spacing between each column in a multi-column output (default 0.5 in.), if applicable.
Print on First	This refers to the header/footer and indicates if it should be shown on the first page of the report.
Print on Last	This refers to the header/footer and indicates if it should be shown on the last page of the report.

### ***Report Chart***

This is only relevant if there is a chart defined in the Report Generator and that chart is automatically populated.

## **Report Chart**

Command: Client Tier -> Report -> Advanced Report -> Report Chart

Report Chart
Export RichText New Copy Undo All Save

Test Chart [Body] 000[Chart] CCha [Pie - Exploded]
Module: Common Area

Control\*: Test Chart [Body] 000[Chart] CCha
Report\*: Test Chart
Chart Type\*: Pie - Exploded
3D: ☒
Category\*: S05Rptwiz39 10: StmtDate
Value\*: =Fields!EndBalance.Value
Series:

Column

Description



Control	The report control this chart refers to.
Report	The report this chart belongs.
Chart Type	The report chart type as described in the Report Generator above.
3D	Check when the chart is to be displayed in 3D, (default is 2D).
Category	The field for the grouping of data by category.
Value	This expression or scalar is the value which is displayed as plot data value.
Series	The field for the grouping of data by series, if applicable.

### ***Report Table***

This contains the definition for a summary table and is populated by the Report Generator. The example below demonstrates a drill-down feature that functions by simply hiding the detail control and toggling for the information by using the “+” and “-” keys.

#### **Aging Summary** **Wednesday, October 01, 2008**

Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
0.00	0.00	0.00	0.00	477.00	⊕ 477.00
0.00	0.00	0.00	0.00	25,697.88	⊖ 25,697.88
ling for the period ending Aug 10, 2007					3,219.75
ling for the period ending Aug 24, 2007					4,690.50

## Report Table

Command: Client Tier -> Report -> Advanced Report -> Report Table

Report Table Export RichText New Copy Undo All Save

Report:  Report Control:

Aging Summary [Body] [Table] T53 [Details] 100 Module: Accou

Control\*:  Parent:

Report\*:

Table Type\*:  Hidden: ☐ n/a ☐ No ☒ Yes

Toggle Item:

Grouping:

Repeat on New Page: ☐ Order:  Width:


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Row#*	Row Height*	Visibility	Table Column*	Column Span
1	0.20		Aging Summary [Body] [Table] T53 [Column] 010	6
1	0.20		Aging Summary [Body] [Table] T53 [Column] 070	

Column	Description
Control	The report control this table refers to.
Parent	The parent report table of this table, if applicable.
Report	The report this table belongs to.
Table Type	The report table type. Selections are “Column”, “Detail”, “Header”, “Group” and “Footer”.
Visibility	Check this if the initial table visibility should be hidden.
Grouping	The field for the grouping of data.
Repeat on New Page	Indicates if this header/footer should be displayed on every page on which the table (or group) is displayed.

Order	This number indicates the relative order of the table columns. (Default is intervals of 10).
Width	Width of the table column.
Row #	The relative row this table cell belongs to.
Row Height	Height of this table row/cell.
Row Visibility	The XML element and expression for the visibility of this row/cell, if applicable.
Table Column	The table column this cell belongs.
Column Span	The number of columns this cell spans. (Default is 1).

### ***Report Style***

This set of default styles has been created to be modified for use by all of the SQL reports. Custom graphics choices can create reports that match corporate identity or user style. Additional styles can be constructed and named to be used by various controls. Developers may click the  icon to popup a selection of color coded styles.

### **Report Style**

Command: Client Tier -> Report -> Advanced Report -> Report Style

Report Style

Export

RichText

New

Copy

Undo All

Save

Default Style:

Column Value Date

Font:08 Left Courier format:Date

Module:

Administ

Style Id: Default:

Description\*:

11

Column Value Date

Font:08 Left Courier format:Date

Border Color Default:

Border Color Left:

Border Color Right:

Border Color Top:

Border Color Bottom:

Foreground Color:

Background Color:

Background Gradient:

Background End Color:

Background Image:

Line Height (pt):

Format:

d

Border Style Default:

Border Style Left:

Border Style Right:

Border Style Top:

Border Style Bottom:

Font Style:

Font Family:

Courier New

Font Size (pt):

8

Font Weight:

Text Decoration:

Text Alignment:

Left

Vertical Alignment:

Border Width Default (pt):

Border Width Left (pt):

Border Width Right (pt):

Border Width Top (pt):

Border Width Bottom (pt):

Padding Left (pt):

2

Padding Right (pt):

2

Padding Top (pt):

2

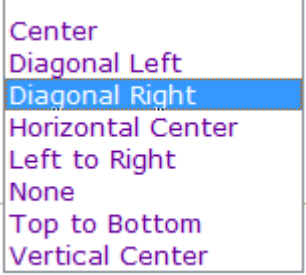
Padding Bottom (pt):

2

Direction:

Writing Mode:

Column	Description
Style Id	This internal identity uniquely represents this report style.
Default	Used internally by the reporting wizard to identify the default style for various report items.
Description	Unique description representing this report style.
Border Color Default	The default color name or RGB color code in the form #HHHHHHH for all the borders.
Border Color Left	The color name or RGB color code in the form #HHHHHHH for the left border.
Border Color Right	The color name or RGB color code in the form #HHHHHHH for the right border.
Border Color Top	The color name or RGB color code in the form #HHHHHHH for the top border.

Border Color Bottom	The color name or RGB color code in the form #HHHHHHH for the bottom border.
Foreground Color	The color name or RGB color code in the form #HHHHHHH for the foreground.
Background Color	The color name or RGB color code in the form #HHHHHHH for the background.
Background Gradient	<p>The background gradient type for the report. Indicates the direction in which the gradient is applied. The choices are:</p> 
Background End Color	The color name or RGB color code in the form #HHHHHHH for the background gradient end color.
Background Image	The external background image file with an absolute or relative path.
Line Height	Height of a line of text (from 1 pt to 1000 pt).
Format String	The .NET formatting string or code i.e. “C” for currency.
Border Style Default	Default border style.
Border Style Left	Left side border style.
Border Style Right	Right side border style.

Border Style Top	Top side border style.
Border Style Bottom	Bottom side border style.
Font Style	Style of the selected font.
Font Family	The font family. Default is Arial.
Font Size	The font size (from 1 pt to 200 pt). Default is 10 pt.
Font Weight	The thickness of the font in pts.
Text Decoration	The text decoration.
Text Alignment	The horizontal alignment of the text.
Vertical Alignment	The vertical alignment of the text.
Border Width Default (pt.)	The default width for the border (from 1 pt to 20 pt).
Border Width Left (pt.)	The width for the left border (from 1 pt to 20 pt).
Border Width Right (pt.)	The width for the right border (from 1 pt to 20 pt).
Border Width Top (pt.)	The width for the top border (from 1 pt to 20 pt).
Border Width Bottom (pt.)	Width for the bottom border from 1 pt to 20 pt.
Padding Left (pt)	The padding between the left edge of the item and its content from 0 pt to 1000 pt.
Padding Right (pt)	The padding between the right edge of the item and its

	content from 0 pt to 1000 pt.
Padding Top (pt)	The padding between the top edge of the item and its content from 0 pt to 1000 pt.
Padding Bottom (pt)	The padding between the bottom edge of the item and its content from 0pt to 1000pt.
Direction	The text direction for different cultures. Select between “Left to Right” and “Right to Left”. (Default is “Left to Right”.)
Writing Mode	The writing mode in either horizontal or vertical.

## Specification

The http command line to invoke a report should look like the following:

SqlReport.aspx?csy=5&msy=1&typ=N&rpt=5&key=2&act=Y&gen=Y

Where:

- Mandatory: “csy” stands for “current system id” found in system table “Systems”;
- “msy” stands for “menu system id” found in system table “Systems”;
- “typ=N” strips all navigation on pop up;
- “key” is the “memorized criteria id” found in system table “RptMemCri”;
- “act=Y” runs the report immediately; “act=N” prompts for criteria;
- “gen=Y” runs report generator’s report; “gen=N” runs developer’s report;

## Rule Tier

Reporting Business Rules are designed to reside in Stored Procedures to maximize flexibility and efficiency. Most, if not all of the business rules used to extract the appropriate information from the databases will be contained in these Stored Procedures. More Stored Procedures can be created, as necessary, to be called by these Stored Procedures. These stored-procedures are called in the Regular Field Clause of the Report Definition.

### Parameters

Except for @wClause which must be present, a developer may choose to use any combination of the following five systems-provided parameters together with those criteria parameters defined by the developer in the client tier as previously described in chapter 3.

Parameter	Data Type	Description
@Usrs	varchar(1000)	Advanced: A list of the current login user id, (UsrId) followed by the impersonated UsrId, if any, delimited by CHAR (191).
@RowAuthoritys	varchar(1000)	Advanced: A list of the current login row authority id, followed by the impersonated row authority id, if any, delimited by CHAR (191).
@UsrId	int	The user id of the current login.
@usrName	nvarchar(50)	The user name of the current login user.
@currCompanyId	smallint	The current company id.
@wClause	varchar(4000)	The simplest form of this is “WHERE 1=1” but it may also contain special filter rules as defined in the client tier.



## Result Set

The result set returned by the reporting Stored Procedure may include a combination of the following system-reserved columns:

Schema Characteristic	Description
AuthorityLevel	Often used to display the user name of the current login user.
ReportName	The default name of the report to be saved when exporting to a tab-delimited flat file, Excel spreadsheet, PDF, DOC, or RTF.
TemplateId	Advanced: Used when different templates need to be implemented for each row of data returned for RTF and TXT document merging and printing. (As described in previous chapters).

Other columns returned in the result set of the reporting Stored Procedure should be specified in the Client Tier (as previously discussed).

It is recommended that all of the business rules, including computations and permutations should be designated in the reporting Stored Procedure so that the result set produced represents the complete blueprint of the requirements. Once this blueprint is complete only layout and formatting remain.

Wherever possible, dynamic SQL should be used to maximize flexibility.