TIBCO® Object Service Broker

Defining Reports

Software Release 6.0
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Contents

Preface

TIBCO® Object Service Broker is an application development environment and integration broker that bridges legacy and non-legacy applications and data.

This manual explains how to create both simple and complex reports using the reporting tools provided within TIBCO Object Service Broker. The Report Generator is used to create reports with simple features and the Report Definer is used to create reports with more complex features.

Topics

Related Documentation

This section lists documentation resources you may find useful.

TIBCO Object Service Broker Documentation

The following documents form the TIBCO Object Service Broker documentation set:

Fundamental Information

The following manuals provide fundamental information about TIBCO Object Service Broker:

- *TIBCO Object Service Broker Getting Started* Provides the basic concepts and principles of TIBCO Object Service Broker and introduces its components and capabilities. It also describes how to use the default developer's workbench and includes a basic tutorial of how to build an application using the product. A product glossary is also included in the manual.
- *TIBCO Object Service Broker Messages with Identifiers* Provides a listing of the TIBCO Object Service Broker messages that are issued with alphanumeric identifiers. The description of each message includes the source and explanation of the message and recommended action to take.
- *TIBCO Object Service Broker Messages without Identifiers* Provides a listing of the TIBCO Object Service Broker messages that are issued without a message identifier. These messages use the percent symbol (%) or the number symbol (#) to represent such variable information as a rules name or the number of occurrences in a table. The description of each message includes the source and explanation of the message and recommended action to take.
- *TIBCO Object Service Broker Quick Reference* Presents summary information for use in the TIBCO Object Service Broker application development environment.
- *TIBCO Object Service Broker Shareable Tools* Lists and describes the TIBCO Object Service Broker shareable tools. Shareable tools are programs supplied with TIBCO Object Service Broker that facilitate rules language programming and application development.
- *TIBCO Object Service Broker Release Notes* Read the release notes for a list of new and changed features. This document also contains lists of known issues and closed issues for this release.

Application Development and Management

The following manuals provide information about application development and management:

- *TIBCO Object Service Broker Application Administration* Provides information required to administer the TIBCO Object Service Broker application development environment. It describes how to use the administrator's workbench, set up the development environment, and optimize access to the database. It also describes how to manage the Pagestore, which is the native TIBCO Object Service Broker data store.
- *TIBCO Object Service Broker Managing Data* Describes how to define, manipulate, and manage data required for a TIBCO Object Service Broker application.
- *TIBCO Object Service Broker Managing External Data* Describes the TIBCO Object Service Broker interface to external files (not data in external databases) and describes how to define TIBCO Object Service Broker tables based on these files and how to access their data.
- *TIBCO Object Service Broker National Language Support* Provides information about implementing the National Language Support in a TIBCO Object Service Broker environment.
- *TIBCO Object Service Broker Object Integration Gateway* Provides information about installing and using the Object Integration Gateway which is the interface for TIBCO Object Service Broker to XML, J2EE, .NET and COM.
- *TIBCO Object Service Broker for Open Systems External Environments* Provides information on interfacing TIBCO Object Service Broker with the Windows and Solaris environments. It includes how to use SDK (C/C++) and SDK (Java) to access TIBCO Object Service Broker data, how to interface to TIBCO Enterprise Messaging Service (EMS), how to use the TIBCO Service Gateway for WMQ, how to use the Adapter for JDBC-ODBC, and how to access programs written in external programming languages from within TIBCO Object Service Broker.
- *TIBCO Object Service Broker for z/OS External Environments* Provides information on interfacing TIBCO Object Service Broker to various external environments within a TIBCO Object Service Broker z/OS environment. It also includes information on how to access TIBCO Object Service Broker from different terminal managers, how to write programs in external programming languages to access TIBCO Object Service Broker data, how to interface to TIBCO Enterprise Messaging Service (EMS), how to use the TIBCO Service Gateway for WMQ, and how to access programs written in external programming languages from within TIBCO Object Service Broker.

- *TIBCO Object Service Broker Parameters* Lists the TIBCO Object Service Broker Execution Environment and Data Object Broker parameters and describes their usage.
- *TIBCO Object Service Broker Programming in Rules* Explains how to use the TIBCO Object Service Broker rules language to create and modify application code. The rules language is the programming language used to access the TIBCO Object Service Broker database and create applications. The manual also explains how to edit, execute, and debug rules.
- *TIBCO Object Service Broker Managing Deployment* Describes how to submit, maintain, and manage promotion requests in the TIBCO Object Service Broker application development environment.
- *TIBCO Object Service Broker Defining Reports* Explains how to create both simple and complex reports using the reporting tools provided with TIBCO Object Service Broker. It explains how to create reports with simple features using the Report Generator and how to create reports with more complex features using the Report Definer.
- *TIBCO Object Service Broker Managing Security* Describes how to set up, use, and administer the security required for an TIBCO Object Service Broker application development environment.
- *TIBCO Object Service Broker Defining Screens and Menus* Provides the basic information to define screens, screen tables, and menus using TIBCO Object Service Broker facilities.
- *TIBCO Service Gateway for Files SDK* Describes how to use the SDK provided with the TIBCO Service Gateway for Files to create applications to access Adabas, CA Datacom, and VSAM LDS data.

System Administration on the z/OS Platform

The following manuals describe system administration on the z/OS platform:

- *TIBCO Object Service Broker for z/OS Installing and Operating* Describes how to install, migrate, update, maintain, and operate TIBCO Object Service Broker in a z/OS environment. It also describes the Execution Environment and Data Object Broker parameters used by TIBCO Object Service Broker.
- *TIBCO Object Service Broker for z/OS Managing Backup and Recovery* Explains the backup and recovery features of OSB for z/OS. It describes the key components of TIBCO Object Service Broker systems and describes how you can back up your data and recover from errors. You can use this information, along with assistance from TIBCO Support, to develop the best customized solution for your unique backup and recovery requirements.

- *TIBCO Object Service Broker for z/OS Monitoring Performance* Explains how to obtain and analyze performance statistics using TIBCO Object Service Broker tools and SMF records
- *TIBCO Object Service Broker for z/OS Utilities* Contains an alphabetically ordered listing of TIBCO Object Service Broker utilities for z/OS systems. These are TIBCO Object Service Broker administrator utilities that are typically run with JCL.

System Administration on Open Systems

The following manuals describe system administration on open systems such as Windows or UNIX:

- *TIBCO Object Service Broker for Open Systems Installing and Operating* Describes how to install, migrate, update, maintain, and operate TIBCO Object Service Broker in Windows and Solaris environments.
- *TIBCO Object Service Broker for Open Systems Managing Backup and Recovery* Explains the backup and recovery features of TIBCO Object Service Broker for Open Systems. It describes the key components of a TIBCO Object Service Broker system and describes how to back up your data and recover from errors. Use this information to develop a customized solution for your unique backup and recovery requirements.
- *TIBCO Object Service Broker for Open Systems Utilities* Contains an alphabetically ordered listing of TIBCO Object Service Broker utilities for Windows and Solaris systems. These TIBCO Object Service Broker administrator utilities are typically executed from the command line.

External Database Gateways

The following manuals describe external database gateways:

- *TIBCO Service Gateway for DB2 Installing and Operating* Describes the TIBCO Object Service Broker interface to DB2 data. Using this interface, you can access external DB2 data and define TIBCO Object Service Broker tables based on this data.
- *TIBCO Service Gateway for IDMS/DB Installing and Operating* Describes the TIBCO Object Service Broker interface to CA-IDMS data. Using this interface, you can access external CA-IDMS data and define TIBCO Object Service Broker tables based on this data.
- *TIBCO Service Gateway for IMS/DB Installing and Operating* Describes the TIBCO Object Service Broker interface to IMS/DB and DB2 data. Using this interface, you can access external IMS data and define TIBCO Object Service Broker tables based on it.

- *TIBCO Service Gateway for ODBC and for Oracle Installing and Operating* Describes the TIBCO Object Service Broker ODBC Gateway and the TIBCO Object Service Broker Oracle Gateway interfaces to external DBMS data. Using this interface, you can access external DBMS data and define TIBCO Object Service Broker tables based on this data.

Typographical Conventions

The following typographical conventions are used in this manual.

Table 1 General Typographical Conventions

Convention	Use
TIBCO_HOME *OSB_HOME*	By default, all TIBCO products are installed into a folder referenced in the documentation as *TIBCO_HOME*. On open systems, TIBCO Object Service Broker installs by default into a directory within *TIBCO_HOME*. This directory is referenced in documentation as *OSB_HOME*. The default value of *OSB_HOME* depends on the operating system. For example on Windows systems, the default value is `C:\tibco\OSB`. Similarly, all TIBCO Service Gateways on open systems install by default into a directory in *TIBCO_HOME*. For example on Windows systems, the default value is `C:\tibco\OSBgateways\6.0`. On z/OS, no default installation directories exist.
`code font`	Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example: Use `MyCommand` to start the foo process.
`bold code font`	Bold code font is used in the following ways: • In procedures, to indicate what a user types. For example: Type **`admin`**. • In large code samples, to indicate the parts of the sample that are of particular interest. • In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, `MyCommand` is enabled: `MyCommand [`**`enable`**` | disable]`
italic font	Italic font is used in the following ways: • To indicate a document title. For example: See *TIBCO ActiveMatrix BusinessWorks Concepts*. • To introduce new terms For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal. • To indicate a variable in a command or code syntax that you must replace. For example: `MyCommand` *PathName*

Table 1 General Typographical Conventions (Cont'd)

Convention	Use
Key combinations	Key name separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C. Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q.
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result.
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

Table 2 Syntax Typographical Conventions

Convention	Use
`[ ]`	An optional item in a command or code syntax. For example: `MyCommand [optional_parameter] required_parameter`
`|`	A logical `OR` that separates multiple items of which only one may be chosen. For example, you can select only one of the following parameters: `MyCommand para1 | param2 | param3`

Table 2 Syntax Typographical Conventions

Convention	Use

`{ }`	A logical group of items in a command. Other syntax notations may appear within each logical group.
	
	For example, the following command requires two parameters, which can be either the pair `param1` and `param2`, or the pair `param3` and `param4`.
	
	`MyCommand {param1 param2} | {param3 param4}`
	
	In the next example, the command requires two parameters. The first parameter can be either `param1` or `param2` and the second can be either `param3` or `param4`:
	
	`MyCommand {param1 | param2} {param3 | param4}`
	
	In the next example, the command can accept either two or three parameters. The first parameter must be `param1`. You can optionally include `param2` as the second parameter. And the last parameter is either `param3` or `param4`.
	
	`MyCommand param1 [param2] {param3 | param4}`

Connecting with TIBCO Resources

How to Join TIBCOmmunity

TIBCOmmunity is an online destination for TIBCO customers, partners, and resident experts, a place to share and access the collective experience of the TIBCO community. TIBCOmmunity offers forums, blogs, and access to a variety of resources. To register, go to http://www.tibcommunity.com.

How to Access All TIBCO Documentation

You can access TIBCO documentation here:

http://docs.tibco.com

How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, please contact TIBCO Support as follows.

- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

  http://www.tibco.com/services/support

- If you already have a valid maintenance or support contract, visit this site:

  https://support.tibco.com

  Entry to this site requires a user name and password. If you do not have a user name, you can request one.

Chapter 1 Reporting Overview

This chapter defines what a report is within the context of TIBCO Object Service Broker, defines the tools you can use to produce reports, and gives information about how to get started producing reports.

Topics

We do not guarantee that the Report Server in TIBCO Object Service Broker for Open Systems works exactly like the Report Server in TIBCO Object Service Broker for z/OS. Customers moving from TIBCO Object Service Broker for z/OS to a Windows or Solaris platform should be aware of this and take appropriate action to change their reports if they encounter a difference.

Overview

What is a TIBCO Object Service Broker Report?

Using the TIBCO Object Service Broker reporting tools, you can:

- Specify the presentation format of your data when you produce a report
- Create relationships between tables of data
- Perform mathematical functions on your data such as average, count, maximum, minimum, and total

Tools Available

From the workbench, there are two tools available that produce reports:

- Report Generator
- Report Definer

Some of the reporting tools described in *TIBCO Object Service Broker Shareable Tools*, such as $SETRPTMEDIUM, $RPTOVERLAP, and $RPTPRINT, can also be used to help produce reports.

Choosing the Right Tool

Comparing the TIBCO Object Service Broker Reporting Tools

The two reporting tools differ significantly from each other in approach, scope, and the type of activities you can perform. The functions common to both are specifying and sorting source data, adding breaks, and some derivation activities.

Report Generator

Use this tool to build a report by identifying and relating its contents. You must specify the data tables and you can also provide selection values. TIBCO Object Service Broker then generates a definition and a rule, using the provided values. For information on generating a report, refer to Tasks to Generate a Report on page 17.

Shortcut for Producing a Report

The Report Generator can provide a shortcut method to produce a report. The Report Generator automatically generates a report definition and a rule for provided values that can then be used as a base in the Report Definer.

You cannot re-use in the Report Generator a generated report definition that has been saved in the Report Definer.

Report Definer

Use this tool to define the formats of the report. The Report Definer is useful if you are concerned with the layout of the report and how you arrive at required values. Using the Report Definer, you build a shell for the report and then use a rule to populate it with values. For information on defining a report, refer to Chapter 7, Using the Report Definer, on page 71.

Selecting a Tool

Use the following table to select the appropriate reporting tool available on the developer's workbench:

If you require...	Select...
A simple report, without complex formatting	Report Generator.
A report without complex derived values	Report Generator.
A report quickly and do not want to key in values	Report Generator.
A report with complex derived values	Report Definer.
A report with a specific format	Report Definer.

Who Provides the Information?

The two reporting tools differ in the amount of information each requires to produce a report.

Reporting Element	Report Generator	Report Definer
Report Name.	You provide.	You provide.
Data Table Name.	You provide.	You provide.
Data Field Name.	You provide.	You provide.
Report Tables.	TIBCO Object Service Broker provides.	You provide.
Report Sub-tables.	TIBCO Object Service Broker provides.	You provide.
Report Fields.	TIBCO Object Service Broker provides.	You provide.
Rule.	TIBCO Object Service Broker provides.	You provide.
Formatting.	TIBCO Object Service Broker provides.	You provide.

In the Report Generator the minimum you must provide is a report name, a data table name, and the name of a data field. The Report Generator provides the rest. In the Report Definer, all the reporting elements must be explicitly provided to run a report.

Getting Started

Invocation from the Workbench

Your choice of tool determines which option you invoke from the workbench:

If you want to use the...	Select...
Report Generator	GR Generate Rpt.
Report Definer	DR Define Report.

Getting Started With the Tool

You can build a report around an existing report definition or enter a name to start a new definition. You can either begin a new report or alter an old report using both workbench reporting tools.

If you...	Then...
Know the name of an existing report definition	Enter the name of the existing report.
Do not remember the name of an existing report	Use Enter to display all the valid report definitions, and then select the desired report and press Enter.
Are starting a new report	Enter the name of the new report.

Chapter 2 The Report Generator

This chapter describes the concepts behind reporting and lists the tasks that must be performed to generate a report.

Topics

Reporting Basics

Many basic reports can be handled using the Report Generator. To generate a report, you must specify only where the source data is coming from and how you want the information to appear. The Report Generator can then automatically generate output based on this information.

What is the Output of the Report Generator?

Through the Report Generator, TIBCO Object Service Broker generates the following:

`Report`	The output that can be directed to a printer, screen, data set, or file. The default report name is the one that you select at the beginning of the process. It can be changed at the final stage.
`Definition`	Contains the underlying definitions and relationships of the report. It is stored under the report name by default. The generated report definition can be expanded in the Report Definer.
`Rule`	Governs the flow of data and directs the output. The saving of this rule is optional; it is saved in your local library under a name that you provide.

Who Owns the Generated Objects?

Initially, there are no promotion rights assigned to the objects created with the Report Generator (reports, rules, report tables). These rights can be obtained (that is, saved) using the definer tool associated with that object. The first time that an object is saved, the promotion rights are assigned to the saver. Alternatively, the rights can be obtained using the MANAGE_RIGHTS tool. For more information, refer to *TIBCO Object Service Broker Shareable Tools* and *TIBCO Object Service Broker Managing Deployment*.

Generating a Basic Framework for a Report

The Report Generator can also be used to create a base framework for a report, for example, using a definition and a rule to insert data into the report.

After saving a report definition in the Report Definer, you cannot bring it back into the Report Generator.

Parts of a Report

The parts described in the following table make up the external composition of a report. Three of these (the Title Elements, Subtotals, and Grand Totals) are automatically generated by the Report Generator.

Part Name	Description
Title elements	The top three lines of the report. Displays present date, report name, and the page number. Editable title area.
Break fields	Fields supplying visual and logical breaks in the report. Can be applied vertically or horizontally.
Print fields	Fields comprising the body of the report.
Break within a break	A break field nested within another break field.
Subtotals	A field providing a subtotal of some numeric fields.
Grand total	A field supplying a grand total of its numeric fields.

The parts are constructed from the reporting information that you supply throughout the reporting process while in the Report Generator.

Sample Report

The following report gives a listing of selected managers and their employees. It groups the employees by their department and displays their names, positions, and salaries. A subtotal of all the employee salaries for each manager is also given, as is a grand total of all the salaries of these selected groups.

```
04/MAR/2000         Report:MAN_DEP_SAL                Page 1

Manager:JOHN DUBINSKY
Department:EDUCATION

       Name                 Position        Salary
---------------------- --------------- -------------

STEVENSON               EDUCATOR              $700.00
DHILLON                 EDUCATOR              $685.00

Department:PUBLICATIONS

CROFTON                 TECH. WRITER          $675.00
POIRIER                 TECH. WRITER          $695.00

Subtotal                                    $2,755.00

Manager:SUSAN SIMONS
Department:RESEARCH

HRODEK                   ANALYST              $710.00
CANNON                   ANALYST              $700.00
BOIVIN                   ANALYST              $710.00
KIMURA                   JR. PROGRAMMER       $575.00
WONG                     SENIOR ANALYST       $800.00
SCHULTZ                  SENIOR ANALYST       $820.00
SMITH                    TESTER               $600.00

Subtotal                                    $4,915.00

Total                                       $7,670.00
```

Elements in the Sample Report

This sample report is composed of the following elements:

Title Area

```
-----------------------------------------------------------------
04/MAR/2000                  Report:MAN_DEP_SAL           Page 1
-----------------------------------------------------------------
```

Break Fields

```
----------------------------
Manager:JOHN DUBINSKY
Department:EDUCATION
----------------------------
```

Print Fields

```
------------------------------------------------------
       Name                Position        Salary
---------------------- --------------- -------------

STEVENSON              EDUCATOR              $700.00
DHILLON                EDUCATOR              $685.00
```

Break Within a Break

```
------------------------
Department:PUBLICATIONS
------------------------

CROFTON                TECH. WRITER          $675.00
POIRIER                TECH. WRITER          $695.00
------------------------------------------------------
```

Subtotals

```
------------------------------------------------------
Subtotal                                   $2,755.00
------------------------------------------------------
Manager:SUSAN SIMONS
Department:RESEARCH
HRODEK                  ANALYST              $710.00
  .                        .                    .
  .                        .                    .

Subtotal                                   $4,915.00
```

Grand Total

```
------------------------------------------------------
Total                                        $7,670.00
------------------------------------------------------
```

Using the Report Generator Screens

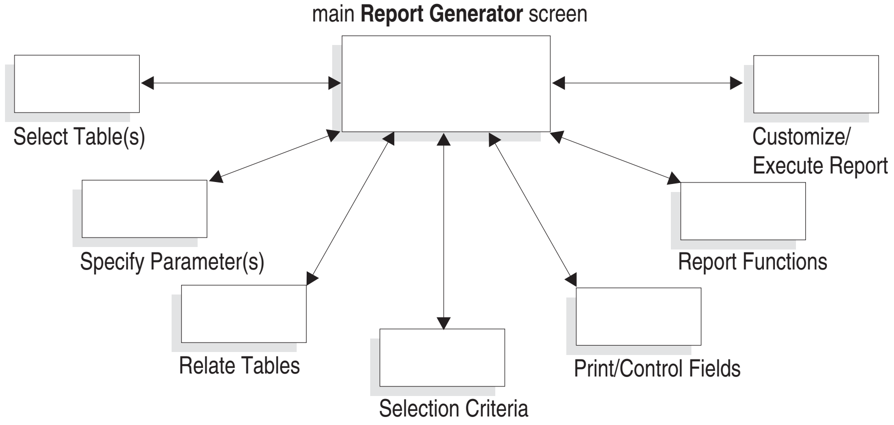
How to Enter Information in the Screens

There are two ways of entering information into the screens of the Report Generator:

- Enter values directly into the appropriate fields.
- Make selections from the display in the lower portion of the screen.

Report Generator Screens Illustration

The Report Generator consists of a main screen and several sub-screens. The following diagram illustrates the Report Generator sub-screens:



What Each Screen Displays

Each screen in the Report Generator displays different information and presents a different phase of report building, as summarized in the following table:

Screen Name	Information Displayed
REPORT GENERATOR	Report Name and Report Type. Names of other Report Generator screens. Sample report that shows you the format of the report you are creating.
Select Source Tables	Valid selection values and the data tables available to you.
Specify Table Parameter Values	Parameter values for the selected parameterized tables.
Relate Source Tables	Field names for each table and parameter names for parameterized tables.
Specify Selection Criteria	Valid selection criteria and field names for each table.
Specify Print/Control Fields	Field names for each of the selected tables and how they are to be printed and used.
Select Report Functions	Available functions and field names for the report.
Customize/Execute Report	Default labels, titles, display masks, and execution options.

How to Move Between Screens

There are two ways of moving between screens in the Report Generator:

- Select the desired screen from the menu of the main Report Generator screen. To return to this screen, press PF3.
- Press PF4 to move to the *next* screen.

Moving at the Sub-screen Level

In addition, when you are in one of the sub-screens, you can move to a screen directly by using its Home key. These keys are summarized in the table below:

Home Key	Corresponding Screen
PF15	Select Tables.
PF16	Specify Parameters.
PF17	Relate Tables.
PF18	Selection Criteria.
PF19	Print/Control Fields.
PF20	Report Functions.
PF21	Customize/Execute.

These keys are available at the sub-screen level as a shortcut for experienced users. They do not appear with the available PF keys on the reporting screens. Pressing PF1 displays a full listing.

The Main Report Generator Screen

Function of the Main Screen

The main Report Generator screen is the first screen encountered when you enter the Report Generator from the workbench. From this screen, you do the following:

- Identify the report
- Select a reporting option
- View the sample report

Main Report Generator Screen

```
                            << REPORT GENERATOR >>
Report Name: MAN_DEP_SAL                                  Report Type: DETAIL
------------------------------------------------------------------------------

_ Select Table(s)              _ Specify Parameter(s)        _ Relate Tables
_ Selection Criteria           _ Print/Control Fields        _ Report Functions
_ Customize/Execute Report

         ********************** SAMPLE REPORT **********************

$PRINTDATE  $RPTTIME                                        Report: $THE_REPORT_N



      Last Name             Position      Salary
---------------------- -------------- ---------
XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXX XXXXXXXXX

------------------------------------------------------------------------------
PFKEYS: 1=HELP 3=END 12=END 22=DELETE RPT
Type in 'S' to select an optional action then press <Enter>
```

The following sections describe the different areas of the main Report Generator screen.

The Report Identification Area

The heading area at the top of the Report Generator screen contains two fields, the **Report Name** field and the **Report Type** field.

Report Name Field

The **Report Name** field appears in the top left hand corner of the screen and is protected. For information on changing the name of your report, refer to Renaming the Report on page 34.

Report Type Field

This field displays the type of report you are producing. The following list describes the three TIBCO Object Service Broker report types:

Detail	A report that produces a print line for every occurrence in the data tables (default report type).
Summary	A report that produces a print line when a summary field changes its value.
Across	A type of summary report that displays its data across the report in a spreadsheet-like format.

Reporting Options Area

The Reporting Options area consists of a menu with seven items. Each menu item represents one of the Report Generator sub-screens. To select a screen from the Reporting Options menu, type an **s** in the line command field next to the desired screen and press Enter.

Sample Report Area

In the Sample Report area you can view the format of the report you are creating. The Sample Report area displays the automatically generated report date, report time, report name, page functions, and positions. The XXXs in the Sample Report indicate areas formatted for data text. Refer to Task G, Finalize the appearance of the report, on page 31 for more details on altering the format of your report.

Tasks to Generate a Report

Tasks for Generating a Report

Required Tasks

The following table presents the tasks required to generate a report. The number of tasks involved varies if your report is based on more than one data table. Except for Task C, the procedure is the same for single or multiple data tables.1

Task		Required	Refer to page...
A	Identify the source data tables	Y	17
B	Specify parameter values	Y	20
C	Relate the data of two or more tables	Y	22
D	Specify selection criteria	N	24
E	Specify print and control fields	Y	26
F	Add break functions to the report	N	29
G	Finalize the appearance of the report	Y	31
H	Execute the report	Y	34

Task A Identify the source data tables

Purpose of this Task

This task indicates which data tables you require for your report. You can access the Select Source Tabless screen by selecting its option on the main Report Generator screen.

Select Tables Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR
                           Select Source Table(s)
+------------------------------------------------------------------------------+
|      Table            Parm Name                     Parm Value               |
| ---------------- ---------------- ---------------------------------------- |
| EMPLOYEE         REGION           'midwest_genrpt'                           |
| DEPARTMENT       CITY             'bayville'                                 |
| MANAGER                                                                      |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
        Tables with UNIT: DOCEXMPL  and NAME like: *EMPLO*
_ $@EMPLOYEE         _ $@EMPLOYEES        _ $EMPLOYEE_EXPENS   _ @EMPLOYEES
_ @EMPLOYEES_CLC     _ EMPLOYEE_CLC       _ EMPLOYEE_EXPENSE   _ EMPLOYEES
_ EMPLOYEES_CLC      _ EMPLOYEES_SUB



PFKEYS: 1=HELP 3=RETURN 12=END 23=EXCLUDE TBL
Select table from list or enter table name directly
```

How to Enter Values

Enter values directly in the top portion of the screen or select them from the scrollable display in the bottom portion of the screen.

Displaying Tables for Selection

When the Select Source Tables screen first appears, it contains a scrollable listing of tables based upon your default UNIT. You can modify this listing to display a subset of these tables or a different set of tables. Use the following as a guide to help you find the tables you are looking for:

If you know...	Use the...	Action
The UNIT that you require	**Tables with UNIT** field.	Type the value in the field.
The approximate names of the tables that you require	**NAME like** field.	Type the value in the field, or type in a partial name along with the asterisk (*), or use question mark (?) wildcard characters.

If you know…	Use the…	Action
Both the UNIT and approximate name	**Tables with UNIT** field and **NAME like** field	Type in the values as described above.

Selecting the Tables

Type an alphanumeric character in the line command field of each table that you want to select. Use the sequential order 0-9, A-Z. The tables are then listed in the **Table** field based on this order.

Removing a Table

To remove a table name from the list, position your cursor on the table name and press PF23. If you remove a table, all references to that table in the rest of the report are also deleted.

Guidelines for Entering Table Information

Follow these guidelines when entering the table information:

- One or more table names can be entered into a **Table** field. Enter each table name on its own row in the **Table** field.
- You must have access to the tables that you want to use.
- If you are using multiple tables, the first one selected becomes the outer table within which subsequent FORALLS are nested.
- If you are using multiple tables, enter the table names so that you can use the data from the multiple tables (relating data). Refer to Task C, Relate the data of two or more tables, on page 22 for more information about relating tables.
- If a table is parameterized, you can also enter the parameter name and value (thus bypassing the Specify Parameters screen). Refer to Task B, Specify parameter values, on page 20 for more information.
- The PRM table must be included before the source parameterized table in the list of tables in the Select Tables screen. If the PRM table does not exist, contact your TIBCO Object Service Broker administrator.

Task B Specify parameter values

Purpose of this Task

This task is used to indicate (to the report formatter) which instance of a parameterized table to use in the report.

Where Parameter Values Can be Specified

Parameter values are required only for parameterized tables. There are three different places to specify the parameter values required for parameterized tables. Depending on your requirements, you can use the:

- Select Tables screen
- Specify Parameters screen
- Relate Tables screen

Choosing Where to Specify the Values

Use the following table to determine which screen you should use to specify parameter values:

If you...	Screen to use	Action
Know the parameter value	Select Tables.	Type the value in the **Parm Value** field, next to the appropriate parameter name. Refer to Task A, Identify the source data tables, page 17 for an illustration of this screen.
Do not know the parameter value and you are not going to relate parameter values to field values	Specify Parameters.	Type the value in the **Parm Value** field, next to the appropriate parameter name and select the value from the displayed list. Refer to Guidelines for Specifying Parameter Values on page 21 for more information.
Are going to relate parameter values to field values	Relate Tables.	Refer to Task C, Relate the data of two or more tables, on page 22 for more information.

Guidelines for Specifying Parameter Values

When specifying parameter values, note the following:

- A PRM table for the parameterized table is required to *select* parameter values. If the PRM table does not exist and you require one, contact your TIBCO Object Service Broker administrator.
- A PRM table is not required if you are entering the parameter values directly into the Select Tables screen or Relate Tables screen.
- Enclose character data in single quotes.
- Provide only one parameter value per parameter name.
- A default value of null ('') appears in the **Parm Value** field of the Select Tables screen if a table has a location parameter and a value is not assigned to it.

See Also *TIBCO Object Service Broker Managing Data* for more information on location parameters.

Using the Specify Parameters Screen

When the Specify Parameters screen first appears, it contains a scrollable listing of parameter values for the first parameter name listed on the Select Tables screen. The following table describes how to display additional parameter values:

To display...	Required Action
A sequential listing of all parameter values	Press Enter.
A listing for a specific parameter	Position your cursor on the parameter name and press Enter.

Specify Parameter Values Screen

```
Report: MAN_DEP_SAL           REPORT GENERATOR                       PF4=NEXT
                       Specify Table Parameter Values
+------------------------------------------------------------------------------+
|      Table           Parm Name                   Parm Value                  |
| ---------------- ----------------- ---------------------------------------- |
| EMPLOYEE         REGION           'midwest_genrpt'                           |
| DEPARTMENT       CITY             'bayville'                                 |
| MANAGER                                                                      |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
     Existing value(s) for Parm REGION           of Table EMPLOYEE
_ ABC00               _ C500A             _ DOC30             _ EDUC
_ JJJ40               _ MIDWEST           _ MIDWEST_GENRPT    _ MAMBO
_ REGION              _ USR30             _ ZIP60             _ ZZ00A


PFKEYS: 1=HELP 3=RETURN 12=END
Select parameter value from list or enter value(s) directly
```

Selecting Parameter Values

To select a parameter value, type an alphanumeric character in the line command field of the required value.

Task C Relate the data of two or more tables

Purpose of this Task

Complete this task if you are using data from more than one table. You must draw a link between the tables by associating individual elements from the tables to one another. You use the Relate Source Tables screen to associate the data.

Relate Source Tables Screen

```
Report: MAN_DEP_SAL          REPORT GENERATOR                        PF4=NEXT
                            Relate Source Tables
+-----------------------------------------------------------------------------+
|RELATE:  Table            Parm/Field       TO:     Table            Field     |
|    ---------------- ----------------        ---------------- ---------------- |
|    DEPARTMENT       DEPTNO                  EMPLOYEE         DEPTNO          |
|    DEPARTMENT                               EMPLOYEE                         |
|    MANAGER          MANAGER_NUM             EMPLOYEE         MGR#            |
|    MANAGER                                                                   |
|                                                                             |
|                                                                             |
+-----------------------------------------------------------------------------+
 RELATE: Parm/Field of DEPARTMENT         TO: Field of EMPLOYEE
_ CITY                 _ DEPTNO           _ EMPNO              _ LNAME
_ DEPTNAME                                _ POSITION           _ MGR#
                                          _ DEPTNO             _ SALARY
                                          _ HIREDATE           _ ADDRESS
                                          _ CITY               _ STATE_PROV
                                          _ ZP_CODE            _ BIRTHDATE
                                          _ SECURITY           _ ACCESS_TYPE


PFKEYS: 1=HELP 3=RETURN 12=END
Select from list or press <Enter> for next selection
```

Entering and Displaying Parameter and Field Values

Enter the values directly into the appropriate fields or select them from the scrollable display in the bottom portion of the screen.

When the Relate Tables screen first appears, the bottom portion of the screen contains two columns listing the fields or parameters of the first two tables selected in the Select Tables screen. The columns contain the following information:

- The RELATE column contains the table name and the fields of the second table entered in the Select Tables screen.
- The TO column contains the table name and the fields of the first table entered in the Select Tables screen.

Displaying Additional Table and Field Values

The following table describes how to display additional table and field values:

Displaying	Action
Sequential listing of additional tables.	Press Enter.
Listing for a specific table.	Position your cursor on the table name and press Enter.

Selecting the Values to Relate

Type a pair of identical alphanumeric characters in the line command fields of the fields or parameters you want to relate and press Enter. For example, to relate the **DEPTNO** field of the EMPLOYEE table to the **DEPTNO** field of the DEPARTMENT table, type the number 1 next to **DEPTNO** of both tables. Repeat this operation until all required links are made.

Guidelines for Relating Values

When relating values, note the following guidelines:

- A table can be associated with more than one field of another table.
- A field of a table can be associated with only one other field or parameter. The semantic type must be compatible.
- Each table must be associated with at least one table preceding it in the list of the **Table** field in the Select Tables screen.
- The PRM table must be included before the source parameterized table in the list of tables in the Select Tables screen. If the PRM table does not exist, contact your TIBCO Object Service Broker administrator.
- Assignments to parameter values in the Specify Parameters screen are overridden if the parameter is associated with a field of another table.

Task D Specify selection criteria

Purpose of this Task

This optional task is used to specify the selection of data when you want to report on a specific range of data. Use the Specify Selection Criteria screen to specify the selection of data.

Specify Selection Criteria Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR                        PF4=NEXT
                          Specify Selection Criteria
+------------------------------------------------------------------------------+
|       Selection Criteria                                                     |
|       --------------------------------------------------------------         |
|       MGR#   = 80002 OR MGR# =79912                                         |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
Fields of EMPLOYEE
_ EMPNO                _ LNAME              _ POSITION           _ MGR#
_ DEPTNO               _ SALARY             _ HIREDATE           _ ADDRESS
_ CITY                 _ STATE_PROV         _ ZP_CODE            _ BIRTHDATE
Relational Operator
_ =        _ <         _ >        _ <=      _ >=       _ ¬=      _ LIKE

Value / Expression


Logical Operator
_ AND     _ OR
PFKEYS: 1=HELP 3=RETURN 12=END
Select from lists or enter selection string directly
```

Entering and Displaying Field Values

You can enter values directly into the appropriate screen or select them from the display in the bottom portion of the screen.

When the Selection Criteria screen first appears, it contains a list of the fields of the first table entered in the **Table** field of the Select Tables screen. Press Enter to display the rest of the tables in sequence.

Selecting Field Values

Complete the following tasks to define selection criteria:

1. Type an alphanumeric character in the line command field of the field that you require.
2. Type an alphanumeric character in the line command field of the operator that you require.
3. Type a valid value or expression in the Value/Expression field.
4. If additional selection is required, select a logical operator (AND or OR) and repeat step 1 to step 3.

Guidelines for Specifying Selection Criteria

When specifying selection criteria, note the following:

- Enclose character data in single quotes.
- Enter up to 248 characters on up to four lines.
- Recall previous selections by pressing PF9. This re-enters your selection values in the line command fields of the previously selected fields.

Examples of Selection

The following illustrates two types of data selection: Numeric Field Value and Character Data Selection.

Numeric Field Value Selection

The following example shows how to select data that is specific only to the manager number 79912 or the manager number 80002:

```
MGR#=79912 OR MGR#=80002
```

Character Data Selection

The following example shows how to select data that is specific to the departments managed by JOHN DUBINSKY:

```
MANAGER_NAME='JOHN DUBINSKY'
```

Task E Specify print and control fields

Purpose of this Task

This task controls output by indicating:

- Which fields are to be printed
- How the data is to be sorted
- How the data is to be grouped
- Whether the report is to be printed down the page or across the page like a spreadsheet
- Whether the report is to contain detailed data or only a summary of data

Specify Print/Control Fields Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR                         PF4=NEXT
                         Specify Print/Control Fields
+------------------------------------------------------------------------------+
|                                                           SUMMARY only: N    |
| PRINT:     ----------------     ----------------     ----------------        |
|            LNAME                POSITION             SALARY                  |
|                                                                              |
|                                                                              |
|                                                                              |
| SORT by:   ---------------- A/D ---------------- A/D ---------------- A/D    |
|            MANAGER_NAME      A  DEPTNAME          A  POSITION          A     |
|                                                                              |
| BREAK by:  ----------------     ----------------     ----------------        |
|            MANAGER_NAME         DEPTNAME                                     |
|                                                                              |
| ACROSS by: ----------------     ----------------     ----------------        |
|                                                                              |
+------------------------------------------------------------------------------+
                              Fields of EMPLOYEE
_ EMPNO               _ LNAME               _ POSITION            _ MGR#
_ DEPTNO              _ SALARY              _ HIREDATE            _ ADDRESS
_ CITY                _ STATE_PROV          _ ZP_CODE             _ BIRTHDATE
PFKEYS: 1=HELP 3=RETURN 12=END
Select field & put cursor on Print/Sort/Break/Across section
```

Types of Print Fields

The output is based on the fields you select to populate the following field types:

Field Types	Purpose	Required
Print fields.	To print on the report.	Y
Sort-by.	To sort the data.	N
Break-by.	To logically group displayed data.	N
Across-by [a].	To display across the report (if the report is defined as an across report).	N
Summary-by [a].	To display a summary of the data (if the report is defined as a summary or across report).	N

a. These field types are required for a summary or across report only. For more information on summary reports, refer to Chapter 5, Creating Across Reports, on page 55.

Entering and Selecting Field Values

To enter field values, do one of the following:

- Enter values directly into the individual sections of the top portion of the screen.
- Select values from the bottom portion of the screen.

  Each section of this screen is used to identify a type of field.

When the Print/Control Fields screen first appears, it contains a listing of the fields of the first table entered in the **Table** field of the Select Tables screen. Press Enter to display the fields in the rest of the tables in sequence.

Only fields with a syntax valid for reports appear on this screen.

Selecting Fields

To select fields, perform the following tasks:

1. Type an alphanumeric character in the line command of each field that you want to select.

   Use the sequential order 0-9, A-Z.

2. Position your cursor in the appropriate section and press Enter.
3. Repeat for each field type that you are using, selecting one field type at a time.

Creating a Summary Report

To create a report that summarizes data, type Y in the **SUMMARY only** field. For more information on summary reports, refer to Chapter 5, Creating Across Reports, on page 55.

Guidelines for Indicating Print Controls

Use the following guidelines when indicating the print controls:

- The maximum combined width of the print fields is 132 display characters.
- Enter up to a combined total of 32 break-by, across-by, and summary-by fields.
- Break-by fields must first be specified as sort-by fields.

- Sort-by fields are sorted in ascending order by default. To sort in descending order, specify D in the A/D field.
- Across-by fields *cannot* be sort-by fields.
- A report that prints across the page (across report) can contain only summary data.
- Recall previous selections by pressing PF9. This re-enters your selection values in the line command fields of the previously selected fields.

Task F Add break functions to the report

Purpose of this Task

Using this task you can perform mathematical computations within your report either at break time or within a summary report (using the functions supplied by the Report Generator). Use the Select Report Functions screen to identify the mathematical functions that you want to use.

Select Report Functions Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR                         PF4=NEXT
  SALARY           1  TOT  Select Report Functions
+------------------------------------------------------------------------------+
| BREAK by:      MANAGER_NAME                                                  |
| --- ---------------       --- ---------------       --- ---------------     |
| TOT SALARY                                                                   |
|                                                                              |
| BREAK by:      DEPTNAME                                                      |
| --- ---------------       --- ---------------       --- ---------------     |
|                                                                              |
|                                                                              |
| FINAL BREAK:                                                                 |
| --- ---------------       --- ---------------       --- ---------------     |
| TOT SALARY                                                                   |
|                                                                              |
+------------------------------------------------------------------------------+
    Functions                          List of Print Fields
_ AVG (AVERAGE) _ LNAME                _ POSITION           _ SALARY
_ CNT (COUNT)
_ MAX (MAX)
_ MIN (MIN)
_ TOT (TOTAL)
PFKEYS: 1=HELP 3=RETURN 12=END
Select function & field then put cursor on appropriate section
```

Available Function Types

You can apply the following functions to the print fields:

Function	Short Name	Valid Types of Data
AVERAGE	AVG	Numeric.
COUNT	CNT	Character and numeric.
MAXIMUM	MAX	Numeric.
MINIMUM	MIN	Numeric.
TOTAL	TOT	Numeric.

Provided Values

The following values are provided by default:

- The name of a break field is entered into each break-by section; you cannot modify the value in this screen.

  Up to three break-by fields appear at a time in each break-by section. To view additional fields press Enter.
- The function TOT appears beside each numeric print field; you can delete or modify this as required.

Each selected function is associated with a print field within a break. The values are printed at the end of the break. A function associated with a print field in the final break prints a grand total for that field at the end of the report.

Entering and Selecting Field Values

To enter field values, perform one of the following:

- Enter values directly into the individual sections of the top portion of the screen.
- Select values from the bottom portion of the screen.

When the Report Functions screen first appears, it contains a list of the fields of the first table entered in the **Table** field of the Select Tables screen. Press Enter to display the fields in the rest of the tables in sequence.

Selecting Fields

To select fields, perform the following tasks:

1. Type an alphanumeric character in the line command of each field that you want to select.

   Use the sequential order 0-9, A-Z.

2. Position your cursor in the appropriate break-by section and press Enter.
3. Repeat tasks 1 and 2 for each break-by section.

Task G Finalize the appearance of the report

Purpose of this Task

This task is used to:

- Finalize the appearance of the report
- Rename the report
- Save and execute the report
- Save the rule

How to Enter Values

Enter values directly into the individual sections of the Customize/Execute Report screen.

Customize/Execu
te Report Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR
                           Customize/Execute Report
+-----------------------------------------------------------------------------+
|  Line#                           Report title(s)                            |
|  ----- ------------------------------------------------------------------- |
|    1   $PRINTDATE  $RPTTIME                                         Report:  |
|    1   $THE_REPORT_NAME                                           Page $PAGE |
|    2                                                                        |
| Fcn      Field                   Label                    Display Mask      |
|                                                     COMMA N MONEY N  D/C _ |
| --- ---------------- --------------------------- ------------------------- |
|     LNAME            'Last Name'                                            |
|     POSITION         'Position'                                             |
|     SALARY           'Salary'                                               |
|     MANAGER_NAME     'Manager'                                              |
+-----------------------------------------------------------------------------+
|                        Report name: MAN_DEP_SAL                             |
| Destination:  Screen: N   Printer: N    DDname/Variable:                    |
|               File:                                                         |
| Save report and send to dest.: N       with record Limit:                   |
| Save report: N Save rule: N by name:               in library: USR40       |
+-----------------------------------------------------------------------------+
PFKEYS: 1=HELP 3=RETURN 12=END
Specify a medium and select an action to produce report
```

Making Final Changes to the Appearance

You can make changes to the appearance of your report before it is executed. Use the numbered lines in the **Line#** field to customize the title of your report. You can use up to 132 spaces across two lines numbered the same for each title line of your report. You can add up to two complete lines of text.

Report Functions

The following report functions are provided in the first title line. These can be moved or deleted as required:

Function	Value Provided
$PRINTDATE	The date the report is executed, using the default date format for your session.
$RPTTIME	The time the report is executed, using the default time format for your session.

Function	Value Provided
$THE_REPORT_NAME	The TIBCO Object Service Broker name under which your report is saved.
$PAGE	A number in the format of *n*.

Use the **Label** field to customize the field titles that appear for your print fields and break/summary functions. The new text must be within single quotes, for example, 'Department'.

Adding Display Masks

You can use the **Display Mask** field to define the display format for numeric and date fields. An example of a display mask is a dollar sign ($) proceeding and a comma (,) separating numbers. You can also add a debit and credit mask, to be used in conjunction with the other masks.

To add a display mask, type in valid display mask values in the **Display Mask** field on the appropriate line for the field. For valid display mask values, refer to *TIBCO Object Service Broker Defining Screens and Menus* and the $PIC tool in *TIBCO Object Service Broker Shareable Tools*. Use the following fields to change or add display masks to your numeric fields.

If you want to add…	Put…	In the…
Commas as numeric delimiters	Y	**COMMA** field.
The default monetary symbol for your session and commas as numeric delimiters	Y	**MONEY** field.
Debit or credit symbols (- or +)	C or D	**D/C** field and **COMMA** field, or **MONEY** field.

Prompting for a Representational Example

Optionally, you can prompt for a representational example:

1. Type Y in either the COMMA or MONEY field.

   If **COMMA** or **MONEY** is Y, you can specify D (for debit) or C (for credit) in the **D/C** field.

2. Position the cursor on the line of the field you are masking.

3. Press Enter.

   A representational example of the mask appears in the **Display Mask** field.

4. Modify the display mask if required.

Renaming the Report

To rename the report, change the name of the report to a valid TIBCO Object Service Broker name in the **Report** field. When you save the report it is saved under this new name.

Task H Execute the report

Purpose of this Task

This task is used to save and execute the report and the rule.

Customize/Execute Report Screen Functionality

The following table lists the functions you can perform using the Customize/Execute Report screen:

If you want to …	Enter…	In the …
Limit the number of occurrences to be printed on the report	The number of occurrences	**with record limit** field.
Send the report to the screen	Y	**Destination Screen** field.
Send the report to the printer	Y	**Destination Printer** field.
Send the report to a file	The name of a file [a] or data set [b]	**File** field.
Save the report and not execute it	Y	**Save Report** field.
Save the rule	Y The name to save it under	**Save Rule** field **by name** field [c].

If you want to ...	Enter...	In the ...
Send the report to a DDname or variable	The report name	**DDname/Variable** field.
Save the report and send it to its destination	Y	**Save Report** field.

a. Enter only the filename. The path is predetermined.

b. Enter the fully qualified name of a pre-allocated data set with a minimum record length of 132. If the data set is partitioned, enter the member name in parentheses.

c. The rule is saved in the library listed in the 'in library' field.

Viewing the Report

When you type Y in the **and send it to Screen** field and press Enter, the report appears on your screen. The following illustrates an example of a displayed report:

```
------------------ O B J E C T S T A R   INFORMATION LOG -------------------
 COMMAND ===>                                                    SCROLL ===> P
    04/MAR/2000 Report:MAN_DEP_SAL                Page 1

    Manager:JOHN DUBINSKY
    Department:EDUCATION

           Name                 Position        Salary
    ---------------------- --------------- -------------

    STEVENSON              EDUCATOR             $700.00
    DHILLON                EDUCATOR             $685.00

    Department:PUBLICATIONS

    CROFTON                TECH. WRITER         $675.00
    POIRIER                TECH. WRITER         $695.00

    Subtotal                                  $2,755.00

    Manager:SUSAN SIMONS
    Department:RESEARCH

    HRODEK                  ANALYST             $710.00
    CANNON                  ANALYST             $700.00
    BOIVIN                  ANALYST             $710.00
    KIMURA                  JR. PROGRAMMER      $575.00
    WONG                    SENIOR ANALYST      $800.00
    SCHULTZ                 SENIOR ANALYST      $820.00
    SMITH                   TESTER              $600.00

    Subtotal                                  $4,915.00

    Total                                     $7,670.00

 PFKEYS: 2=NEXT LOG 3=EXIT 5=REPEAT 12=EXIT 13=PRINT
```

Chapter 3 Modifying a Report

This chapter describes how to modify reports.

Topics

Methods to Modify Reports

You can modify reports using one of the following methods:

- Report Generator
- Report Definer
- TIBCO Object Service Broker Rules

Report Generator

For simple modifications to the appearance of your report, use the Report Generator. You can also use the Report Generator to change the report to an Across or Summary Report so that it displays only summary data. For more information about Across Reports and summarization refer to Chapter 5, Creating Across Reports, on page 55.

Using the Report Generator

The table below lists the various modifications you can perform using the Report Generator.

If you want to…	Refer to page…
Modify table entries	40
Modify page attributes of the report	42
Copy a report	44

Report Definer

If modifications are required to the report format or if you require more complex computations, you can make these modifications using the Report Definer. After modifying a report in the Report Definer, you can no longer view or modify it in the Report Generator. For more information about the Report Definer, refer to Chapter 7, Using the Report Definer, on page 71.

TIBCO Object Service Broker Rules

You can make modifications to the rule used to generate your report. For example, you can access additional tables, change your selection criteria, or use it as a template to execute other reports. Use the Rule Editor to make these changes to the rule.

See Also *TIBCO Object Service Broker Programming in Rules* for more information about writing and editing rules.

Modifying Existing Values

You can modify table entries, parameter values, selection criteria, print controls, and some of the relationship information for your report.

Modifying Table Entries

You can make the following modifications to the table name list on the Select Tables screen:

- Add a table
- Insert a table
- Remove a table

Adding a Table

To add a table to a report, enter a new table name after the existing list of table names in the **Table** field or select the table from the Options area. If the table is parameterized, enter the parameter values you require.

Inserting a Table

To insert a pre-existing table to a report, complete the following tasks:

1. Select the table from the listing of tables in the Options area.
2. Position the cursor on the table in the Input area you want your table to be positioned above and press Enter.
3. Enter a parameter value if the table is parameterized.

Removing a Table

To remove a table, position the cursor on the table and press PF23.

If you remove a table, all references to the table in the report are also removed.

Modifying Other Values

To edit existing values, select the appropriate screen and type over the text in the fields (use the EOF key to clear the end of the field if required) or select from the Options area.

Modifying Page Attributes

Modifiable Attributes

You can do the following modifications to some page attributes using the Customize/Execute Report screen.

- Edit title lines and labels
- Remove functions
- Add or change display masks for numeric and date fields

Other page attributes cannot be changed; for example, the width of the report is always 132 characters.

Title, Label, Display Mask Segment Illustrated

The Title, Label, Display Mask segment of the Customize/Execute Report screen used for these modifications (for the MAN_DEP_SAL report) is illustrated below:

```
Report: MAN_DEP_SAL            REPORT GENERATOR
                          Customize/Execute Report
+-----------------------------------------------------------------------+
|  Line#                          Report title(s)                        |
|  ----- --------------------------------------------------------------- |
|    1   $PRINTDATE  $RPTTIME                                  Report:   |
|    1   $THE_REPORT_NAME                                    Page $PAGE  |
|    2                                                                   |
| Fcn      Field                  Label                 Display Mask     |
|                                                   COMMA N MONEY N  D/C _ |
| --- ---------------- -------------------------- ------------------------ |
|     LNAME            'LNAME'                                           |
|     POSITION         'POSITION'                                        |
|     SALARY           'SALARY'                                          |
|     MANAGER_NAME     'MANAGER_NAME'                                    |
```

Editing Title Lines

You can edit the title lines by adding text or deleting the predefined elements. In the modified example shown below, the $RPTTIME and $THE_REPORT_NAME functions are deleted. You can also add an additional line of text on lines 2 and 3 (press PF8 to view line 3).

Editing Default Values

Default values for each printed field, and function and field combination appear under the **Label** field. You can edit the entry in this field by changing the literal text. The new text must be within single quotation marks, for example, 'Name'. You *cannot* edit entries in the **Fcn** or **Field** fields.

Modified Title, Label, Display Mask Segment

The modified Title, Label, Display Mask segment of the Customize/Execute screen is illustrated below:

```
Report: MAN_DEP_SAL           REPORT GENERATOR
                          Customize/Execute Report
+-----------------------------------------------------------------------------+
|  Line#                               Report title(s)                        |
|  ----- ------------------------------------------------------------------  |
|    1   $PRINTDATE                                                  Report:  |
|    1                                                            Page $PAGE  |
|    2                                                                        |
| Fcn      Field                    Label                     Display Mask    |
|                                                       COMMA N MONEY N  D/C _ |
| --- ---------------- --------------------------- ------------------------- |
|     LNAME            'Last Name'                                           |
|     POSITION         'Position'                                            |
|     SALARY           'Salary'                  $N,NNN,NN9V.99              |
|     MANAGER_NAME     'Manager'                                             |
+-----------------------------------------------------------------------------+
|                        Report name: MAN_DEP_SAL                             |
| Destination:  Screen: N   Printer: N    DDname/Variable:                    |
|               File:                                                         |
| Save report and send to dest.: N        with record Limit:                  |
| Save report: N Save rule: N by name:                 in library: USR40     |
+-----------------------------------------------------------------------------+
PFKEYS: 1=HELP 3=RETURN 12=END
Select the action
```

Copying a Report and Report Rule

To copy an existing report use the **Report name** field on the Customize/Execute screen. The following illustrates the Report segment:

```
+------------------------------------------------------------------------------+
 |                          Report name: SAMPLE_REPORT                          |
 | Destination:  Screen: N Printer: N       DDname/Variable:                    |
 |               File:                                                          |
 | Save Report: Y   Save Rule: Y by name: SAMPLE_RULE     in library: USR40    |
 +------------------------------------------------------------------------------+
```

Copying the Report Definition

The value in the **Report name** field specifies the name that is used for the report definition created when you press Enter. To copy a report, type a new report name in the **Report name** field and press Enter. For example, if you type in the new report name SAMPLE_REPORT and press Enter, the report is sent to the screen and the report definition is saved under the name SAMPLE_REPORT.

Copying the Report Rule

The rule generated with the report can also be copied to another name. To do this, type Y in the **Save Rule** field, and then type the name to which you want to copy the rule in the **by name** field. For example, typing SAMPLE_RULE in the **by name** field saves the rule generated by your report under that new name.

Executing the Modified Report

Using the Customize/Execute Screen

You execute your modified report in the same way as a new report, using the execute segment of the Customize/Execute screen. You can also execute the report by executing its associated rule. Refer to Task H, Execute the report, on page 34 for information on executing a generated report.

If you execute your report and send it to the screen, the modifications you make are saved under the name that is currently shown in the **Report name** field. To keep any changes made without affecting the original report, type a new report name in the **Report name** field and press Enter. The changes made are then applied only to the new report.

Modified Report Example

The following illustrates the first few lines of the modified report:

```
04/MAR/2000      Weekly Salary Report          Page 1
                                by Manager

Manager:JOHN DUBINSKY
Department:EDUCATION

       Name                   Position        Salary
---------------------- --------------- -------------

STEVENSON              EDUCATOR              $700.00
DHILLON                EDUCATOR              $685.00

Department:PUBLICATIONS

CROFTON                TECH. WRITER          $675.00
```

Chapter 4 Creating Summary Reports

This chapter describes how to create summary reports.

Topics

Summary Report

What is a Summary Report?

A summary report is a report you create or modify to contain only summarized data.

Sample Summary Report

The sample report below summarizes the number of employees within a department and gives the minimum, maximum, and average salaries for each department. It also provides a final count of the number of employees, the minimum salary, the maximum salary, and the average salary for all the departments.

```
 04/MAR/2000   16:55:32                            Report: MAN_DEP_SAL_SUM

  Dept. Number of Employees Minimum Salary Maximum Salary  Average Salary
  ----- ------------------- -------------- --------------- --------------
     50                   7        $575.00         $820.00        $702.14
     60                   2        $685.00         $700.00        $692.50
     70                   2        $675.00         $695.00        $685.00

  FINAL SUMMARY          11        $575.00         $820.00        $697.27
```

Tasks for Defining a Summary Report

To define a summary report, complete the following tasks:

Task	Refer to page...
Task A: Summarize the Data	49
Task B: Add Functions	51

Task A: Summarize the Data

In this task you use the Print/Control Fields screen to identify which fields to print or to use in a function that is printed, and to determine how the report appears. The Print/Control Fields screen contains the following sections:

- **PRINT**
- **SORT by**
- **BREAK by**
- **ACROSS by**

Print/Control Fields Screen

```
Report: MAN_DEP_SAL      REPORT GENERATOR
                    FIELD - Print/Control Fields
+------------------------------------------------------------------ +
|                                                    SUMMARY only: Y  |
| PRINT:    ----------------    ----------------    ---------------- |
|           EMPNO               SALARY                                |
|                                                                     |
|                                                                     |
| SORT by:  ---------------- A/D ---------------- A/D --------------- |
|           DEPTNO           A                                        |
|                                                                     |
| BREAK by: ----------------     ----------------     --------------- |
|                                                                     |
|                                                                     |
| ACROSS by:----------------     ----------------     --------------- |
|                                                                     |
+------------------------------------------------------------------ +
 .....................................................................
                        Fields of EMPLOYEE
_ EMPNO                _ LNAME          _ POSITION          _ MGR#
2 SALARY

PFKEYS:1=HELP 3=RETURN 12=END
```

Considerations

Note these considerations about the above sample:

- The print fields are **EMPNO** and **SALARY**. Both of these fields are printed within function and field pairs: **EMPNO** as a count of employees, **SALARY** as a maximum, minimum, and average salary within the summarized report.
- The only sort and summary field is **DEPTNO**.

- No break fields are required for this report.

How to Summarize the Data

To display only summary data on your report, complete the following tasks:

1. Specify Y in the SUMMARY ONLY field in the Print/Control Fields screen.
2. In the PRINT section, specify which fields to print or to use in a function that is to be printed on the report.

   The field by which you are summarizing is printed automatically and does not have to be specified here.
3. In the SORT by section, specify any fields to control the sorting of the report.

   All **sort by** fields automatically become **summary by** fields. One report line is printed for each unique value of your sort by field or field combinations.
4. In the BREAK by section, specify any additional control breaks that you require within the summarized report.
5. Determine the functions to apply to fields.
6. Press PF4 to go to the Report Functions screen to specify appropriate functions.

   Refer to , Task B: Add Functions, on page 51 for more information on adding functions.

Task B: Add Functions

In this task you specify on which fields you want to perform numerical functions.

Print Functions Screen

```
Report: MAN_DEP_SAL             REPORT GENERATOR
                               FUNCT - Print Functions
+----------------------------------------------------------------------------+
| SUMMARY PRINT:                                                             |
| --- ----------------       --- ----------------       --- ---------------- |
| CNT EMPNO                  MIN SALARY                 MAX SALARY           |
| AVG SALARY                                                                 |
|                                                                            |
| FINAL BREAK:                                                               |
| --- ----------------       --- ----------------       --- ---------------- |
| CNT EMPNO                  MIN SALARY                 MAX SALARY           |
| AVG SALARY                                                                 |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+
 ..........................................................................
    Functions                               List of Print Fields
_ AVG (AVERAGE) _ EMPNO                   _ SALARY
_ CNT (COUNT)
_ MAX (MAX)
_ MIN (MIN)
_ TOT (TOTAL)
```

Valid Functions

You can apply the following functions to your print fields from within the Report Functions screen:

- AVERAGE (AVG)
- COUNT (CNT)
- MAXIMUM (MAX)
- MINIMUM (MIN)
- TOTAL (TOT)

The TOTAL function is provided as the default for all numeric print fields. This can be modified as required. The TOTAL and AVERAGE functions can be applied to numeric print fields only, that is, these fields must be of semantic data type Q or semantic data type C.

How to Add Functions to the Report

To add functions to your summary report, complete the following tasks:

1. In the SUMMARY PRINT section, type in the fields and functions that you want to print.

   This section controls which functions and field pairs to print on the print lines of your summary report.

2. If you specified break fields, type in the fields and functions that you require in the BREAK by section.

   A break by section appears for each break by field that you specify in the Print/Control Fields screen (that is, Subtotals). The break by sections control each function and field pair that is printed when the control breaks occur.

3. In the FINAL BREAK section, type in the fields and functions you require.

   The final break section controls the field and function pairs that are printed at the end of your report (that is, Grand Totals).

Customizing and Executing Summary Reports

You use the Customize/Execute screen to edit the report title or field labels, determine a destination for the report, or execute the report. Select this screen by typing **S** next to the **Customize/Execute Report** field in the Report Generator screen.

Sample Customize/Execute Screen

```
Report: MAN_DEP_SAL            REPORT GENERATOR
            EXEC - Execution Options / Title / Label / Display Mask
 +------------------------------------------------------------------------------+
 |  Line#                          Report title(s)                              |
 |  ----- -------------------------------------------------------------------   |
 |    1   $PRINTDATE  $RPTTIME                                     Report:      |
 |    1   $THE_REPORT_NAME                                        Page $PAGE    |
 |    2                                                                         |
 | Fcn      Field                 Label                    Display Mask         |
 |                                                     COMMA N MONEY N  D/C _   |
 | --- ---------------- --------------------------- -------------------------   |
 |     DEPTNO           'Department'                                            |
 |     POSITION         'Position'                                              |
 | AVG SALARY           'Average Salary'            $NN,NN9V.99                 |
 | MAX SALARY           'Maximum Salary'            $NN,NN9V.99                 |
 | MIN SALARY           'Minimum Salary'            $NN,NN9V.99                 |
 +------------------------------------------------------------------------------+
 |                        Report name: MAN_DEP_SAL                              |
 | Destination:  Screen: Y Printer: N      DDname/Variable:                     |
 |               File:                                                          |
 | Save Report: N   Save Rule: N by name:                in library: USR40     |
 +------------------------------------------------------------------------------+
 PFKEYS: 1=HELP 3=RETURN 12=END
 Specify media to produce report
```

Customizing Reports

To edit report titles or field labels, overtype new names on items you want to change. Use the fields at the bottom of the Customize/Execute screen to save the report, select a destination, and execute the report to that destination. Type Y next to the appropriate fields and press Enter.

Chapter 5 Creating Across Reports

This chapter describes how to create across reports.

Topics

Across Report

What is an Across Report?

Across reports are reports you create or modify to display summarized data across a page like a spreadsheet.

Sample Across Report

The following illustrates a sample Across report that provides the maximum, minimum, and average salaries within a specific position and department, and in the final column provides the maximum, minimum, and average salaries for the whole department. The report displays its output across the report, with each cell containing the summarized values.

```
04/MAR/2000  12:20:56                                    Report: MAN_DEP_SAL_A

   Position            ANALYST   JR PROGRAMMER  SENIOR ANALYST.... FINAL
 Department       |
 ---------------+--------------+--------------+--------------+--------------+---

             50 |              |              |              |              |
 Minimum Salary |       $700.00|       $575.00|       $800.00|       $575.00|
 Maximum Salary |       $710.00|       $575.00|       $820.00|       $820.00|
                +--------------+--------------+--------------+--------------+---

 FINAL SUMMARY
                +--------------+--------------+--------------+--------------+---
 Minimum Salary |       $700.00|       $575.00|       $800.00|       $575.00|
 Maximum Salary |       $710.00|       $575.00|       $820.00|       $820.00|
 Average Salary |       $706.66|       $575.00|       $810.00|       $702.14|
                +--------------+--------------+--------------+--------------+---
```

Tasks for Defining an Across Report

To define an across report, complete the following tasks:

Task	Refer to page...
Task A: Defining Across By Fields	57
Task B: Add Functions	59

Task A: Defining Across By Fields

In this task you determine which fields are to be printed across the report and which fields are to be printed down the report, using the Print/Control Fields screen. Since an across report contains only summary information, it defaults to **SUMMARY only**=Y in its definition. You specify the **PRINT** and **BREAK by** fields for an across report as for a summary report.

Sample Print/Control Fields Screen

```
Report: MAN_DEP_SAL       REPORT GENERATOR
                     FIELD - Print/Control Fields
+-------------------------------------------------------------------- +
|                                                     SUMMARY only: Y |
| PRINT:    ----------------    ----------------     ---------------- |
|           SALARY                                                    |
|                                                                     |
|                                                                     |
| SORT by:  ---------------- A/D ---------------- A/D --------------- |
|           DEPTNO           A                                        |
|                                                                     |
| BREAK by: ----------------     ----------------     --------------- |
|                                                                     |
|                                                                     |
| ACROSS by:----------------     ----------------     --------------- |
|           POSITION                                                  |
+-------------------------------------------------------------------- +
 .....................................................................
                          Fields of EMPLOYEE
_ EMPNO                 _ LNAME            _ POSITION          _ MGR#
2 SALARY

PFKEYS:1=HELP 3=RETURN 12=END
```

Considerations

Note the following about the above sample:

- The print field is **SALARY**. It is used in the function and field pair **TOT SALARY**, which is printed in each cell.
- The only sort and summary field is **DEPTNO**.
- No break fields are required for this sample report.
- **POSITION** is defined as the field that appears across the report. When a new value is encountered for **POSITION**, a new column is created.

How to Define Across by Fields

To define across by fields, complete the following tasks:

1. In the SORT by section, specify all the sort and summary fields.

   These fields control what lines are to be printed down the report (each unique field or field combination forms one line down the report).

2. In the ACROSS by section, specify all the fields that are used to control what columns are to be printed across the report.

   The intersection of each unique sort by and across by field value forms an across report cell.

3. Determine the functions to be applied to the fields.

4. Press PF4 to go to the Report Functions screen.

   Refer to , Task B: Add Functions, on page 59 for more information on adding functions.

Task B: Add Functions

In this task you specify on which fields you want to perform numerical functions.

Report Functions Screen

A portion of the defined Report Functions screen for the sample across report is illustrated below:

```
Report: MAN_DEP_SAL              REPORT GENERATOR
                              FUNCT - Print Functions
+------------------------------------------------------------------------------+
| SUMMARY PRINT:                                                               |
| --- ----------------      --- ----------------      --- ----------------     |
| CNT EMPNO                 MIN SALARY                MAX SALARY               |
| AVG SALARY                                                                   |
|                                                                              |
| FINAL BREAK:                                                                 |
| --- ----------------      --- ----------------      --- ----------------     |
| CNT EMPNO                 MIN SALARY                MAX SALARY               |
| AVG SALARY                                                                   |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
 ..........................................................................
   Functions                        List of Print Fields
_ AVG (AVERAGE) _ SALARY
_ CNT (COUNT)
_ MAX (MAX)
_ MIN (MIN)
_ TOT (TOTAL)
```

Valid Functions

You can apply the following functions to your print fields from within the Report Functions screen:

- AVERAGE (AVG)
- COUNT (CNT)
- MAXIMUM (MAX)
- MINIMUM (MIN)
- TOTAL (TOT)

The TOTAL function is provided as the default for each numeric print field. This can be modified as required. The TOTAL and AVERAGE functions can be applied to numeric print fields only, that is, these fields must be of semantic data type Q or semantic data type C.

How to Add Functions to the Report

You can add functions to an across report in the same way that they are added to a summary report. Refer to How to Add Functions to the Report on page 52 for information on adding functions to summary reports. If you have not yet defined break and summary fields for the report, you can add functions by completing the following tasks:

1. Insert an **S** on the line command field of the function you want to perform.
2. Insert an **S** on the line command field of the print field on which you want to perform the function.
3. Move your cursor to a Break or Summary section in the upper part of the Report Functions screen.
4. Press Enter.

Customizing and Executing Across Reports

You use the Customize/Execute screen to edit the report title or field labels, determine a destination for the report, or execute the report. Select this screen by typing **S** next to the **Customize/Execute Report** field in the Report Generator screen.

Sample Customize/Execute Screen

```
Report: MAN_DEP_SAL           REPORT GENERATOR
            EXEC - Execution Options / Title / Label / Display Mask
 +------------------------------------------------------------------------------+
 |  Line#                          Report title(s)                              |
 |  ----- ------------------------------------------------------------------    |
 |    1    $PRINTDATE  $RPTTIME                                      Report:    |
 |    1    $THE_REPORT_NAME                                        Page $PAGE   |
 |    2                                                                         |
 | Fcn      Field                  Label                      Display Mask       |
 |                                                      COMMA N MONEY N  D/C _   |
 | --- ---------------- -------------------------- -------------------------    |
 |     DEPTNO           'Department'                                            |
 |     POSITION         'Position'                                              |
 | AVG SALARY           'Average Salary'            $NN,NN9V.99                 |
 | MAX SALARY           'Maximum Salary'            $NN,NN9V.99                 |
 | MIN SALARY           'Minimum Salary'            $NN,NN9V.99                 |
 +------------------------------------------------------------------------------+
 |                        Report name: MAN_DEP_SAL                              |
 | Destination:  Screen: Y Printer: N       DDname/Variable:                    |
 |               File:                                                          |
 | Save Report: N   Save Rule: N by name:                 in library: USR40     |
 +------------------------------------------------------------------------------+
 PFKEYS: 1=HELP 3=RETURN 12=END
 Specify media to produce report
```

Customizing Reports

To edit report titles or field labels, overtype new names on items you want to change. Use the fields at the bottom of the Customize/Execute screen to save the report, select a destination, and execute the report to that destination. Type Y next to the appropriate fields and press Enter.

Chapter 6 Composition of a Report

This chapter describes the structure of reports and their different elements in the Report Definer context.

Topics

Overview

Structure of a Report

TIBCO Object Service Broker provides you with visual aids when you are defining the basic elements of a report, from the placement of text and fields to the positioning of titles and headings.

You can use the Report Definer and the Report Table Painter to define a report. Using the Report Definer, you establish the basic structure of the report including:

- Physical page dimensions
- Page format
- Use of titles and headings
- Position of the report tables making up the report

Defining Elements of a Report Table

You use the Report Table Painter to design and paint each report table of the report. Within the Report Table Painter, you use sub-screens to define the specific elements of a report table:

- Controlling fields
- Derivation of field values
- Positioning of titles and headings

After defining and painting a report, you must execute a rule to insert the appropriate data into the report tables. Refer to Appendix A, Sample Report Definitions and Rules, on page 131 for an example rule and the reporting tools in *TIBCO Object Service Broker Shareable Tools* for more information about inserting data and printing the report.

Further Modifications

You can make further modifications to your report using the Report Definer. If your report was created using the Report Generator you can also modify the report definition using the Report Definer. If you make modifications to a generated report with the Report Definer, you cannot subsequently access the report from the Report Generator.

Elements of a Report

List of Elements

A report defined in TIBCO Object Service Broker can contain a number of structural elements:

- Body report table
- Title report tables
- Break tables
- Report fields
- Literal fields
- Control fields
- Title and heading rows
- Title and final columns.

Illustration of Sample Report

The sample report EMP_EXPENSE, illustrated below, contains employee expenses by month. It is composed of a body report table, two title report tables, and one break table within a report table. A description of each element follows, using examples from this sample report.

```
              DEVELOPMENT CORPORATION              Page 12

04/MAR/2007         Employee Expense Report by Month

    Month of DEC

     Employee Last Name      ID #     Monthly Exp
     ----------------------  ------   -----------

     BARALDI                 98895       89.00
     BOIVIN                  71866        0.00
     CANNON                  51121        0.00
     CLARK                   44789        0.00
     CROFTON                 41001        0.00
     DHILLON                 61385     1010.80
     GLADWELL                32189        0.00
     HARTIG                  43456        0.00
     HOEGSON                 30058        0.00
     HRODEK                  51111        0.00
        .                      .            .
   Monthly Total                       9730.00

                             Accounting Department
                              Internal Confidential
```

Title Report Tables

Title report tables are used to define title and footer elements that can be used by other reports, independently of the body report table. The title report tables in the sample report contain the corporation name, the page number, and footer text.

Title Element

```
                         DEVELOPMENT CORPORATION        Page 12
```

Footer Element

```
                              Accounting Department
                               Internal Confidential
```

Body Report Table

The body report table is the primary table of the report. The data from your data tables is inserted into the body report table. You define only one body report table for each report definition. In the following example, the body report table contains the employee expenses.

MONTHLY_EXPENSE Report Table

```
      |
      |  Employee Last Name        ID #    Monthly Exp
      |  ----------------------  ------    -----------
      |
      |  BARALDI                 98895         89.00
      |  BOIVIN                  71866          0.00
      |  CANNON                  51121          0.00
      |  CLARK                   44789          0.00
      |  CROFTON                 41001          0.00
      |  DHILLON                 61385       1010.80
      |  DRABEK                  22001       2321.00
      |  GLADWELL                32189          0.00
      |  HARTIG                  43456          0.00
      |  HOEGSON                 30058          0.00
      |  HRODEK                  51111          0.00
      |     .                      .             .
```

Break Tables

Break tables are used to visually group related information rows within a report table. In the example, the information is grouped within individual months.

MONTH_BREAK Break Table

The following illustrates the break table MONTH_BREAK. This break table contains two break fields, MONTH_NAME and MONTHLY_TOTAL, and displays report table values from the data table:

```
| Month of DEC |









  |  Monthly Total                         9730.00 |
```

Report Fields

Report fields are the placeholders that contain the data for your report. The data can be inserted directly from a data table or can be derived dynamically at runtime based on a specified rule, field, or report function. In the example, the values for the employee name, ID, and monthly expense come directly from an employee table. The values for the month, total expenses, date, and page number are based on derived values.

Literal Fields

Literal fields contain the text of your report. They contain no data. 'Month of' is an example of literal text.

Control Fields

Control fields determine how the data should appear. There are four types of control fields:

Sort fields	Determine how the data is sorted. In the above body report table, the employees are sorted by month and last name.
Break fields	Determine where a control break occurs in a report. When a different value is encountered for a break field, a new grouping of values is printed. For example, the above sample report breaks on a new month.
Summary fields	Summarize data. A report line is printed for every change in value of a summary field or field combination. The above sample report contains no summary information.
Sort across by fields	Determine the data columns printed on an across report. When a new value is encountered for an across by field, a new data column is printed. The above sample report is not an across report so it contains no across by fields.

Title and Heading Rows

Title and heading rows can be defined within report tables and title rows can be defined within break tables. They can contain both literal fields and report fields. Title rows print only once per page (although break titles can appear more than once on a page). Heading rows can be defined to print for each break within a report table or only once per page. `Employee Expense Report by Month` is an example of a title row. `Employee Last Name ID# Monthly Exp` is an example of a heading row.

Title Columns and Final Columns

Title columns and final columns can be defined within report tables of an across report. Title columns are printed only once at the beginning of each page and the beginning of each panel of an across report. Final columns are printed only at the end of the final panel of the report. Since the sample report is not an across report, it has no title columns or final columns.

Chapter 7 Using the Report Definer

This chapter describes how to use the Report Definer.

Topics

The Report Definer

The Report Definer is the tool where you define and modify reports. You enter the names of the report tables that comprise the report on the Report Definer screen. This screen also shows the initial default attributes assigned to the report. These attributes can be changed as required.

Layout

The Report Definer screen is divided into four sections:

- Report identification
- Physical attributes
- Report tables
- PF keys

Example

The following illustrates the definition for the EMP_EXPENSE report:

```
                       DEFINE REPORT: EMP_EXPENSE              Unit:  ACC
 Command ===>
 Page Length:  60   Page Width :  80  Fill Missing Data :   .


REPORTTABLES:        Origin  Max  Max   Title Blank  Title Heading Title Final
  Name               Row Col Occ  Acr   Only Overlap Rows  Rows    Cols  Cols
  ----------------   --- --- ---- ----   -       -    --    --      ---   ---
_ MONTH_EXPENSE        3   1    *    0   N             3     2        0     0
_ HUR_TITLE            1   1    1    0   Y             1     0        0     0
_ ACCT_FOOTER         -3   1    1    0   Y             2     0        0     0
_
_







PFKEYS: 3=SAVE 12=CANCEL 2=DOC 22=DELETE 6=PAINT 13=PRT 21=DISPLAY 16=LITERAL
```

When the body report table is painted, more fields appear on this screen. These fields are explained in Chapter 10, Adding Break Tables, on page 121.

Line Commands for the Report Definer Screen

You can use two line commands when you are defining report tables:

R	Replicate the report table above the line where the cursor is placed. The values for row and column are replicated and a new name is generated from the old report table name. An overlap condition exists until the row and column is modified for either the old or new report table.
D	Delete the report table from the current definition of this report.

Tasks for Defining a Report

The following table lists the tasks required to define a report:

Task A: Verify Report Identification

You use this task to uniquely identify the report within TIBCO Object Service Broker.

Report Identification Segment

```
DEFINE REPORT: EMP_EXPENSE           Unit:  ACC
```

The Define Report and Unit Fields

The information outlined below is entered to the fields by default. You can change this information if necessary.

DEFINE REPORT	The report name in this field is the one you specified when you invoked the Report Definer. You can type in a new name to save the definition of the existing report under a new report name. For more information on how to copy TIBCO Object Service Broker objects, refer to *TIBCO Object Service Broker Shareable Tools*.
Unit	The unit marks the report as belonging to a particular application or logical unit such as utilities, accounting, or network control. You can modify it as required.

Task B: Specify Physical Attributes

You use the physical attributes segment to define the physical attributes of the report on the Report Definer screen.

Physical Attributes Segment

```
                    DEFINE REPORT: EMP_EXPENSE              Unit:  ACC
Command ===>
Page Length:  60   Page Width :  80  Fill Missing Data :    .
```

Physical Attributes Segment Fields

The physical attributes segment contains the fields listed below. Default specifications are entered to the fields, which you can change as required. For valid values, press PF1.

Page Length	The physical length of the page. The default value is 60.
Page Width	The physical width of the page. The default value is 132. If you define fields beyond the physical width of the page or on the page and extending beyond its width, these fields are not shown when you display the report.
Fill Missing Data	An assigned character string to be printed whenever data is absent for a report field. You can type in a valid string up to 16 characters long. The default value is a period (.). If the string specified is longer than the field that has absent data, the value prints as a series of asterisks (***).

Task C: Specify Report Tables

You use the report tables segment to enter the names and specifications of the report tables in your report. The right-hand portion of this screen is also used for modifying the line spacing of the report. For more information refer to Task E: Modify the Line Spacing on page 79.

Report Tables Segment

```
REPORTTABLES:         Origin  Max  Max   Title Blank  Title Heading Title Final
   Name                Row Col Occ  Acr    Only Overlap Rows    Rows     Cols   Cols
   ----------------    --- --- ---- ----    -       -     --     --      ---    ---
_ MONTHLY_EXPENSE      3   1     *    0    N       N      3      2        0      0
_ HUR_TITLE            1   1     1    0    Y       N      1      0        0      0
_ ACC_FOOTER          -2   1     1    0    Y       N      1      0        0      0
_
_
```

Report Tables Segment Fields

The following shows the fields contained in the report tables segment of the Report Definer screen. These fields are also used for across reports, that is, reports that display their data across the report in a spreadsheet-like format. For fully defined examples of the screens of an across report, refer to Across Report Sample Report Screens and Rule on page 134. For valid values, press PF1.

Name	The name of each report table. Since report tables are shareable you can type in the name of an existing report table, or create a new report table.
Origin Row	The row where the report table originates on each page of the report.
Origin Col	The column where the report table originates on each page of the report.
Max Occ	The maximum number of occurrences to appear on each page of the report.
Max Acr	Specify whether the report is to be an across report, that is, in a spreadsheet format.

Title Only	Specify if the report table is to be a title report table, meaning it contains only title rows. A title report table cannot refer to data from the body report table.
Blank Overlap	Specify whether the title rows should be blanked out on the overlap page if the report is to be merged after other reports.
Title Rows	The number of title rows the body report table contains.
Heading Rows	The number of heading rows the body report table contains.
Title Cols	Indicates the columns that are title columns, if the report is to be an across report. These are individual columns within the painted report table that are to be held as titles and not repeated across the page. These columns, which are grouped together to form a column of data, are printed only at the beginning of each page of a report and at the beginning of each panel.
Final Cols	Indicates the columns that are the final columns, if this is an across report. These columns are similar to title columns in that they are grouped together to form a column of data. Final columns are printed only once, at the end of the final panel of a report. They do not repeat across a page.

For a report table to appear, it must begin on the displayable report image. For example, if a report table begins in column 81 and it is being displayed on a report that is only 80 columns wide, it is not visible even by scrolling. The number of displayed columns of the report table is the maximum amount scrolled when scrolling the table left or right.

Task D: Modify the Display of Literal Fields

If you are merging a report after another report and you do not want specific literal fields displayed on the overlap page, you can blank them out using the Report Literals screen. To display the Report Literals screen press PF16 from the Report Definer screen, or type in the command **LITERAL** in the primary command field.

REPORT LITERALS Screen

```
                              REPORT LITERALS
 Command ===>
              All literals will be reset upon entering Painter

Row,Col  Literal                                                BlankOverlap
-------  ------------------------------------------------------------    -

         REPORT TABLE: ACCT_FOOTER

(1,31)   'Accounting Department'
(2,31)   'Internal Confidential'

         REPORT TABLE: HUR_TITLE

(1,24)   'OBJECTSTAR DEVELOPMENT CORPORATION         page'

         REPORT TABLE: MONTH_BREAK

(1,1)    'Month of'

         REPORT TABLE: MONTHLY_EXPENSE

PFKEYS: 12=CANCEL 3=SAVE
```

Usage

To blank out a literal field on the overlap page, type Y in the **BlankOverlap** field next to the field that you want to blank out. Press PF3 to save the changes or PF12 to cancel changes. In either case you return to the Report Definer screen.

Task E: Modify the Line Spacing

You can use the Report Definer to modify line spacing to improve the readability and clarity of your report. You can also view the layout of the report before modifying the spacing. Refer to Viewing the Report Layout on page 80 for more information.

You can modify the default spacing directly on the Report Definer screen using the fields shown below. To view these fields, position your cursor in the Report Table section and press PF11 to scroll right.

```
REPORTTABLES:            Skip before Skip after Skip after Skip after Skip after
  Name                     TABLE        TABLE      TITLES    HEADINGS     ROWS
  ----------------          --           --          --         --         --
_ MONTHLY_EXPENSE
_ HUR_TITLE
_ ACCT_FOOTER
_
```

Where Line Spacing Can be Modified

You can modify the number of lines to be inserted before or after any of the following parts of the report:

- Report tables
- Break tables
- All title or heading elements of the report

Default Line Spacing on the Report Definer Screen

The following table lists the Report Definer default spacing:

Position	Skip
After all body titles.	1 line
Before a body heading or a body row.	1 line
After all body headings, before the first body row.	1 line
Before each break.	1 line

Position	Skip
After all break titles, before first body row or title.	1 line
After each break before next body row.	1 line

When you modify line spacing, the new user values override all default values. To restore default spacing values, you must redefine them manually in the appropriate fields.

Viewing the Report Layout

If you want to view the layout of the report before modifying the spacing, press PF4 or issue the primary command **FORMAT** to display the Format Report screen. You can use this screen to override the default spacing for the report. Any non-null values on the Format screen or the Report Definer spacing attributes section override *all* the default spacing for the report screen.

Format Report Screen

```
                         FORMAT REPORT: EMP_EXPENSE
 Command ===>
_0 lines before report
+-----------------------------------------------------------------------------+
   __ before title     +------------------------------------------+
                       |         Title:  HUR_TITLE                |
   __ after title      +------------------------------------------+

   __ before body      +----- BODY TABLE:  MONTHLY_EXPENSE   -----+
                       |           BODY TITLES                    |
                       |                __ after titles           |
                       |           HEADINGS                       |
                       |                __ after headings         |
                       |           ROWS                           |
                       |                __ after rows             |
   __ after body       +------------------------------------------+

   __ before title     +------------------------------------------+
                       |         Title:  ACCT_FOOTER              |
   __ after title      +------------------------------------------+
+-----------------------------------------------------------------------------+
_0 lines after report
PFKEYS: 12=CANCEL 3=SAVE
```

Chapter 8 Painting the Report Tables

This chapter describes how to use the Report Table Painter.

Topics

The Report Table Painter

After defining the report tables, you use the Report Table Painter to paint the report tables and define the fields for each report table. The Report Table Painter has one main screen and three sub-screens. This chapter explains the main screen. Refer to Chapter 9, Extending Report Table Attributes, on page 103 for information about the sub-screens.

Invoking the Report Table Painter

To invoke the Report Table Painter from the Report Definer, complete the following tasks:

1. In the Report Definer, specify the report tables that make up your report.
2. Place the cursor anywhere on the row containing the report table name that you are defining.
3. Press PF6 or type the **`PAINT`** command in the primary command field.
4. Press Enter.

If a definition for a report table with that name already exists, the Report Table Painter displays its definition; otherwise, the Report Table Painter displays an empty template for you to complete.

Report Table Painter Screen

This table shows the Report Table Painter screen for the report table EMP_EXPENSE:

```
COMMAND ==>                                                    Scroll:  P

....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....8

_  1              Employee Expense Report by Month
_  2
_  3  Employee Last Name          ID #      Monthly Exp
_  4  ----------------------     ------     -----------
_  5  ¬AAAAAAAAAAAAAAAAAAAAAA     ¬99999     ¬99999.99
_  6
_  7
_  8
_  9
     Table: MONTHLY_EXPENSE    Unit: DOCEXMPL
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -     -    ----  ---  -    -      -     ------------

_ LNAME              5   2  S     C      22   0  L    N      N
_ EMPNO              5  25  I     P       6   0  L    N      N
_ MONTHLY_EXP        5  32  Q     P       9   2  R    N      N      ZZZZ9V.99
_ DATE               0   0  D     B       9   0  L    N      Y      MMM/DD/YYYY
_ DEPTNO             0   0  I     P       2   0       N      N
_ MONTH_NUMBER       0   0  S     C       2   0       N      N
_
PFKEYS: 6=+FLD 18=-FLD 5=CUT 17=PASTE 16=CNTL 15=EXPAND 4=TITLE/HEAD 19=SHIFT
```

How to Use the Report Table Painter

Layout

The Report Table Painter screen is divided into the following three areas:

- Image area
- Field definition area
- Selected PF keys for editing and accessing the sub-screens

The Image Area

The image area displays the appearance of the report table. It is composed of the following elements: a ruler, literal text, and report fields. In the image area, you can do the following:

- Type in and position literal text up to 254 characters per row
- Create and position report fields
- Copy and append fields from other tables
- Cut and paste fields
- Add and delete fields
- Copy, add, and delete lines (literal text and report fields)
- Change the syntax of fields
- Change the length of fields

The image area scrolls both horizontally and vertically and a scroll amount field is also available.

The Field Definition Area

The field definition area displays attributes for each of the report fields associated with a specific report table. It contains two sections that you can edit:

- Header information
- Field information

Header Information

The header information section, which is non-scrollable, contains default values for the report table name and the unit to which the report table belongs. You can change either of these values.

To use this definition as a template for a new definition, change the report table name. The report fields are associated with this new report table. For more information on how to copy TIBCO Object Service Broker objects, refer to *TIBCO Object Service Broker Shareable Tools*.

Field Information

The field information area, which is scrollable, contains the attributes for each of the fields that you define. You can enter a definition directly into this area.

If you add fields using the image area, default information is added for you in the field definition area. You can modify these default values as required.

Available PF Keys for the Report Table Painter

The PF key line displays the most commonly used PF keys for the Report Table Painter. Not all the most commonly used PF keys appear on this line. For information on all available PF keys, press PF1 for a listing and description.

Defining Report Tables

There are two components to defining a report table:

- Adding literal text
- Defining data fields

These two components are discussed in the following sections.

Adding Literal Text

Where to Add Literal Text

Use the image area to add or modify the literal text of your report table.

Example

The following illustration shows literal text from the MONTHLY_EXPENSE report table:

```
COMMAND ==>                                                  Scroll:  P
   ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
_  1  ¬99999999     Employee Expense Report by Month
_  2
_  3  Employee Last Name     ID #   Monthly Exp
_  4  ---------------------- ------ -----------
_  5  ¬AAAAAAAAAAAAAAAAAAAAA ¬99999 ¬99999.99
_  6
_  7
_  8
_  9
```

Creating Literal Text

To create literal text, position your cursor where you want your text to start on the report and type the information. `Employee Expense Report by Month` is an example of literal text. You can position the literal text anywhere on a desired row. If it is in a title or heading row, it is repositioned if you type L, R, or C in the **Justify** fields on the Title/Heading screen. Refer to Task C: Add Titles and Headings on page 116 for more information.

Editing Literal Text

You can edit the text and report fields entered in the image area either by adding or overtyping the new text, adding or blanking out the fill characters, or using PF keys and line commands. The edited information is not saved until you press PF3.

Defining Data Fields

Methods for Defining Data Fields

There are three methods for defining fields that contain data:

- Using predefined fields
- Using fields with default attributes
- Creating new fields

What Method to Use?

Consult the following table to determine which method of defining fields best suits your needs:

If you want to…	Refer to…
Use predefined fields and presentation attributes	Using Predefined Fields on page 88.
Achieve the functionality of your fields and customize the presentation at a later time	Creating Fields with Default Attributes on page 94.
Have total control over the data definition and the presentation attributes of your fields	Creating New Fields on page 95.

Using Predefined Fields

You can use predefined fields to create definitions for your report fields, unless these fields have a syntax of RD (raw data) or UN (Unicode). There are two types of predefined fields:

- Table field definitions
- Global fields

Using Table Field Definitions

You can use fields and their definitions from any type of predefined table to simplify the assignment of data and promote the shareability of data definitions. For example, when creating a monthly expense report, you can import employee field definitions from the employee table. To use a fields in a table, use one of the following primary commands:

- **COPY**
- **APPEND**

You can copy all the fields of a table, some fields from a table, or individual fields from a table. Both the **COPY** and **APPEND** commands copy only complete fields and they copy only as many fields as can fit within the defined page width.

Information is entered into both the image and field definition areas of the Report Table Painter screen when you use these commands. The length information is converted into a display length, so the value entered into the length specification could be different from the stored value. Copied report fields can be changed in all the same ways as any other existing report fields.

Copying Fields from an Existing Table Definition

To copy fields and their definitions from a predefined table, use the **COPY** command. The fields are copied into the current report table (the image area is cleared when you invoke the command). If there is not sufficient room, only the fields that fit on the screen are copied. In the case of a report table, the Row and

Column specifications and control information (SORT, BREAK, and so on) are also copied and they are positioned according to their existing Row and Column specifications. Specify one of the following in conjunction with the **COPY** command:

tablename	A listing of fields appears. Place an alphanumeric character in the line command field next to the fields that you require. The selected fields are copied into the image area in the order 0-9, A-Z when you press PF3.
tablename.fieldname	The named field is copied into the current report table.
*tablename.**	From this table, all fields that do not have a syntax of RD (raw data) or UN (Unicode) are copied into the current report table.

You can also specify the NONAMES option. If NONAMES is not used, the field name is copied as a literal with the field added beside it. If the NONAMES option is specified, the field name is not copied as a literal.

Appending Fields from an Existing Table Definition

To append fields and their definitions from a predefined table into the current report table, use the **APPEND** command. The fields are added at the line below the cursor position, if there is sufficient room. If there is insufficient room, only the fields that fit in the report table are appended. If the cursor is not positioned in the image area, the fields are added after the existing fields. Specify one of the following:

tablename	A listing of fields appears. Place an alphanumeric character in the line command field next to the fields that you require. The selected fields are appended into the image area in the order 0-9, A-Z when you press PF3.
tablename.fieldname	The named field is appended into the current table.
*tablename.**	From this table, all fields that do not have a syntax of RD (raw data) or UN (Unicode) are appended into the current table.

You can also specify the option NONAMES. If NONAMES is not used, the field name is appended as a literal with the field added beside it. If the NONAMES option is specified, the field name is not appended as a literal.

Considerations When Appending Fields

The following points should be noted about appending fields:

- The fields are appended after the cursor position, except under the following condition:

  The field of a non-report table that is overlapping an existing report field cannot be appended. If you are appending a report table, the row and column specifications are also copied. Because of this, the report fields are positioned according to their existing definition and not at the cursor position.

- If an appended report field is going to overlap an existing field, the following list of options appears:

PF3=COPY/ALL	Pressing PF3 causes all the fields to be copied; the position of the overlapping field is set to 0,0.
PF4=COPY/NO OVERLAP	Pressing PF4 all the fields to be copied, except the field that is overlapping. A message appears stating that not all requested fields are copied.
PF12=CANCEL	Pressing PF12 cancels the append.

- If an appended field is defined as a control field in its source table and control fields exist in the report table, the following list of options appears:

PF3=COPY/CNTL	Pressing PF3 causes the field to be copied and defined as a control field; the field is positioned after the control fields already defined for the report table.
PF4=COPY/NO CNTL	Pressing PF4 causes the field to be copied without it being defined as a control field.
PF12=CANCEL	Pressing PF12 cancels the append.

Global Fields

Global fields are predefined fields that standardize the position, name, and use of data across your reports. They are also used to create standard definitions across the database. The use of global fields in your environment is determined by your application administrator. This implementation is enforced at a table-type level.

Types of Implementation

The following implementations are available for the @GLOBALFIELDS table. Check with your application administrator for the implementation used in your development environment.

Field Names	Field Attributes
Each field must be linked to a global field or you are not able to save the definition.	The attributes of the field must match the attributes of the global field to which you are linked or you are not able to save the definition.
You are warned if a field is not linked to any field in the global field dictionary.	You are warned if the field attributes do not match the attributes of the global field to which you are linked.
The fields are not linked to the global field dictionary.	The field attributes are not linked to the global field dictionary.

Types of Information Stored with a Global Field

The following types of information are stored with a global field:

- Field attributes such as name, unit, type, and syntax
- A description of the field (optional entry)
- A display mask and/or a display length if the field is to be used in screens or reports
- Help specific to the field (optional entry)

Using Global Fields

The following illustration shows an example of the Global Field Dictionary screen:

```
                         Globalfields                              Scroll: P
COMMAND ==>                                                    Select All: N
Location:                                                    Deselect All: N
                                                      Show selection specs: Y
========================== Selection Specification ============================
      Selection: NAME LIKE '*'
AND               Op                         Value
                 ---- ---------------------------------------------------------
          NAME
  BUSINESSNAME
          UNIT
       CREATED
        AUTHOR
===============================================================================
  Name             Businessname                            Unit       Created Author
  ---------------- ------------------------------------ -------- ----------
--------
_ DLWFLD2          NONE                                 ACC    1994-11-08 USR01
_ DLWTEST          DFJKLDFH                             ACC    1995-06-27 USR01
_ EMPLOYEE         EMPLOYEE                             PER    1993-05-04 USR02
s EMPLOYEE#        EMPLOYEE NUMBER                      PER    1992-07-16 USR03
s EMPNO            EMPLOYEE NUMBER-UNIQUE FOR EACH EMP  PER    1991-01-14 USR04

PFKEYS: ENTER=UPDATE 3=SAVE 12=CANCEL
```

Selecting Global Fields

To select a global fields to copy, complete the following tasks:

1. Press PF14.

   This displays a listing of the Global Field Dictionary excluding fields that have a syntax of RD (raw data) or UN (Unicode).

2. To narrow your selection list, beside the appropriate selections, specify an operator in the Op field and appropriate values in the Value field.

   You can use the middle section of the screen to narrow down the selection list by using specified selection criteria. The list of fields appears in the lower portion of the screen. You can use more than one type of selection criteria. For a list of valid values for each of these fields, position your cursor on the field and press PF1.

3. Type **s** in the line command field of the fields you want to copy.

4. Press PF3 to save or copy.

The Report Table Painter screen appears with the global fields appended to the report table, one per line in the order in which they are stored in the table. The display lengths of the global fields are used as the lengths of the report fields.

Example

The following illustration shows an example of the **EMPLOYEE#** and **EMPNO_1** fields added to your report table definition from the Global Field Dictionary:

```
COMMAND ==>                                                        Scroll:  P
     ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+.
_  1 ¬99999999                    Employee Expense Totals
_  2
_  3  Employee Last Name     Id #   Monthly_exp
_  4  ---------------------- ------ -----------
_  5  ¬AAAAAAAAAAAAAAAAAAAAA ¬99999 ¬999999.99
_  6
_  7
_  8
_  9
     Table: DEPT_EXPENSE       Unit: DOCEXMPL
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -    ----  ---  -    -      -     ---------------
_ DATE               1   1  D    B       9    0  L    N      N     MMM/DD/YYYY
_ LNAME              5   2  S    C      22    0  L    N      N
_ EMPNO              5  25  I    P       6    0  L    N      N
_ MONTHLY_EXP        5  32  Q    P      10    2  R    N      N     -$ZZZ9V.AB
_ EMPLOYEE#          0   0  I    C      11    0       N      N
_ EMPNO_1            0   0  I    P       6    0       N      N

 PFKEYS: 6=+FLD 18=-FLD 5=CUT 17=PASTE 16=CNTL 15=EXPAND 4=TITLE/HEAD 19=SHIFT
```

Creating Fields with Default Attributes

You can create fields for your report tables that contain default attributes, so that you can use the default functionality of the field. You can customize the fields at a later time. This is useful if you want to use the field for testing purposes and are not concerned with the presentation of the field.

Creating Report Fields with Predefined Attributes

To create report fields with predefined attributes, complete the following tasks:

1. Place the cursor one column to the left of where you want the data in the field to begin in the image area.
2. Press PF6.

   If there is enough room, a new field is added to the right of where the cursor is positioned.

   A marker character, that is, Not sign (¬) or caret (^), and a sample data element (A or 9) appear. The data element indicates the start of the data in the field. A definition containing default information automatically appears in the field definition area.

Creating New Fields

You can create new fields by specifying required and optional attributes in the field definition area.

Required Attributes

When you create a report table, you must specify certain fields to contain the data. For valid values, press PF1.

Field Name	The name of a field of the report table. The name uniquely identifies the field within the report table. Rules must use this name to read data from or write data to the field.
Row	The row where the field appears with respect to the top left corner of the report table.
Col	The column where the field appears with respect to the top left corner of the report table. A **Row** and **Column** of 0,0 indicates a non-display field. A non-display report field is normally used to derive a value for another report field, or for control purposes (sorting, and so on).
Type	The semantic data type of the field. The default value is S. Refer to *TIBCO Object Service Broker Programming in Rules* for more information.
Syntax	The syntax of the field. The default value is C. Refer to *TIBCO Object Service Broker Programming in Rules* for more information.
Len	The maximum display length of the report field, including the decimal point and display mask characters, for example, dollar signs and commas. The default value is 1.
Dec	The number of digits that appear to the right of the decimal point. The default value is 0.

- Use non-display fields (ROW 0, COL 0) to store information that should not be visible on the screen. For example, you can store information that is to be used for future development and that should not be released yet.

  You can also use this technique for deriving values. For example, the value for MONTH is actually using the field MONTH_NUMBER (0,0), and a value is being derived with a rule to be inserted into the displayed field MONTH_NAME.
- If the information in the report comes directly from a MetaStor table, use the same field names for the report tables as in the MetaStor. Using the same field names makes the assignment of data to the report field easier.

Optional Attributes

The following are optional fields. For valid values, press PF1.

Just	The justification of data within the field for display purposes. If a field is left justified, leading blanks are removed. If leading blanks are to appear on a report, use no justification (' '). No justification is the default value.
Blank	Specifies whether the field is to be blanked out on an overlapping page when the report is merged with another report. N is the default value.
Derived	Specifies whether a value for a report field is to be derived from another specified source. If you define a field to be derived, you cannot exit the Report Table Painter until a source for the derivation is supplied. Refer to Task B1: Add the Source for a Derived Value on page 109 for more detail on derived fields.
Display Mask	You can add a display mask to a field of syntax B or P. You can also modify the display mask using the Expand screen.
Global Field	The source name for a global field appears in this field. You cannot modify this name. Refer to Using Predefined Fields on page 88 for more information on global fields.
Source Rule/Field/Text	The source for the value of a derived field.

Editing Report Tables and Report Fields

This section describes the editing functions you can use when editing report tables and report fields from the Report Table Painter. The following editing functions are available:

- Editing the report field definition
- Specifying control fields
- Adding a line or report field
- Copying lines or literals
- Cutting fields or literals
- Pasting fields, lines, or literals
- Deleting lines or fields
- Deleting report tables
- Changing report field syntax

Editing the Report Field Definition

You can edit a field definition by overtyping the specification with new information or by using line commands. To view available line commands, press PF1. The edited information is not saved until you press PF3. You can also make changes to the field definition using the image area. Editing changes have identical effects in both the image area and the field definition area.

Specifying Control Fields for the Report

Press PF16 to display the Control Fields screen.

Adding a Line or Field

To add a blank line or report field, press PF4. Depending on the location of your cursor, the following occurs:

- From the image area, if there is sufficient room, a blank line is added at the line where the cursor is positioned.
- From the field definition area, if there is sufficient room, a new field is added at the line where your cursor is positioned.

Cutting Fields or Literals

PF5 cuts the field or literal where the cursor is positioned and holds it until you paste it in a new location. You can cut a field in either area and paste it in the image area.

Pasting Fields, Lines, or Literals

You can paste fields, lines, or literals that were cut by doing the following:

1. Cut the fields, lines, or literals that you want to paste.

   Refer to Cutting Fields or Literals above for information on cutting fields, lines, and literals.

2. Position the cursor where you want the fields, lines, or literals to be pasted.
3. Press PF17.
   - If used in the image area, the fields, lines, or literals are pasted where the cursor appears.
   - If used in the field definition area, the fields are pasted after the field where the cursor is positioned. If pasting a line, the contents are placed after the line where the cursor is positioned. If there is insufficient room, the paste is not performed and the held content is saved for subsequent pasting.

Deleting Lines or Fields

You can delete information using two different methods:

- PF18
- Entering a “d” beside the field in the field definitions area

Using PF18

Use PF18 to delete the field where the cursor is positioned in either area or to delete a literal from the image area.

You can delete a field only by using PF18. If you type over a field in the image area, you cannot save the report table. It is restored to the state it was in before you edited it when you cancel from the Report Table Painter.

Deleting Report Tables

To delete a report table, use one of the following methods:

- Use the **D** line command from the Report Definer screen.
- Press PF22.

Using the D Line Command

To delete a report table using the **D** line command, complete the following tasks:

1. Ensure that you are in the Report Definer screen.

   The report tables are listed in the Report Table section of the screen.
2. Type **D** in the line command field next to the report table you want to delete.
3. Press Enter.

   The report table is deleted.

Using PF22

Use PF22 from either the Report Definer screen or the Report Table Painter. You are prompted to confirm the deletion.

Changing Report Field Syntax

You can change the syntax of any existing report field by typing over the first character or characters of the field in the image area or field definition area and pressing Enter. The characters you type in are translated as follows:

Character	Associated Syntax
A	C **Note** You can change this to syntax V.
9	If length <=11, syntax=B. If length >11, syntax=P.
9.E	F **Note** This field must have a minimum length of 8.

If you change the first characters to A, 9, or 9.E, the type of the report field *does not* change. When you attempt to save the changes, a message informs you that the type and syntax of the highlighted field *must* be compatible.

Expanding Definitions of Individual Fields

Literal Text

When defining a report table, you can display the attributes for the literal text in your report table. To expand a particular piece of literal text, complete the following tasks from the Report Table Painter:

1. Place your cursor on the literal text.
2. Press PF15.

   A view-only screen showing all the attributes for the literal appears. The display attributes are the same for all the text literals in the report table.

```
COMMAND ==>                                                   Scroll:
-----------------------------------------------------------------------------
Literal: Y                 Definition for FIELD:
Row : 4       Col: 6
Type:      Syntax: C    Length: 8        Decimal Places: 0       Justify: L

Display Mask:
Globalfield Name :
Value : EMPLOYEE

Visual Attributes
 Foreground Colour :                            Highlight : Y
 Background Colour :                            Show      :
 Blink             : N                          Truncate  :
 Reverse           : N
 Underline         : N
-----------------------------------------------------------------------------
ROW COL    FIELD NAME    Type  Syn Len Dec Just Fill Prot Show Rqd Hi Skip Null
--- --- ---------------   -     - ---- ---  -    -    -    -    -   -   -    -
1   16  MONTH             D     B    6   0  L    .    Y    Y    N   N   Y    Y
1   49  DEPTNO            I     P    2   0  L         Y    Y    N   N   Y    Y
2   49  MANAGER_NUM       I     P    5   0  L         Y    Y    N   N   Y    Y
PFKEYS: 3=SAVE 12=CANCEL
```

Field Definitions

When defining a report table, you can expand the definition of a field. You use this feature to invoke a window that displays more information on a particular field and change its attributes. It is the same screen you get when you expand on a literal except that you are able to edit most of the attributes for the fields.

The only attributes you are not able to edit are the FIELD NAME, Literal, and Globalfield Name. Refer to Adding Literal Text on page 86 and Creating New Fields on page 95 for a description of each of these attributes.

The field you expanded is highlighted in the list of fields in the bottom portion of the screen. To expand on a field, complete the following tasks from the Report Table Painter:

1. Place the cursor on the field.

   You can position the cursor on the field in either the image area or the field definition area.

2. Press PF15.

   A screen showing the definition of the field (for example, MONTH) appears:

```
 COMMAND ==>                                                 Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  MONTH
Row : 1        Col: 16
Type: D    Syntax: B    Length: 6         Decimal Places: 0        Justify: L

Display Mask: MMM YYYY
Globalfield Name :
Value :

Visual Attributes
 Foreground Colour :                              Highlight : N
 Background Colour :                              Show      : Y
 Blink             :                              Truncate  : Y
 Reverse           :
 Underline         :
-----------------------------------------------------------------------------
ROW COL    FIELD NAME     Type Syn Len Dec Just Fill Prot Show Rqd Hi Skip Null
--- --- ---------------    -    -  ---- ---  -    -    -    -    -   -   -    -
1   16  MONTH              D    B    6   0  L    .    Y    Y    N   N   Y    Y
1   49  DEPTNO             I    P    2   0  L         Y    Y    N   N   Y    Y
2   49  MANAGER_NUM        I    P    5   0  L         Y    Y    N   N   Y    Y
PFKEYS: 3=SAVE 12=CANCEL
```

Chapter 9 Extending Report Table Attributes

This chapter describes how to define Report Table Attributes.

Topics

Overview

What Do Extended Attributes Do?

The report fields defined to a body report table can have extended attributes. These attributes control the following characteristics:

- How the report is sorted
- Where it breaks
- The selection of the data
- How the values for some report fields can be derived from some other source
- How numeric values appear

Title Attributes

The body report table can also have attributes that define specific rows to be title or heading rows and, in the case of an across report, title or final columns. Breaks can also have title rows. Breaks that repeat across the page can have title and final columns.

Tasks to Define Extended Attributes

There are three tasks you must complete to define extended attributes to the report fields and report tables:

Task	Refer to page...
Task A: Select and Sort Data and Add Breaks	105
Task B: Define and Display Attributes	107
Task C: Add Titles and Headings	116

Task A: Select and Sort Data and Add Breaks

This task is used to:

- Select data
- Sort data
- Add breaks

Control Fields Screen

The following illustration shows the Control Fields screen defined for the sample report table MONTHLY_EXPENSE:

```
 -----------------------------------------------------------------------------
    Sort_by         A/D Break_by     New Page Sort_Across_By    Summary_By
    ---------------- - ----------------- -  ----------------   ----------------
  1 MONTH_NUMBER        MONTH_NUMBER       Y
  2 LNAME
  3
    Selection Criteria for Report  EMP_EXPENSE
               1  DEPTNO >= 10 & DEPTNO <= 80
               2
 -----------------------------------------------------------------------------
```

Selecting and Sorting Data

The following fields are used to select and sort data. For valid values, press PF1. You can specify a combined total of 32 **break by**, **across by**, and **summary by** fields.

Sort_by	Data is sorted based on the fields typed into this field. Sort by fields are nested in the order given. In the example, **MONTH_NUMBER** and **LNAME** are designated as sort by fields.
A/D	Data can be sorted in ascending (A) or descending (D) order. If you do not type in a value, the data is sorted in ascending order.

Sort_Across_By	Data can appear across the report. The across by fields control the data columns printed on an across report. **Note** If the sort fields do not match the break fields, problems could occur when running large reports.
Summary_By	The report can be based on compressions or summarizations of the data read. A change in the value of a summary field or a combination of summary fields causes one occurrence to be considered for output. Up to fifty entries are allowed. You use summary fields only in summary reports and across reports. The sample report has no entries in this field. The across report contained in Across Report Sample Report Screens and Rule on page 134 is summarized on the field **Month**.
Selection Criteria for Report	You can select which occurrences you want to use for your report. The fields you use in the selection criteria must be report fields defined to the report table. You can type in up to 240 characters of selection criteria. In the above example, the selection criteria states that only those occurrences from DEPTNO 10 to DEPTNO 80 are to be used in the report.

Adding Breaks

The following fields are used to add breaks. For valid values, press PF1.

Break_by	New groupings of data can be created when there is a change in the value of a break field. If you designate more than one report field as a break field these are also nested in the order given. In the previous example MONTH_NUMBER is designated as a break field. If you supply a break table, the contents of the break table are printed when there is a break in this field. If you do not supply a break table, a blank line is printed when there is a break on this field. Refer to Chapter 10, Adding Break Tables, on page 121 for more information on break tables.
New Page	You can skip to a new page for each change in value of a break field. To skip to a new page for a break, type Y in this field. The default value is no new page (N). In the previous example, a new page is ejected as each month begins.

Task B: Define and Display Attributes

This task is used to define and display the attributes for a single field or literal, or modify an existing field definition. Using the Expand screen you can modify all the attributes that appear in the field definition area of the Report Table Painter screen, except for Blank and Derived.

You cannot modify an existing literal definition. The modifications you make on this screen override values specified in the Report Table Painter screen. They are reflected on the Report Table Painter screen when you press PF3.

Invoking the Expand Screen

To invoke the Expand screen, position the cursor on the field to which you are adding additional information and press PF15. Position the cursor in either the image area or the field definition area. For more information about the Expand screen, refer to Expanding Definitions of Individual Fields on page 100.

Expand Screen

```
COMMAND ==>                                                           Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  LNAME
Row : 5       Col: 2
Type: S    Syntax: C    Length: 22        Decimal Places: 0        Justify: L

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  LNAME
FUNCTION: Total: _ Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:
BY Field:
WHERE    :  DEPTNO >= 10 & DEPTNO <= 80

OR  Source rule/field/text:


-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -     ----  ---  -    -      -      ------------
_ LNAME              5   2  S     C      22    0  L    N      N
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "LNAME"
```

Expand Screen Functionality

The following table lists the tasks you can perform using the Expand screen:

Task	Refer to page...
Task B1: Add the Source for a Derived Value	109
Task B2: Add a Display Mask for Numeric and Date Fields	114

Task B1: Add the Source for a Derived Value

You must provide a source to obtain a value for each derived report field. The value can be derived from a function, a rule, or another report field. Each derived field must have this source information individually designated. In the example report MONTHLY_EXPENSE, the report field **DATE** is derived from the $TRXDATE tool. Refer to *TIBCO Object Service Broker Shareable Tools* for more information on this tool.

Function Segment

```
                              LITERAL/DERIVED Field Definition
FUNCTION: Total: _ Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
 OF Field:
 BY Field:
 WHERE    :

 OR  Source rule/field/text: $TRXDATE
```

Derived Fields

Note the following points about a derived field:

- If the value for the field is derived from a report function, select the function and type your specifications into the appropriate argument fields. You can select only one function per derived field.
- If the value for the field is derived from a rule or another report field, type the information in the **Source rule/field/text** field.
- Deriving fields from a report function is available only through the Report Definer. If you want to perform this functionality on a report you created with the Report Generator, you must first save the report in the Report Definer and then access the LITERAL/DERIVED Field Definitions segment of the Expand screen in the Report Table Painter.

Using Report Functions

To use report functions, complete the following tasks:

1. Select a function.

   Type an alphanumeric character (0-9, A-Z) in the field to the right of the function.

2. If the function requires arguments, type in the values to the right of the argument name.

   To specify more than one report field for the **OF Field** or **BY Field** arguments, type in the fields separated by blanks.

3. To specify selection criteria for the occurrences to be used by the report function, type in this criteria to the WHERE argument.

Arguments and Selection

The arguments and selection are used as follows:

OF Field The field on which the report function is to be performed. For the report function COUNT, more than one field can be specified.

BY Field The field or fields by which the function is calculated. **BY field** values partition the report table occurrences into sets. The report function value stored on any given occurrence is the one that was calculated using the set of occurrences that contains the current value of the **BY field**s.

WHERE The selection criteria used to further limit the set of occurrences available for the report function. The selection criteria entered on the Control Field screen are not applied to the occurrences used by the report function.

Valid Report Functions

The report functions are used as follows:

Total	Returns the total of the values of the **OF Field** for the selected occurrences.
Count	Returns the count of the unique **OF Field** values for the selected occurrences. If no field name is specified in the **OF Field**, Count returns the total number of occurrences based on the WHERE clause.
Average	Returns the mean value of the **OF Field** for the selected occurrences.
Max	Returns the maximum value of the **OF Field** for the selected occurrences.

Min	Returns the minimum value of the **OF Field** for the selected occurrences.
Std Dev	Returns the standard deviation of the values of the **OF Field** for the selected occurrences. Standard deviation is the square root of the variance.
Variance	Returns the variance of the values of the **OF Field** for the selected occurrences. The formula used to derive the variance is as follows: $$\text{Variance} = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$$ where: x_i is an individual value of report field x; n is the count of selected values of x; $\bar{x}$ is the mean of the selected values of x

Using Special Functions

Two additional functions are provided in the special functions segment:

$PAGE_NUMBER	Returns the number of the current page to the report.
$REPORT_NAME	Returns the current value of the report name to the report.

You enter these functions in the **Source rule/field/text** field. This field also displays the actual text associated with a literal field. To display this information, position your cursor on the literal text and press PF15. The information that appears cannot be modified.

Special Function Segment

```
OR  Source rule/field/text: $REPORT_NAME
```

Deriving a Value Based on a Field or Rule

To derive a value based on a field or a rule, type the name of the field or the name of the rule in the **Source rule/field/text** field, for example, $TRXDATE.

Report fields that are referenced in a rule must be passed in as arguments to the rule in the **Source rule/field/text** field of the screen.

The rule does not receive field names, it receives the actual values of the fields.

Example

A report SHOWITEMS contains a report table RPTITEMS that includes four fields: ITEM#, PRICE, TAX, and TOTAL. Sample output for the report is shown here:

```
    Items and Total Costs

Item#     Price     Tax Rate     Total

1         $10.00     0.1500      $11.50
2         $19.95     0.0700      $21.34
3         $24.49     0.2300      $30.12
```

In the report table RPTITEMS, the value of the TOTAL field is derived from the TOTCOST rule that takes the PRICE and TAX fields as arguments, as in the following:

```
COMMAND ==>                                                      Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  TOTAL

 . . .

OR  Source rule/field/text: TOTCOST(PRICE, TAX)
```

When the rule executes, it takes the values passed from the PRICE and TAX fields, calculates a new value, and returns it to the TOTAL field.

The argument names in the rule do not have to match the source field names.

An example of the rule is shown here:

```
    RULE EDITOR ===>                                                  SCROLL: P
TOTCOST(ARG1, ARG2);
_
_---------------------------------------------------------------------------
_ ------------------------------------------------------------+--------------
_ RETURN(ARG1 + ARG1 * ARG2);                                 |   1
_ ---------------------------------------------------------------------------
```

Task B2: Add a Display Mask for Numeric and Date Fields

What is a Display Mask?

A display mask enables numeric fields to be printed according to common conventions, for example, 1,000 or $1,000.00, or 03/14/2000. The display mask for the field MONTHLY_EXP of the sample report is defined as ZZZZ9V.99 and this converts to 10000.00.

Adding a Display Mask

To add a mask to the numeric or date fields you can use the **Display Mask** field illustrated below:

```
Display Mask : MMM/DD/YYYY
```

Refer to *TIBCO Object Service Broker Defining Screens and Menus* for detailed information on the use of display masks.

Date Display Mask Examples

The following table lists examples of date display masks:

Display Mask	Result
YY/M/D	98/3/5
YYYY MM DD	2000 03 05
DD-MMM-YYYY	05-Mar-2000
MMMM D YYYY	March 5 2000

Numeric Display Mask Examples

The following table lists examples of numeric display masks, where [] represents a blank character:

Display Mask	Value	Result
ZZZ999V.99	12.34	[][][]012.34
	-12.34	[][][]012.34
-$ZZZ9V.AB	+12	$[][]12ßß
	-12	-$[][]12.AB

Task C: Add Titles and Headings

This task is used to:

- Define which row numbers are the title rows and heading rows of a body report table.
- Define the title column and final column positions of a body report table in an across report.
- Justify titles or headings.

The values you enter in the Titles/Headings screen are updated in the Report Definer screen and Report Painter screen, and vice versa.

Invoking the Titles/Headings Screen

To invoke the Titles/Headings screen, use PF4 from within the Report Table Painter.

Titles/Headings Screen

```
                         Titles/Headings
COMMAND ==>                                                    Scroll:  P
     ___________________________________________________________________________
T  1               Employee Expense Report by Month
T  2
H  3  Employee Last Name     ID #   Monthly Exp
H  4  ---------------------- ------ -----------
_  5  ¬AAAAAAAAAAAAAAAAAAAAA ¬99999 ¬99999.99
_  6
-----------------------------------------------------------------------------
Page Width:  80                                                       Justify
                 Title(s)
                 --------------------------------------------------------   -
                 'Employee'                                                 _
                 'Expense'                                                  _

                                                Link Headings to Fields : Y

Field            Heading(s)                                           Justify
---------------- ------------------------------------------------------     -
LNAME            'Employee' 'Last' 'Name'                                   _
LNAME            '----------------------'                                   _
PFKEYS: 3=SAVE 12=CANCEL ENTER=UPDATE
ROW MARKERS: H = HEADING T = TITLE   COL MARKERS: F = FINAL T = TITLE
```

Defining Rows and Columns

To define the rows and columns of the report use the Titles/Headings segment as illustrated below:

```
                        Titles/Headings
COMMAND ==>                                                      Scroll:  P
 __________________________________________________________________________
T  1  ¬99999999     Employee Expense Report by Month
T  2
H  3  Employee Last Name      ID #    Monthly Exp
H  4  ---------------------- ------ -----------
   5  ¬AAAAAAAAAAAAAAAAAAAAA ¬99999 ¬99999.99
```

Titles/Headings Segment Fields

The following table lists the placement and markers of the fields on the Titles/Headings segment. These entries are optional:

Row/Column	Marker	Placement
Title Rows	T	Rows selected must start in column 1 and be consecutive.
Heading Rows	H	Rows selected must come immediately after the title rows and be consecutive. If title rows are not defined, heading rows must start in row 1.
Title Columns	T	Title columns must start at column 1, be consecutive, and precede the final columns.
Final Columns	F	Final columns must end in column -1 (the last column in the report) and be consecutive. You can use blanks or the underscore symbol as separators between the title columns and final columns.

The markers for rows are typed into the line command fields of the appropriate lines. The markers for columns are typed in a line bar that is provided across the top of the report.

Modifying the Width of the Report

To modify the width of the report, you can use the **Page Width** field. Changes to the page width are carried over to the Report Definition screen. The maximum width you can have for a report is 255 columns. The value given for page width is also used to justify the title rows.

Defining the Position of the Titles and Headings

You can also justify titles and headings using the Titles/Headings segment. This segment, as illustrated below, contains a display of the information currently in the rows defined as title and heading rows.

```
  __________________________________________________________________________
T  1  ¬99999999     Employee Expense Report by Month
T  2
H  3  Employee Last Name     ID #   Monthly Exp
H  4  ---------------------- ------ -----------
   5  ¬AAAAAAAAAAAAAAAAAAAAA ¬99999 ¬99999.99
_  6
-----------------------------------------------------------------------------
```

Column Headings

The heading elements that appear are determined from the report fields on the first row directly below the last defined heading row. For example, the following headings are assigned to the fields directly below them:

```
   Employee Last Name        ID#     Monthly Exp
    ---------------------      ------  ------------
```

Column Range

The column range is used to find headings for the report fields, on all heading rows. The range for the first report field on a row begins with the first column of a field on the row and ends with the position immediately before the next field. This range determination is repeated across the report for each report field, using the position immediately after the last report field as the starting point.

Justifying Titles and Headings

Each sub-section of the Titles/Headings screen can be scrolled vertically. You can justify your titles and headings using the **Justify** fields by entering the following values:

C	Centers the text or fields of a title on the page. Centers the text of a heading over the field associated with it.
L	Left justifies the text or fields of a title on the page. Left justifies the text of a heading over the field associated with it.
R	Right justifies the text or fields of a title on the page. Right justifies the text of a heading over the field associated with it.
Blank	Blank (a null value) causes the text or fields to be positioned as they appear in the image area, that is, no justification is performed.

Linking the Heading to a Field

Using the **Link Headings To Fields** field, you can determine whether your headings are always aligned with the fields associated with them. The default is Y (yes) for non-across reports and N (no) for across reports. For a particular Report Table Painter session, you can change this value, and at the end of the session it reverts to the default. If the heading is also a field and it is above two or more fields, the value is automatically set to N.

The following sections illustrate the behavior displayed when the **Link Headings to Fields** field is set to Y and the field **ID#** is shifted right five spaces.

Position of Headings and Fields Before Shifting

The following illustration shows the position of headings and fields before shifting:

```
Employee Last Name     ID#     Monthly Exp
---------------------  ------  ------------
¬AAAAAAAAAAAAAAAAAAAA  ¬99999  ¬999999.99
```

Position of Headings and Fields After Shifting

The following illustration shows the position of linked headings and fields after shifting right five spaces:

```
Employee Last Name          ID#     Monthly Exp
---------------------       ------  ------------
¬AAAAAAAAAAAAAAAAAAAA       ¬99999  ¬999999.99
```

Position of Headings When Not Linked to Fields

The following illustration shows the position of headings when not linked to fields:

```
Employee Last Name     ID#     Monthly Exp
---------------------  ------  ------------
¬AAAAAAAAAAAAAAAAAAAA  ¬99999  ¬999999.99
```

Chapter 10 Adding Break Tables

This chapter describes how to define Break Tables.

Topics

Break Tables

What Are Break Tables?

Break tables are tables printed at specified points within a body report table. They group information both logically and visually within a report. Their primary purpose is to improve the usability of a report.

Tasks to Defining a Break Table

To add break tables to a report, complete the following tasks:

Task A: Defining Break Tables

This task is used to do the following:

- Define break tables that group together related information in a body report table
- Define break fields to determine the position of control breaks in a break table

How to Define a Break Table

To define a break table, use the Report Definer screen. When you define a field to be a break field in the Control Fields screen, an entry is automatically made in the Control Breaks section of the Report Definer screen. The Control Breaks section is added to the Report Definer screen when a field is defined to a body report table.

Breaks Section

The following shows the Report Definer screen with the Control Breaks section added:

```
                         DEFINE REPORT: EMP_EXPENSE              Unit:  ACC
 Command ===>
 Page Length:  60   Page Width :  80  Fill Missing Data :   .



REPORTTABLES:        Origin  Max  Max   Title Blank  Title Heading Title Final
  Name               Row Col Occ  Acr   Only Overlap Rows  Rows    Cols  Cols
  ----------------   --- --- ---- ----   -      -     --    --      ---   ---
_ MONTHLY_EXPENSE      3   1    *    0   N             2     2        0     0
_ HUR_TITLE            1   1    1    0   Y             1     0        0     0
_ ACCT_FOOTER         -3   1    1    0   Y             2     0        0     0
_
_
CONTROL BREAKS:      Max   Repeat    Title  Body              Control
  Name               Acr   Head      Rows   Reporttable       Break Field
  ----------------   ----  -         --     ----------------  ---------------
_ MONTH_BREAK           0  N          1     MONTHLY_EXPENSE   MONTH_NUMBER
_                                     0     MONTHLY_EXPENSE
_                                     0


PFKEYS: 3=SAVE 12=CANCEL 2=DOC 22=DELETE 6=PAINT 13=PRT 21=DISPLAY 16=LITERAL
```

Control Break Defaults

The Control Breaks section contains the following default information, which is protected and cannot be modified:

- The name of the body report table within which the break table is created. This name appears in the **Body Reportable** field.
- The name of the break field (for example, MONTH_NUMBER) whose change in value causes an additional break table to be printed. This name appears in the **Control Break Field** field, next to the name of its associated report table. Refer to Task A: Select and Sort Data and Add Breaks on page 105 for more information on break fields.

Name, Max Acr, Repeat Head, and Title Rows Fields

The following fields are used to add breaks to your report. Use PF1 for valid values.

Name	Contains the name of the break table. The name must be a valid name and be unique to the report. This break table can be shared by other reports.
Max Acr	Determines whether the report is an across report and, if so, how many times the break table repeats across the page.
Repeat Head	Determines whether the body report headings repeat for each additional break table.
Title Rows	Contains the number of title rows for the break table. You can change this value from the Titles/Headings screen.

Task B: Break Table Positioning

How Break Tables are Positioned

The position of a break table on the report is determined by its definition. The following table describes the positioning obtained depending on whether a body report table and/or control break field is specified for the report:

Body	Control	Result
Y	Y	For each value of the control break field: Title rows for the break table print immediately before the body report table that has this value as its control break field. Table rows of the break table print immediately after the body report table that has this value as its control break field.
Y	N	Title rows for the break table are printed before the title rows for the first page of the body report table. Table rows are printed after the last occurrence on the last page for the body report table.
N	N	Title rows of the break table act as a banner page and print at the beginning of the report. Table rows act as a footer page and print at the end of the report.

Break Table Illustrated

The following table illustrates the above control break field positioning for the report MONTHLY_EXPENSE and the break table MONTH_BREAK.

```
 04/MAR/2000        Employee Expense Report by Month
 -------------
| Month of DEC |
| -------------
|
|  Employee Last Name       ID #     Monthly Exp
|  ----------------------   ------   -----------
|
|  BARALDI                  98895        89.00
|  BOIVIN                   71866         0.00
|  CANNON                   51121         0.00
|  CLARK                    44789         0.00
|  CROFTON                  41001         0.00
|  DHILLON                  61385      1010.80
|  DRABEK                   22001      2321.00
|  GLADWELL                 32189         0.00
|  HARTIG                   43456         0.00
|  HOEGSON                  30058         0.00
|  HRODEK                   51111         0.00
|    .                        .             .
|---------------------------------------------
|  Monthly Total                      9730.00 |
 ---------------------------------------------
```

The dotted vertical line is added for illustrative purposes only and does not appear on the report.

Modifying Break Table Line Spacing

You can modify the line spacing of your break tables using:

- The Format screen, displayed when you press PF4
- The **FORMAT** primary command
- Fields displayed on the right-most portion of the Control Breaks section

When you modify line spacing, the new user values override all default values. To restore default spacing values, you must redefine them manually in the appropriate fields.

For more information about line spacing refer to Task E: Modify the Line Spacing on page 79.

Control Break Section

The following illustration shows the fields in the Control Break section that can be used to modify line spacing:

```
CONTROL BREAKS:    Skip before Skip after Skip after
  Name                 TABLE       TABLE      TITLES
  ----------------      --          --          --
_ MONTH_BREAK
_
_
```

Task C: Painting the Break Table

After defining and positioning the break table, you paint it by placing your cursor on the name of the break table to be painted and pressing PF6. Painting a break table is very similar to painting a report table. Refer to Chapter 8, Painting the Report Tables, on page 81 for more information.

Report Table Painter Screen for a Break Table Illustrated

The following illustrates the Report Table Painter screen for a break table. The double dotted line in the illustration separates the report fields of the report table from the report fields of the break table:

```
COMMAND ==>                                                     Scroll:  P
     ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
_  1 Month of ¬AA
_  2                              ¬999999.99
_  3
_  4
_  5
_  6
_  7
_  8
_  9
     Table: MONTH_BREAK        Unit: ACC
  Field Name        Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- --- -    -     ---  ---  -    -     -      ------------
_ DEPTNO              0   0  I    P       2    0  L    N     N
_ MONTH_NUMBER        0   0  S    C       2    0  L    N     N
_ DATE                1   2  D    B       9    0  L    N     Y      MMM/DD/YYYY
_ LNAME               5   2  S    C      22    0  L    N     N
_ EMPNO               5  25  I    P       6    0  L    N     N
_ MONTH_EXP           5  32  Q    P       9    2  R    N     N      ZZZZ9v.99
=================================================================================
_ MONTH_NAME          1  10  S    C       3    0  L    N     Y
_ MONTH_TOTAL         2  32  Q    P       9    2  R    N     Y
_
_
_  _
PFKEYS: 6=+FLD 18=-FLD 5=CUT 17=PASTE 16=CNTL 15=EXPAND 4=TITLE/HEAD 19=SHIFT
```

- Field definitions of the body report table appear in a protected format. They are there only for visual help.
- Fields for the break table can be added in the Image area or the Field Definition area. Their definition values are typed in below the protected area.

Deriving Values

The derived fields are defined in the same way as for report tables, using the Expand screen. Refer to Task B1: Add the Source for a Derived Value on page 109 for more information.

- The value for the derived field defaults to Y, as all fields on a break table must be derived.
- All report fields on the body report table are available to the break table for use in deriving a field value.

A derived field on a break table automatically assumes values from a report field on the body report table with the same name. As a result, if the source report field has the same name as the derived report field, you cannot enter any information in the Expand screen.

Defining Title Rows and Title and Final Columns

The title rows are defined in the same way as for body report tables, using the Titles/Headings screen. Refer to Task C: Add Titles and Headings on page 116 for more information.

The title columns and final columns for a break table, which repeat across the page, inherit their definition from the body report table. This definition cannot be changed for the break table. A non-repeating break table does not have title columns and final columns.

Appendix A Sample Report Definitions and Rules

This appendix provides sample reports.

Topics

Basic Report and Rule Definition

MAN_DEP_SAL Report

The following illustration shows the definition for the MAN_DEP_SAL report generated from the Report Generator:

```
                       DEFINE REPORT: MAN_DEP_SAL              Unit:  USR40
  Command ===>
  Page Length:  60   Page Width : 132  Fill Missing Data :   .


 REPORTTABLES:        Origin  Max  Max    Title Blank  Title Heading Title Final
   Name               Row Col Occ  Acr    Only Overlap Rows  Rows    Cols  Cols
   ----------------   --- --- ---- ----    -      -     --    --      ---   ---
 _ MAN_DEP_SAL          1   1    *    0    N             1     2        0     0
 _
 _
 _
 _
 CONTROL BREAKS:      Max   Repeat   Title  Body              Control
   Name               Acr   Head     Rows   Reporttable       Break Field
   ----------------   ----  -        --     ----------------  ---------------
 _ MAN_DEP_SAL$$$$1     0             1     MAN_DEP_SAL       MANAGER_NAME
 _ MAN_DEP_SAL$$$$2     0             1     MAN_DEP_SAL       DEPTNAME
 _ MAN_DEP_SAL$$$$3     0             0     MAN_DEP_SAL
 _                                    0
```

MAN_DEP_SAL_R Rule

The following illustration shows the definition for the MAN_DEP_SAL_R rule generated from the Report Generator:

```
MAN_DEP_SAL_R;
_
_ -----------------------------------------------------------------------------
_ ----------------------------------------------------------------+--------------
_ FORALL EMPLOYEE('MIDWEST') WHERE MGR# = 79912 | MGR# =        | 1
_      80002 :                                                   |
_    FORALL DEPARTMENT('BAYVILLE') WHERE DEPTNO =                |
_         EMPLOYEE.DEPTNO :                                      |
_       FORALL MANAGER WHERE MANAGER_NUM = EMPLOYEE.MGR# :       |
_          MAN_DEP_SAL.* = MANAGER.*;                            |
_          MAN_DEP_SAL.* = DEPARTMENT.*;                         |
_          MAN_DEP_SAL.* = EMPLOYEE.*;                           |
_          INSERT MAN_DEP_SAL('MAN_DEP_SAL');                    |
_          END;                                                  |
_       END;                                                     |
_    END;                                                        |
_ CALL $SETRPTMEDIUM('MAN_DEP_SAL','VISUAL', 'SCR');             | 2
_ PRINT MAN_DEP_SAL;                                             | 3
_ CALL ENDMSG(MESSAGE('@RPTGEN', 602, 'MAN_DEP_SAL ''SCR''')     | 4
_   );                                                           |
_ -----------------------------------------------------------------------------
_ ON LOGLIMIT :
_    CALL ENDMSG(MESSAGE('@RPTGEN', 698, ''));
```

Depending on the selection specified, the selection criteria is allocated to the rule or it is allocated to the report definition. You can use this rule as a template and modify it as you require, or you can execute it to query your report.

Across Report Sample Report Screens and Rule

DEPT_EXPENSE_SUM Report

The following illustration shows the definition for the DEPT_EXPENSE_SUM report:

```
                       DEFINE REPORT: DEPT_EXPENSE_SUM         Unit:  USR40
  Command ===>
  Page Length:  60   Page Width : 132  Fill Missing Data :   .



 REPORTTABLES:       Origin  Max  Max   Title Blank  Title Heading Title Final
   Name              Row Col Occ  Acr   Only Overlap Rows  Rows    Cols  Cols
   ----------------  --- --- ---- ----   -      -    --    --      ---   ---
 _ DEPT_EXPENSE_SUM    1   1    *    *   N             1     2      11    24
 _
 _
 _
 _
 CONTROL BREAKS:     Max   Repeat   Title  Body              Control
   Name              Acr   Head     Rows   Reporttable       Break Field
   ----------------  ----  -        --     ----------------  ---------------
 _                                   0     DEPT_EXPENSE_SUM  MONTH_NUMBER
 _ TOTAL_EXP_BR         *  N         0     DEPT_EXPENSE_SUM
 _                                   0

 PFKEYS: 3=SAVE 12=CANCEL 2=DOC 22=DELETE 6=PAINT 13=PRT 21=DISPLAY 16=LITERAL
```

DEPT_EXPENSE_SUM Rule

The following illustration shows the definition for the DEPT_EXPENSE_SUM rule:

```
    RULE EDITOR ===>                                                  SCROLL: P
DEPT_EXPENSE_SUM(MEDIA);
_
_ ---------------------------------------------------------------------------
_ ------------------------------------------------------------+--------------
_ FORALL $EMPLOYEE_EXPENS :                                   | 1
_    DEPT_EXPENSE_SUM.MONTH_NUMBER = $DATE_PIC('MM',          |
_      $EMPLOYEE_EXPENS.MONTH);                               |
_    FORALL EMPLOYEE_EXPENSE($EMPLOYEE_EXPENS.MONTH) :        |
_       DEPT_EXPENSE_SUM.* = EMPLOYEE_EXPENSE.*;              |
_       INSERT DEPT_EXPENSE_SUM('DEPT_EXPENSE_SUM');          |
_       END;                                                  |
_    END;                                                     |
_ CALL $SETRPTMEDIUM('DEPT_EXPENSE_SUM', 'VISUAL', 'SCR');     | 2
_ PRINT DEPT_EXPENSE_SUM;                                     | 3
_ ---------------------------------------------------------------------------
_
_
_
_
_
_     _
```

Body Report Table Definitions

DEPT_EXPENSE_SUM Report Table

The following illustration shows the definition for the DEPT_EXPENSE_SUM report table:

```
COMMAND ==>                                                        Scroll:  P
     ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
_  1           Employee Expenses by Department                         ¬AAA
_  2 Month/Dept     ¬999       Total
_  3 ----------  ---------   ---------
_  4 ¬AA         ¬99999.99   ¬99999.99
_  5
_  6
_  7
_  8
_  9
     Table: DEPT_EXPENSE_SUM   Unit: USR40
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -     ----  ---  -    -      -     ------------
_ PAGENO             1  68  S    C        4    0  L    N      Y
_ DEPTNO             2  16  I    B        4    0  L    N      N      Z9
_ MONTH_OF           4   1  S    C        3    0  L    N      Y
_ DEPT_MON_EXP       4  13  Q    P        9    2  R    N      Y
_ TOTAL_EXP          4  25  Q    P        9    2  R    N      Y
_ EMPNO              0   0  I    P        6    0  L    N      N
_ MONTH_NUMBER       0   0  S    C        2    0  L    N      N
_ MONTHLY_EXP        0   0  Q    P        9    2  R    N      N
PFKEYS: 6=+FLD 18=-FLD 5=CUT 17=PASTE 16=CNTL 15=EXPAND 4=TITLE/HEAD 19=SHIFT
```

Control Fields Screen for the DEPT_EXPENSE_SUM Report Table

The following illustration shows the Control Fields screen for the DEPT_EXPENSE_SUM report table:

```
COMMAND ==>                                                         Scroll:  P
     ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
_  1             Employee Expenses by Department                           ¬AAA
_  2 Month/Dept      ¬999       Total
_  3 ----------  ---------   ---------
_  4 ¬AA         ¬99999.99   ¬99999.99
-----------------------------------------------------------------------------
   Sort_by         A/D Break_by     New Page Sort_Across_By    Summary_By
   ---------------- - ----------------- -  ----------------    ----------------
 1 MONTH_NUMBER        MONTH_NUMBER          DEPTNO              MONTH_NUMBER
 2
 3
   Selection Criteria for Report  DEPT_EXPENSE_SUM
              1
              2
-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- --- -    -     ----  ---  -    -     -       ------------
_ PAGENO             1  68  S    C       4    0  L    N     Y
_ DEPTNO             2  16  I    B       4    0  L    N     N       Z9
_ MONTH_OF           4   1  S    C       3    0  L    N     Y
_ DEPT_MON_EXP       4  13  Q    P       9    2  R    N     Y
PFKEYS: 3=SAVE 12=CANCEL 6=+FLD 18=-FLD 4=TITLE/HEAD 15=DERIVE 19=SHIFT
```

Expand Screens for the DEPT_EXPENSE_SUM Report Table

The following sections illustrate the expand screens for the fields **MONTH_OF**, **DEPT_MON_EXP**, and **TOTAL_EXP**.

Expand Screen for the MONTH_OF Field

The following illustration shows the expand screen for the **MONTH_OF** field:

```
COMMAND ==>                                                       Scroll:
-----------------------------------------------------------------------------
Literal: N                Definition for FIELD:  MONTH_OF
Row : 4       Col: 1
Type: S    Syntax: C    Length: 3        Decimal Places: 0       Justify: L

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  MONTH_OF
FUNCTION: Total: _ Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:
BY Field:
WHERE   :

OR  Source rule/field/text: CONVERTDATE(MONTH_NUMBER)



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -     -    ----  ---  -    -     -      ------------
_ PAGENO             1  68  S     C       4    0  L    N     Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "MONTH_OF"
```

Expand Screen for the DEPT_MON_EXP Field

The following illustration shows the expand screen for the **DEPT_MON_EXP** field:

```
COMMAND ==>                                                            Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  DEPT_MON_EXP
Row : 4       Col: 13
Type: Q    Syntax: P    Length: 9        Decimal Places: 2        Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  DEPT_MON_EXP
FUNCTION: Total: S Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:  MONTHLY_EXP
BY Field:  DEPTNO MONTH_NUMBER
WHERE    :

OR  Source rule/field/text:



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- --- -    -     ----  --- -    -     -       ------------
_ PAGENO             1  68  S    C       4    0  L    N     Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "DEPT_MON_EXP"
```

Expand Screen for the TOTAL_EXP Field

The following illustration shows the expand screen for the **TOTAL_EXP** field:

```
COMMAND ==>                                                         Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  TOTAL_EXP
Row : 4       Col: 25
Type: Q    Syntax: P    Length: 9        Decimal Places: 2        Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  TOTAL_EXP
FUNCTION: Total: S Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:  MONTHLY_EXP
BY Field:  MONTH_OF
WHERE   :

OR  Source rule/field/text:



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -     ----  ---  -    -      -     ------------
_ PAGENO             1  68  S    C        4    0  L    N      Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "TOTAL_EXP"
```

Titles/Headings Screen for the DEPT_EXPENSE_SUM Report Table

The following illustration shows the Titles/Headings screen for the DEPT_EXPENSE_SUM report table:

```
                              Titles/Headings
COMMAND ==>                                                              Scroll:  P
     TTTTTTTTTTT____________FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
T  1           Employee Expenses by Department                                ¬AAA
H  2 Month/Dept     ¬999        Total
H  3 ----------  ---------   ---------
_  4 ¬AA         ¬99999.99   ¬99999.99
_  5
_  6
-----------------------------------------------------------------------------
Page Width: 132                                                            Justify
                 Title(s)
                 --------------------------------------------------------   -
                 'Employee'                                                 _
                 'Expenses'                                                 _

                                                  Link Headings to Fields : N

Field            Heading(s)                                                Justify
---------------- ------------------------------------------------------      -
                                                                             _
                                                                             _
PFKEYS: 3=SAVE 12=CANCEL ENTER=UPDATE
```

Break Table Definitions

DEPT_EXPENSE_SUM Break Table

The following illustration shows the definition for the DEPT_EXPENSE_SUM break table:

```
COMMAND ==>                                                        Scroll:  P
     ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....
_  1           Employee Expenses by Department                          ¬AAA
_  2 Month/Dept     ¬999       Total
_  3 ----------  ---------   ---------
_  4 ¬AA         ¬99999.99   ¬99999.99
_  5
_  6
_  7
_  8
_  9
     Table: DEPT_EXPENSE_SUM   Unit: USR40
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -    ----  ---  -    -      -     ------------
_ PAGENO             1  68  S    C       4    0  L    N      Y
_ DEPTNO             2  16  I    B       4    0  L    N      N      Z9
_ MONTH_OF           4   1  S    C       3    0  L    N      Y
_ DEPT_MON_EXP       4  13  Q    P       9    2  R    N      Y
_ TOTAL_EXP          4  25  Q    P       9    2  R    N      Y
_ EMPNO              0   0  I    P       6    0  L    N      N
_ MONTH_NUMBER       0   0  S    C       2    0  L    N      N
_ MONTHLY_EXP        0   0  Q    P       9    2  R    N      N
PFKEYS: 6=+FLD 18=-FLD 5=CUT 17=PASTE 16=CNTL 15=EXPAND 4=TITLE/HEAD 19=SHIFT
```

Expand Screens for the DEPT_EXPENSE_SUM Break Table

The following sections illustrate the expand screens for the fields **TOT_DEP_EXP**, **TOTAL_EXP**, **MAX_EXP**, and **MAX_TOTAL_EXP**.

Expand Screen for the TOT_DEP_EXP Field

The following illustration shows the expand screen for the **TOT_DEP_EXP** field:

```
COMMAND ==>                                                   Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  TOT_DEP_EXP
Row : 1       Col: 13
Type: Q    Syntax: P    Length: 9        Decimal Places: 2       Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  TOT_DEP_EXP
FUNCTION: Total: S Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:  MONTHLY_EXP
BY Field:  DEPTNO
WHERE    :

OR  Source rule/field/text:



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -     -    ----  ---  -    -     -     ------------
_ TOT_DEP_EXP        1  13  Q     P       9    2  R    N     Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "TOT_DEP_EXP"
```

Expand Screen for the TOTAL_EXP Field

The following illustration shows the expand screen for the **TOTAL_EXP** field:

```
COMMAND ==>                                                       Scroll:
----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  TOTAL_EXP
Row : 1       Col: 25
Type: Q    Syntax: P    Length: 9        Decimal Places: 2       Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  TOTAL_EXP
FUNCTION: Total: S Count: _ Average: _ Max: _ Min: _ Std Dev: _ Variance: _
OF Field:  MONTHLY_EXP
BY Field:
WHERE   :

OR  Source rule/field/text:



----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -    ----  ---  -    -     -      ------------
_ TOT_DEP_EXP        1  13  Q    P       9    2  R    N     Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "TOTAL_EXP"
```

Expand Screen for the MAX_EXP Field

The following illustration shows the expand screen for the **MAX_EXP** field:

```
COMMAND ==>                                                       Scroll:
-----------------------------------------------------------------------------
Literal: N                 Definition for FIELD:  MAX_EXP
Row : 4       Col: 13
Type: Q    Syntax: P    Length: 9        Decimal Places: 2       Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  MAX_EXP
FUNCTION: Total: _ Count: _ Average: _ Max: S Min: _ Std Dev: _ Variance: _
OF Field:  DEPT_MON_EXP
BY Field:  DEPTNO
WHERE    :

OR  Source rule/field/text:



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -     -    ----  ---  -    -     -      ------------
_ TOT_DEP_EXP        1  13  Q     P       9    2  R    N     Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "MAX_EXP"
```

Expand Screen for the MAX_TOTAL_EXP Field

The following illustration shows the expand screen for the **MAX_TOTAL_EXP** field:

```
COMMAND ==>                                                     Scroll:
-----------------------------------------------------------------------------
Literal: N                Definition for FIELD:  MAX_TOTAL_EXP
Row : 4       Col: 25
Type: Q    Syntax: P    Length: 9        Decimal Places: 2       Justify: R

Display Mask:
Globalfield Name :
                       LITERAL/DERIVED Field Definition  MAX_TOTAL_EXP
FUNCTION: Total: _ Count: _ Average: _ Max: S Min: _ Std Dev: _ Variance: _
OF Field:  DEPT_MON_EXP
BY Field:
WHERE   :

OR  Source rule/field/text:



-----------------------------------------------------------------------------
  Field Name       Row Col Type Syntax Len  Dec Just Blank Derived Display Mask
  ---------------- --- ---  -    -    ----  ---  -    -      -     ------------
_ TOT_DEP_EXP        1  13  Q    P       9    2  R    N      Y
PFKEYS: 3=SAVE 12=CANCEL
Enter/change FIELD DEFINITION for "MAX_TOTAL_EXP"
```

Titles/Headings Screen for the DEPT_EXPENSE_SUM Break Table

The following illustration shows the Titles/Headings screen for the DEPT_EXPENSE_SUM break table:

```
                         Titles/Headings
COMMAND ==>                                                       Scroll:  P
     TTTTTTTTTTT____________FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
_  1 Total Exp   ¬99999.99   ¬99999.99
_  2
_  3 Max Monthly
_  4 Expense     ¬99999.99   ¬99999.99
_  5
_  6
-----------------------------------------------------------------------------
Page Width: 132                                                        Justify
                 Title(s)
                 --------------------------------------------------------   -
                                                                            _
                                                                            _
                                                  Link Headings to Fields : N

Field            Heading(s)                                            Justify
---------------- ------------------------------------------------------     -
                                                                            _
                                                                            _
PFKEYS: 3=SAVE 12=CANCEL ENTER=UPDATE
```

Appendix B Merging Reports

This appendix describes how to merge reports to make them appear as one single report.

Topics

Merging Reports

Reporting Tools

You can merge reports to make them appear as one report. To merge a report you use the $RPTPARMS tool. To make selected visual changes to the merged reports you can also use the $RPTOVERLAP tool, in addition to $RPTPARMS. Changes that you make using $RPTOVERLAP override changes that are made using the Report Definer. For more information about these tools refer to *TIBCO Object Service Broker Shareable Tools*.

EMP_EXPENSE_MRG Rule

The EMP_EXPENSE_MRG rule merges the reports EMP_EXPENSE and DEPT_EXPENSE_SUM. No changes are made to the length or width of the second report, DEPT_EXPENSE_SUM, a new page is ejected between the two reports, and the page numbers run consecutively throughout the report.

```
EMP_EXPENSE_MRG;
 _
 _ ---------------------------------------------------------------------------
 _ ------------------------------------------------------------+--------------
 _ FORALL $EMPLOYEE_EXPENS :                                   | 1
 _    MONTHLY_EXPENSE.MONTH_NUMBER = $DATE_PIC('MM',           |
 _      $EMPLOYEE_EXPENS.MONTH);                               |
 _    FORALL EMPLOYEE_EXPENSE($EMPLOYEE_EXPENS.MONTH) :        |
 _       MONTHLY_EXPENSE.* = EMPLOYEE_EXPENSE.*;               |
 _       INSERT MONTHLY_EXPENSE('EMP_EXPENSE');                |
 _       DEPT_EXPENSE_SUM.* = EMPLOYEE_EXPENSE.*;              |
 _       INSERT DEPT_EXPENSE_SUM('DEPT_EXPENSE_SUM');          |
 _       END;                                                  |
 _    END;                                                     |
 _ CALL $SETRPTMEDIUM('EMP_EXPENSE', 'VISUAL', 'SCR');         | 2
 _ PRINT EMP_EXPENSE;                                          | 3
 _ CALL $RPTPARMS('DEPT_EXPENSE_SUM', '', '', 'Y', '');        | 4
 _ CALL $SETRPTMEDIUM('DEPT_EXPENSE_SUM', 'VISUAL', 'SCR');    | 5
 _ PRINT DEPT_EXPENSE_SUM;                                     | 6
 _ ---------------------------------------------------------------------------
```

See Also *TIBCO Object Service Broker Programming in Rules* for more information about editing rules.

Index

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