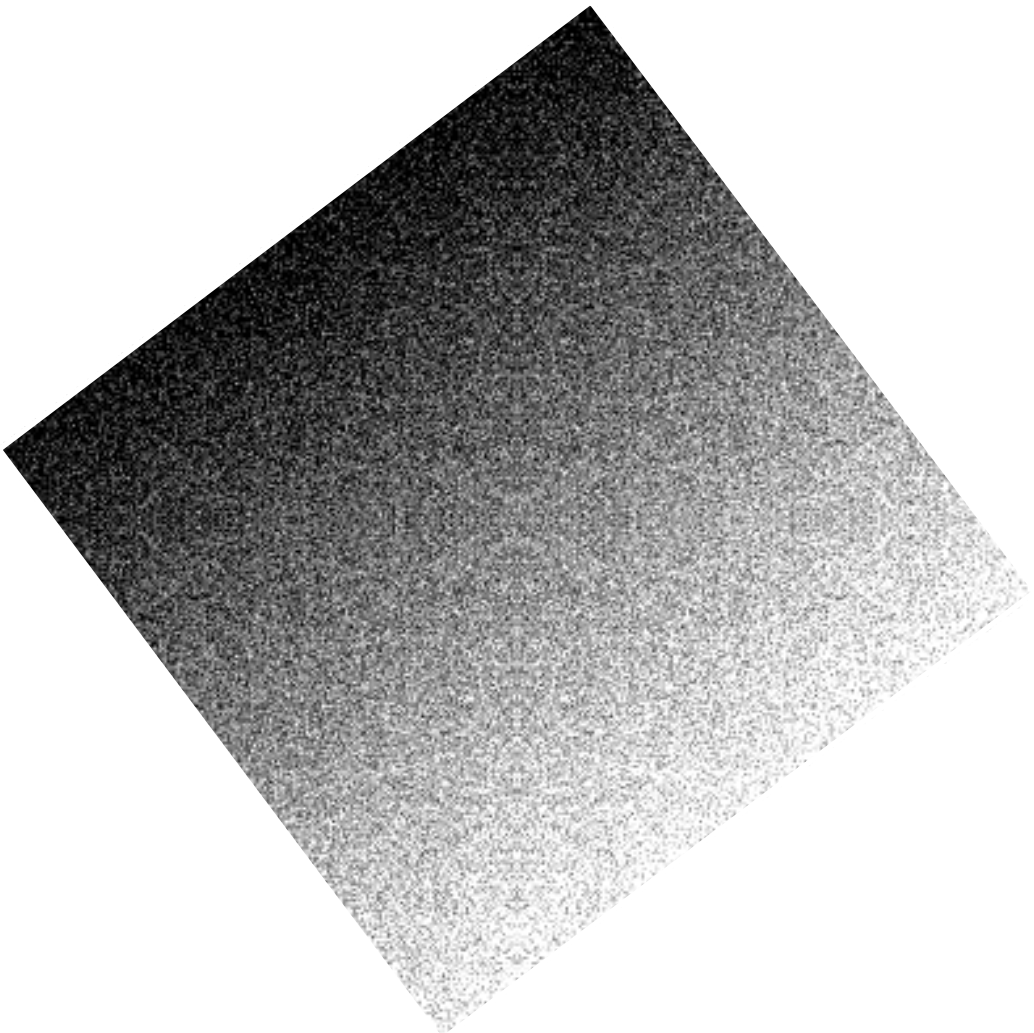
Intelligent Decision Server

IBM

Reporter User's Guide

Version 1



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Note

Before using this information and the product it supports, be sure to read the general information under “Notices” on page vi.

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This edition applies to Version 1 of Intelligent Decision Server, 5639–IDS, and to any subsequent releases until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

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About This Book

This book describes how to use the Reporter tool to retrieve data from a database, analyze it, format it into a report, and print it.

Who Should Read This Book

This book is intended for use by anyone who is using the Reporter tool to retrieve data from a database and create a report from that data. This guide describes the tasks necessary to query the database for the appropriate data and to format that data into a report for electronic or print distribution.

Prerequisite Reading

This guide is designed for users with a working knowledge of IDS. For information about your desktop and IDS, see *Working With the Intelligent Decision Server*.

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Chapter 1. What Is Reporter?

Reporter retrieves and performs calculations on data from a designated database and displays the data in a format you specify. This report can be printed or transferred to other tools such as Spreadsheet, Plot, or Text.

Reporter uses a basic column and row format, but you determine how the columns and rows are arranged, the types of calculations used, and whether or not special formatting is used to highlight data.

For example, the creator of the following report chose to use bold to highlight data that showed a dollar sales increase of more than 10%. When the data was returned, 13.02 % appeared in bold because it met the special case requirements specified by the creator. Notice that the creator of this report chose not to use a dollar sign in the dollar sales columns and also chose to round off dollars rather than show cents. In this report, the parentheses indicate negative values.

Snack Right Chips

Market	June 1992 Dollar Sales	June 1993 Dollar Sales	Change
Atlanta	310, 918	176,624	(43.19)%
Chicago	277,552	288,425	3.92%
Dallas	247, 921	280,208	**13.02%**
Total	836,391	745,257	

In the following report, the creator performed two calculations on the dollar sales data. The creator then annotated the report to show how those figures were calculated.

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Snack Right Chip Sales for West Coast Region
First Quarter 1993

	Sales Dollars	2nd Quarter Sales Quota	Bonus Level Sales
Los Angeles	$789,668	$868,635	$947,602
Portland	$107,690	$118,459	$129,228
San Diego	$107,395	$118,135	$128,874
San Francisco	$356,304	$391,934	$427,565
Seattle	$164,101	$180,511	$196,921
TOTAL FOR REGION	$1,525,158	$1,677,674	$1,830,190

Second quarter quotas are based on a 10% increase
Bonus level sales are based on a 20% increase

** Report contains aggregated facts

When you are creating reports, you can customize them for various audiences by using number formatting and currency options. For example, you can specify that monetary values be shown with $, ¥, £, or any other currency symbol available on your keyboard. Or, you can change the decimal and thousand separators to match different cultural expectations; for example, 1,000.00 or 1.000,00 or 1'000.00.

The following report shows the national U.S. Snack Right Chip sales for the first quarter as reported to Snack Right's British headquarters office. The second column, labeled **Sales**, is a calculation that converts U.S. dollar values into British pound values.

US National Snack Right Chip Sales
First Quarter 1993

	Sales U.S. $	Sales
West Coast	$2,836,794.29	1,525,158.22
East Coast	$2,311,707.66	1,242,853.58
Midwest	$1,722,164.38	925,894.83
South	$3,328,328.29	1,789,423.81
TOTAL	$10,198,994.62	5,483,330.44

Exchange rate at deposit: $1.86 to

** Report contains aggregated facts

Chapter 2. Getting Started with Reporter

A Reporter icon must be configured for a specific database service, category, user, and password before it can be used. Typically, the database administrator creates and configures Reporter icons, but you can configure your own icon by following the instructions in this chapter.

The Reporter icon appears as a small labeled picture of an oblong spiral tablet. If the icon has already been configured, the label usually describes the subject matter of the report, so it is unlikely that any of your configured Reporter icons are actually named Reporter.

This chapter describes:

How to configure a Reporter icon

The setup and report windows

Configuring a Reporter Icon

After you copy a Reporter icon from the *Blank Icons file drawer, you must configure it for a specific database service before you can open it. To configure the icon, you must know the password and the name of the database or DB2 subsystem you want to access. If you do not have this information, consult your database administrator.

To configure a Reporter icon:

1. Select the Reporter icon and open the Icon Options window.
2. Select **Other Data** in the **Display** field.

   The Other Data settings are displayed in the window.

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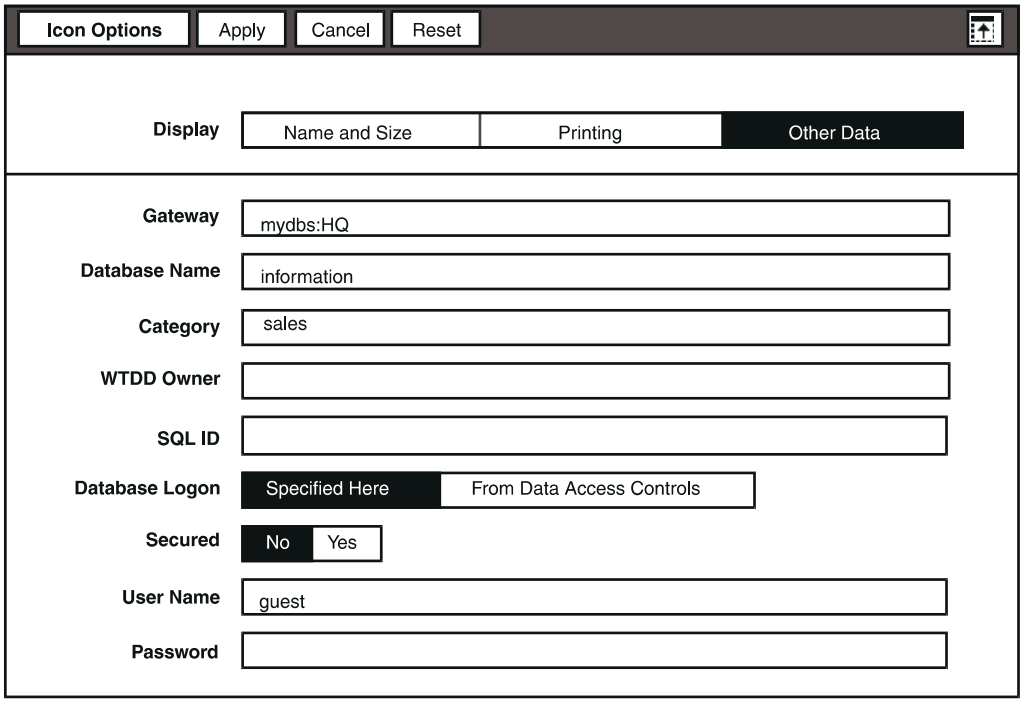


Using the guidelines provided in the following table, enter the required information into the text fields and select the appropriate choices in the other fields.

Table 1 (Page 1 of 3). Icon Options window settings

Field	Guidelines
Gateway	Type the name of the database gateway that you want the Reporter icon to access. If the gateway service is on a different realm from the one you are on, immediately follow the service name with a colon and then the realm name. For example: mydbs:HQ

Table 1 (Page 2 of 3). Icon Options window settings

Field	Guidelines
Database Name	Type the name of the physical database you want the Reporter icon to access. For DB2 databases, type the name of the DB2 subsystem you want to access. For SQL/DS databases, type the name of the virtual machine running SQL/DS. For AS/400 databases, it is not necessary to specify anything in this field, because the AS/400 is a single-database system. If you want to connect to a supported remote IBM database using Distributed Relational Database Architecture (DRDA), immediately follow the local database name with a period and then the name of the DRDA server through which the connection is being made. For example: DSN.TD1 If you want to connect to a remote SYBASE or Red Brick database, immediately follow the SQL Server name with a vertical bar and then the name of the database you want to access. For example: SYBSERVER2|SYBPROD If you want to connect to a remote ORACLE database, specify the full database name or its alias. For the full database name, specify the standard single-character prefix used for the remote connection (such as T for TCP/IP), followed by a colon, the name of the target host followed by another colon, and finally the system ID (SID) of the target ORACLE database. For example: T:host1:DBS
Category	Type either the print name or internal name of the database category needed for this Reporter icon. The name you specify here appears in the window header of the category window.
WTDD Owner	If the Reporter tool is configured to a database that supports multiple WTDDs and qualified table names, type the name of the owner of the WTDD tables. This field makes it unnecessary to drop and re-create synonyms whenever you want to access a different WTDD within the same database.
SQL ID	If you are using DB2, type the table qualifier name. The ID entered in the SQL ID field overrides the default table qualifier name, which is the name entered in the User Name field. If you have questions about the table qualifier name, consult your database administrator.
Database Logon	Select Specified Here if you want database access to be based on information you type in the User Name and Password fields. Select From Data Access Controls if you want access to be based on information in the desktop's Data Access Controls window. Consult your database administrator if you have security questions.
Secured	Specify Yes if you want the icon's User Name field to be set to the user ID of the desktop on which it resides. See the next section, “Securing a Reporter Icon,” for important information about securing an icon.

Table 1 (Page 3 of 3). Icon Options window settings

Field	Guidelines
User Name	Type a user name the database can identify as valid. This may or may not be the same as your desktop user ID depending on how your database security is set up. When the Reporter icon connects to the RDBMS, this is the user name sent to the RDBMS. If you are using the DB2 for OS/2 DRDA gateway to connect to a DRDA server, and your DB2 for OS/2 user ID is different from your DRDA server user ID, you must specify both user IDs separated by a period. For example: DB2 for OS_userid.DRDAID
Password	Type the database user's password. This password may or may not be the same as your desktop password depending on how your database security is set up. For security, the password is never displayed. If you are using the DB2 for OS/2 DRDA gateway to connect to a DRDA server, and your DB2 for OS/2 password is different from your DRDA server password, you must specify both passwords separated by a period. For example: DB2 for OS_password.DRDA_password

Securing a Reporter Icon

When you secure a Reporter icon in the Icon Options window, the user ID of the desktop where the icon resides becomes the value in the **User Name** field. When a secured icon is mailed, the value in the **User Name** field changes to the user ID of the recipient. The icon cannot be opened or used by the recipient unless his or her user ID has the appropriate privileges for the database. You cannot change the **User Name** field of a secured icon.

If you receive a secured icon from another user and the database does not recognize your user ID, you will not be able to open the icon.

Attention: Securing an icon is an irreversible operation. Before you secure an icon that you plan to distribute to other users, check with your database administrator to ensure that their user IDs are authorized to use the specified database.

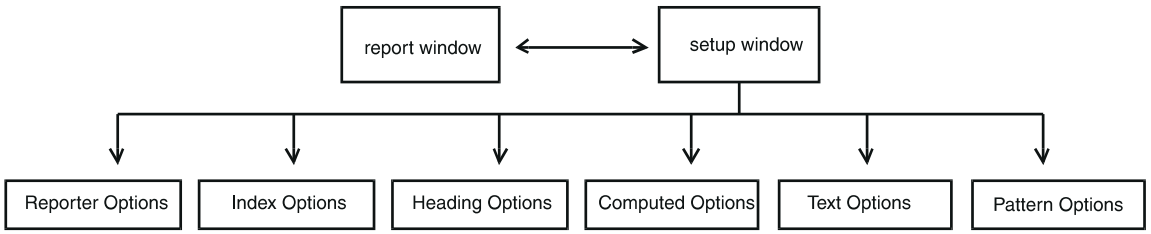
An alternate way to secure a Reporter icon is to configure it to read the user name and password setting from the desktop's Data Access Controls window. For more information about the Data Access Controls window, refer to the IDS publication *Working with the Intelligent Decision Server*, or consult your system administrator.

Accessing the Reporter Windows

The setup window and the report window are the two main Reporter windows. The six other Reporter windows are option windows that enable you to set constraints, format data, and add text and patterns to your finished report.

You use the setup window to create a report and the report window to view a completed report. You can only view one of these two windows at a time. The **Show Report** and **Show Setup** buttons in the window header enable you to switch between the two windows as you design and build your report. You cannot switch to the report window until you have retrieved data.

The following illustration shows the relationship between the two main windows and the six options windows.



The Setup Window

When you open a new Reporter icon, the setup window appears first. If the icon has been opened and used before, the window that was active when the icon was closed appears first.

To display the setup window:

1. Open a Reporter icon.
2. If the Reporter icon opens to the report window, select **Show Setup** in the window header.

   The setup window appears and the report window is hidden.

The setup window consists of two main areas: the index area and the setup area. The index area is located in the lower-right portion of the setup window and consists of the DIMENSIONS INDEX and the FACTS INDEX tables. You might need to scroll to see all of the index tables. The setup area is located in the top-left portion of the setup window and contains the COLUMN HEADINGS and ROW HEADINGS indicators.

The Index Area

Reporter icons are preconfigured for specific database categories. When you open a Reporter icon, the names of the tables and columns in the database category appear in the index area as Reporter table names and column names. The table names are located at the top of each Reporter index table and are displayed in boldface.

Underneath the table names are Reporter column names that list information describing the type of data that is stored in each database column.

Key fields, such as **PRODUCT ID**, **TERRITORY ID**, and **PERIOD** as shown in Figure 1 on page 8, are displayed in the DIMENSIONS INDEX but not in the FACTS INDEX.

Use the Reporter index tables to set global constraints and to create report headings by copying the column names into the setup area.

Each of the indexes serves a specific function in the overall design of a report.

DIMENSIONS INDEX Dimensions describe attributes of a fact or data item. Dimension data consists of descriptive labels for items such as periods of time, products, and market locations. Dimensions are used to define both column and row headings.

FACTS INDEX Facts make up the body of the report. Fact data consists of measures such as unit price or volume. The fact data retrieved in a report is dependent on the dimension headings that you specify in the setup area or the dimension index area. Facts can appear as either column headings or row headings, but not both.

The Setup Area

The setup area is where you create column and row headings and determine the layout of a report. To create headings, you copy column names from the index area and arrange them under COLUMN HEADINGS and ROW HEADINGS in the setup area. Figure 1 shows the setup area for a simple report.

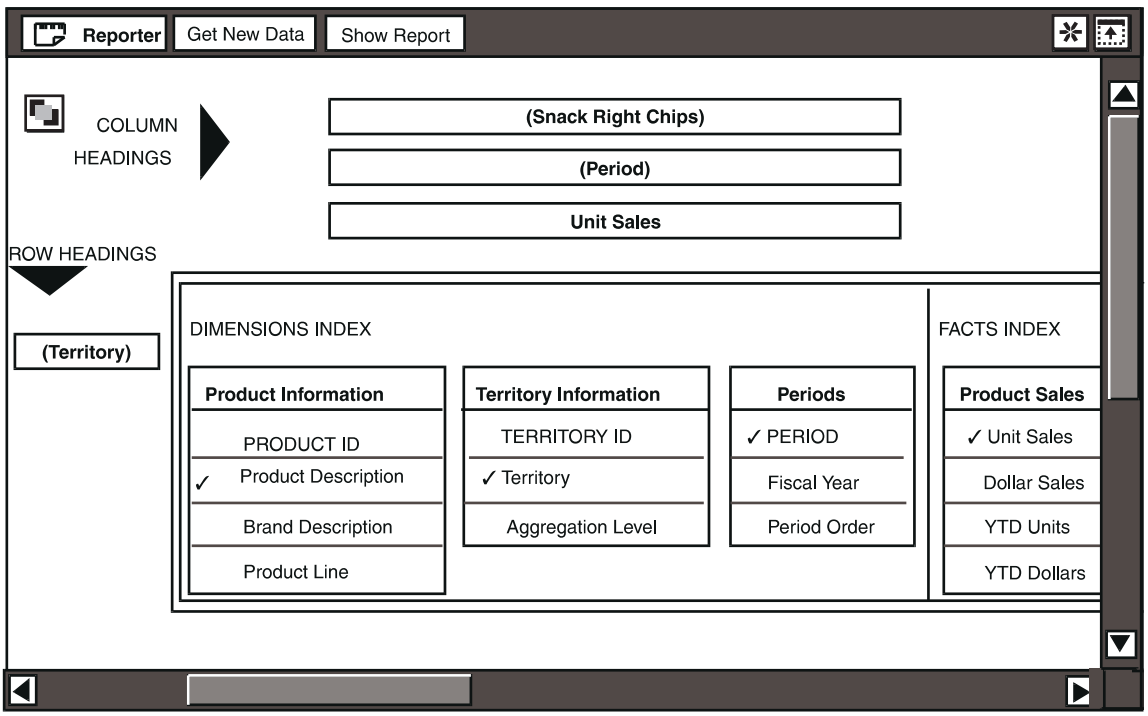


Figure 1. Setup window with headings in setup area

Heading names that appear in parentheses have been constrained to specific values. For example, Product Description is constrained to Snack Right Chips, as shown at the top of the COLUMN HEADINGS area, and the Period heading is constrained to retrieve only information for the first six months of 1993. The three types of constraints are described in Chapter 3, “Designing an Effective Report” on page 11.

The checkmarks in the index area denote that those column names have been copied into the setup area to form column or row headings.

The setup area shown in Figure 1 on page 8 produced the report shown in Figure 2.

The Report Window

After you request data from the database, the report window appears. You cannot view the report window until the Reporter tool retrieves information from the database. However, once the report contains data, you can switch back and forth between the setup and report windows.

To display the report window:

1. Select **Show Report** in the window header of the setup window. The formatted report appears, and the setup window is hidden, as shown in Figure 2.

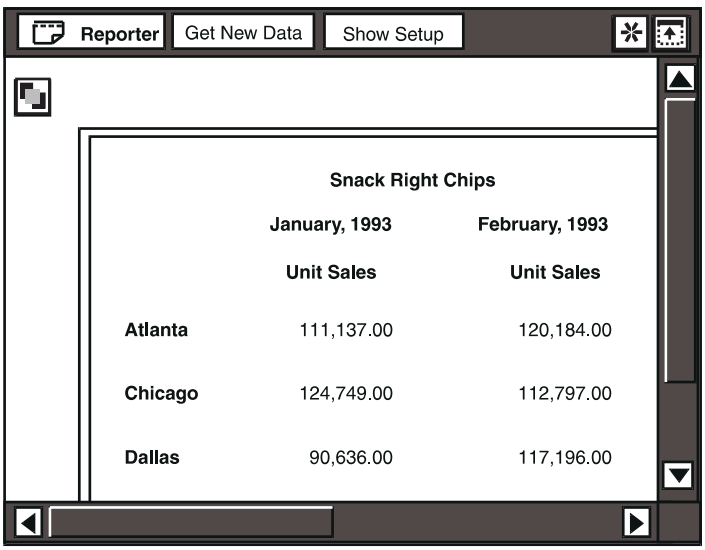


Figure 2. Report window

Use the report window to check the design, results, and format of a report as you build it. When you are content with the appearance of the report in the report window, you can print it, copy it to another tool such as Text, Plot, or Spreadsheet, or use a capsule application to transfer the data to other tools.

If you return to the setup window or close the Reporter icon, the Reporter tool stores the report and its format. When you reopen the icon, this report can still be viewed until the next time you retrieve new data from the database. See Chapter 7, “Retrieving New Data” on page 30, for more information about generating the report.

Saving Your Reports

To save a report, you need to save the Reporter icon. Changing the setup window does not change the report until you click on the **Get New Data** button. One solution for saving reports is to create a Saved Reports folder. Place Reporter icons that you wish to keep inside this folder. When you want to make a slight adjustment to a report, you can copy the icon from the folder to your desktop and work on the copied icon. This way, you do not risk overwriting a report that you might need to refer to again in the future.

Chapter 3. Designing an Effective Report

Before you begin creating a report, ask yourself the following questions to assure that the report you create meets your needs now and in the future.

Who is the intended audience?

What is the purpose or message of the report?

What do you want to see as the output?

Are there facts you want to emphasize?

Do you need to perform calculations on the data?

Will you need to create similar reports in the future?

After you answer these questions, you might want to sketch on paper the column and row headings you envision and think about how different arrangements of data call attention to different information and affect the usability of the data.

Overview of the Report Setup Process

When you have a clear plan for the report, begin building it in stages—getting new data after you set up each column or row and checking your results so problems become obvious immediately.

Setting up a report consists of the following basic tasks.

1. Configure a Reporter icon if one is not available for you.
2. Set global constraints in the index area of the setup window to limit data for the entire report without placing the related column name in the report as a heading.

   Global constraints are optional. They can simplify the setup process and make your reports easier to maintain.
3. Copy column names from the index area into the ROW HEADINGS and COLUMN HEADINGS areas of the setup window to provide a structure for your report. Facts must appear at the lowest level of the report, and facts must be either all row headings or all column headings.

   Do not copy a column name to the setup area if it has already been constrained globally. If you feel you need to copy a globally constrained column to the setup area, re-evaluate the use of a global constraint on that column. See Chapter 4, “Setting Global Constraints” on page 13, for more information.
4. Set local constraints within a specific heading frame (in the setup area) to limit the data that appears in that particular column or row.

   After setting each local constraint, retrieve new data to check for potential problems.

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5. Create any calculations necessary for your report. For example, you might want to calculate the average unit price for a product or the West Coast region's percentage of total dollar sales.
6. Adjust number and currency formatting to meet your audience's needs.
7. Set special cases to highlight data values that meet specific requirements. For example, you can automatically show unit sales of over 500,000 in bold or italics to highlight markets that are doing well. Or, in a column where you have calculated market growth over the past year, you might want to replace improvement figures of less than 1% with the word None.
8. Retrieve new data.
9. Fine tune the formatting by adjusting column width or row height and adding page breaks, annotations, or patterns as desired.
10. Print the report, distribute it electronically, or transfer the information into another tool, such as Spreadsheet, Plot, or Text, for further analysis or formatting.

Report Maintenance

Many users find that they want to create similar reports on a weekly or monthly basis. Or, that they want to create similar reports for a variety of different products or regions. If you want to be able to reuse reports easily, keep in mind the following design considerations when creating a report.

Create a separate Reporter icon for each basic type of report you want to run repeatedly, and name the icons by topic.

Use *@-variables* when setting constraints, and run your Reporter within a capsule application. See *Capsule User's Guide* for more information.

Annotate your report if data could be ambiguous or if you wish to leave reminders to yourself for next time you run the report.

Chapter 4. Setting Global Constraints

Setting global constraints is practical if you repeatedly create reports for a specific type of data or if you want to constrain an index column that will not be shown in the report.

This chapter describes:

- When to use global constraints
- The various constraint operators
- Two places to enter constraint values
- How to copy constraint values from a Choices window
- How to change and delete global constraints

Global constraints are set on column names in the index area of the setup window. When setting global constraints, use the Index Options window to narrow the range of data in a report.

Always set global constraints in the index area before setting individual heading constraints. Then each time you set up or reorder the report headings, the column names are already limited to specific information and you need not reset constraints for every report.

It is better not to constrain a field globally if you are going to copy it to the setup area. Otherwise, you might eventually have the same column name constrained both globally and locally, which can lead to problems, such as conflicting constraints when retrieving data. See Chapter 6, “Setting Local Constraints” on page 27, for information on constraining individual headings after they have been copied into the setup area.

To open the Index Options window:

1. Select a column name in the DIMENSIONS INDEX or FACTS INDEX.
2. Open the Index Options window by pressing the Options key or using the pop-up function pad. If you select a column name from the Index Options window appears as shown in Figure 3 on page 14.

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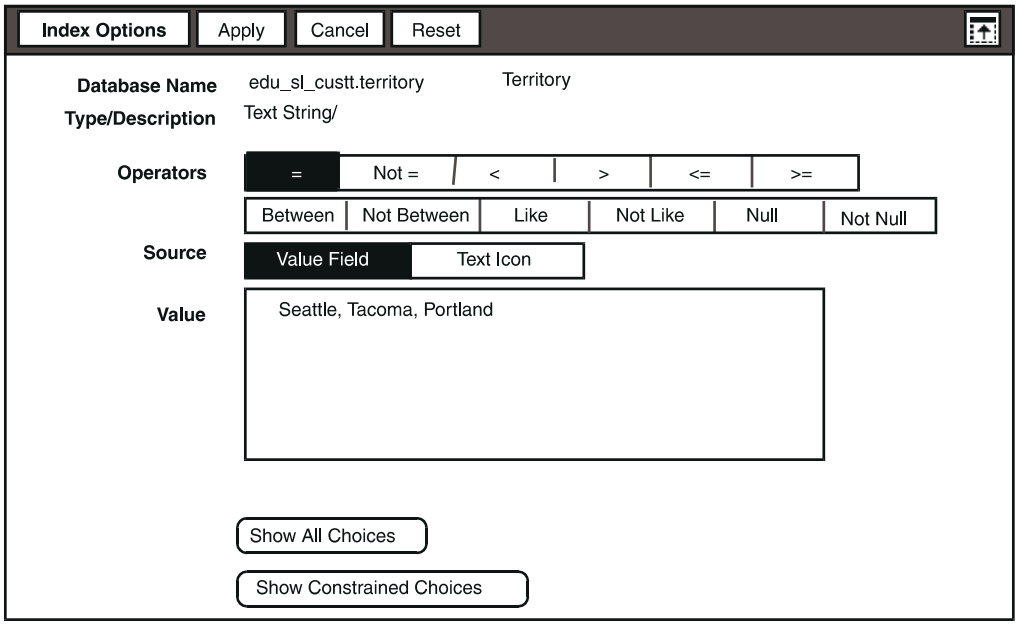


Figure 3. Index Options window for a dimension column name

At the top of the Index Options window are two fields that provide information about the data. The **Database Name** field shows the internal table name and the column name separated by a period (edu_sl_custt.territory) and the print name (Territory). The second field, **Type/Description**, provides information about the type of data found in that column of the database.

The Index Options window also displays the **Operators** field, the **Source** field, and the **Value** field. The **Operators** field lets you designate the range of data you want to retrieve. The **Source** field lets you enter use values stored in a text document, or those you specify in the **Value** field, which lets you specify the value of the constraint. In Figure 3, for example, the Territory column is being constrained to Seattle, Tacoma, and Portland.

Because you selected a column name from the DIMENSIONS INDEX, the **Show All Choices** and **Show Constrained Choices** buttons are displayed near the bottom of the Index Options window. These buttons let you view a list of valid constraints for the index column name you have selected and are discussed in detail in the section titled “Selecting Values from a List” on page 18. These buttons do not appear in the options window when you are constraining column names from the FACTS INDEX.

Selecting an Operator

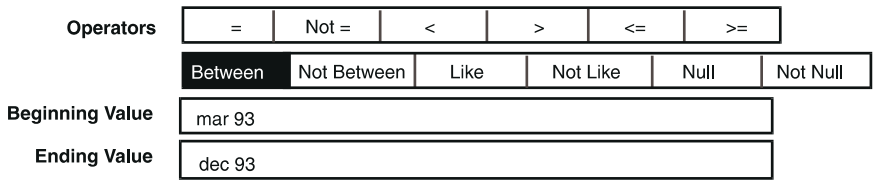
The Index Options window lets you set constraints on the range of data you want to retrieve. Table 2 on page 15 outlines each Operators choice and its function.

Table 2. Constraint operators

Operator	Returns data that
=	equals the value(s) entered
Not =	does not equal the value(s) entered
<	is less than the value entered
>	is greater than the value entered
<=	is less than or equal to the value entered
≥	is greater than or equal to the value entered
Between	is within the range of values entered, inclusive
Not Between	is not within the range of values entered
Like	matches the string data entered in conjunction with a wild card (see “Constraining with Wild Cards” on page 18 for more information)
Not Like	does not match the string data entered in conjunction with a wild card (see “Constraining with Wild Cards” on page 18 for more information)
Null	is specified as null in the database
Not Null	is not specified as null in the database

Some operators let you enter more than one value in the **Value** field. The operators **=** and **Not =** let you enter multiple values separated by a comma and a space.

The operator **Between** requires that you specify a value range using two fields: **Beginning Value** and **Ending Value**. When you use this operator, the Reporter tool retrieves data that is inclusive of the values specified in the fields. If you constrain a report as shown in the following illustration, the Reporter tool retrieves data for March, 1993 through December, 1993.



In addition, you can enter *@-variables* into the fields for any operator. Refer to the IDS publication *Capsule User's Guide* for more information about using *@-variables*.

Entering Constraint Values

Constraint values can be characters, numbers, or dates depending on the column name selected. These values must match the data type of the column name. For example,

there are many different ways to enter dates, but your database can be customized to accept a particular date format.

There are several ways to enter constraint values. You can:

- Type values directly into the **Value** field
- Type wild card constraint values using the **Like** and **Not Like** operators
- Select values from a Choices window
- Select values from a constrained Choices window

Selecting a Constraint Source

Constraints can be entered two ways. If you are entering only a few values or if you are not going to reuse the same set of values, it is easiest to use the **Value** field.

If you have a great number of values or frequently use the same set of values, it might be easier to create a Text document that contains the values.

If you choose to use a Text icon to enter values, the Text icon should be placed in the same container, capsule or folder, as the Reporter icon. If the Reporter icon is on the desktop, place the Text icon on the desktop or enter the entire path name for the Text icon in the **Text Icon Name** field.

Whether you are entering constraint values in the **Value** field or in a Text document, the following rules apply.

- A comma and, optionally, a space must be placed between each value.
- Values are case sensitive. If you are unsure of the correct capitalization, check the Choices window.

Entering Numbers

Use a comma and a space to separate each number in a series. When entering numbers by typing them, you must use the same number format as you have chosen in the Set Preferences window for your desktop. If you mail a Reporter icon to someone and they have chosen different number formats for their desktop, the Reporter icon cannot get new data until they either change their desktop preferences or change the format of the numbers entered in the **Value** field.

Entering Dates

All date formats are case insensitive. For example both Jan 94 and jan 94 are acceptable. Table 3 on page 17 lists acceptable date formats.

Table 3. Acceptable date formats for direct entry

Date type	Correct formats for direct entry
Day	January 15, 1994
	Jan 15, 1994
	Jan 15,94
	Jan 15 94
	15 Jan 94
	15 January, 1994
	1/15/94
Month	January, 1994
	Jan, 1994
	January, 94
	Jan, 94
	Jan 94
	94 January
	1/94
Year	1994
	94
Odd-Bimonth	DJ, 1994
	DJ 94
	94 DJ
Even-Bimonth	JF, 1994
	JF 94
	94 JF
Quarter	1Q94

In addition to specifying exact dates, you can use date arithmetic. For example, you can enter January 7, 94 - 2 months or february 7 94 + 3 days.

When you enter more than one constraint value in the **Value** field, each entry must be separated by a comma. Although the Reporter tool reads a comma as the end of an entry, date strings can include commas between their month, day, and year elements. The commas within date strings are ignored by the Reporter tool.

To enter information directly into a blank field:

1. Select the operator you want to use.
2. Type your data constraints into the **Value** field(s) that appears, depending on the type of operator you selected.

   For example, to constrain a report to return data for only April 1994, select the operator **=** and type April, 1994 in the **Value** field.

When you constrain a column name in the index area, a set of parentheses appears around the column name indicating that it has been constrained.

3. Close the Index Options window.

Only data for the specified constraint will be retrieved. In this example, only data for April, 1994 is retrieved. Applying global constraints in a report is useful because it allows you to reduce the number of headings and thus simplify the report setup area.

If you are setting constraints in the DIMENSIONS INDEX and you do not know the acceptable data format for the column name you have selected, you can view the valid choices currently in the database. See the sections "Constraining with Wild Cards" and "Selecting Values from a List" later in this chapter.

Parentheses always indicate that an index column name has been constrained. When parentheses show in the index area of a newly opened Reporter icon, this indicates that the database administrator has preset constraints for that column name.

Constraining with Wild Cards

The percent sign (%) and the underscore (_) are used as *wild card* characters with the **Like** and **Not Like** operators. A wild card character lets you search for constraint values that match a particular character pattern.

The percent sign can take the place of multiple characters. The underscore can take the place of a single character.

For example, you could constrain Product Description to Snack%. Then when you retrieve data, the Reporter tool searches for all products in the database that begin with Snack.

The wild card character can be used anywhere in the character string. For example, constraining Product Description to %Pretzel retrieves information for all products whose names end with Pretzel.

Another possibility is to specify a constraint such as Snack%12 oz, so that the data retrieval process returns all products whose names begin with Snack and end with 12 oz.

Selecting Values from a List

The **Show All Choices** and **Show Constrained Choices** buttons both provide access to lists of acceptable constraint values for the selected dimension column name. The lists appear in a Choices window.

The **Show All Choices** button accesses a list of all the valid choices. For example, all cities in the database would appear in the Choices window for the Territory column regardless of any constraints previously set.

The **Show Constrained Choices** button accesses a list of all the valid choices that meet the current constraints on the selected table. For example, if the Region column

was already constrained to West Coast, using the **Show Constrained Choices** button to constrain Territory would provide a list that contains Portland, Sacramento, San Diego, San Francisco, and Seattle, but not New York or Chicago.

There are two ways to copy constraint values from a Choices window to the **Value** field. You can:

Copy one or more constraint values to the **Value** field

Select one or more constraint values from the list and close the Choices or Index Options window

To enter constraint values using either the **Show All Choices** or **Show Constrained Choices** button:

1. Click on either the **Show All Choices** or **Show Constrained Choices** button at the bottom of the Index Options window. A Choices window opens and displays a list of valid values for the selected index column name.
2. Select one or more constraint values from the list.
3. Close the Choices window. The constraint values you selected now appear in the **Value** field, including separating commas and spaces if you chose multiple constraint values. You can also select a constraint value in the list and copy it into the **Value** field if you want to keep the Choices window open.
4. Repeat steps 1 through 3, or enter the constraint values directly, to include additional constraint values. The newly selected constraint values are appended to those already listed when you close the Choices window.

   When you add constraints to an existing list or type constraints rather than copying them from the Choices window, be sure to add a comma and a space between each of the constraint values.
5. Close the Index Options window.

Changing or Deleting Global Constraints

You can easily change or delete global constraints in the index areas. You can either delete individual global constraints or all global constraints.

To delete or change individual global constraints:

1. Select the desired column name shown in parentheses.
2. Open the Index Options window.
3. Make any necessary deletions or changes to the current constraints listed in the **Value** field.
4. Close the Index Options window. If you deleted a constraint, the index column name returns to its original setting. If you changed the constraint, the index column name again shows parentheses indicating this new constraint.

When you change or delete constraints in the index area, these new constraints can affect the range of data available to previously constrained headings and index column names. Before generating a report, review all constraints to verify that they do not contradict one another. The **Show Constrained Choices** button offers an easy way to check valid constraint values.

Deleting constraints can also affect database performance. For example, suppose your report has been constrained to retrieve sales data for one month. If you delete this constraint, the Reporter tool can return data for an entire year. This data retrieval would take considerably longer than the previous one, because the period has changed from one month to twelve months.

If you wish to create a new report using an existing icon, you can quickly delete the existing constraints and setup. This means, however, that you cannot rerun the existing report without rebuilding it. Generally, it is best to copy an existing icon before deleting existing constraints and/or the setup.

To delete all global constraints, along with all headings in the setup area, click on the **Select All** button in the upper-left corner of the setup area.

All headings disappear from the setup area, and all global constraints are cleared.

Chapter 5. Setting Structural Constraints

The placement of headings in the setup area determines the structure of the report and also creates structural constraints.

This chapter describes:

Rules for setting up heading hierarchies

How to copy column names to the setup area to create headings

How to move headings within the setup area

How to delete headings

Creating Headings in the Setup Area

To create report headings, select column names from the DIMENSIONS INDEX and the FACTS INDEX and copy them to the setup area. See “The Setup Window” on page 7 for more information about the index and setup areas.

Headings can be layered and used as subheadings, up to four deep for columns and six deep for rows. The upper-most heading in the COLUMN HEADINGS area is a superheading. A superheading sets a constraint precedent for all subheadings below it. A constraint precedent means that any constraint set on a superheading affects all related subheadings. Similarly, the left-most heading in the ROW HEADINGS area is a superheading and sets a constraint precedent for all subheadings indented below it.

Other aspects of constraining are described in Chapter 4, “Setting Global Constraints” on page 13 and Chapter 6, “Setting Local Constraints” on page 27.

To the right of the COLUMN HEADINGS indicator and below the ROW HEADINGS indicator are areas that accept new headings. The area that accepts row headings is level with the index area. If the COLUMN HEADINGS area contains multiple levels, the area for placing row headings might be an inch or so below the ROW HEADINGS indicator.

To copy a column name into the setup area:

1. If the setup window is not showing, select **Show Setup** in the window header.
2. Copy a column name in the DIMENSIONS INDEX or FACTS INDEX area that pertains to the information you want to include in the report.
3. Select either the **COLUMN HEADINGS area** or the **ROW HEADINGS area**, depending on whether you want the data to be arranged vertically or horizontally. The column name that you copied now becomes a heading in the selected area.
4. Repeat steps 2 and 3 each time you want to add another heading.

   You can copy the same index column names into the setup area as many times as necessary for your intended report. However, only copy a column name as many

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times as is absolutely necessary, because each copy of the column name requires its own query and slows performance.

When you copy a column name from an index table, the copied item is checkmarked in the index area. This mark indicates that the column name is being used in the setup area.

Copying and Moving Headings

Heading placement is an important aspect of report design. For example, fact headings must be at the lowest column heading level or at the same level in a row hierarchy for the Reporter tool to retrieve data.

After headings have been created in the setup area, you can copy and move them as you refine the report. When copying or moving headings, different rules apply depending on whether you are placing the headings in a column or a row.

Working with Column Headings

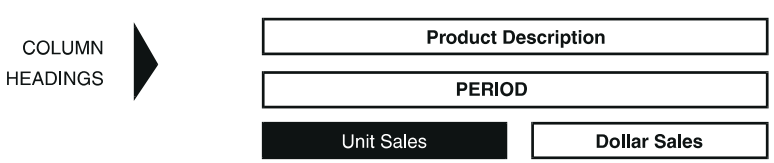
You can copy or move headings in the COLUMN HEADINGS area both horizontally and vertically depending on how you want the report data to be displayed. Column headings can be layered up to four levels deep.

Positioning Horizontally

You can easily copy or move a new or existing heading in the COLUMN HEADINGS area to the right of an existing heading or to the left of the top left existing heading:

To place a heading to the right of an existing heading:

1. Copy or move the desired heading or index column name. In this example, select the **YTD Dollars** column name in the FACTS INDEX.
2. Select a heading on the same level that you want your new heading to appear. In this case, select **Unit Sales**.



The new heading appears to the right of the heading you selected in the COLUMN HEADINGS area, as shown in Figure 4 on page 23. Notice that the length of the superheading stretches to match the total length of subheadings.

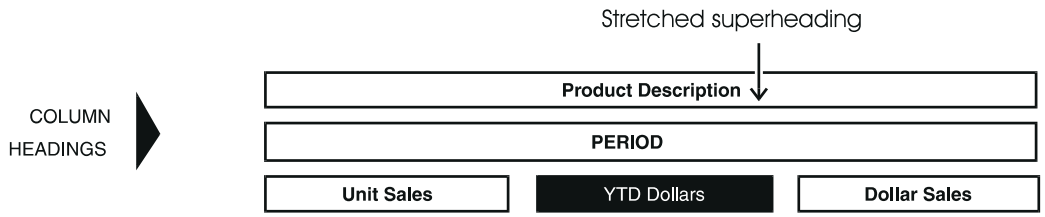


Figure 4. Adding COLUMN HEADINGS horizontally

Moving headings to the left of other headings in the COLUMN HEADINGS area is restricted. You can only copy or move a heading to the left of the top left existing heading.

To place a heading to the left of the top left existing heading:

1. Copy or move the desired heading. In this case, move **PERIOD**.

2. Select the area to the left of the existing heading. In this case, select the blank space to the left of the Product Description heading. **Period** now appears to the left of Product Description as shown in the following illustration.

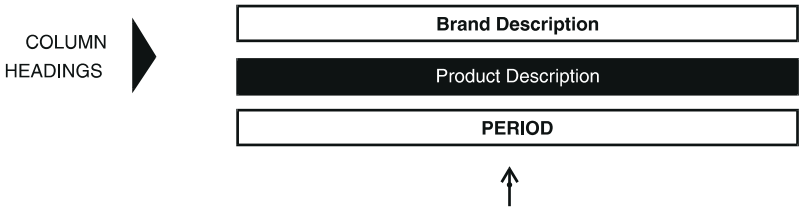
Do not move a computed heading to the left of a heading it uses in a calculation. If you do so, the result of the calculation will be incorrect. See Chapter 8, “Performing Calculations” on page 33, for more information on computed heading functions and requirements.

Positioning Vertically

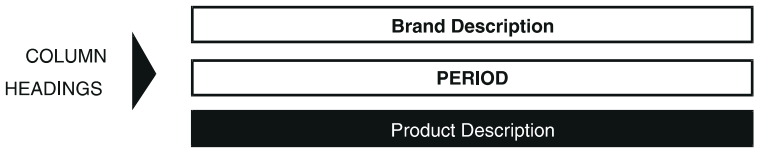
Moving headings vertically in the COLUMN HEADINGS area is restricted. You can only move or copy a heading to the area below all other column headings.

To copy or move a heading below all existing headings:

1. Copy or move the desired heading. In this example, move **Product Description**.



2. Select below all existing headings in the COLUMN HEADINGS area. In this case, select below the PERIOD heading. The Product Description heading appears below the other headings, as shown in the following illustration.



Working with Row Headings

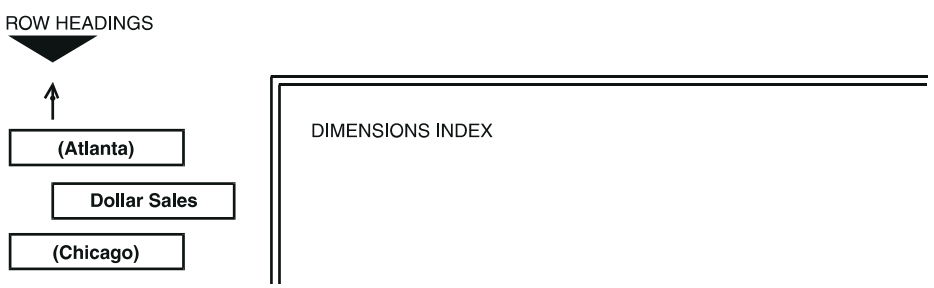
You cannot move or copy row headings horizontally adjacent to each other. You can add them only above or below existing row headings. After you have rows placed vertically, you can indent headings to provide hierarchy. Any constraints on a superheading will affect rows indented beneath it.

Positioning Vertically

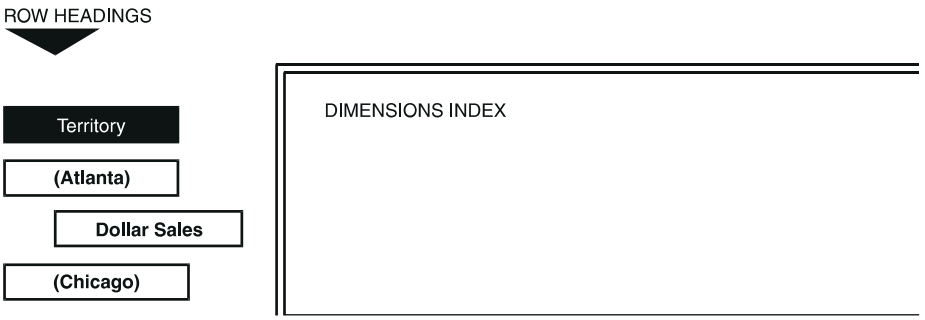
You can copy or move a new or existing heading in the ROW HEADINGS area above all existing headings or below an existing heading.

To copy or move a heading above all existing headings:

1. Copy or move the desired heading. In this example, copy the **Territory** column name from the DIMENSIONS INDEX.
2. Select just above the topmost existing heading. In this case, select above the (Atlanta) heading and below the ROW HEADINGS indicator symbol.

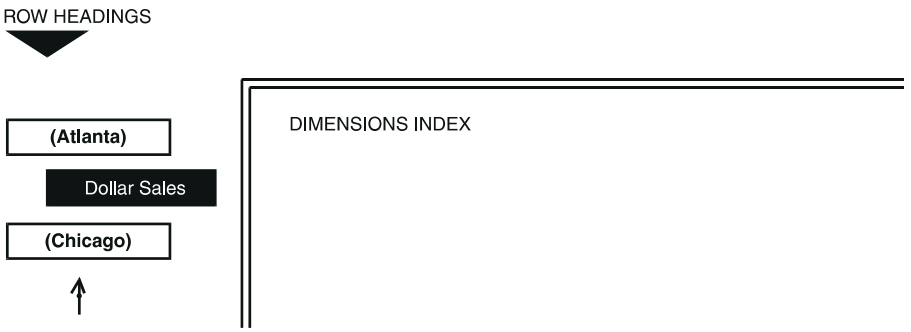


The ROW HEADINGS area appears as shown in the following illustration.

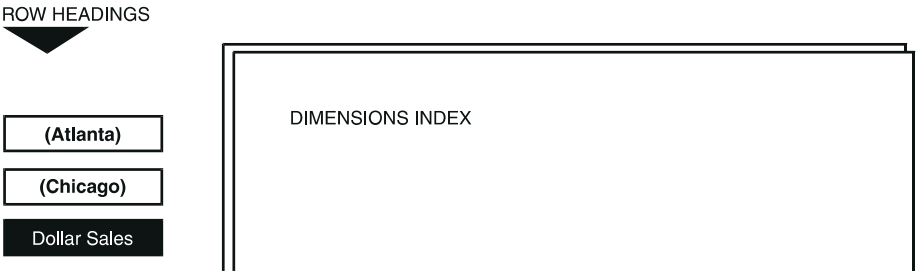


To copy or move a heading below an existing heading:

1. Copy or move the desired heading. In this example, move **Dollar Sales**.



2. Select below the lowest existing heading. In this case, select in the area below the (Chicago) heading. **Dollar Sales** appears below all existing headings as shown below.



When you copy an indented heading, the indentation level is not retained. If you want the new heading to be indented, you must do it manually.

Indenting Headings

When you copy column names from the index area to the ROW HEADINGS area, all new row headings appear at the left margin of your report. To establish a hierarchy of row superheadings and subheadings, you need to indent selected headings.

Row superheadings set constraint precedents for all indented headings below them.

To indent a row heading:

1. Select the heading that you want to indent.
2. Press the Tab key.

To return a row heading one indentation level to the left:

1. Select an indented heading.
2. Press the key combination Shift+Tab.

Removing Headings

You can remove headings individually, or you can remove all of the headings in the setup area at once.

To remove a single heading from the setup area, select and delete the heading that you want to remove.

To remove all headings in the setup area, select the Select All button in the upper-left corner of the setup area, as shown, and delete all the headings from the setup area.

Chapter 6. Setting Local Constraints

A local constraint affects only the column or row where it is set. Once you have copied the table column names from the index area into the setup area, you can use the Heading Options window to constrain headings individually.

Most fields on the Heading Options window Constraint page are similar to those in the Index Options window, which is described in Chapter 4, “Setting Global Constraints” on page 13.

This chapter describes how to:

Set constraints on individual headings

Name headings

Avoid applying local constraints to headings that already have global constraints assigned to their associated column name in the index area as this can cause conflicting constraint errors when retrieving data. See Chapter 4, “Setting Global Constraints” on page 13, for more information about constraining column names in the index area.

Understanding the Heading Options Constraint Page

Use the Heading Options window to constrain data you are retrieving and to establish a range restriction for that data, as you would in the Index Options window. The difference here is that the restriction applies only to the data that appears for this heading and its subheadings, not to all data searched as with the global constraints set in the Index Options window.

The fields listed on the Constraint page differ slightly depending upon whether you are constraining a dimension or fact heading. The fields of both windows are described in this section.

To display the Constraint page for a dimension:

1. Select a heading in the COLUMN HEADINGS or ROW HEADINGS area that came from the DIMENSIONS INDEX.
2. Open the Heading Options window.

   The Constraint page of the Heading Options window for a dimension appears, as shown in Figure 5 on page 28.

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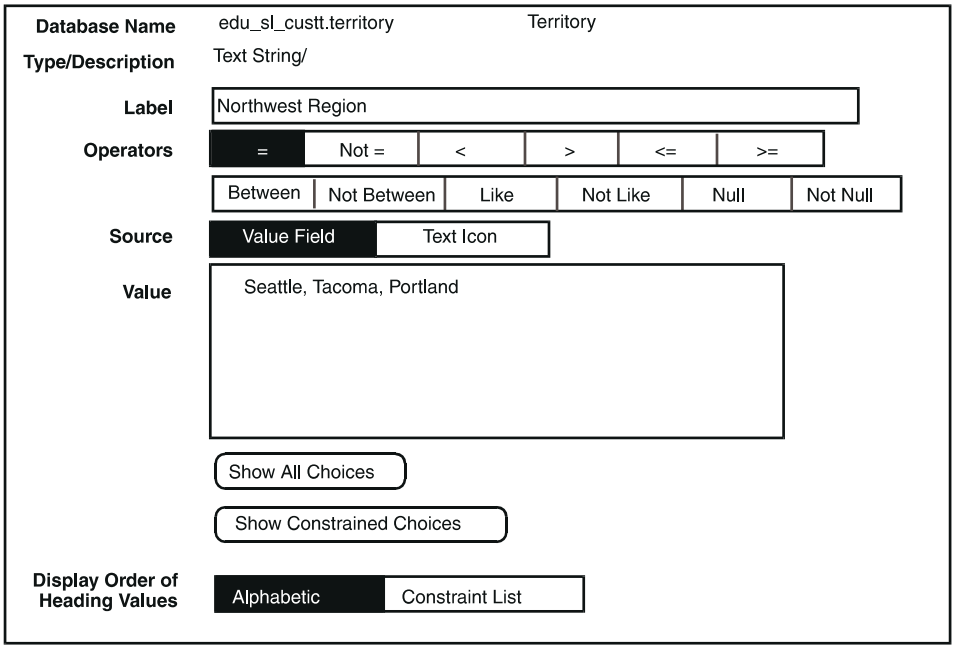

Figure 5. Constraint page for a dimension heading

To display the Constraint page for a fact:

1. Select a heading in the COLUMN HEADINGS or ROW HEADINGS area that came from the FACTS INDEX.
2. Open the Heading Options window.

   The Constraints page of the Heading Options window for a fact opens.

Some of the fields contained in the Heading Options windows are not discussed in this chapter because they are not related to constraining a report. The **Display Order Of Heading Values** field, shown in Figure 5, is described in Chapter 9, “Formatting and Printing a Report” on page 47. The **Report Facts As** and **Aggregate As** fields are described in Chapter 8, “Performing Calculations” on page 33.

For information about the **Operators**, **Source**, and **Value** fields, see “Selecting an Operator” on page 14 and “Entering Constraint Values” on page 15.

Using the Choice Window Buttons When Constraining Headings

If the heading is from the DIMENSIONS INDEX, the **Show All Choices** and **Show Constrained Choices** buttons appear near the bottom of the Heading Options window as shown in Figure 5.

When you select the **Show Constrained Choices** button for a subheading in the setup area, the Reporter tool searches the superheadings and tables in the index area for

constraints that apply to the same table. See “Selecting Values from a List” on page 18 for more detailed information on using the **Show Constrained Choices** button.

Naming a Heading

Naming headings enables you to provide information about how specific rows and columns have been constrained to return specific data. The heading name entered in the **Label** field only affects the heading frame in the setup window. Columns and rows in the report, except for calculations, get their names from the database.

The **Database Name** field displays the internal database name for a heading followed by the index column name.

Database Name	edu_sl_custt.territory	Territory
Type/Description	Text String/	

The database you are accessing might use internal names different from those shown in the illustrations in this document.

By default, the **Label** field initially displays the index column name. You can rename this to be more descriptive, perhaps naming the **Label** field to correspond to the data you request in the **Value** field.

To change the label of a heading in a report:

1. Select the desired heading.
2. Open the Heading Options window.
3. Delete the current label.
4. Type an informative label.

   Notice that the **Database Name** field retains the internal database name and the index column name when you change a heading label.
5. Close the Heading Options window. The heading then appears in the setup area with a different name than the column name it relates to in the index area. In Figure 6, the row heading contains parentheses, indicating that the heading has been constrained to a specific territory.

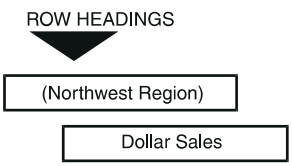

Figure 6. Naming a heading

Chapter 7. Retrieving New Data

When you select the **Get New Data** button, the Reporter tool queries the database for information you specified in the setup area. As you build and design your report, you can select this button at any time to update the data in the report.

This chapter describes how to:

Request data

Stop data retrieval

Update database categories

Capture the Structured Query Language (SQL) statements that are generated by the Reporter tool

Requesting Data

If you have made changes in the setup area, or if the database has been updated with more current information, you need to retrieve new data to update your report.

To retrieve new data:

1. Select the **Get New Data** button in the window header. Both the setup and report windows have a **Get New Data** button in the window header, allowing you to retrieve new data from either window.

Depending on the size and content of your report, the Reporter tool can take a few moments to retrieve data when you select **Get New Data**. Status messages appear in the report window while the Reporter tool does the following:

Sends queries to the database service

Arranges the data according to the specified heading positions

Performs any calculations that you have specified

Attention: Each time you select **Get New Data**, data that was previously retrieved is replaced with the new report data. If you want to save a particular report, you must make a copy of the Reporter icon or copy the data to a Text, Spreadsheet, Layout, or Plot tool.

Stopping Data Retrieval

If you decide after starting the data retrieval process that you want to make more changes to a report or for some reason do not want to retrieve new data, you can stop the data retrieval process.

To stop data retrieval:

1. Press the Stop key on your keyboard at any time.

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Attention: Stopping a Reporter icon during the data retrieval process can cause incomplete or inaccurate results in the Report window.

Updating Database Categories

If you suspect that changes have been made to WTDD tables since the last time you opened a Reporter icon, you can use the **Update Category** button in the Special button menu to read the Workstation Tools Data Dictionary (WTDD).

When you select the **Update Category** button, the Reporter tool reads the tables in the database categories and updates the setup window. This action updates the categories for the current Reporter icon only, leaving other Reporter icons on your desktop untouched. The **Update Category** button is primarily useful to database administrators and application developers who wish to test changes they have made to the database categories before implementing them for use by the entire user group.

If the WTDD is successfully updated, the Reporter tool generates a confirmation message. If the WTDD cannot be updated, a message identifies the function that failed.

For more information about updating the database structure, refer to the IDS publication *Administering Databases with IDS*.

Capturing SQL Statements

You can use the **Capture SQL** item in the Special menu of the setup window to save all SQL statements generated by the Reporter tool. Capturing SQL statements is useful for troubleshooting your report setup.

To capture the SQL generated by your Reporter tool:

1. Select the Special button in the setup window or report window header.
2. Select **Capture SQL** in the Special button menu.
3. Click on the **Get New Data** button.

A Text icon is created and its window opens automatically in the lower right corner of your desktop. The name of this icon is **RptrLog** and includes the date and time the icon was created, as shown in Figure 7 on page 32.

Understanding the Contents of the RptrLog Window

The RptrLog capture window provides all the same functions as the Text tool. Each time you use the **Capture SQL** item to capture SQL statements, a separate RptrLog window is added to your desktop. When the Reporter tool sends SQL statements to the database, copies of these statements appear simultaneously in the RptrLog window. This window captures only SQL statements sent from the Reporter tool to the database and does not record error message information, query times, or query results.

A sample RptrLog window is shown in Figure 7 on page 32. Notice the title block in the window header contains the current date and time, marking the exact time when the RptrLog window opened.

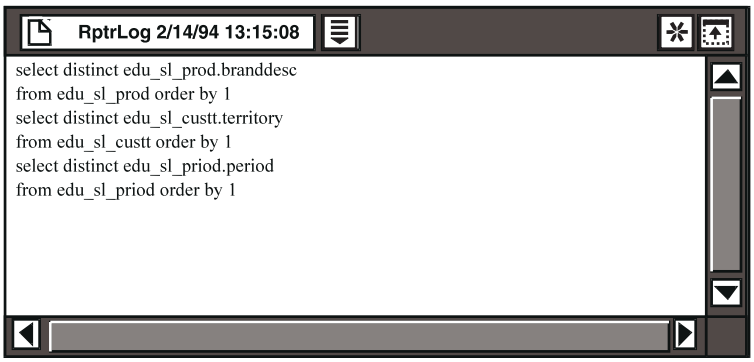

Figure 7. RptrLog window

You can capture multiple SQL statement sessions by leaving the RptrLog window open while you work in the Reporter windows. Once you close the RptrLog window, the capture process stops. The RptrLog icon remains on your desktop until you delete it, allowing you to retain records of each SQL statement session.

If your RptrLog window reaches the maximum size of a Text document, it closes automatically and a new RptrLog icon is created and opened on your desktop. This new RptrLog window has a new date and time-stamp in its title block, reflecting the day and time it was created. All further SQL statements for the session are recorded in this new window.

Stopping the SQL Capture

To stop the capture process, close the RptrLog window. The RptrLog captures all the SQL statements gathered up to the time you close the window.

Chapter 8. Performing Calculations

There are two ways to add calculations to a report. You can either specify that the Reporter tool aggregate individual values instead of returning them to the report, or you can add computed frames that display their results in labeled columns or rows. This chapter describes how to use both of these methods to add calculations to your reports. Specific topics include how to:

Report facts as aggregates

Design accurate computed frames

Create computed frames

Change the order of calculation in your report when necessary

Suppress warning messages that print in a report

Reporting Facts as Aggregates

The **Report Facts As** field lets you specify how you want the Reporter tool to display fact values. Facts can be displayed as values or aggregates.

Reporting facts as values returns one data value to each column and row intersection in your report.

Reporting facts as aggregates returns the result of a specified operation on the multiple values returned to a column and row coordinate in your report. For example, totals and averages are aggregates. Totaling or averaging multiple values results in a single value.

If you choose **Values**, the Reporter tool returns one value per heading coordinate. If there is overlapping data, more than one value per column and row coordinate, the Reporter tool displays a highlighted box in the row or column that contains the number of values which were returned, instead of displaying the data itself. For more information about overlapping data, see the section “Correcting Reports that Return Overlapping Values” on page 69.

If you choose **Aggregates**, a series of choices appears.

Table 4. Heading Options window aggregated fact operators

Operator	Returns
Sum	the sum of all values
Average	the average of all values
Min	the lowest value
Max	the highest value
Count	the number of values

To calculate the Average value of facts data in a report:

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1. Select **Aggregates** in the **Report Facts As** field.
2. Select **Average** in the **Aggregate As** field.
3. Close the Heading Options window.
4. Select **Get New Data**. The value displayed is the average of the multiple values returned.

When you create a report that contains aggregate values, the Reporter tool generates a message that displays in the report window after you select **Get New Data**. This message informs you that the report contains aggregated facts. You can suppress this message to prevent it from displaying and printing in your report. See "Suppressing Printed Warning Messages" on page 46, for more information.

Designing Accurate Computed Frames

When you set up a calculation in your report, that calculation appears as a computed frame in the setup area of your report.

Computed frames depend on other heading frames for data, so their location in the report is very important. Correct computed frame placement ensures that columns and rows are read in an order that yields accurate results. Additionally, careful placement assures that the computed data appears in a logical area in the formatted report. This section offers some tips to help you create accurate, useful computed frames.

Retrieve data before you create any computed frames.

Look at the report structure to see where the dimension and fact headings are placed in the setup area. The placement of existing headings can make a difference in where you place a computed frame.

Use the Computed Options window to select or enter the heading values that you want to calculate. The **Calculate** field displays several prompts, depending upon the operator that you select.

Always determine the order of calculation for columns and rows. In the Reporter Options window, you can choose to calculate columns first or rows first. The order in which the Reporter tool performs calculations affects the report results. For information about changing the order of calculation in a report, see "Changing the Order of Calculation" on page 45.

You can use calculated columns and rows that intersect, even when the rows and columns are calculated using different operators. See "Changing the Order of Calculation" on page 45.

Creating Computed Frames

After you have designed a report, you might want to make further calculations on the data that you have retrieved. For example, you might want to show each salesperson's total sales figures as a percentile share of the total figure for the entire territory. Or, when creating a comparison report, you might want to show the percentage of change

between one set of figures and another. You can create these types of calculations and others using the Reporter tool's Computed Options window.

To display the Computed Options window:

1. Select **Add Computed Frame** from the Special button menu of the setup window. The Computed Options window opens, as shown in Figure 8.

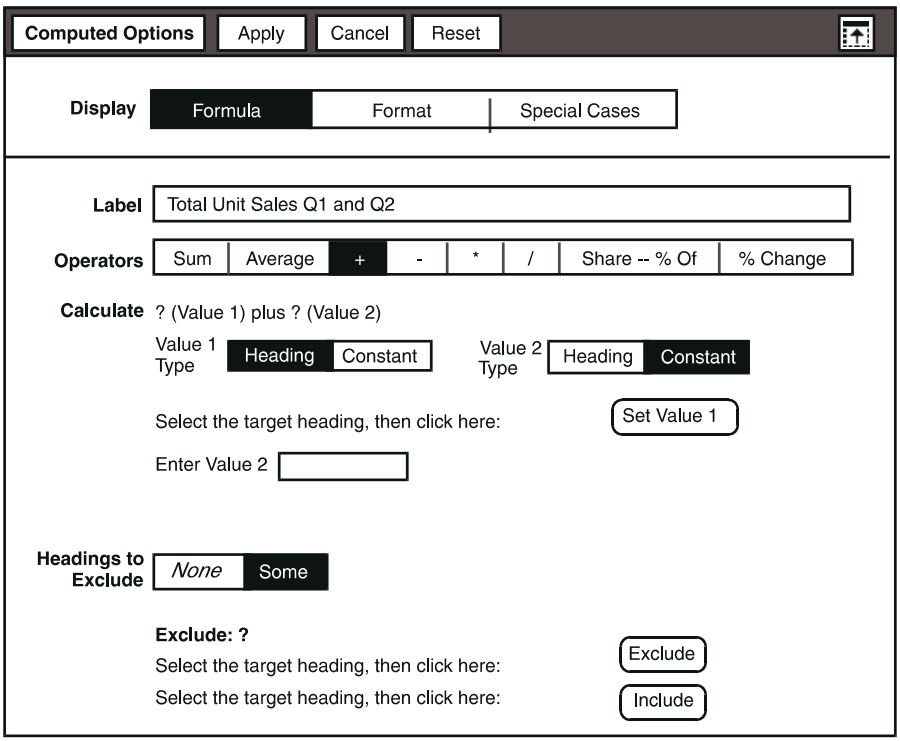


Figure 8. Computed Options window

After you set a formula, you can select any of the **Display** field choices at any time to alternate between pages. When you move to another page, any changes that you made on the previous page are automatically applied.

The procedures for formatting calculation results and setting options for special cases are the same as those used in the Heading Options window. See Chapter 9, “Formatting and Printing a Report” on page 47, for more detailed information about formatting individual columns and rows of data.

Understanding Formulas

Use the Computed Options window, shown in Figure 8, to set calculations in a report.

The following steps provide an overview of the procedure for setting the formula for a computed frame. These steps are further explained throughout the chapter.

To set a formula:

1. Select **Formula** in the **Display** field.
2. Enter a name into the **Label** field. This name appears in both the setup area and in the formatted report.
3. Select an operator from the **Operator** field. See Table 5 on the next page for a brief explanation of each operator.
4. Select the headings in the report setup area or enter constants that supply appropriate data for your intended calculation. Set these heading values in the calculation with the **Set Value 1** and **Set Value 2** buttons that appear in the **Calculate** field.
5. Select a choice from the **Exclude** field if applicable.
6. Close the Computed Options window.

   The Reporter tool places the computed frame in the setup area, either in the COLUMN HEADINGS or ROW HEADINGS area, depending on the headings with which it is associated. Within the setup area, you can manipulate computed frames by copying, moving, or deleting them or changing their options. The computed frame label appears in italics in the setup area.
7. Click on **Get New Data** in the setup window header to display the computed frame and its results in your report.

Labeling a Computed Frame

Label a computed frame by entering descriptive information or an *@-variable* into the Computed Options window. Then, any time you open the report, you know exactly what the computed frame is calculating without having to open the Computed Options window. Labels entered here become column and row names in the report and also appear in the setup area frames. You cannot create a calculation without naming it. You can, however, hide a label. See “Hiding Data and Labels” on page 51.

Selecting an Operator

The operator you specify determines the type of calculation you are creating and sets the requirements for the **Calculate** field. Table 5 outlines each **Operator** choice and its function.

Table 5 (Page 1 of 2). Computed Options window operators

Operator	Function
Sum	totals values spanning a row or column
Average	averages values spanning a row or column
+	adds two rows, columns, or constants
-	subtracts two rows, columns, or constants
*	multiplies two rows, columns, or constants
/	divides two rows, columns, or constants

Table 5 (Page 2 of 2). Computed Options window operators

Operator	Function
Share -- % Of	shows the values in one heading as a percentage share of the values in another heading
% Change	shows the percentage of change between one value and another

Creating Sum and Average Calculations

This section describes the procedure for creating Sum and Average calculations in computed frames. The process is the same for both of these aggregate calculations.

Both the **Sum** and **Average** operators calculate a fact that spans another heading and require you to set a spanning value, Value 1, which must be a dimension. Value 2 must be a fact and be a subheading of Value 1 or share the same superheading as Value 1. When fact headings are in the opposite heading area from the span heading, all facts are automatically aggregated. For example, if the fact is a column heading and the spanning value is a row heading, as in Figure 10 on page 38, Value 2 is set automatically.

You can also return aggregated facts with the Reporter tool, by setting the Heading Options window of a fact heading. For more information, see “Reporting Facts as Aggregates” on page 33.

To total or average column or row results:

1. Select **Sum** or **Average** in the **Operator** field. The **Calculate** field appears as shown in Figure 9.

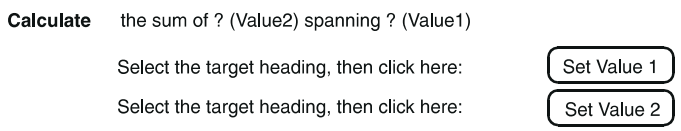


Figure 9. Sum calculation in a Computed Options window

   The **Calculate** field requires values from the report setup area to calculate a total.

2. Select a dimension heading from the report setup area to represent Value 1, and click on the **Set Value 1** button in the **Calculate** field. Value 1 is the row or column heading that categorizes the data you want to sum. Value 1 must be a dimension heading not a fact heading.
3. Select a fact heading from the report setup area to represent Value 2, and click on the **Set Value 2** button. Value 2 is the fact heading that contains the data you want to sum.

In some cases, the Reporter tool automatically sets Value 2. If the Value 1 heading is constrained for multiple values, those values are all used in the calculation. In Figure 10 on page 38 for example, (Territory) is the only selected value for the **Sum**

operator, producing a Dollar Sales total for all three territories that exist in that heading. The computed frame name is Total.

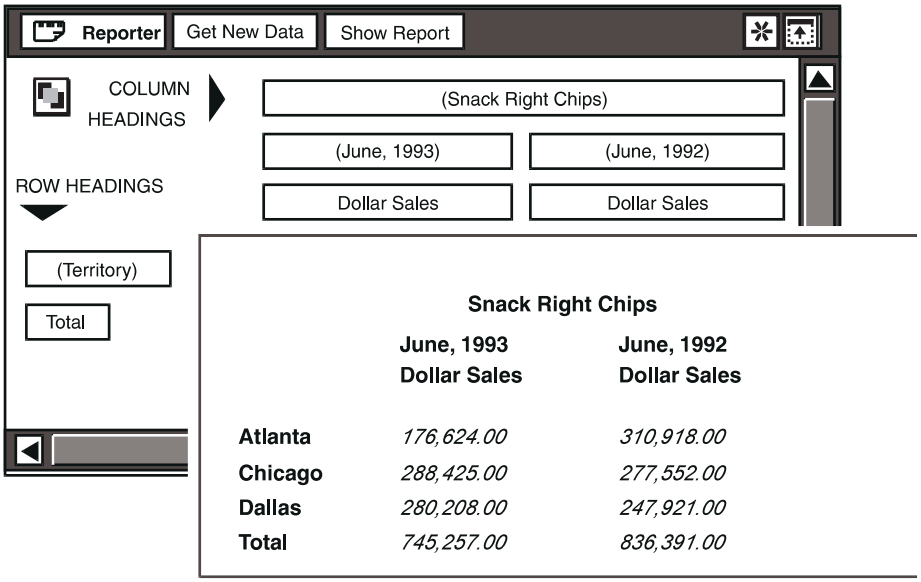


Figure 10. Sum calculation in a computed frame and resulting report

The report in Figure 11 is an example of how the **Average** operator can be used to calculate the computed frame. This report calculates the average dollar amount spanning the Dollar Sales for all three territories. The computed frame name is Average.

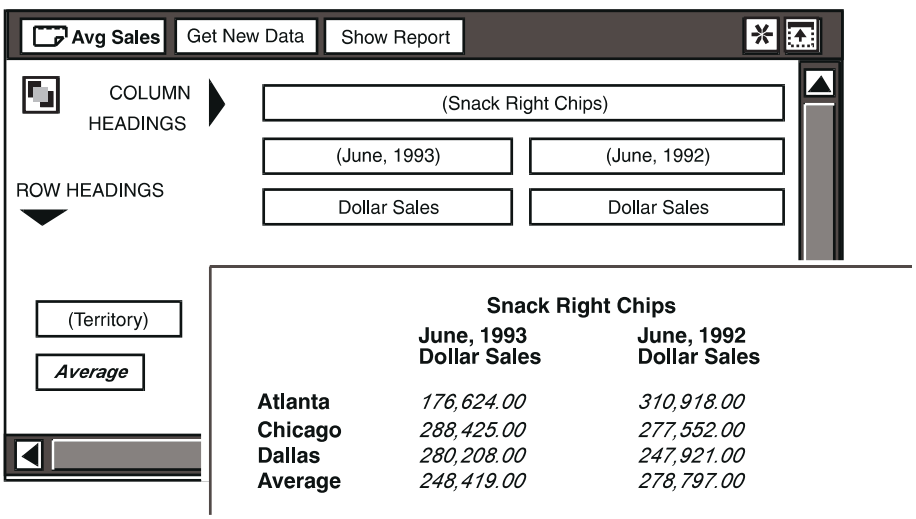


Figure 11. Average calculation in a computed frame

For Sum and Average calculations, an N/A value is treated as a zero.

Adding, Subtracting, Multiplying, and Dividing

This section describes binary calculations that use the **+**, **-**, *, and / operators in computed frames. The calculation process outlined in this section is similar for each of these operators.

The **+**, **-**, *, and / operators calculate the results by adding, subtracting, multiplying, or dividing using two headings or one heading and a constant.

To add, subtract, multiply, or divide:

1. Select **+**, **-**,*, or / in the **Operator** field.

   You now have the option of selecting a heading or entering a constant as one of the values for the calculation.

2. Select a heading from the report setup area to represent Value 1, and click on the **Set Value 1** button in the**Calculate** field.

   Guidelines for the **Heading** choice:

   If you select **Heading**, the data calculated varies, since the data for each heading changes as the database is updated. **Heading** is the default choice.

   If you select **Heading** for both values, they must have the same superheading and both must be either column headings or row headings. You can specify two separate headings as **Value 1** and **Value 2** even if they represent the same fact.

   or

   Select **Constant** as **Value 1**. A field opens where you can enter the **Constant** value.

Guidelines for the **Constant** choice:

If you select **Constant** for one value, you must select **Heading** for the other.

If you are using the Reporter tool within a capsule application, you can use an *@-variable* as a **Constant**. When using *@-variables* as constants:

The Reporter icon must be inside the capsule window when you set the calculation.

Set and apply the *@-variable* values in the capsule User Input Controls window before placing *@-variables* in the report. If you do not apply the *@-variable* values first, you will receive an error message when you try to close the Reporter Computed Options window.

Refer to *Capsule User's Guide* for more information about setting *@-variables*.

Set Value 2 using the same guidelines discussed in the previous step.

The **Calculate** field displays your selections for Value 1 and Value 2.

Setting calculations for the subtract, multiply, and divide operators all follow the same procedure described here.

The report in Figure 12 shows the use of the / operator in a computed frame. This report divides Dollar Sales by the number of sales people in each territory, giving a potential quota. Note that the names of the computed frames, such as Sales / 4, provide information about how each calculation is set up.

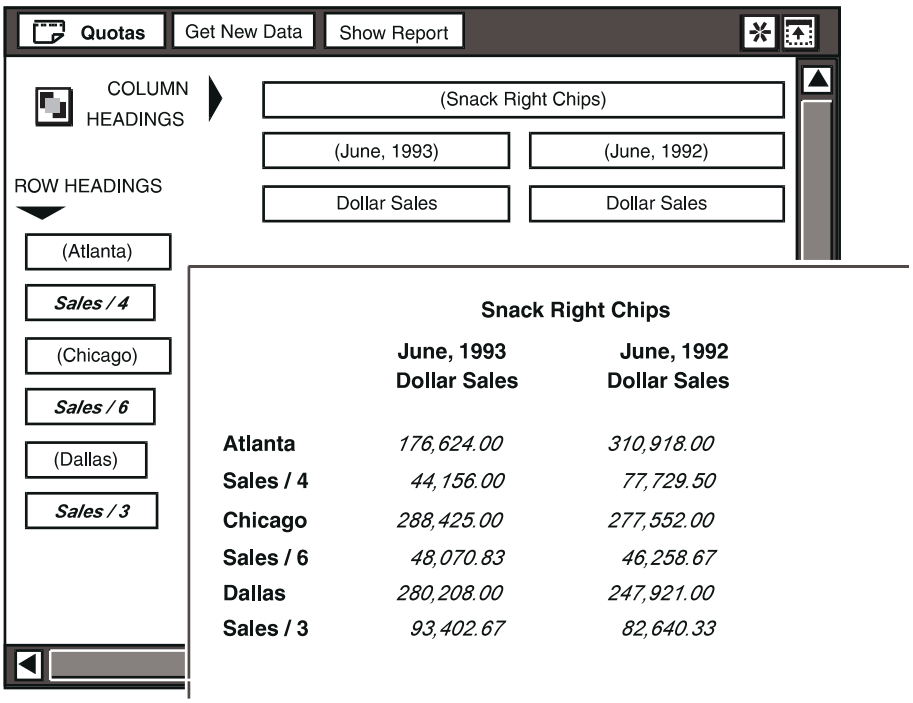


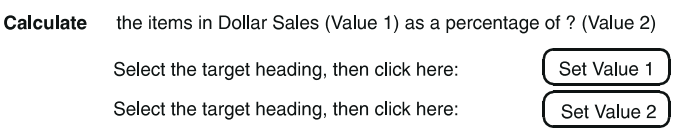
Figure 12. Division calculation in computed frames

Creating Share Calculations

The **Share -- % Of** operator shows the values in one heading as a percentage share of those in another.

To calculate a share:

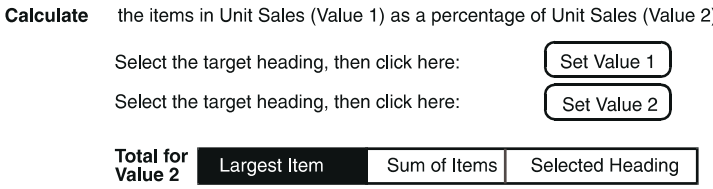
1. Select **Share -- % Of** in the **Operator** field. The **Calculate** field appears as shown below.



2. Select a heading from the report setup area to represent Value 1, and click on the **Set Value 1** button in the **Calculate** field.
3. Select a heading to represent Value 2, and click on the **Set Value 2** button.

   Only headings from the lowest level of a hierarchy can be used as value 2.

   You can also use the same heading for both values. For example, you could calculate Unit Sales for each territory as a percentage of some Unit Sales total. To do this, set **Unit Sales** as **Value 1** and **Value 2**. The **Calculate** field then requests more information, because you are using the same heading for both values.



4. Select a choice from the **Total for Value 2** field. The selected choice tells the Reporter tool exactly how to calculate each share within the heading.
5. If you select **Largest Item**, share is calculated against the item with the largest value. For example, in the following illustration, Chicago has the largest value and is consequently the share base.

Snack Right Chips

June, 1993

	Unit Sales	**% Largest Market**
Atlanta	*176,624.00*	*61*
Chicago	*288,425.00*	*100*
Dallas	*280,208.00*	*97*

6. If you select **Sum Of Items**, share is calculated against the total number for all items. The share base in the following report is the total of 176,624.00 + 288,425.00 + 280,208.00. However, the total number does not appear in the report unless you have created a computed frame to sum the column of data, as shown below.

Snack Right Chips

June, 1993

	Unit Sales	Share of Sales
Atlanta	*176,624.00*	*24%*
Chicago	*288,425.00*	*39%*
Dallas	*280,208.00*	*37%*
Total	*745,257.00*	*100%*

7. If you select **Selected Heading**, share is calculated against the total associated with another heading you select. In the following illustration, Atlanta was the selected heading, and would be shown in the **Calculate** field as the new heading for Value 2.

Snack Right Chips

June, 1993

	Unit Sales	Share Of Atlanta
Atlanta	*176,624.00*	*100.00*
Chicago	*288,425.00*	*163.30*
Dallas	*280,208.00*	*158.65*

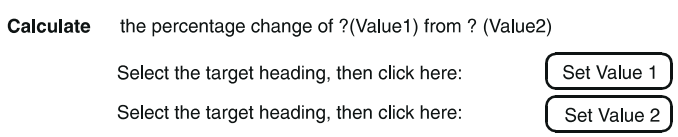
For **Share -- % Of** calculations, an N/A value always results in **N/A.** When using **Largest Item** or **Selected Heading**, you cannot use a total calculation in a row heading unless you change the order of calculation to compute row headings first.

Creating Percentile Calculations

The **% Change** operator shows the percentage of change between one value and another.

To calculate a percentage of change:

1. Select **% Change** in the **Operator** field. The calculate field appears, as shown below.



2. Select a heading from the report setup area to represent Value 1, and click on the **Set Value 1** button.
3. Select a heading to represent Value 2, and click on the **Set Value 2** button. The **Calculate** field reflects your selections.

Figure 13 on page 43 shows Dollar Sales for 1993 calculated as a percentage of change from Dollar Sales in 1992. The Dollar Sales heading for 1993 is Value 1, and the Dollar Sales heading for 1992 is Value 2. The computed frame name is % Change.

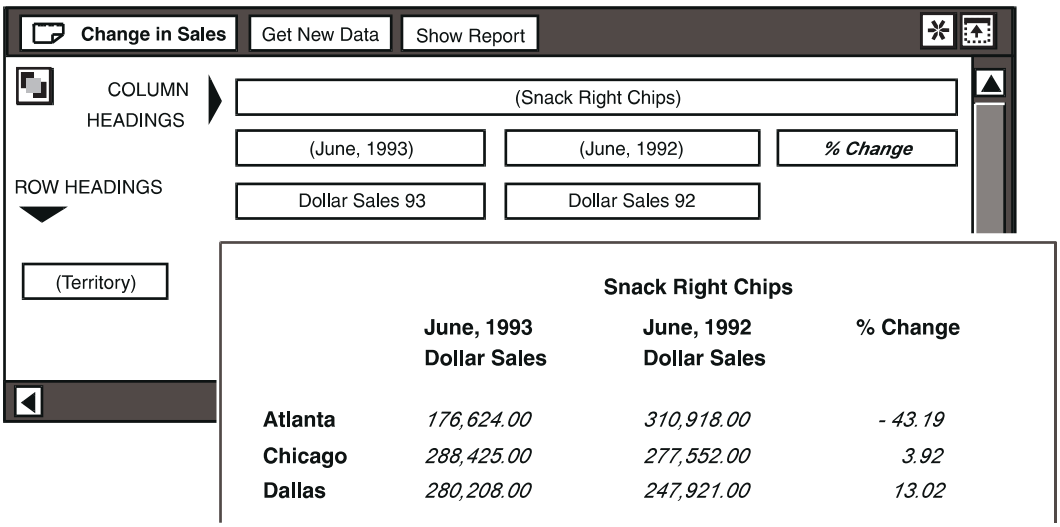


Figure 13. Percentage of change calculation in a computed frame

When an N/A value is encountered in a **% Change** calculation, the result is always N/A.

Excluding Data from a Calculation

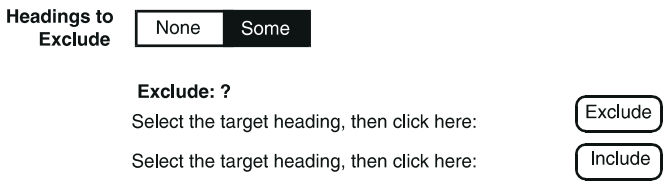
The Computed Options window lets you specify which columns are included in the computed row calculation or which rows are included in the computed column calculation. Some columns and rows might not contain the appropriate data for the intended calculation. You can use this option to exclude them. For example, in calculating the projected total dollar sales for several products, you might want to exclude one product that will soon be taken off the market.

To include all columns or rows in a calculation, select **None** in the **Headings to Exclude** field as shown in the following illustration. **None** is the default setting.

To omit specified columns or rows from a calculation:

1. Select **Some** in the **Headings to Exclude** field.

   A new field and two new buttons are added to the Computed Options window, as shown in the following illustration.



If the computed frame is a column, the excluded headings must be rows and vice versa.

2. Select the heading of the column or row of data that you want to omit from the calculation, and click on **Exclude**. You can omit more than one heading.

   As an example, in the report shown in Figure 15, if you put a total on the Dollar Sales numbers for 1993, you could set up a **Sum** calculation for (Territory) and select **Some** in the **Headings to Exclude** field. As shown in Figure 14, you could then select Dollar Sales for 1992 and exclude this data from the calculation.

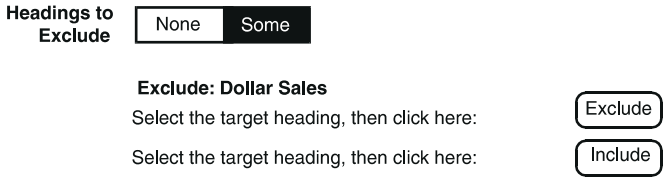


Figure 14. Excluding a specified heading in a calculation

This results in the report shown in the following illustration.

	Snack Right Chips	
	June, 1993 Dollar Sales	**June, 1992 Dollar Sales**
Atlanta	176,624.00	310,918.00
Chicago	288,425.00	277,552.00
Dallas	280,208.00	247,921.00
Total	745,257.00	

Figure 15. Example of excluding a heading from a calculation

Things to remember when you exclude a heading:

The maximum number of excluded headings is 15.

You can open the Computed Options window at any time and view the **Exclude** field to see what headings are currently excluded from the calculation. The Reporter tool lists all excluded headings in the **Exclude** field.

If you exclude headings in a calculation, you can reopen the Computed Options window at a later date and re-include the heading in the calculation.

To re-include a heading in a calculation:

1. Select the relevant computed frame in the setup area.
2. Select **None** in the **Headings to Exclude** field to re-include all the headings.

   or

   Select the frame of the heading you wish to re-include.
3. Click on the **Include** button.

Changing the Order of Calculation

You can perform calculations on computed columns and computed rows that intersect, even when the rows and columns are calculated using different operators. The **Calculate Computed Frames** field lets you tell the Reporter tool to calculate either columns or rows first. The order in which the Reporter tool performs calculations affects the report results.

The **Calculate Computed Frames** field, shown below, appears at the bottom of the Reporter Options window.

By default, the Reporter tool calculates columns first. To change or reset the order of calculation, select **Columns First** or **Rows First** in the **Calculate Computed Frames** field. The type of calculation operators used in your computed frame determines whether you must calculate the row or the column first.

The following example illustrates the significance of calculating columns and rows in the correct order. In the report shown in Figure 16, the % Change column uses the **% Change** operator and the Total row uses the **Sum** operator.

	Snack Right Chips		
	Dollar Sales April, 1993	**Dollar Sales April, 1992**	**% Change**
Atlanta	*176,624.00*	*310,918.00*	*(43.19)*
Chicago	*288,425.00*	*277,552.00*	*3.92*
Dallas	*280,208.00*	*247,921.00*	*13.02*
Total	*745,257.00*	*836,391.00*	*(26.25)*

Figure 16. Calculating computed headings

By default, the Reporter tool calculates the computed % Change column heading first. In Figure 16 shown on the previous page, the values in parentheses indicate a negative change or decrease in value. The (26.25)% change for the Total row is an incorrect value, because the value shows the % Change for the three territories, when it should

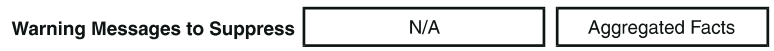
show the % Change of the total Dollar Sales. To show the correct value, you need to calculate the Total row before calculating the % Change column.

When the **Calculate Computed Frames** field is changed to **Rows First**, the correct report is generated, as shown in the following illustration.

	Snack Right Chips		
	Dollar Sales April, 1993	**Dollar Sales April, 1992**	**% Change**
Atlanta	176,624.00	310,918.00	- 43.19
Chicago	288,425.00	277,552.00	3.92
Dallas	280,208.00	247,921.00	13.02
Total	745,257.00	836,391.00	- 10.90

Suppressing Printed Warning Messages

If N/A or aggregate values are returned from calculations in a report, the Reporter tool generates a warning message that is displayed in the report window and also prints in the report. If the N/A values are valid or if you intended to return an aggregated result and you do not want these messages to appear in the report, you can suppress them with the **Warning Messages to Suppress** field in the Reporter Options window.



To suppress a warning message:

1. Display the Reporter Options window.
2. Select the appropriate buttons in the **Warning Messages to Suppress** field.

   If both the N/A and aggregate facts messages are displayed in your report, you can select both choices to suppress both messages.
3. Close the Reporter Options window.
4. Select **Show Report**. The messages are no longer displayed in the report and do not appear in any printed copy.

Chapter 9. Formatting and Printing a Report

You can use two methods to format a report with the Reporter tool. You can either set format characteristics, such as data alignment and type attributes, globally with the Reporter Options window. Or, if you want to make more specific formatting settings on a column or row basis, you can use the Heading Options window. As a general rule, it is more efficient to set global formatting first and then apply any specialized formatting by individual heading.

This chapter describes how to:

Display the Reporter Options window

Create and format a title in a report

Specify alignment and type attributes of all data

Format data by column or row

Choose the order in which the headings display

Enhance a report by adding page breaks, patterns, and descriptive text

Set special cases so data that meets specific requirements is displayed in a distinctive way, for example, in a particular typeface

Assemble multi-page printed reports

Setting Global Format Options

The Reporter Options window lets you globally manipulate data in a report. You can use this window to add a title and set the format of all data in a report (for example, specify that all data be displayed in italics). Unlike the Heading Options window, which lets you format the data in individual columns or rows, the Reporter Options window format settings affect the entire report.

To set global report formats and options:

1. Click on the **Select All** button in the top left corner of the setup area.
2. Display the Reporter Options window.

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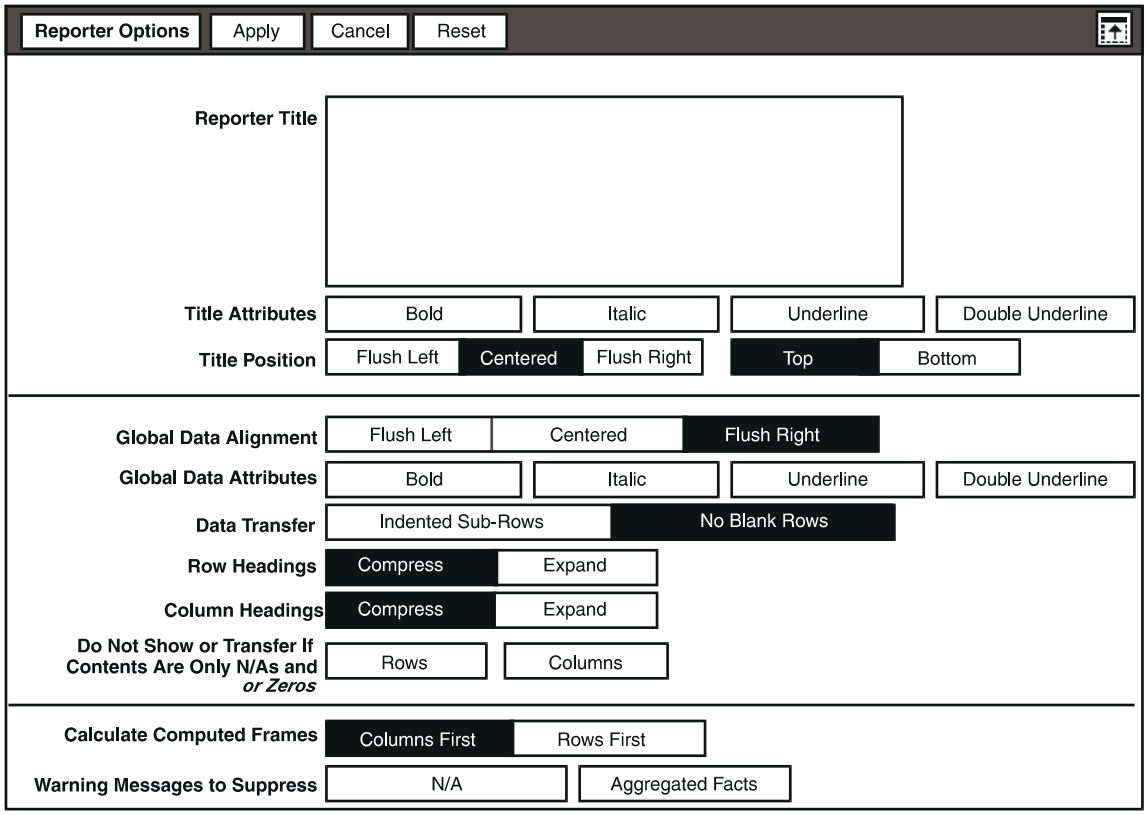


Figure 17. Reporter Options window

3. Set the desired fields and close the window. The global options available in this window are discussed throughout this chapter.

If the report data has been retrieved previously and you have not made any structural changes to the setup area, you do not need to reselect Reporter Options window settings affect the report window. You can simply select **Show Report** to see the new format.

Attention: When set last, the Reporter Options format settings override any specific format settings made previously in the Heading Options windows. The opposite is also true; if you set Heading Options format settings last, those settings override any you have made in the Reporter Options window.

Creating the Report Title

You can name your report in the **Reporter Title** field and specify the typeface and location of this title. In addition to the report title, you can add headers and footers to help your users identify the report content. For information about setting headers and

footers, see the printing section of the IDS publication *Working with the Intelligent Decision Server*.

To name a report:

1. Type a title in the **Reporter Title** field. If the Reporter icon is in a capsule application, you can use *@-variables* in the title.

   Refer to *Capsule User's Guide* for more information about *@-variables*. The **Reporter Title** field also recognizes the @-keywords @TIME, @DATE, and @USER. @TIME and @DATE record the time and date the report was generated. @USER records the desktop name of the person who generated the report.

2. Press Shift+Enter to insert a line feed at the end of each line. Only the first five lines of the title appear in the field, but you can enter more than five lines. If you have a lengthy title, it might be easier to type the title in a Text icon and then copy it to the **Reporter Title** field.

When you select **No Blank Rows**, and select **Compress** for the **Column Headings** field, the Reporter tool does not transfer the Reporter Title text. If you want the Reporter Title text to transfer, you must select the **Indented Sub-Rows** choice.

Setting the Typeface of the Title

The **Title Attributes** field lets you set a typeface for the Reporter Title. There are four choices available in this field.

To set the typeface, select one or more choices from the **Title Attributes** field.

Positioning the Title

The **Title Position** field lets you set the location of your report title.

To position the title, select a choice from each section of the **Title Position** field.

Assigning Global Data Formatting

The **Global Data Alignment** and **Global Data Attributes** fields enable you to set the alignment and typeface of data in the columns and rows of your report.

To globally set the data appearance:

1. Select a choice in the **Global Data Alignment** field to designate the positioning of data within columns.
2. Select any number of items from the **Global Data Attributes** field to designate the typeface of data in the report.

Formatting Headings and Data by Column or Row

The Heading Options window lets you set the appearance of the data and headings in your report on an individual basis. The options on this page function similarly to the global formatting options of the Reporter Options window, but the settings you choose

affect only the data in the corresponding column or row, not in the entire report. You can use this page to specify whether or not the data or heading is displayed, align the data in individual rows and columns, set the typeface of the data, and specify the numeric precision of the displayed data.

To display the Heading Options window:

1. Select a report heading in the setup area.
2. Display the Heading Options window.
3. Select **Format** in the **Display** field. The Format page appears, as shown in Figure 18.

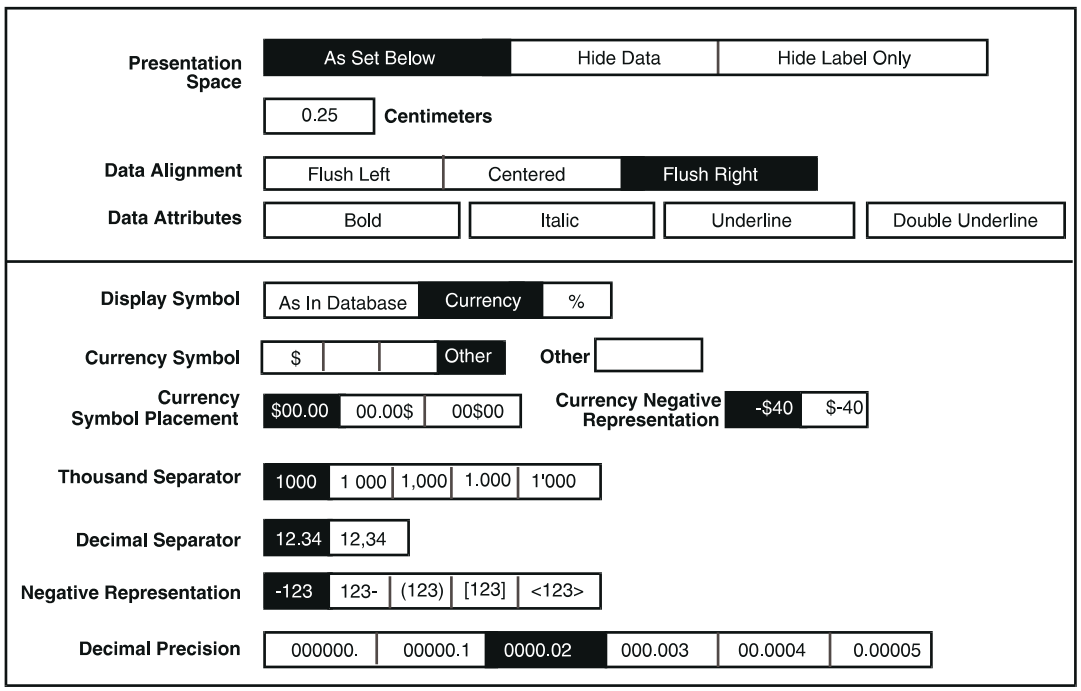


Figure 18. Heading Options and Computed Options windows Format page

In places where columns and rows intersect, data appears according to the last selections applied in the Heading Options window.

For example, in the report shown in Figure 19 on page 51, if you set the data column for Unit Sales to appear in italic typeface, then set the intersecting row for Chicago to appear in bold, the data at the intersecting point appears in bold.

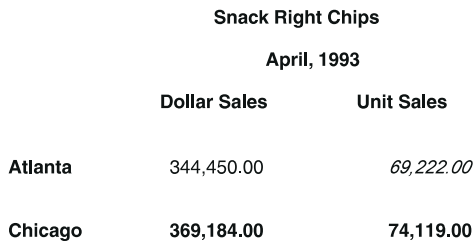


Figure 19. Intersecting format settings

If the data has already been retrieved, and you have made no structural changes to the setup, you do not need to reselect **Get New Data** to see the new format. You can simply select **Show Report**, and the report appears with the new format in place.

Setting the Presentation Space

The Heading Option window enables you to set the column width or row height for your report or to specify that data or heading labels be hidden.

Setting Column Width or Row Height

The **As Set Below** or **Hide Label Only** choices let you change the width or height of columns and rows in a report.

When you select either of these choices, the **Inches** or **Centimeters** field appears below the field, depending on your desktop settings, and you can then enter the desired number of units. Use this field to change the spacing in your report or to visually group data.

You can select **As Set Below** or **Hide Label Only** for any type of heading frame except text, pattern, and page break. See “Enhancing the Report” on page 54 for information about these items.

Hiding Data and Labels

To hide a specific column or row of data, its label, and any related subheadings, select the **Hide Data** choice in the **Presentation Space** field.

For example, you might want to use product and brand sales to compute share but show only the share data in the final report. When you select **Hide Data**, the labels and data remain in the report but are omitted from the display and from any printed copy. Because you have not made any structural changes to the setup area, you can select **Show Report** to view the revised report.

When you hide data and labels, the border surrounding the heading name in the setup area changes from a solid line to a faint dotted line, as shown in Figure 20 on page 52.

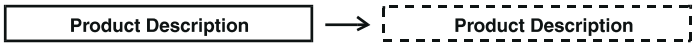


Figure 20. Border of heading with hidden data

Hiding Labels Only

To hide a heading label but display the associated data, select **Hide Label Only** in the **Presentation Space** field.

Suppose you create a report that shows unit sales in January for ten products in a product line. If you include January in the title, you might not want it to appear repeatedly in each column of your report. The heading and associated data remain in the report, but the label is omitted from the display and from any printed copy.

You can also adjust the width or height of the column or row associated with this label by changing the value in the **Inches** or **Centimeters** field. For more information about column and row spacing, see "Setting Column Width or Row Height" on page 51.

When you hide a label, the border surrounding the heading name in the setup area changes from a solid line to a dotted line.

Aligning Data and Setting Typeface

The **Data Alignment** and **Data Attributes** fields of the **Format** page let you specify the appearance of the data in individual columns and rows. Several format options are available.

To set the data format:

1. Select a choice from the **Data Alignment** field. This choice designates the position of data in the report row or column.
2. Select any number of choices from the **Data Attributes** field. These choices designate the typeface of the data in the row or column.

Displaying Symbols with Numbers

The fields in the bottom half of the Format page let you further enhance how numbers appear in a selected column or row.

To set the format for numbers:

1. Select a choice from the **Display Symbol** field.

   As In Database displays returned values with any symbols that are included in the database.

   Currency enables you to set a variety of fields related to money. Additional fields appear only when **Currency** is selected.

   % displays returned values with a % sign.
2. Set the **Currency** options if applicable.

3. Select a symbol from the **Currency Symbol** field.

Enter your own currency symbol using the **Other** choice and field.

1. Determine the placement of the currency symbol.
2. Set the **Currency Negative Representation**.
3. Set the **Thousand Separator** and **Decimal Separator** fields.

   These two fields are related. You cannot select the same type of separator for both fields. For example, if you choose a comma as the thousand separator you cannot choose a comma as the decimal separator.
4. Set the **Negative Representation** field.

   If you select a method of representing negative numbers that is not familiar to your audience, you might want to annotate your report to show your audience how negative numbers are being depicted.

Setting Decimal Precision

The **Decimal Precision** field lets you select the number of places you want to display after the decimal point in a number. The Reporter tool rounds off to the number of decimal places you specify. Numbers greater than or equal to five round up, and numbers less than five round down.

Rounding is only done when numbers are displayed. All calculations use the full value of numbers.

When you first open the Heading Options window, the default setting is 0000.02. To set numeric precision, select a choice in the **Decimal Precision** field. Table 6 on the next page describes how each choice in the **Decimal Precision** field functions. The number 2.37519 is used as an example in this table.

Table 6. Numeric precision as specified in the Decimal Precision field

Choice	Displays number as
000000	2
00000.1	2.4
0000.02	2.38
000.003	2.375
00.0004	2.3752
0.00005	2.37519

When you transfer data from Reporter to another tool, regardless of the Decimal Precision display setting in Reporter, the full value of every number is transferred to the new tool. The full value might not be displayed in the new tool. To find out how values containing decimals are displayed, see the documentation for the tool you are transferring data to.

Choosing the Heading Display Order

The **Display Order of Heading Values** field on the Heading Options window lets you specify the order in which the dimension headings are displayed in your report.

The **Display Order of Heading Values** field is active only when the **=** operator is selected and the selected heading is a dimension.

If you select **Alphabetic**, the constrained dimension headings appear in your report in alphabetic order (A-Z, 0-9). If you select **Constraint List**, the headings appear in the order you have designated in the **Value** field of the Constraint page.

The **Constraint List** choice is useful if you want the headings in your report to display in a particular order. For example, if you are constraining a Territory heading and you want to list the dimension headings geographically, not alphabetically, select **Constraint List** and use one of the following methods for entering constraints:

Type the constraint values in the desired order in the **Value** field.

Type the constraint values in the desired order in a Text tool window and set **Source** to **Text Icon**.

Select the desired items in order from one of the Choices windows and then copy them into the **Value** field or into a Text icon, depending on how the **Source** field is set.

Enhancing the Report

The Reporter tool offers features that let you present data in the best possible format by beginning new pages at appropriate places, adding patterns to emphasize or separate data, and adding text to further explain comparisons or results.

These features are accessed through the **Special** button in the setup window header.

This section describes how to use Add New Page, Add Pattern Frame, and Add Text Frame.

Adding a Page

If a report is too large to print on one page, the Reporter tool automatically makes a break in the report and prints remaining data on additional pages. Consequently, related data can be separated on different pages making the report difficult to use. Setting your own page breaks enables you to better group data for easy reading.

To add a new page:

1. Select **Add New Page** in the Special button menu of the setup window header. A message appears in the message area.

Copying. -- Select destination.

2. Select the column or row heading frame in the setup area after which you want the page break to occur. Placing the new page symbol after a column heading causes a vertical break in the report and placing it after a row heading causes a horizontal break in the report.

A new page symbol indicates the location of the page break, as shown in Figure 21.

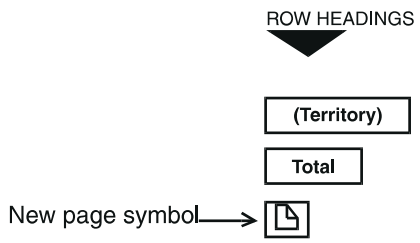


Figure 21. New page symbol in a report setup

Select **Get New Data** in the setup window header to display the page break. The report appears in the report window, as shown in Figure 22.

A new page symbol and a dotted line in the report window indicate the page break location in the printed report. This symbol and dotted line do not appear in the printed report. When you print a report, column and row headings are reprinted on all additional pages, even though they are not repeated in the report window.

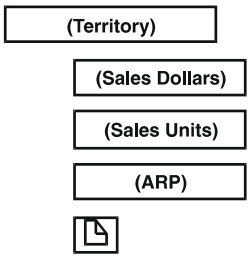
Snack Right Chips

	June, 1993 Dollar Sales	June, 1992 Dollar Sales	% Change
Atlanta	176,624.00	310,918.00	(43.19)
Chicago	288,425.00	277,552.00	3.92
Dallas	280,208.00	247,921.00	13.02
Total	745,257.00	836,391.00	(10.90)
Los Angeles	355,000.00	260,045.00	27.00
New York	298,700.00	225,552.00	13.00

Figure 22. Page break indicated in a report window

When inserting a new page symbol in the ROW HEADINGS area, the indentation level determines exactly where the page break occurs in the report. Figure 21 and Figure 22 show the results of aligning a new page frame with a major row heading.

You can use page breaks to clarify information in your report. For example, if you want to generate a report that prints information for each territory on a separate page, you can insert new page symbols in the setup area, indented as shown in the next illustration.



When you place the new page symbol at the same indentation level as ARP, a page break occurs after every ARP calculation in the printed report, as shown in the following illustration.

Snack Right
June 1993

	PRETZELS	CHIPS
PORTLAND		
Sales Dollars	$1,312	$84,539
Sales Units	263	19,095
Average Retail Price	$4.99	$4.43
SAN FRANCISCO		
Sales Dollars	$260,531	$95,773
Sales Units	59,928	22,630
Average Retail Price	$4.36	$4.23
SEATTLE		
Sales Dollars	$26,530	$119,055
Sales Units	5,435	27,397
Average Retail Price	$4.88	$4.35

Within the setup area, you can also duplicate or change the position of new page frames by copying or moving the symbols.

Adding a Pattern

You can enter a repeating character pattern to draw attention to significant rows in a report. Patterns run horizontally in a report. The use of a pattern is shown in Figure 23 on page 57.

	June, 1993 Dollar Sales	June, 1992 Dollar Sales	% Change
Atlanta	176,624.00	310,918.00	(43.19)
Chicago	288,425.00	277,552.00	3.92
Dallas	280,208.00	247,921.00	13.02
	********	********	******
Total	745,257.00	836,391.00	(10.90)

Figure 23. Pattern displayed in data columns

To add a pattern:

1. Select **Add Pattern Frame** in the Special button menu. The Pattern Options window opens.
2. Enter the character series of your choice in the **Pattern** field. The character series is the pattern, and it is repeated for the length of the area specified in the **Pattern Placement** field. You can enter a single character or multiple characters. For example, you might enter a pattern consisting of a single asterisk, the results of which are shown in Figure 23.
3. Select an item in the **Pattern Placement** field.

   If you select **Data Columns Only**, only the columns of data in the row directly above the pattern frame are underscored with the pattern, as shown in Figure 23.

   If you select **Entire Page**, the pattern spans the page, as shown in Figure 25 on page 58.
4. Close the Pattern Options window.
5. Select the row heading frame directly above the location where you want the pattern to appear in the report. In Figure 24, (Territory) was selected, and the pattern appears directly below it in the report.

   You can also move or copy the pattern frame as you would any other heading frame in the setup area.

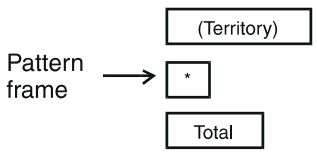


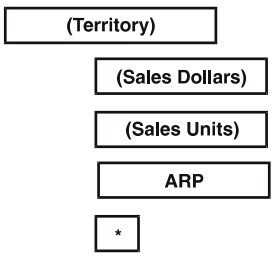
Figure 24. Pattern frame in a report setup

6. Select **Get New Data** in the setup window header to display the asterisk pattern in the report. The report appears as shown in Figure 23, with the pattern below the Dallas territory.

   You must select the correct indentation level for the pattern frame in the setup area because frame placement determines where the pattern is displayed in the report. Figure 23 shows the results of aligning a pattern frame with a major row heading.

Within the setup area, you can also align pattern frames with subheadings by selecting the pattern frame and pressing the Tab key.

If you have a setup area similar to the one shown in the next illustration, and you want to create a pattern after each territory's information, set the pattern for **Entire Page** and place the pattern frame at the same indentation level as the ARP calculation.



In the report, the pattern spans the width of each column and repeats following each ARP calculation, as shown in Figure 25.

Snack Right
June 1993

	PRETZELS	CHIPS
PORTLAND		
Sales Dollars	$1,312	$84,539
Sales Units	263	19,095
ARP	$4.99	$4.43
**********	**********	**********
SAN FRANCISCO		
Sales Dollars	$260,531	$95,773
Sales Units	59,928	22,630
ARP	$4.36	$4.23
**********	**********	**********
SEATTLE		
Sales Dollars	$26,530	$119,055
Sales Units	5,435	27,397
ARP	$4.88	$4.35

Figure 25. Repeat pattern over entire page

Adding Descriptive Text

You can add comments or descriptive text as column or row headings in a report by using the Text Options window.

To add text:

1. Select **Add Text Frame** in the Special menu. The Text Options window appears.
2. Enter up to 50 characters in the **Text** field. For example, you might enter the following text:

   Note: June 1993 contains only figures for June 1-2 .

3. Close the window.
4. Select the location in the setup area where you want the text to appear.

   As with the new page and pattern frames, you must select the appropriate indentation level. Within the setup area, you can copy, move, delete, or reopen the Text Options window to edit the text frame.

   In Figure 26, the setup area to the left of the (Snack Right Chips) heading was selected, and the remaining heading frames were moved below the text frame, so the text appears at the top of the report columns. You can also use text frames at the bottom of a report, to serve as footnotes.

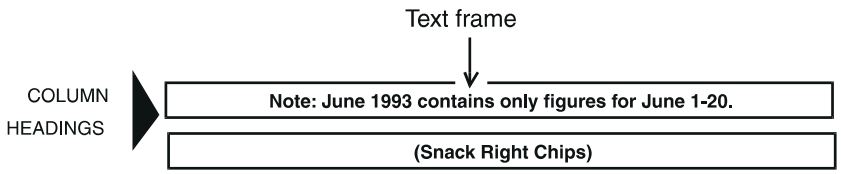


Figure 26. Text frame in a report setup

5. Select **Get New Data** in the setup window header. The report appears with the new text at the top, as shown in Figure 27.

Note: June 1993 contains only figures for June 1-20.

		Snack Right Chips	
	June, 1993 Dollar Sales	**June, 1992 Dollar Sales**	**% Change**
Atlanta	176,624.00	310,918.00	(43.19)
Chicago	288,425.00	277,552.00	3.92
Dallas	280,208.00	247,921.00	*13.02*
**********	**********	**********	**********
Total	745,257.00	*836,391.00*	*(10.90)*

Figure 27. Added text as displayed in a report

To include the contents of a text frame when you transfer a report to a Spreadsheet or transformer icon, you must select the **Indented Sub-Rows** and **Expand** choices in the Reporter Options window. If you do not want the contents of the text frame included in the transfer, select the **No Blank Rows** and **Compress** choice in the **Data Transfer, Row Headings,** and **Column Headings** fields in the Reporter Options window.

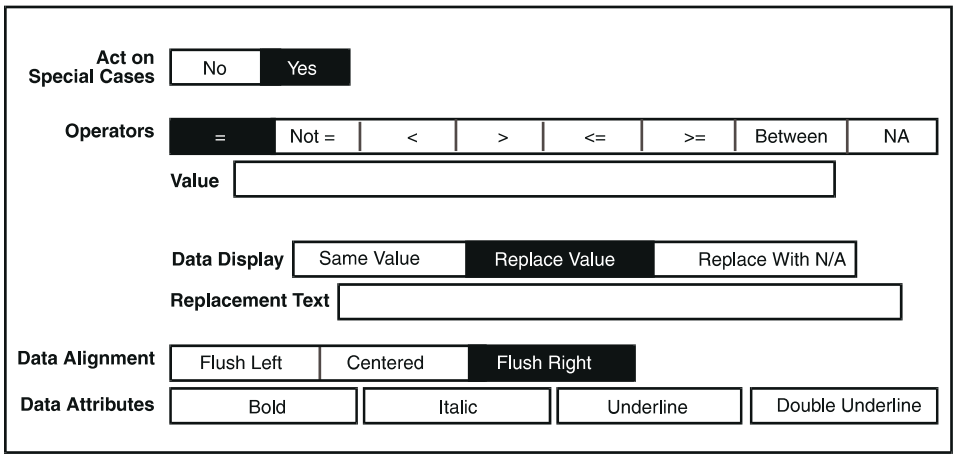
Setting Requirements for Special Cases

The **Special Cases** page lets you set range restrictions and appearance formats for conditional data. This option is useful if you want to call attention to pertinent informa-

tion in your report. For example, you might want to display all unit sales over 5,000 in italic typeface.

To display the Special Cases page:

1. Select a heading in the setup area.
2. Display the Heading Options window.
3. Select **Special Cases** in the **Display** field.
4. Select **Yes** in the **Act on Special Cases** field. New options appear, as shown in the following illustration.



1. Select an operator. The operator you select determines the fields and additional choices that then appear. For example, if you select **Between** as the operator, two fields appear where you can enter a range of data.

   Most of the operators function identically to the constraint operators described in Table 2 on page 15. An additional operator, **NA**, appears on the Special Cases page. This choice tells the Reporter tool what to do when the database returns no data for that heading.

2. Enter the appropriate value in the field provided.
3. Select a choice from the **Data Display** field.

   Same Value displays the data exactly as it is stored in the database.

   Replace Value replaces the data with other information you provide. Enter any special data that you want to appear in place of the original data. To enter *@-variables*, refer to *Capsule User's Guide* for more information.

   Replace With N/A replaces the data with N/A, indicating that it is not available. For example, you might want to compare the sales figures for three different products for the past year, but one product has only been on the market for eight months. The first four months of data for the new product displays as -999999, the data-

base figure indicating that no data is available. This choice replaces the -999999 with N/A in the report.

Attention: Special Cases settings only affect the way that the data appears. The original values are still used when calculations are performed within Reporter. When you transfer Reporter results that include special case data to another tool, such as Spreadsheet, the special case data appears as Text type data, so it cannot be used in a calculation.

Formatting Special Case Data

You can set the appearance of specific data by making the appropriate selections in the Special Cases page. Special Cases settings always override any settings made on the Format page of the Heading Options window. Several format choices are available.

To set the data format:

1. Select a choice from the **Data Alignment** field to determine the placement of data in the row or column.
2. Select any number of choices from the **Data Attributes** field to determine the typeface of data in the row or column.

   For example, if you want to emphasize all sales data that is greater than $300,000 per month, you can specify that this data appear underlined in the report. Figure 28 shows an example where Dollar Sales greater than $300,000 are underlined, and the column data is flush right.

	April, 1983	
	Dollar Sales	**Unit Sales**
Atlanta	344,450.00	69,222.00
Chicago	569,184.00	154,119.00
Dallas	269,184.00	30,119.00

Figure 28. Special Cases results displayed in a report

3. Close the Heading Options window when you are done. If the data has already been retrieved and you have not made any structural changes to the setup area, you do not need to use **Get New Data**. You can simply click on **Show Report**.

Printing a Report

This section provides printing information that is specific to printing the Reporter icon. For general information about printing an icon, refer to printing section of *Working with the Intelligent Decision Server*.

Reports are often large and print on multiple pages. When the report information reaches the edge of the paper, the next column or row of data is continued on a new page. The icon is said to be printed in panel form. This feature allows you to make a printout that has a larger width than the specified paper size.

To aid in assembling the printed copy, the Reporter tool generates and prints a panel page prior to printing the report. The panel page illustrates how the individual pages fit together to make a complete report, as shown in Figure 29.

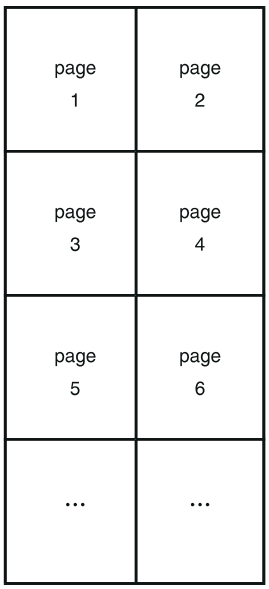


Figure 29. Reporter panel page

Important facts to remember when printing a Reporter icon:

If you want to include headers and footers on the printout, you must use a minimum margin of 0.5 inches. If you use smaller margin settings, the headers and footers do not print.

When you print individual pages of a multi-page report, you must increment page numbers by one in the Printer icon's Printing window to allow for the panel page. For example, if you do not want to print the panel page, type *2* in the **Starting Page** field.

If you specify page 1, the panel page prints. The panel page has a page number of 0 (zero), but is considered the first page of the printed document.

Your printer might not support all the fonts available in IDS. If you select a font that is not supported by your printer, Courier is used as the substitution font.

Chapter 10. Using Reporter with Other Tools

You can copy or move data from the report window to another tool window, or you can transfer data from a Reporter icon to another tool icon in a capsule application. Certain formatting considerations apply when you are transferring data from a Reporter icon to another tool icon.

This chapter describes how to:

Copy or move data from a report window to another tool window

Use Reporter in a capsule application and identify the Capsule Run Log icon

Choose settings when transferring data to other tools

Restrict data display and transfer

Use the **Secured** field to prevent unauthorized users from accessing specified Reporter icons

Copying or Moving Data from the Report Window to Another Tool Window

You can copy data from the report window to another tool window such as Text, Spreadsheet, or Plot. For example, to copy an entire report to a Spreadsheet icon:

1. Open a Spreadsheet icon on your desktop.
2. Open a Reporter icon.
3. Display the report window.
4. Click on the **Select All** button. All the data in the report is highlighted.
5. Copy or move the data to the Spreadsheet window.

Decimal precision display settings are not retained during data transfer operations between tools, such as from a Reporter tool to a Spreadsheet tool in a capsule application. Regardless of the Decimal Precision display setting in Reporter, the full value of every number is transferred to the new tool. The full value might not be displayed in the new tool. To find out how values containing decimals are displayed, see the documentation for the tool you are transferring data to.

Using a Reporter Icon in a Capsule Application

You can use a Reporter icon as a source icon in a capsule application to transfer data to other tools. Refer to *Capsule User's Guide* for more information about capsule applications.

When using Reporter in a capsule application, you might want to use the @-keywords @TIME, @DATE, and @USER. @TIME and @DATE record the time and date the report was generated. @USER records the desktop name of the person who generated the reports.

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In the Arrow Options window for the arrow that follows the Reporter icon, the **Transfer Data Attributes** field provides you with the option to send the cell, number, symbol, date, time, and font formatting with the data from Reporter to the following icon.

Transferring Data to Other Tools

The Reporter Options window lets you determine the format in which data is transferred to another tool, such as Text, Plot, or Spreadsheet. The field appears as shown in the following illustration.

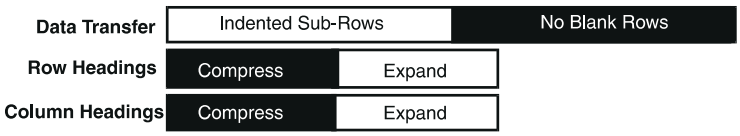


Table 7. Transferring data to other tools

Tool	Recommended data transfer setting
Plot	No Blank Rows/Compress
Spreadsheet	No Blank Rows/Expand
Text	Indented Sub-Rows

Indenting Sub-Rows

Indenting sub-rows in a report makes the data easier to read. To transfer headings and data with an indented format, select the **Indented Sub-Rows** choice in the **Data Transfer** field. This choice is the default format for the report. For example, if you choose to transfer data to a Text icon with indented sub-rows, the row titles do not run together into one column, but appear as shown in Figure 30.

		Snack Right Chips	
		Dollar Sales	**Unit Sales**
	South US		
Indented sub-row →	**Atlanta**	344,450.00	69,222.00
	Miami	369,184.00	74,119.00

Figure 30. Indented sub-rows

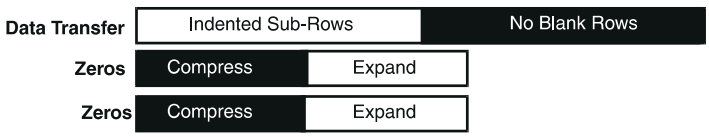
Indenting sub-rows affects only the format of the data that is transferred from the report to other tools, not the data retrieved for the report itself.

Deleting Blank Rows

The **No Blank Rows** choice lets you delete blank rows when you transfer data to another tool such as Text or Plot. This changes only the transferred data; the original report is unaffected.

To delete blank rows:

1. Select **No Blank Rows** in the **Data Transfer** field and two additional choices appear.



When you select **No Blank Rows**, the Reporter tool does not transfer the report title, patterns, or annotation text to a spreadsheet or transformer. If you want these items to transfer to these icons, you must select the **Indented Sub-Rows** choice.

Compressing Headings

You can select **Compress** to transfer a row or column heading and its subheadings to a plot as a single line or to a spreadsheet as a single cell.

For example, suppose you want to transfer the report shown in Figure 30 on page 64 to a spreadsheet. If you select **Compress**, all column headings are compressed into one cell and all row headings are compressed into one cell as shown in the following illustration.

	Snack Right Chips Dollar S	Snack Right Chips Unit Sa
South US Atlanta	344,450.00	69,222.00
South US Miami	369,184.00	74,119.00

In some cases, as in the preceding illustration, the heading is displayed incompletely because it is too long to fit in the cell. For information about changing the size of cells, see the IDS publication *Spreadsheet User's Guide*.

Expanding Headings

You can select **Expand** to transfer a row or column heading and its subheadings to a spreadsheet as several adjacent cells.

Using the report shown in Figure 30 on page 64 as an example, if you select **Expand** when transferring data to a spreadsheet, the column and row headings appear as shown in the following illustration:

		Snack Right Chips	Snack Right Chips
		Dollar Sales	Zeros
South US	Atlanta	344,450.00	69,222.00
South US	Miami	369,184.00	74,119.00

You can also use the Compress Transformer tool when you want to compress only a few Reporter headings and subheadings, rather than all of the headings. This is particularly useful in a capsule application. Refer to the IDS publication *Transformers User's Guide* for more information.

Restricting Data Display and Transfer

The **Do Not Show or Transfer If Contents Are Only N/As and or Zeros** field is useful when your report contains a large number of zero or N/A values and only scattered data. N/A values are displayed in a report when the database contains no data for a value as presently constrained.

The **Do Not Show or Transfer If Contents Are Only N/As and or Zeros** field in the Reporter Options window lets you select two choices, either individually or together, to suppress rows and columns that contain only zero or N/A values. When zero is a valid value in your report, do not use this field.

Do Not Show or Transfer If Contents Are Only N/As and or Zeros [Rows] [Columns]

Suppressing Rows

In the following report, there are two rows that contain only N/A values.

	actual amount	budget amount
Eastern Region		
Accounting	N/A	91.00
Advertising	N/A	N/A
Automobiles	1966.60	1800.00
Checking	34543.67	0.00
Savings	N/A	N/A
Commissions	6734.92	4500.00

Figure 31. Report with no rows or columns suppressed

In the report shown below, the Advertising and Savings rows from Figure 31 are suppressed after selecting the **Rows** field.

	actual amount	budget amount
Eastern Region		
Accounting	N/A	91.00
Automobiles	1966.60	1800.00
Checking	34543.67	0.00
Commissions	6734.92	4500.00

The Accounting and Checking rows remain because they each have at least one valid value.

If all values under a superheading are N/A or zero, the superheading and any subheadings are suppressed. For example, in the partial report shown below, the Western Region subheadings both have only N/A values.

	actual amount	budget amount
Eastern Region		
Accounting	N/A	91.00
Advertising	N/A	N/A
Automobiles	1966.60	1800.00
Checking	34543.67	0.00
Western Region		
Advertising	N/A	N/A
Petty Cash	N/A	N/A

After selecting the **Rows** field, the Western Region heading and subheadings are suppressed, because all of the subheading values are N/A.

	actual amount	budget amount
Eastern Region		
Accounting	N/A	91.00
Automobiles	1966.60	1800.00
Checking	34543.67	0.00

Suppressed values are maintained as part of a report even though they are not displayed, printed, or transferred to other tools, so you do not save memory by suppressing them.

Suppressing Columns

Suppressing columns that contain only N/As and zeros enables you to quickly clean up your report by deleting columns that contain no useful information. If any value in a column is valid, that column of data remains in the report. For example, in the partial report shown in the next illustration, the actual amount column has all N/A or zero values.

	actual amount	budget amount
Eastern Region		
Accounting	N/A	91.00
Advertising	N/A	20.00
Savings	N/A	N/A

After selecting **Columns**, the actual amount column is suppressed because all values are N/A or zero.

	budget amount
Eastern Region	
Accounting	91.00
Advertising	20.00
Savings	N/A

The budget amount column remains because it contains at least one valid value.

Chapter 11. Troubleshooting

Understanding how to prevent common Reporter problems helps streamline the report building process.

This chapter describes how to:

Use the **Show Constrained Choices** button for troubleshooting constraint errors

Correct reports:

- That return overlapping values
- That have fact headings in both the COLUMN HEADINGS and ROW HEADINGS areas
- That have fact and dimension headings at the lowest level in the setup area
- That contain incorrect N/A values

Using the Show Constrained Choices Button for Troubleshooting

If you have constrained a report incorrectly, the Reporter tool might not be able to find the data you specified. Even a simple typing error can cause this problem. The best way to avoid such errors is to use the **Show Constrained Choices** button in the dimension Heading Options window. When you select this button, a Choices window opens that lists only the values that are valid for that heading, based upon the constraints set on other headings in the report. You can choose and copy values from the choice list directly into the **Value** field of the Heading Options window, preventing you from making typing mistakes. For information about the **Show Constrained Choices** button, see “Selecting Values from a List” on page 18.

Solving Common Reporter Problems

When the Reporter tool cannot produce the report you have specified, an error message appears. Learning to identify and correct the problems that these messages describe helps you to better understand the Reporter tool and avoid potential inaccuracies in your own reports.

Correcting Reports that Return Overlapping Values

A request for new data might not return data in the form you expect. For example, your report can contain overlapping values (more than one piece of data per row and column coordinate). If you intended to return single values, rather than aggregates, and your report is constrained incorrectly, the Reporter tool might return multiple values to one or more coordinates. These values are displayed in a shaded rectangle, as shown below.

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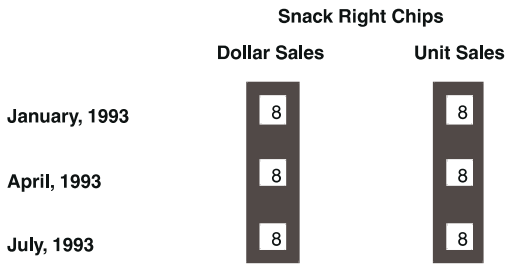


Figure 32. Example of a report that retrieved multiple values

Each rectangle contains numbers that represent the number of available values returned for that particular column and row coordinate, not the actual values themselves.

If you want to aggregate the returned values, you can specify this in the Heading Options window of a fact heading by selecting **Aggregates** in the **Report Facts As** field, and selecting one of the five aggregate operators offered. See “Reporting Facts as Aggregates” on page 33 for more information about returning aggregated fact values.

The following illustration shows an example of the setup area of a report that was incorrectly constrained.

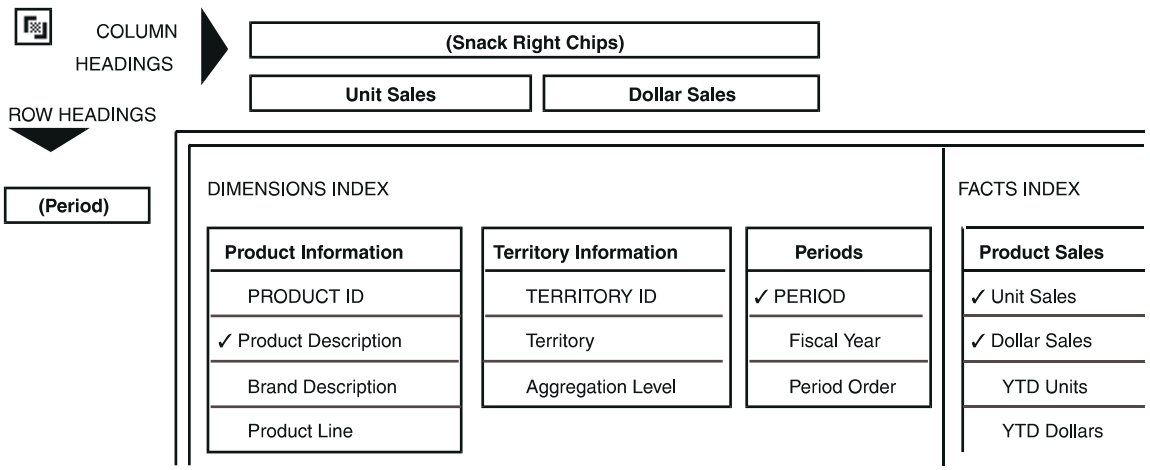


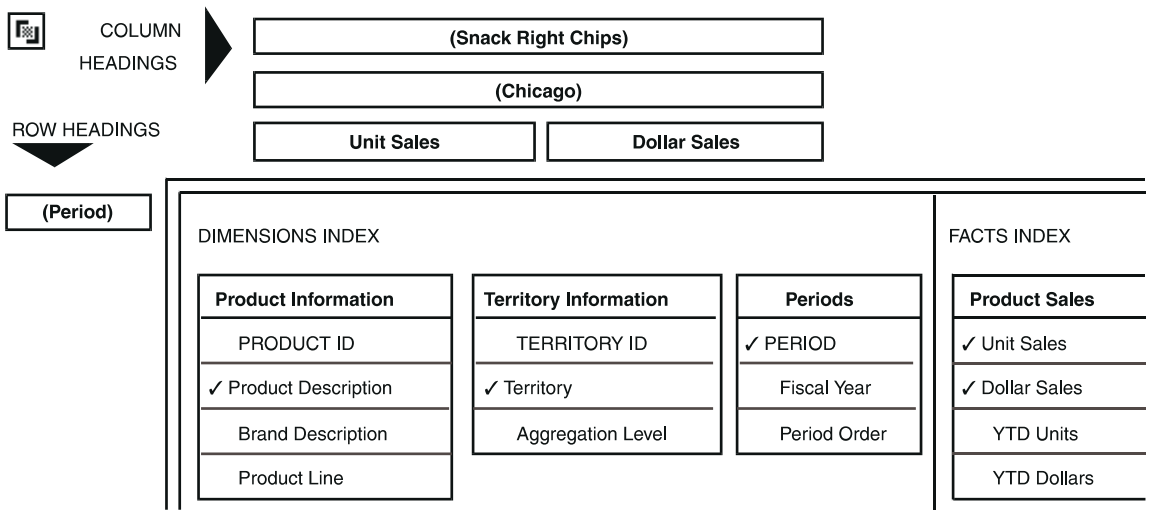
Figure 33. Setup area missing constraints on Territory Information table

The creator of this report intended to return sales information for Snack Right Chips for three months, but because this product was sold in eight territories, the Reporter tool could not return a single fact and instead displayed the number of entries it received for that column and row coordinate, as shown in Figure 32.

To correct constraint errors so that the report returns single fact values:

1. Close the Important Message Display window.
2. Make the necessary corrections to the heading constraints associated with the highlighted data.

   For example, to correct the report depicted in Figure 32 on page 70, a heading needs to be added to the COLUMN HEADINGS area or an index constraint needs to be set that specifies one territory. In this case, Territory was added as a column heading and was then constrained to Chicago on the local level. The following illustration shows a corrected setup window.



3. Select **Get New Data**.

   The Reporter tool retrieves new data and the report is displayed.

	Snack Right Chips Chicago	
	Dollar Sales	**Unit Sales**
January, 1993	48,057.00	152,969.00
April, 1993	19,173.00	60,922.00
July, 1993	332.00	996.00

See Chapter 6, “Setting Local Constraints” on page 27, for information about constraining headings.

If you are running the Reporter in a capsule application and using *@-variables* to constrain data, make sure your constraints match the values in the capsule's User Input

Control window. If you add an *@-variable* constraint and the corresponding value field in the capsule control window is left blank, the Reporter tool retrieves all data just as if you had left the table unconstrained.

Fact Headings in Both Rows and Columns

The Reporter tool cannot return data in a report that contains fact headings as both column and row headings. The setup shown in the following illustration would result in an error message and would not generate a report until the fact headings are both in the same headings area.

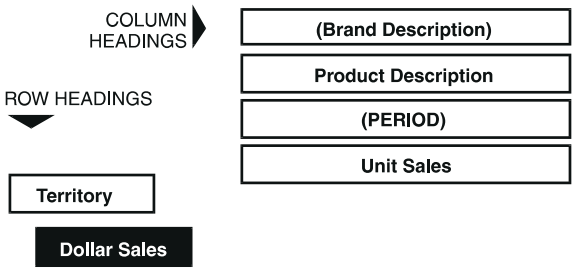


Figure 34. Facts headings in both rows and columns

To correct this report, reposition the Dollar Sales heading next to the UNIT SALES heading in the COLUMN HEADINGS area. Or, move the Unit Sales heading to the row headings area and indent it parallel to the Dollar Sales heading.

Facts and Dimensions as Lowest-Level Headings

When you have multiple level headings in a report, fact headings must be positioned at the lowest level. In addition, fact and dimension headings cannot share the lowest heading level. For example, the report shown in the following illustration is set up incorrectly.

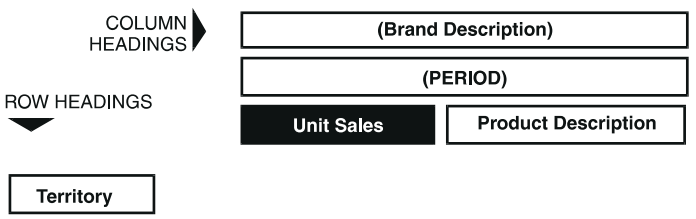


Figure 35. Incorrect setup showing both fact and dimension at lowest level

Before this setup can retrieve data, the fact heading Unit Sales must be moved to the lowest level in the COLUMN HEADINGS or ROW HEADINGS area. This can be done by positioning Unit Sales under Product Description in the column area or indenting Unit Sales under Territory in the row area.

Handling Incorrect N/A Values

The Reporter tool displays N/A to mean not available whenever the database contains no data for a particular value. These valid N/A values add significant information to a report. However, if you include headings from the same table in both the ROW HEADINGS and COLUMN HEADINGS area, the Reporter tool displays only N/A values. These N/A values are not valid. When you see only N/A values in a report, check the arrangement of headings to ensure that column names from the same table appear in the same heading area.

Glossary

aggregated fact. The result of a user-defined calculation that combines multiple values into one fact. The individual values are not shown in the report. See *fact*.

aggregate function. A calculation that combines values. Examples of aggregate calculations are Average and Sum.

binary calculation. A calculation that uses + , - , * , / , Share -- % Of, or % Change to create computed frames.

computed column. A column created to contain the results of calculations performed on one or more columns.

computed frame. A heading frame that appears in the setup area when the user uses the Computed Options window to create a calculation associated with one or more headings. See *heading frame*.

computed heading. The heading that is displayed in a report to label the results of a computed frame. See *computed frame*.

date resolution. The way in which the interval between dates is interpreted. For example, if the date resolution is Week, the interval between dates is 7 days, but if the date resolution is QuadWeek, the interval is 28 days (4 weeks). IDS date resolutions include Day, Week, QuadWeek, Month, EvenBiMonth, OddBiMonth, Quarter, Year.

dimension. Data (such as periods of time, products, and locations) defining the context of facts. Dimensions typically make up the column or row headings in a report. Contrast with *fact*.

fact. Data consisting of measures such as unit price or volume. Facts typically make up the returned data in a report. Contrast with *dimension*.

frame. A rectangular box that holds heading-label, pattern, text, and new-page information in the setup area.

full value. The entire value of a number as it was entered into a report or spreadsheet cell, rather than the displayed value, which might have been truncated or rounded.

global constraint. A constraint applied to a column name in the index area that limits the scope of the query for all headings associated with that column name. Contrast with *local constraint*.

heading. The name of a column or row that appears at the top or left of a report and identifies the data in the corresponding column or row.

heading frame. The rectangular box that surrounds a heading label in the setup area.

heading label. The name of a heading as it appears in a heading frame in the setup window. The default value of the heading label is the column name from the index area, but the user can rename a heading in the Label field of the Heading Options window.

index area. The portion of the setup window that contains database table information.

internal name. In the IDS environment, the name by which a database item is stored in the Workstation Tools Data Dictionary (WTDD). Each database category, table, and column has an internal name based on naming conventions required by the database system. To make these names more useful to users, each internal name has a corresponding external name, called a print name, that the IDS tool user sees on the screen. For example, a table with the internal name DBA_EMP might be known to the user as the Employee table. Contrast with print name. See also Workstation Tools Data Dictionary.

local constraint. A constraint applied to a heading frame in the setup area that limits the scope of the query for that heading only. Contrast with global constraint.

N/A. A value that is returned when a database is queried and the requested data is not found or is a null value.

new-page symbol. A symbol that indicates printing will end on the current page and restart at the top of the next page.

operator. A symbol or word that the user selects or enters along with one or more values to define the amount, range, or characteristics of data. For example, +, -, >, not=, and between.

print name. The name of a database item (such as a column or table) that is used in IDS windows instead of the more cryptic name by which the data item is identified in the database. Print names are identified in the

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Workstation Tools Data Dictionary (WTDD) and are converted during data retrieval to internal names that can be understood by the database. Contrast with internal name. See also *Workstation Tools Data Dictionary*.

report window. The window where the formatted report is displayed after data is retrieved from the database.

setup area. The upper-left corner of the setup window where the user places frames to be used as row and column headings.

setup window. The window in which the user creates the layout of a report. The setup window has two main areas, the setup area and the index area.

share base. The value used as the denominator in a percentage or share equation.

wild card. A special character, such as a percent sign, that can be used to represent one or more characters. For example, in the IDS Reporter tool, the percent sign (%) can be used in constraints to represent multiple characters, and the underscore (_)can be used to represent a single character.

Workstation Tools Data Dictionary (WTDD).. A logical data dictionary that standardizes the IDS workstation view of data across many relational database management systems. The WTDD stores the print names of database items, defines how the items are to be displayed, and includes other logical attributes of data. The WTDD is implemented as a set of standard relational tables that can be managed through the DBA tool.

IDS Publications

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Getting Started with the Intelligent Decision Server (SC26-8892)

Working with the Intelligent Decision Server (SC26-8893)

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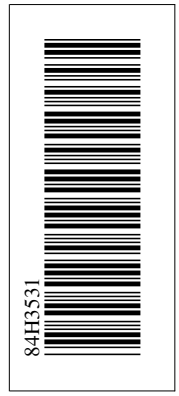
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