# SAS® BI Dashboard 3.1

## User's Guide
## Second Edition

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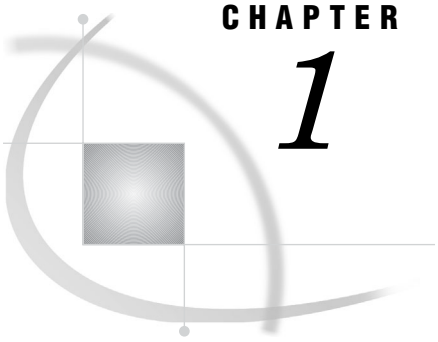

CHAPTER

# 1

# Introduction

*Overview* **1**
*Audience* **1**

## Overview

The SAS BI Dashboard enables users to employ dashboards to monitor key performance indicators that convey how well an organization is performing. Dashboards include graphics, text, colors, and hyperlinks. Dashboards are created, maintained, and viewed through an easy-to-use Web-based interface. All content is displayed in a role-based, secure, customizable, and extensible environment. End users can customize how information appears on their personal dashboards.

## Audience

As is true for many SAS®9 applications, the users of the SAS BI Dashboard can be grouped based on their skills and on whether they play a role in defining and managing the system. The following table shows the three types of users of the SAS BI Dashboard:

| User | Description | Example |
|---|---|---|
| Dashboard user | The ultimate audience of dashboards. This role views dashboards and uses them as a launching point for further exploration and action. | Executives and employees presented with dashboards as part of their intranet home page. |
| Dashboard administrator | This role defines indicators and dashboards. This role is responsible for setting user access to various dashboards and for controlling the extent to which dashboard users can personalize the dashboards. This role might also be responsible for extending the functionality of the SAS BI Dashboard by creating custom code. | A business manager with some SAS technical knowledge, or a SAS consultant involved in the initial implementation or major overhauls of the SAS BI Dashboard who works with outside consultants and corporate developers. |
| IT support personnel | This role installs the SAS BI Dashboard and maintains its setup, configuration, and administration. | An IT person who is responsible for supporting application deployment and maintenance on an organization's computer network. |

This guide is intended for SAS BI Dashboard administrators and dashboard users.

CHAPTER

# 2

# Getting Started

*The SAS Information Delivery Portal* **3**
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## The SAS Information Delivery Portal

### Overview

The SAS BI Dashboard is accessed from within the SAS Information Delivery Portal. This guide assumes that you are familiar with the SAS Information Delivery Portal. If you are not, see the online Help.

### Open the Portal and Log On

To open the SAS Information Delivery Portal, open your Web browser and point it to the portal's URL address. (To obtain the URL, contact your portal administrator.)

To identify yourself to the portal, you must log on with your user name and password. (If you do not have a user name and password, contact your system administrator to obtain them.)

The logon procedure varies depending on how your organization has installed the portal. Use either the Portal logon procedure or the Web server logon procedure, as appropriate.

### Portal Logon Procedure

Some organizations use the portal's logon feature, as follows:

1 Open your browser and point to the portal's URL.

Either a public page or the portal's logon page appears.

2 If a public page appears, click **Log On** in the banner.

3 On the logon page, enter your user name and password.

4 Click **Log On**.

Your personal portal opens.

### Web Server Logon Procedure

In some organizations, logging on to a Web server is sufficient to identify yourself to the portal. The Web server logon procedure is different in each organization. After you have logged on to the Web server, just point your browser to the portal's URL.

Your personal portal opens.

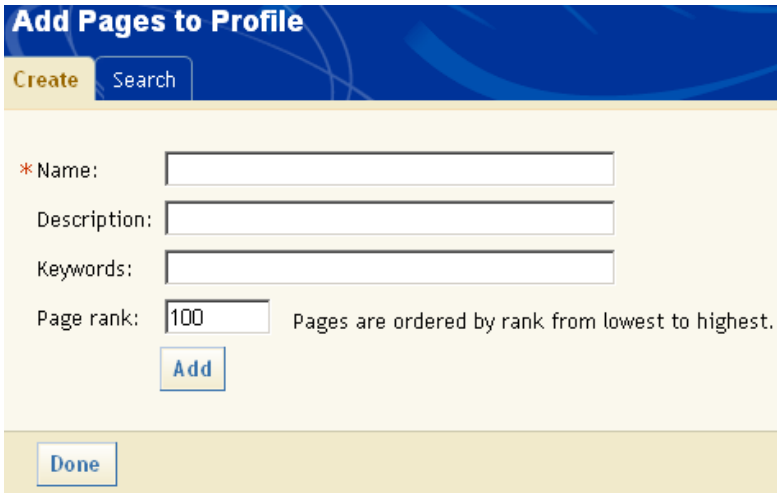
---

## Create a Page and Add It to Your Navigation Bar

To create a new page and add it to your navigation bar:

1 Click **Options ▸ Add**.

The Add Pages to Profile page appears.




2 On the **Create** tab, enter descriptive information about the page:

| | |
|---|---|
| **Name** | A short name that will appear in the page's tab in the navigation bar. |
| **Description** | A short description that will appear with the page title in search results. |
| **Keywords** | Single words that you or other users can use to search for this page. Use spaces to separate keywords from one another. |

*Note:* To ensure efficient searching, develop a standard list of keywords and use these keywords consistently. △

**Page rank** A number that indicates the importance of this page as compared to other pages. The default value is 100.

This number determines the order in which pages are listed in the navigation bar. The pages are ordered by rank from lowest to highest. Pages with equal rank are listed in the order in which they were created.

*Note:* You can choose to override page ranks by explicitly defining the order of pages. △

**Location (group)** and **Share type** These fields appear only if you are a group content administrator. In these fields, you can specify a group with which the page is to be shared and specify the share type.

3 Click **Add**.

A message appears, indicating that a new page was added.

4 Click **Done**.

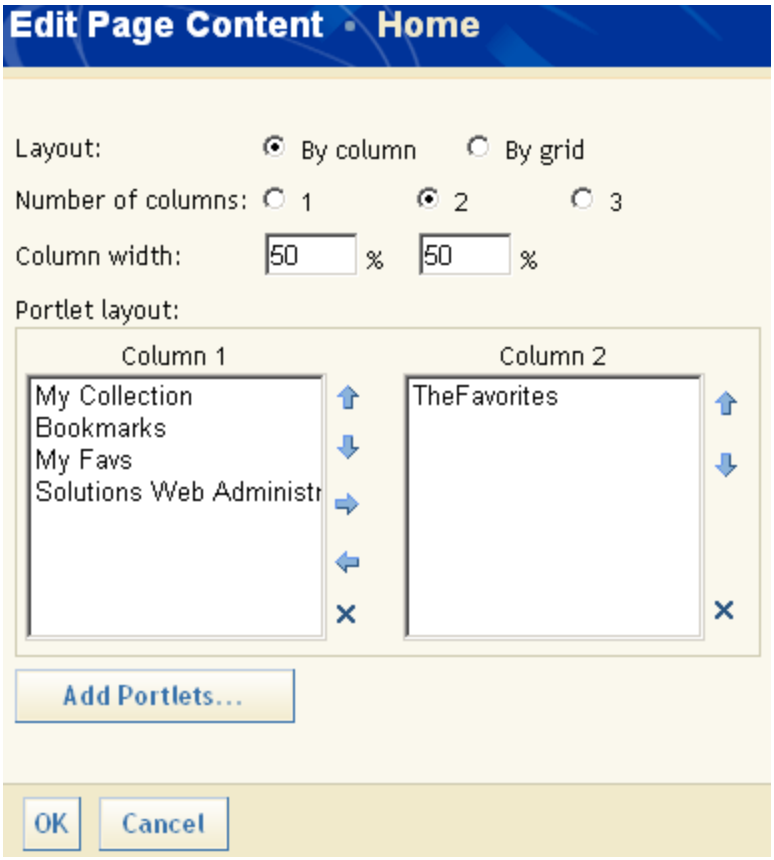
## Add a SAS BI Dashboard Portlet to a Page

To add a SAS BI Dashboard portlet to a page:

1 Navigate to the page that you want to add the portlet to.

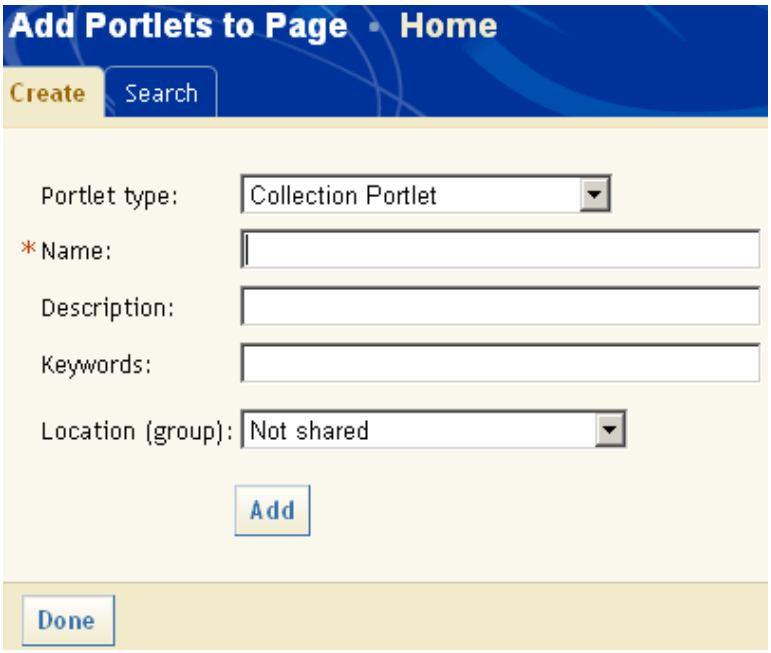
2 Click **Options ▸ Edit Content**.

The Edit Page Content page appears.



3 Click **Add Portlets**.

The Add Portlets to Page page appears.




4 From the **Portlet type** drop-down list, select **SAS BI Dashboard**.

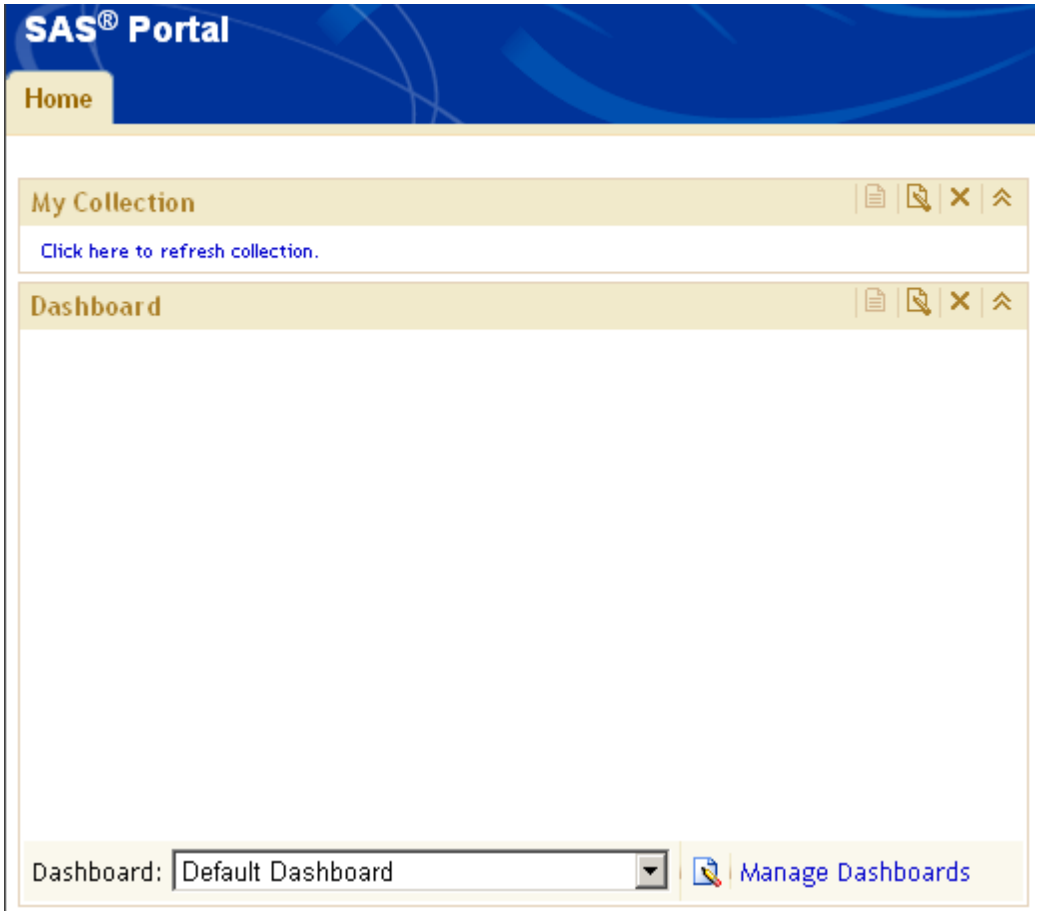
5 Type the name for the portlet and, if desired, the description and keywords.

6 If you are a group content administrator, select a group with which the portlet is to be shared from the **Location (group)** drop-down list.

7 Click **Add**, and then **Done**.

8 On the Edit Page Content page, click **OK**.

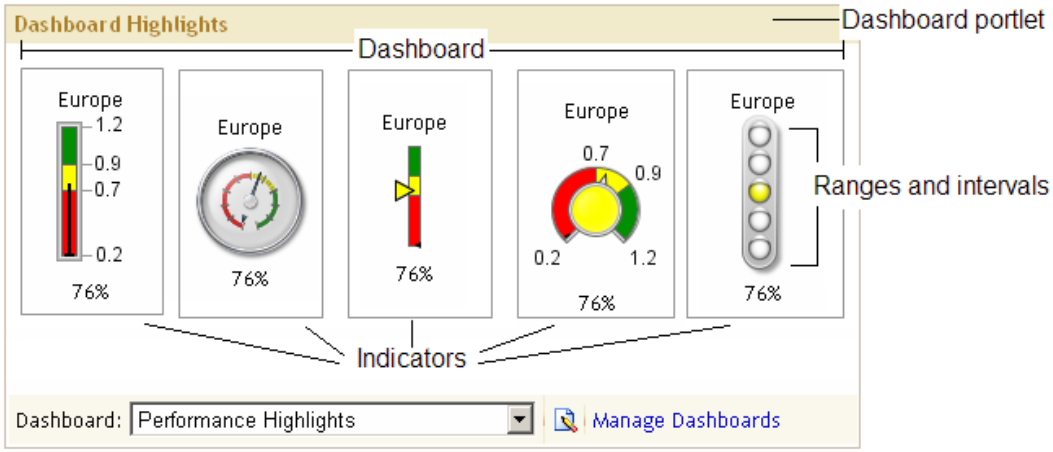
The original page is displayed, with the new portlet added.




# Creating a Dashboard

## Overview

A *dashboard* is a container that has a collection of one or more *indicators*. A dashboard is displayed in a portlet, which is displayed on a page within the SAS Information Delivery Portal. Here is an example of a dashboard and its components in a portlet:




Four components are required to create and display dashboards within the portal:

- the data model, which defines the data source and how to access the data within the data source. A data model must be created before an indicator can be defined. (Only one type of indicator, the graph, does not require a data model to be created. This graph indicator is addressed in detail in "Graph Display" on page 56.)

  Data models are addressed in detail in Chapter 3, "Data Models," on page 23.

- the range, which defines the measurement intervals by which a metric is evaluated, such as below target, on target, and above target. The dashboard administrator can define up to ten intervals. Each segment is assigned a user-selected color that is displayed when a metric falls within that particular segment. Ranges must be created before an indicator can be defined.

  Ranges are addressed in detail in Chapter 4, "Ranges," on page 41.

- the indicator, which defines the display settings, image types, and links for all metrics displayed in a dashboard. An indicator must be created before a dashboard can be defined.

  Indicators are addressed in detail in Chapter 5, "Indicators," on page 45.

- the dashboard, which is a collection of indicators to display.

  Dashboards are addressed in detail in Chapter 6, "Dashboards," on page 65.

# Create a Dashboard from Sample Data

## Data File

The sample data file used in this section can be obtained from SAS Technical Support. Your SAS administrator must copy it to the **sas-datasets** folder under the SAS BI Dashboard configuration folder (for example, **C:\sas\<plan file name>\Lev1\SASBIDashboard\sas-datasets**). It is necessary to do this only once.

The data file contains the following fields:

VIEWTABLE: TMP1.region_summary

| | SALES_YEAR_TO_DATE | RELATIVE_TO_LAST_YEAR | RELATIVE_TO_FORECAST | _NAME_FOR_RELATIVE_TO_FORECAST | REGION_REPORT_CODE | _LABEL_FOR_RELATIVE_TO_FORECAST |
|---|---|---|---|---|---|---|
| 1 | $900,000 | -0.5 | -0.7 | Upper Midwest | UMW | (70%) |
| 2 | $3,265,040 | -0.4 | -0.35 | Northwest | NW | (35%) |
| 3 | $1,000,000 | 0.1 | -0.25 | New England | NENG | (25%) |
| 4 | $2,420,000 | 0 | -0.1 | South Midwest | SMW | (10%) |
| 5 | $9,450,000 | 0.2 | -0.1 | NYC Metro | NYC | (10%) |
| 6 | $4,012,035 | 0.1 | 0 | Southwest | SW | 0% |
| 7 | $3,450,000 | 0.02 | 0.05 | Mid Atlantic | MATL | 5% |
| 8 | $2,402,000 | -0.1 | 0.09 | Southeast | SE | 9% |
| 9 | $7,453,020 | 0.09 | 0.12 | California | CAL | 12% |
| 10 | $6,720,000 | 0.5 | 0.4 | Central Midwest | CMW | 40% |

## Create the Data Model

Your first step is to create a data model for the indicator. The data model can use an SQL data source, a SAS Information Map data source, or a scorecard data source. This example uses an SQL data source.

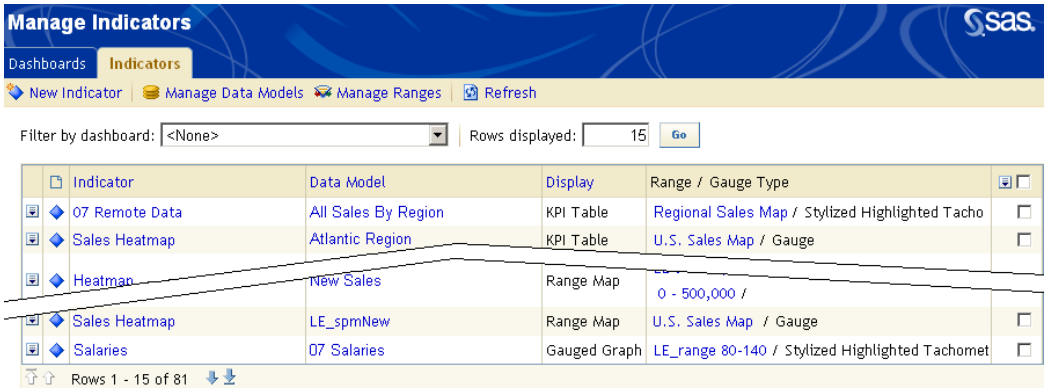
*Note:* This example uses an SQL data source because it is available to all customers. Within your own organization, a SAS Information Map is usually the easiest data source to use because you do not have to create an SQL query. △

To create the data model:

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

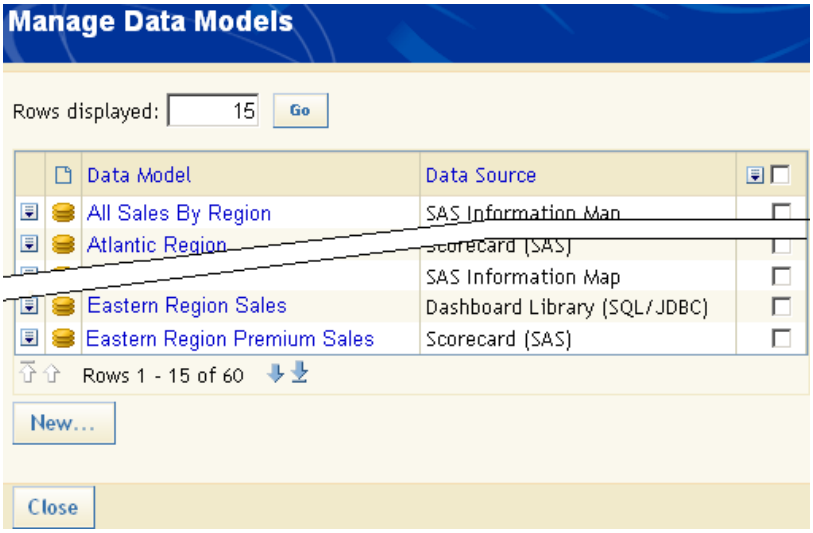
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. Contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.



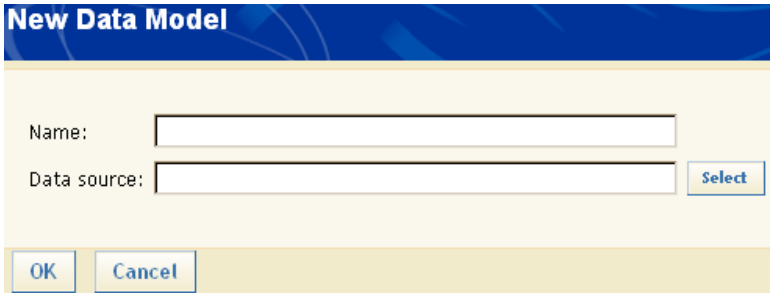

2 Click **Manage Data Models**.

The Manage Data Models page appears.




3 Click **New**.

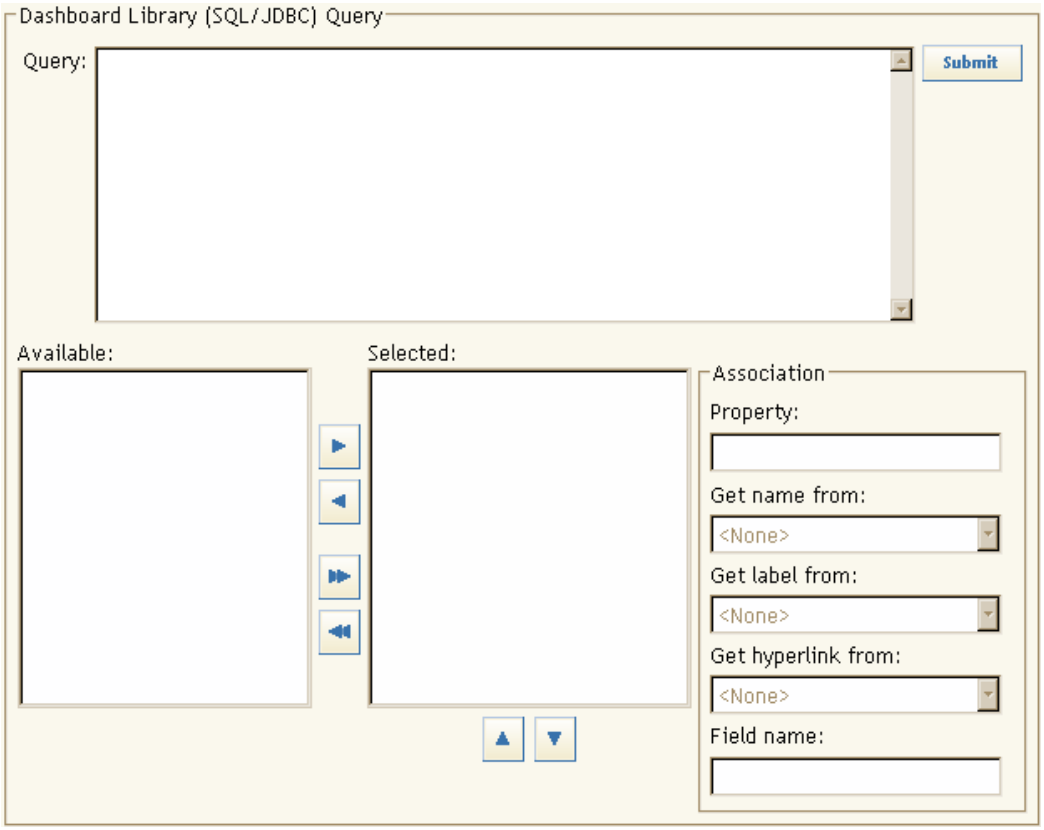
The New Data Model page appears.




4 In the **Name** field, type **Regional Summary**.

5 Next to the **Data source** field, click **Select**, and select **Dashboard Library (SQL/JDBC)**.

The fields to define a dashboard library (SQL/JDBC) data source appear.

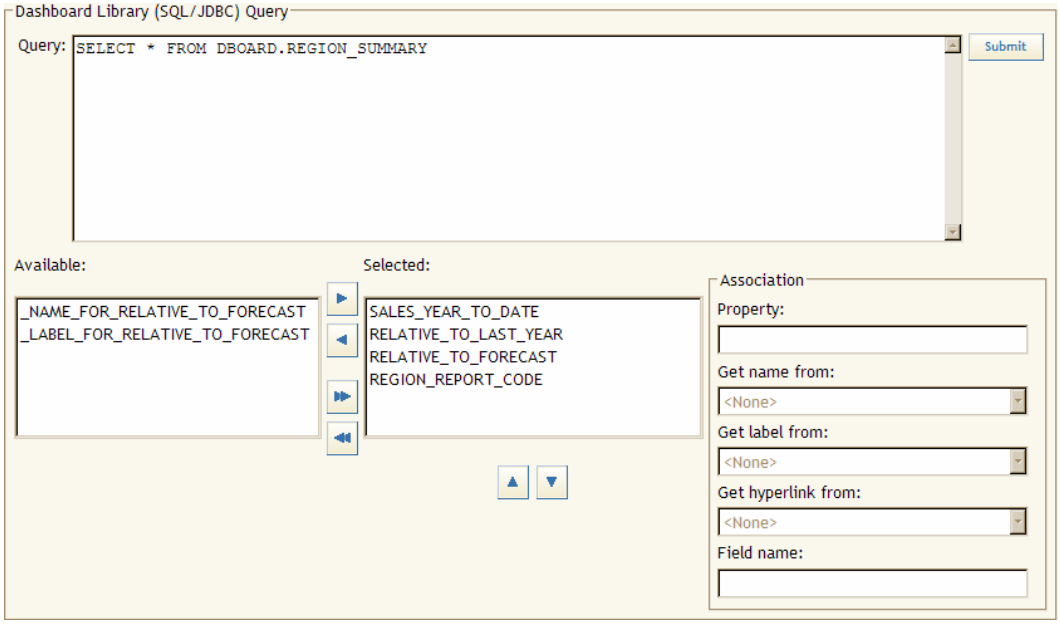



6 In the **Query** field, type **SELECT * FROM DBOARD.REGION_SUMMARY**.

If you are reading this document in an electronic format, you can copy and paste the query.

7 Click **Submit**.

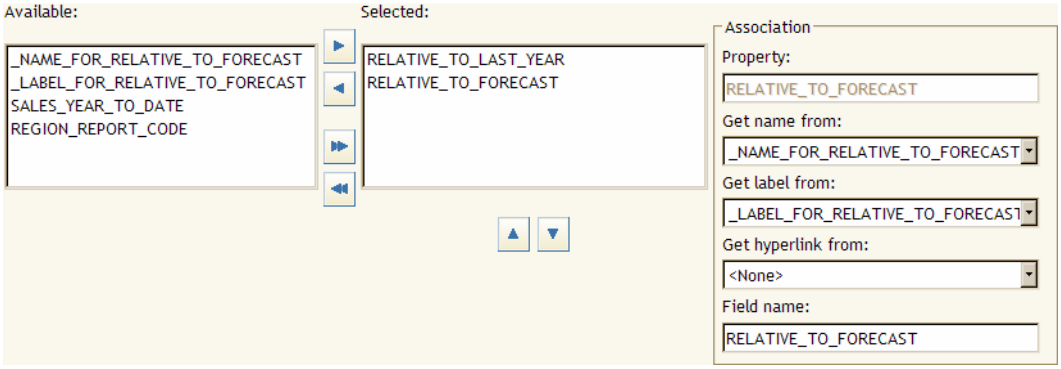
Data fields from the data source appear in the **Available** and the **Selected** lists.



*Note:* If the **Available** and **Selected** lists are empty, the query is incorrect. Retype the query. △

8 In the **Selected** list, select **SALES_YEAR_TO_DATE** and **REGION_REPORT_CODE**, and click the left arrow between the lists.

The data fields move to the **Available** list. These data fields are not used in the dashboard.




9 In the **Selected** list, select **RELATIVE_TO_FORECAST**.

In the **Association** area, the **Property** field contains **RELATIVE_TO_FORECAST**. You cannot change this value in this field.

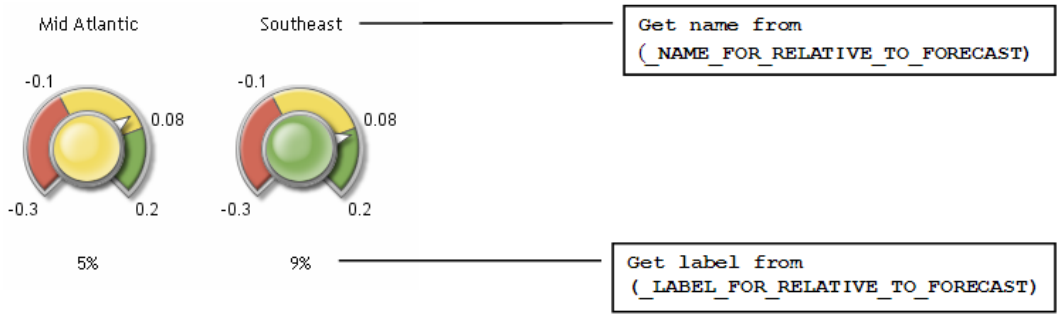
10 From the **Get name from** drop-down list, select **_NAME_FOR_RELATIVE_TO_FORECAST**.

The value for **Get name from** is displayed on the KPI gauge. In this example, it appears at the top of the KPI gauge.

11 From the **Get label from** drop-down list, select **_LABEL_FOR_RELATIVE_TO_FORECAST**.

The value for **Get label from** is the value displayed by the KPI gauge. In this example, it appears at the bottom of the KPI gauge.

Here is how these two values appear in the example gauge:




12 Click **OK**.

You return to the Manage Data Models page.

*Note:* The value for **Get hyperlink from**, which specifies information about hyperlinks, and the value for **Field name**, which is text that replaces the value retrieved for **Get name from**, are not used in this example. The default values are used for this example. △

13 Click **Close**.

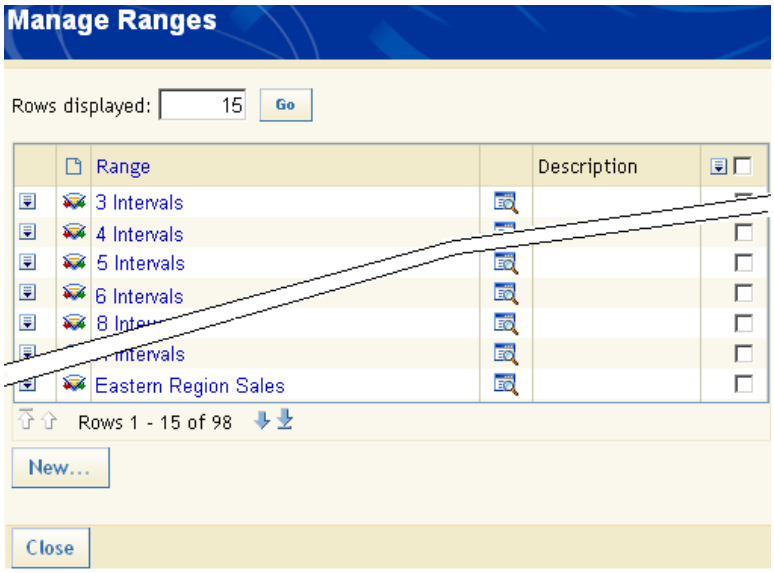
You return to the Manage Indicators page. Remain on this page.

## Define the Range

Your next step is to create a range for the indicator.

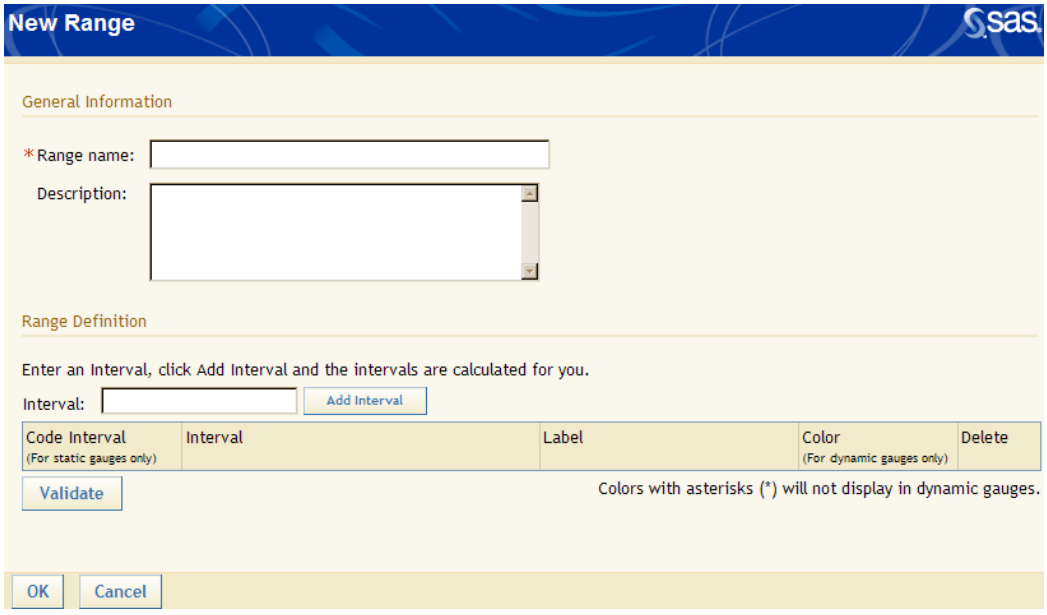
1 On the Manage Indicators page, click **Manage Ranges**.

The Manage Ranges page appears.




2 Click **New**.

The New Range page appears.

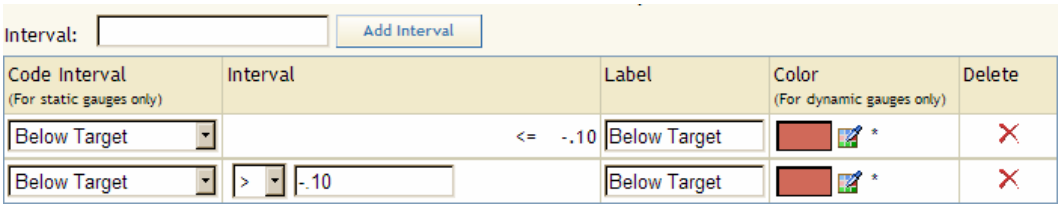



For this example, you create a range with intervals at -.30, -.10, .08, and .2.

3 In the **Range name** field, type **Range 1**.

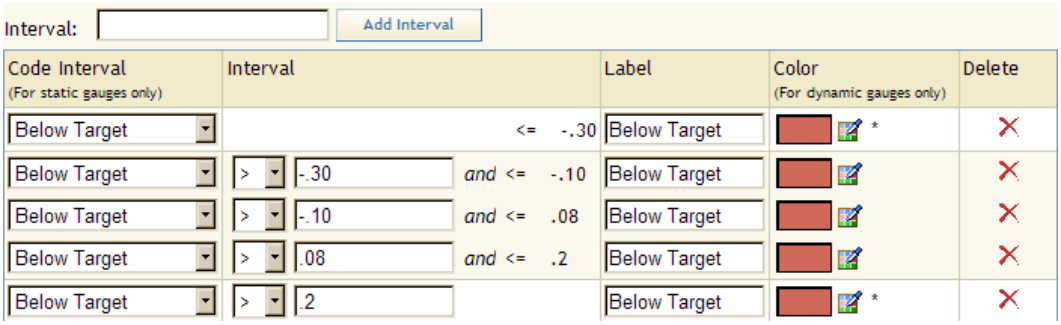
4 In the **Interval** field, type **-.10**, and click **Add Interval**.

The interval appears in the table.

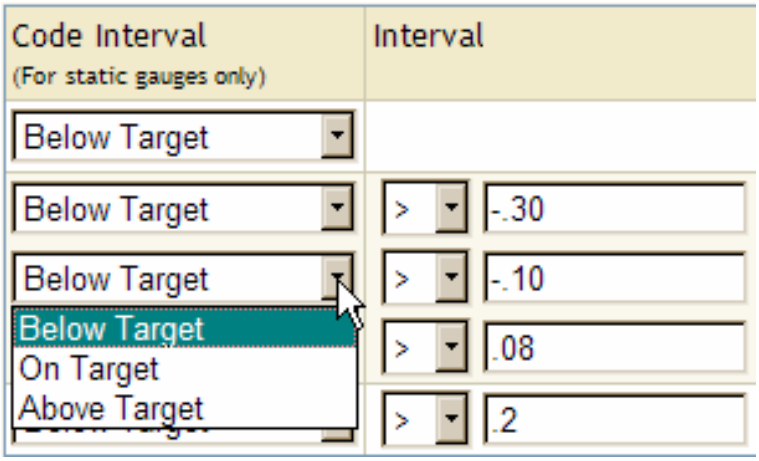



5 Type the values **.2**, **-.30**, and **.08**, clicking **Add Interval** after each value.

Notice that, although you typed the interval values in a random order, the intervals are ordered correctly in the table.



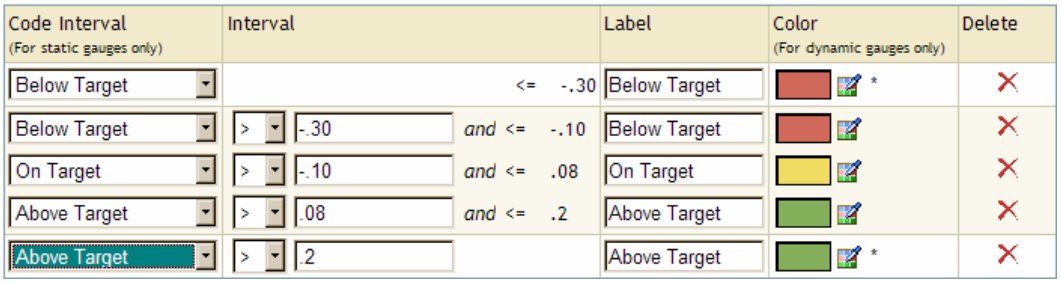

6 For the **-.10** interval, select **On Target** from the drop-down list in the **Code Interval** column.




7 Notice that the value in the **Label** column for the **-.10** interval is now **On Target** and that the color is yellow.

8 For the intervals **.08** and **.2**, specify the code interval as **Above Target**.

The table now looks like this:




**9** Click **OK**.

You return to the Manage Ranges page.

**10** Click **Close**.

You return to the Manage Indicators page. Remain on this page.

## Create the Indicator

Your next step is to create the indicator. There are four steps to create an indicator:

**1** Define the indicator.

This step is the minimum required to create an indicator.

**2** Define the links.

This example does not address links.

**3** Define the display.

This example changes the display of the indicator only in a minor way.

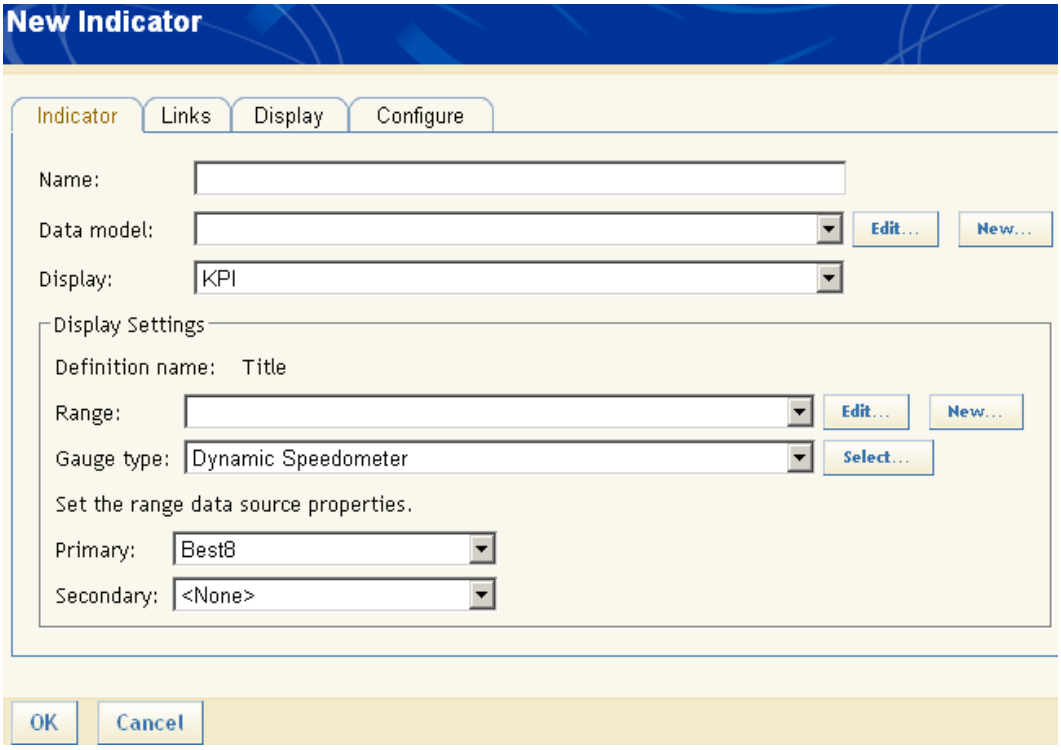
**4** Configure the indicator.

This example does not address configuration.

The settings necessary to perform each step are presented on separate tabs.
To create the indicator for this example:

**1** On the Manage Indicators page, click **New Indicator**.

The New Indicator page appears.



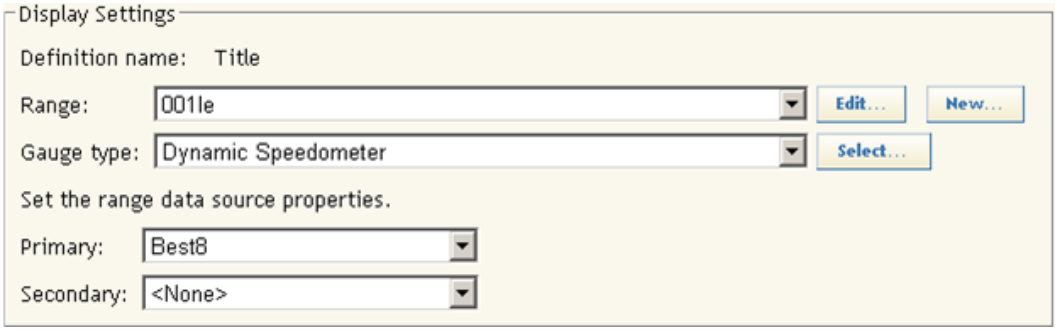

2 In the **Name** field, type **Regional Sales KPIs**.

3 From the **Data model** drop-down list, select **Regional Summary**.

This is the data model that you just created.

4 From the **Display** drop-down list, select **KPI**.

When you select a display, the information in the **Display Settings** area changes based on the display selected.




5 From the **Range** drop-down list, select **Range 1**.

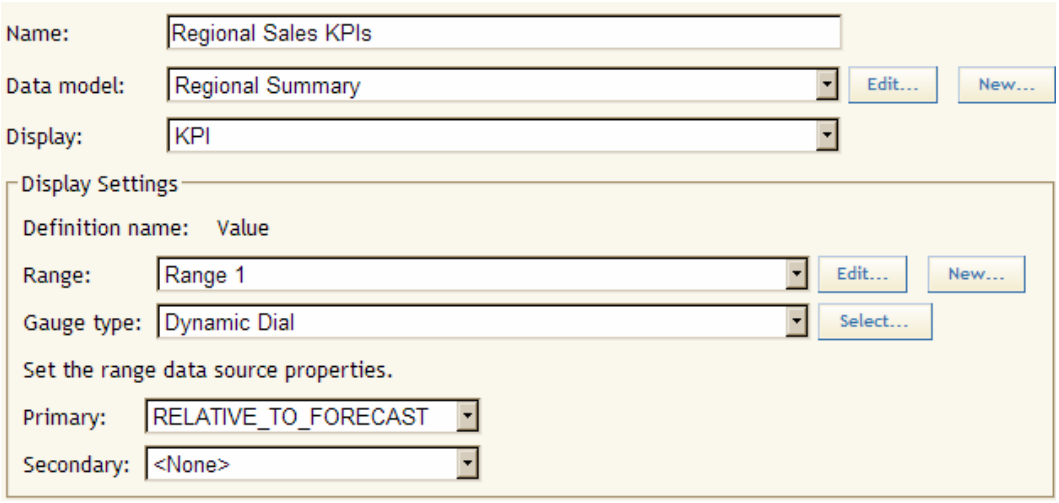
This is the range that you just created.

6 From the **Gauge type** drop-down list, select **Dynamic Dial**.

The **Dynamic Dial** appears as a three-dimensional, colorful gauge in the dashboard.

7 From the **Primary** drop-down list, select **RELATIVE_TO_FORECAST**.

The page now looks like this:




The value in the data field **RELATIVE_TO_FORECAST** appears in the indicator.

Although you have specified enough information to create the indicator, the following step will create a better display.

8 Click the **Display** tab, and in the **Width** field, type **900**.

This value widens the indicator so that it doesn't wrap in the dashboard.

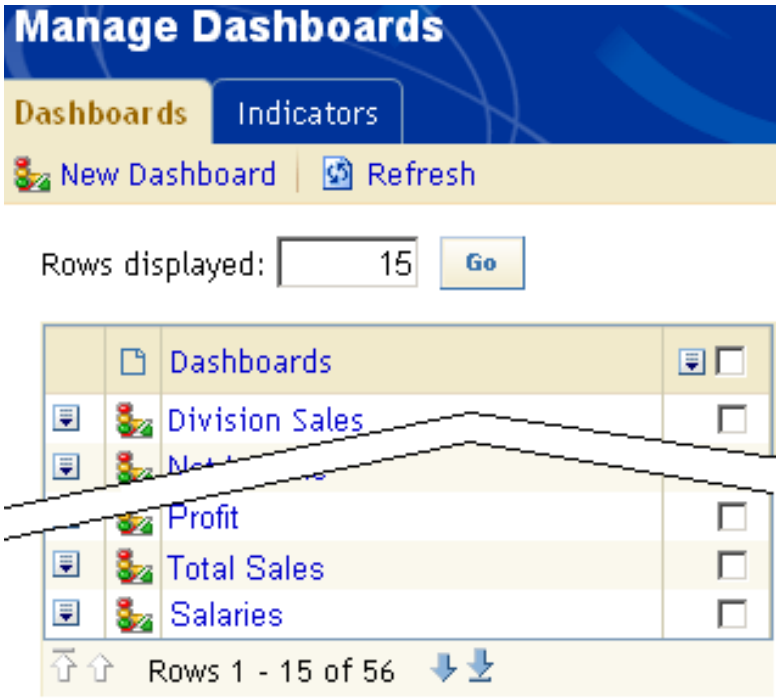
9 Click **OK**.

You return to the Manage Indicators page. Remain on this page.

## Create the Dashboard

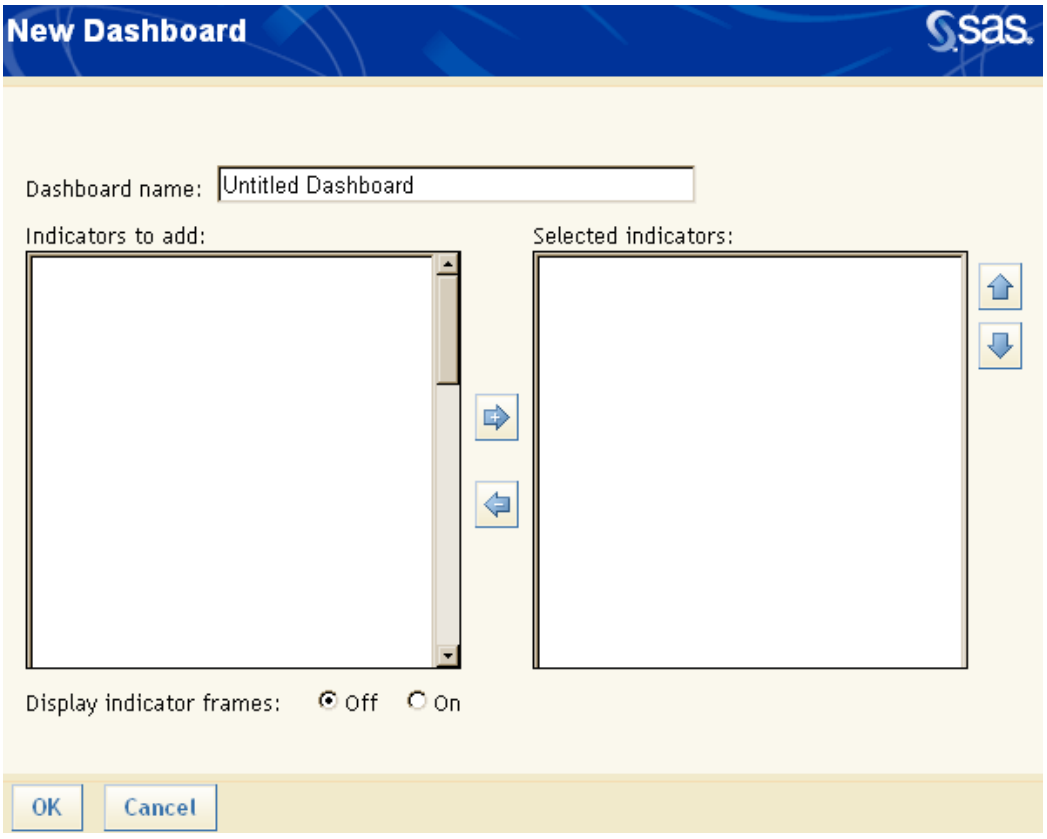
1 On the Manage Indicators page, click the **Dashboards** tab.

The Manage Dashboards page appears.




2 Click **`New Dashboard`**.

The New Dashboard page appears.




3 In the **`Dashboard name`** field, type **`Example Dashboard`**.

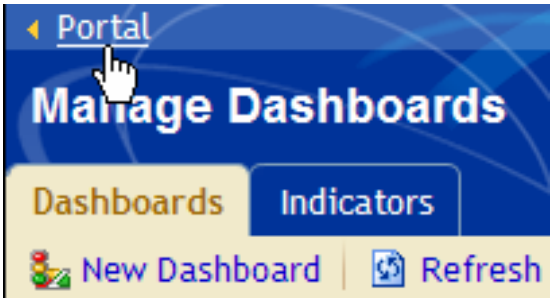
4 From the **Indicators to add** list, select **Regional Sales KPIs**, and click the right arrow.

**Regional Sales KPIs** moves to the **Selected indicators** list.

5 Click **OK**.

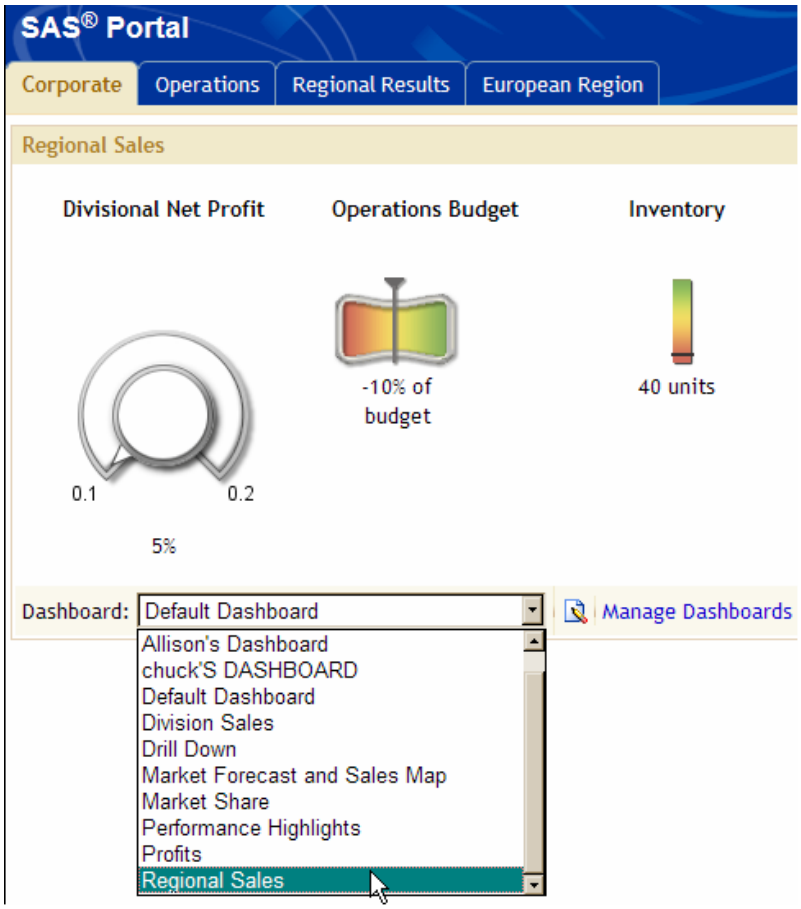
You return to the Manage Dashboards page.

6 At the top of the page, click **Portal**.

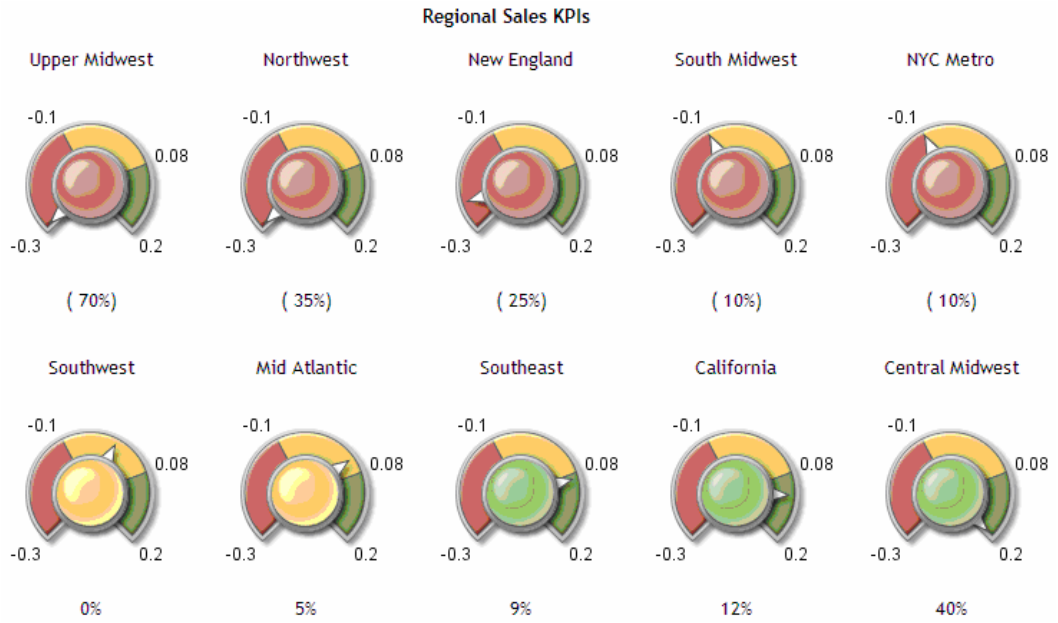



You return to the portal.

7 From the **Dashboard** drop-down list, select **Regional Sales**.




The example dashboard appears.




Congratulations! You just created your first dashboard. Compare the dashboard to the underlying data:

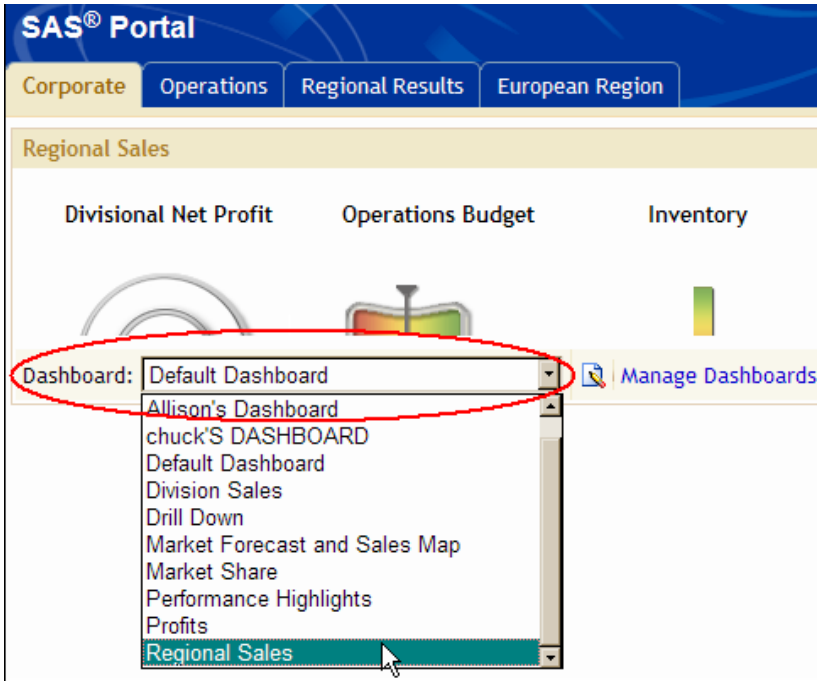
VIEWTABLE: TMP1.region_summary

| | SALES_YEAR_TO_DATE | RELATIVE_TO_LAST_YEAR | RELATIVE_TO_FORECAST | _NAME_FOR_RELATIVE_TO_FORECAST | REGION_REPORT_CODE | _LABEL_FOR_RELATIVE_TO_FORECAST |
|---|---|---|---|---|---|---|
| 1 | $900,000 | -0.5 | -0.7 | Upper Midwest | UMW | ( 70%) |
| 2 | $3,265,040 | -0.4 | -0.35 | Northwest | NW | ( 35%) |
| 3 | $1,000,000 | 0.1 | -0.25 | New England | NENG | ( 25%) |
| 4 | $2,420,000 | 0 | -0.1 | South Midwest | SMW | ( 10%) |
| 5 | $9,450,000 | 0.2 | -0.1 | NYC Metro | NYC | ( 10%) |
| 6 | $4,012,035 | 0.1 | 0 | Southwest | SW | 0% |
| 7 | $3,450,000 | 0.02 | 0.05 | Mid Atlantic | MATL | 5% |
| 8 | $2,402,000 | -0.1 | 0.09 | Southeast | SE | 9% |
| 9 | $7,453,020 | 0.09 | 0.12 | California | CAL | 12% |
| 10 | $6,720,000 | 0.5 | 0.4 | Central Midwest | CMW | 40% |

# Working in the SAS BI Dashboard

## Select a Dashboard

To select a dashboard, select one from the **`Dashboard`** drop-down list in the SAS BI Dashboard portlet.




This list includes dashboards created by your organization and sample dashboards that are distributed with the SAS BI Dashboard if the installer chose to install and configure them.

# Lists

## Overview

Lists appear in many places in the SAS BI Dashboard. Here are the tasks that you perform on lists:

- Scroll through a list.
- Delete one or more items in a list.

## Scroll Through a List

To scroll through a list, click one of these icons:

Move to the first page.

Move to the previous page.

Move to the next page.

Move to the last page.

## Delete One or More Items in a List

To delete a single item, click the action menu that is next to the item and select **`Delete`**.

To delete multiple items:

1. In the last column, select the check box that is next to the item.
2. To select all items, select the check box at the top of the last column.
   The check box that is next to each item is selected.
3. At the top of the last column, click the action menu and select **`Delete`**.

CHAPTER

# 3

# Data Models

*Overview* **23**
*Data Model Rules* **25**
*Manage Data Models* **26**
*Create or Edit a Data Model* **27**
*Defining a Data Source* **29**
*Data Columns* **29**
*SAS Information Map Data Source* **30**
*Overview* **30**
*OLAP Information Maps* **34**
*Define a SAS Information Map Data Source* **34**
*Define a Dashboard Library (SQL/JDBC) Data Source* **36**
*Define a Scorecard Data Source* **38**

## Overview

The SAS BI Dashboard uses *data models* to define data that is used in *indicators*. The core object is the indicator, and a dashboard is just a collection of indicators. An indicator never has more than one data model (and is rarely used without a query). The data model is an abstraction layer for the query. Access to three types of data sources is supplied with the SAS BI Dashboard:

- SQL/JDBC, which can access relational data
- SAS Information Maps, which can access relational data and OLAP cubes
- scorecards, which can access scorecard values directly from SAS Strategic Performance Management

*Note:* The SAS BI Dashboard administrator can add access to other data sources. △

Before you create a dashboard, you must understand how to create a data model. Understanding the data flow in the SAS BI Dashboard is the key to building enterprise dashboards that operate efficiently within your organization's Business Intelligence system.

Unlike the flow of data in a report (which is usually relatively simple), the flow of data in a dashboard can be very different. Consider the dashboard in your car. Although you see a single representation of the state of the car, the state is actually a collection of different types of data received by the dashboard. The fuel gauge receives data from the fuel tank, the speedometer receives data from the wheels, the battery gauge receives data from the battery, and so on. Like your car's dashboard, a SAS BI Dashboard can have disparate data sources.

Whereas a report created with SAS Web Report Studio might fill several screens with data from a single information map, a dashboard might render data in a small display

that is the result of SQL/JDBC queries, information maps, and SAS Strategic Performance Management scorecards. A dashboard can also render the output of stored processes. Here is an example of a portal page that contains three dashboards that use disparate data sources:

In the dashboard across the top, there are six indicators, each with its own data model underneath. These indicators are driven by six different SQL queries, but the data models could be all information maps, all scorecards, or some combination of these types.

Notice that the data models for the first four indicators and the last one return only one row of data. The best way to represent a single row of data is a gauge. Each of these indicators shows a different type of gauge.

The data model for the fifth indicator returns several rows of data. The best way to represent multiple rows of data is a graph, in this case a line graph.

The dashboard in the lower left corner contains a single indicator that is driven by a query that returns eleven rows of data. The values in the Profit Margin data field drive the bar and trend display.

The dashboard in the lower right corner contains two indicators. The indicator on the left renders ten rows of data (one for each region) as a bar graph. Two columns are rendered: Sales YTD as the bar height and Sales Quota YTD as the target line. A third computed column, Relative To Forecast, controls the bar color. This indicator is driven by an information map.

The last indicator, the US Sales Pipeline Map, contains output generated from a stored process. For more information about using stored processes with an indicator, see “Graph Display” on page 56.

By using information maps and SQL queries to retrieve data, you are unconstrained with how the data is laid out at the data set level. For example, you can use computed columns and grouping in the data model. Once you have the data configured, the lack of constraints helps you to get initial dashboards up and running quickly. But this same simplicity means that data structure is not enforced.

## Data Model Rules

Here are several rules that will help you to create quicker and more efficient data models:

- Plan the data model by considering the kinds of indicator display types that will be used with the data model and the required appearance of the desired end result.

  For example, KPIs appear best with a data model that produces summarized data with a limited number of data rows. A data model with significant amounts of data, when used to drive a KPI indicator display, causes the SAS BI Dashboard to try to produce one KPI graphic representation for each row of data in the data model. Other indicator display types, such as the bar and chart, automatically summarize the data. In this case, it might be appropriate to use a data model that produces a larger number of data rows.
- To display a single gauge in an indicator, the query must return a single row of data.
- Create a query so that it executes quickly.

  A single slow query will slow the entire dashboard. Even when a query returns only a single row of data, if it must first join tables that each contain thousands of rows of data, the query won't perform well.
- A query shouldn't return a lot of data.

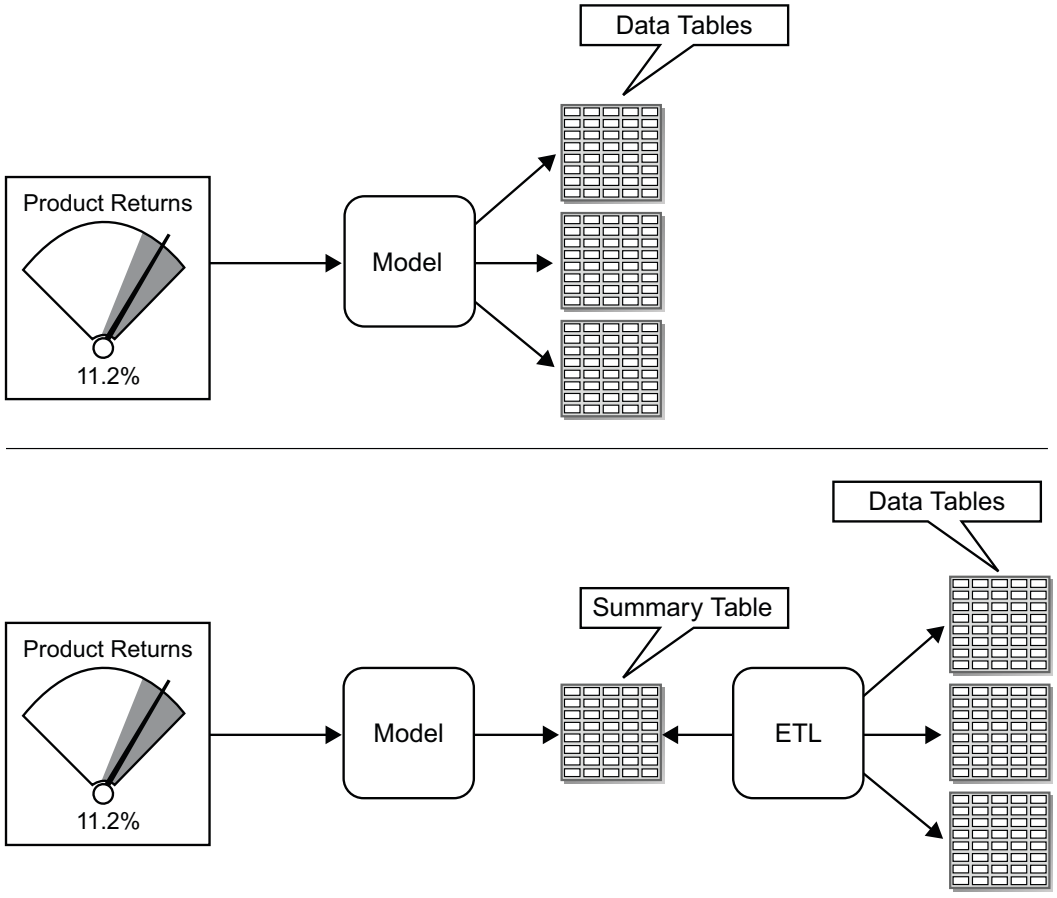
  For example, if an indicator is defined to display a gauge, each row in the result set becomes a gauge. If the result set returns a large number of rows, the indicator will have a large, unwieldy number of gauges. Instead, a query should return a single row or a small number of rows, such as 10. Even an indicator that displays a graph shouldn't use more than 100 or 200 rows.
- If the source data has too many rows, aggregate the data.

  Summarize data at the query or data-model level. Do not rely on the indicator display to perform the summary.

  For a SAS Information Map, you can usually use aggregation selected in the data model editor to summarize numeric data, which reduces the number of rows to a reasonable number.

  For an SQL query, you can summarize data using aggregation functions such as **`avg()`** and the **`distinct`** keyword.

  Another summarization strategy is to summarize the data into a summary table. The summary table is then used as the basis for the SQL query or as the base table for the information map. The first illustration that follows shows the SAS BI Dashboard data model using a query that combines data from multiple tables. The second illustration shows the same two tables being summarized by an ETL program. The SAS BI Dashboard data model then uses this summarized table.




The first method is easier to set up and might result in more timely data, but the second method is more flexible and will probably be more scalable. You can employ a similar strategy when creating information maps that will be used by the SAS BI Dashboard data models.

- The numeric data field you choose to render in an indicator needs a label or it won't look right.

  For instance, you have a value such as .422644 that you want to display in an indicator as 42.3%. If you are using an information map, format the value in SAS Information Map Studio. For an SQL query, create a separate data field that formats the value and retrieve this data field in the query.
- To display multiple gauges or a graph in an indicator, each numeric value should be associated with a name.

  After you define a query, you select the data fields to include in the indicator display. For every numeric data field displayed in the indicator, select a data field from the **`Get name from`** drop-down list to associate with the numeric value. This associated data field is displayed with the gauge or the category value in a graph.

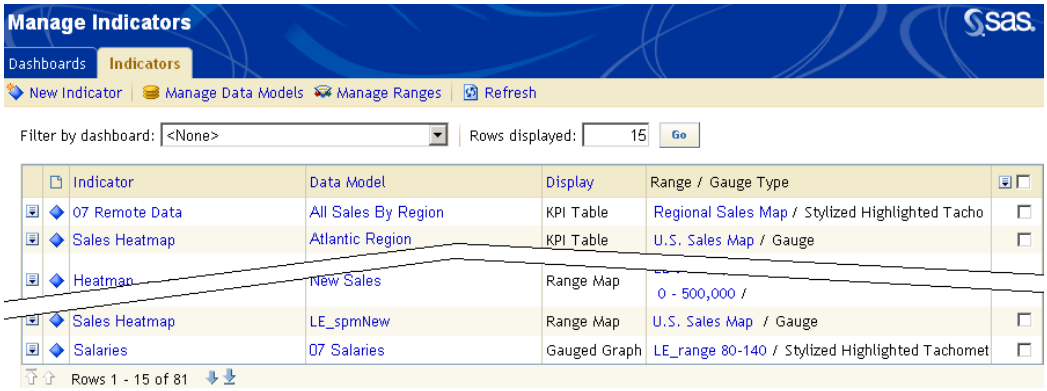
# Manage Data Models

To manage data models:

1 In the SAS BI Dashboard portlet, click **`Manage Dashboards`**.

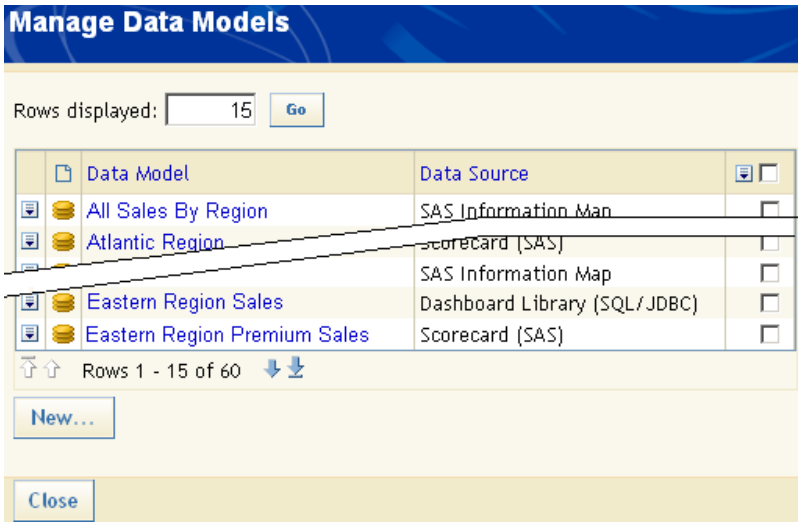
*Note:* If you do not see **`Manage Dashboards`**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.




2 Click **`Manage Data Models`**.

The Manage Data Models page appears.




3 To specify the number of rows to display on the page, type a number in the **`Rows displayed`** field, and click **`Go`**.

4 Scroll through the list.

For more information, see “Scroll Through a List” on page 21.

5 (Optional) Create or edit a data model .

6 To change the sort order, click a column heading.

7 (Optional) Delete one or more data models from the list.

For more information, see “Delete One or More Items in a List” on page 21.

# Create or Edit a Data Model

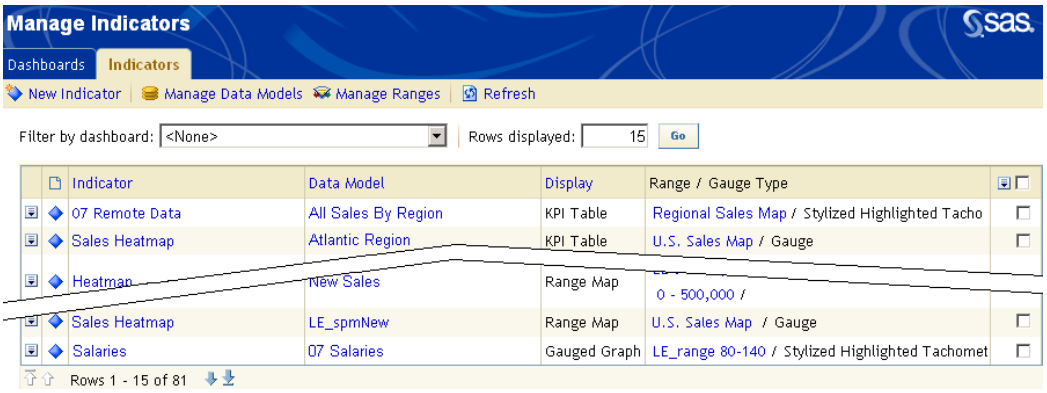
To create or edit a data model:

*Note:* You can also create or edit a data model when you create or edit an indicator. For more information, see “Create or Edit an Indicator” on page 47. △

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

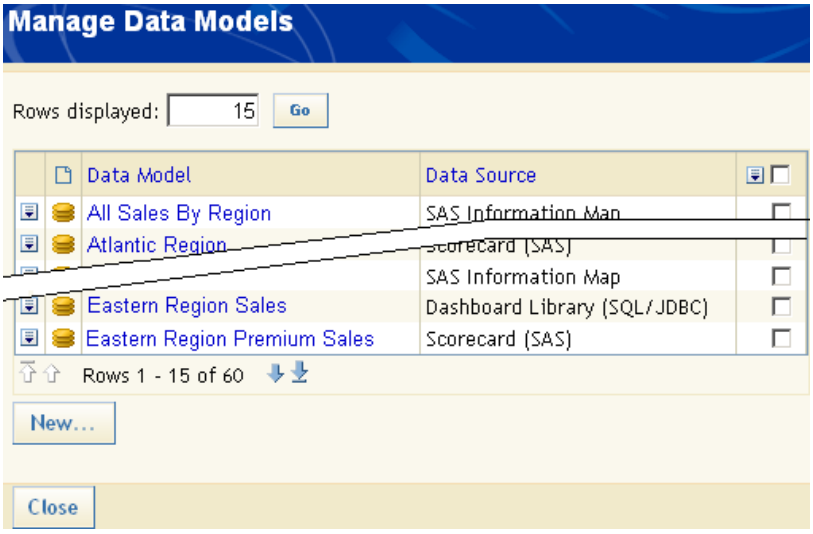
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.



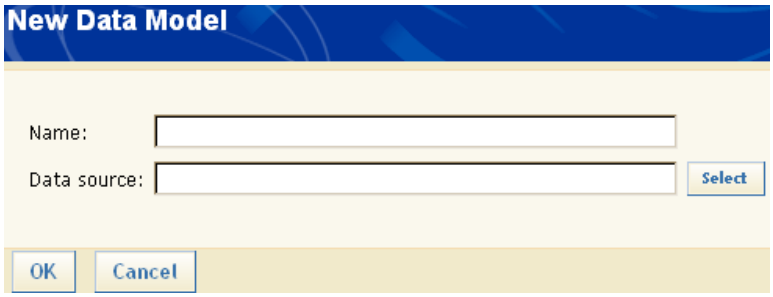

2 Click **Manage Data Models**.

The Manage Data Models page appears.




3 To create a data model, click **New**.

The New Data Model page appears.



4 To edit a data model, click the name of the data model.
5 Do one of the following:
   - Define a dashboard library (SQL/JDBC) data source. For more information, see "Define a Dashboard Library (SQL/JDBC) Data Source" on page 36.
   - Define a SAS Information Map data source. For more information, see "Define a SAS Information Map Data Source" on page 34.
   - Define a scorecard data source. For more information, see "Define a Scorecard Data Source" on page 38.

# Defining a Data Source

## Data Columns

When you define a data source, part of the information that you specify is the display attributes for each data column that is retrieved from the data source by a query or an information map.

Here is an explanation of the fields:

**`Property`** The name of the data column. You cannot modify this value.

Here is how **`Property`** appears in each type of display:

| Bar and trend | Gauged graph | Graph | KPI | KPI table | Range map |
|---|---|---|---|---|---|
| Used as the default value for **`Get name from`**, **`Get label from`**, and **`Field name`**. | | | | | |

**`Get name from`** The data column that contains the name that is displayed on a KPI gauge or graph.

Here is how **`Get name from`** appears in each type of display:

| Bar and trend | Gauged graph | Graph | KPI | KPI table | Range map |
|---|---|---|---|---|---|
| Not used. | For line and bar graphs, displayed as the category for a given value. | Displayed above each gauge. | | Not used. | Displayed as a tooltip. |

**`Get label from`** The data column that contains the formatted value that is displayed. This format can be a simple numeric value of a label.

A SQL query does not require this field. To create a formatted label at the bottom of a gauge, create the label as a formatted string in the SQL query, and then define that formatted string as the **`Get label from`** attribute.

Here is how **Get label from** appears in each type of display:

| Bar and trend | Gauged graph | Graph | KPI | KPI table | Range map |
|---|---|---|---|---|---|
| Displayed to the right of each gauge. | For line and bar graphs, displayed as the category for a given value. | Displayed below each gauge. | | Displayed in the value column. | Displayed next to each data point. |

**Get hyperlink from** The data column that contains hyperlinks.

Here is how **Get hyperlink from** appears in each type of display:

| Bar and trend | Gauged graph | Graph | KPI | KPI table | Range map |
|---|---|---|---|---|---|
| Hyperlinks embedded in gauges or individual data points in graphs. | | | | | |

**Field name** The text that replaces the value retrieved for **Get name from**.

Here is how **Field name** appears in each type of display:

| Bar and trend | Gauged graph | Graph | KPI | KPI table | Range map |
|---|---|---|---|---|---|
| Displayed as the column heading. | Displayed as the axis label. | Not used. | Not used. | Displayed as the column heading. | Displayed as the axis label. |

When you define a dashboard library (SQL/JDBC) data source or a scorecard data source, you create a query that retrieves data from the data source. After you create the query, you submit the query for validation. If the query is correct, data source column names are available in a list named **Available**. If the query is incorrect, the list is empty.

If the query is incomplete or incorrect, it is stored so that you can edit it later.

# SAS Information Map Data Source

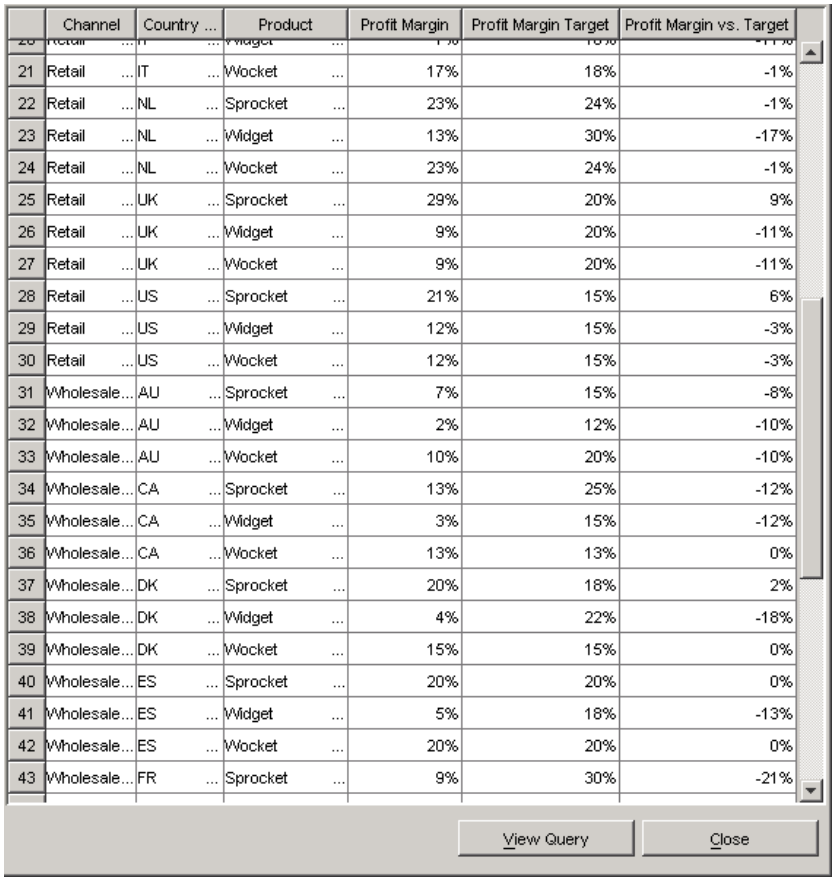
## Overview

A SAS Information Map data source easily aggregates data in such a flexible manner that a single SAS Information Map can drive several different dashboard indicators, such as the example shown here:

This example dashboard contains four indicators:

- **`Overall Product Net Profit And Profit Target`** shows a single gauge that represents the aggregate of all profit and profit target data across all product lines and sales channels.
- **`Overall Net Profit And Profit Target By Product`** shows three gauges, each of which is a pair of aggregated values for each product.
- **`Net Profit And Profit Target By Channel`** shows two gauges, each one representing aggregated profit and profit target for a specific sales channel.
- **`Net Profit By Channel And Country Vs. Goal`** shows 120 data values: 60 net profit values for each country, product, and targets for a specific sales channel.

This example demonstrates how a single SAS Information Map can be configured to drive different indicators by taking advantage of aggregation at the SAS Intelligent Query Services level. The information map for this example is a simple relational SAS Information Map that returns approximately 60 rows of data. Here is a sample of the data:



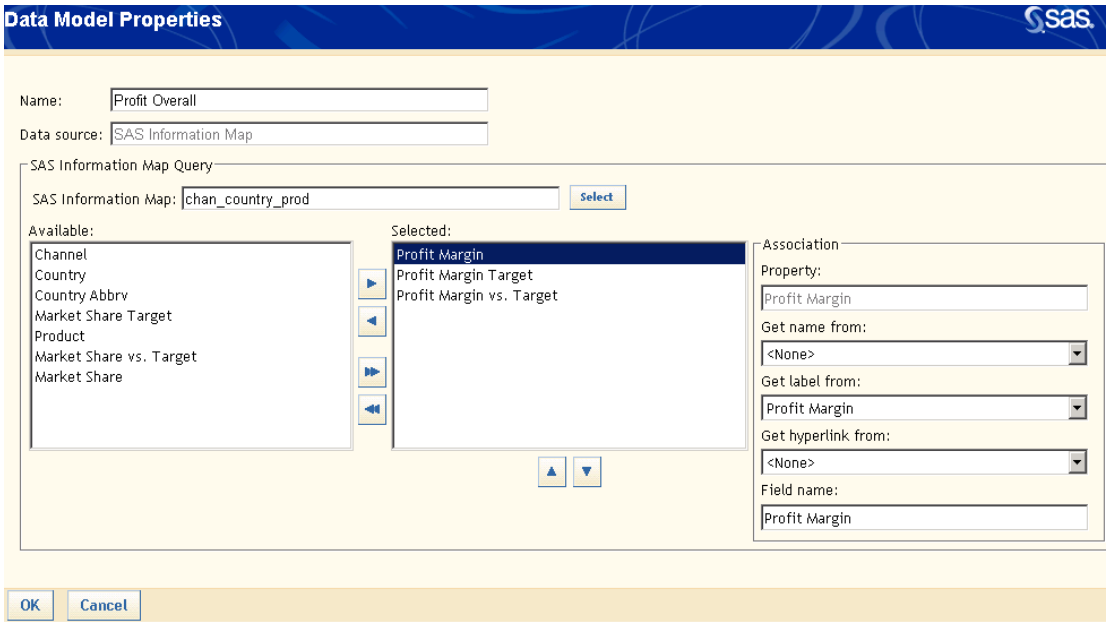
| | Channel | Country ... | Product | Profit Margin | Profit Margin Target | Profit Margin vs. Target |
|---|---|---|---|---|---|---|
| 21 | Retail ... | IT ... | Wocket ... | 17% | 18% | -1% |
| 22 | Retail ... | NL ... | Sprocket ... | 23% | 24% | -1% |
| 23 | Retail ... | NL ... | Widget ... | 13% | 30% | -17% |
| 24 | Retail ... | NL ... | Wocket ... | 23% | 24% | -1% |
| 25 | Retail ... | UK ... | Sprocket ... | 29% | 20% | 9% |
| 26 | Retail ... | UK ... | Widget ... | 9% | 20% | -11% |
| 27 | Retail ... | UK ... | Wocket ... | 9% | 20% | -11% |
| 28 | Retail ... | US ... | Sprocket ... | 21% | 15% | 6% |
| 29 | Retail ... | US ... | Widget ... | 12% | 15% | -3% |
| 30 | Retail ... | US ... | Wocket ... | 12% | 15% | -3% |
| 31 | Wholesale... | AU ... | Sprocket ... | 7% | 15% | -8% |
| 32 | Wholesale... | AU ... | Widget ... | 2% | 12% | -10% |
| 33 | Wholesale... | AU ... | Wocket ... | 10% | 20% | -10% |
| 34 | Wholesale... | CA ... | Sprocket ... | 13% | 25% | -12% |
| 35 | Wholesale... | CA ... | Widget ... | 3% | 15% | -12% |
| 36 | Wholesale... | CA ... | Wocket ... | 13% | 13% | 0% |
| 37 | Wholesale... | DK ... | Sprocket ... | 20% | 18% | 2% |
| 38 | Wholesale... | DK ... | Widget ... | 4% | 22% | -18% |
| 39 | Wholesale... | DK ... | Wocket ... | 15% | 15% | 0% |
| 40 | Wholesale... | ES ... | Sprocket ... | 20% | 20% | 0% |
| 41 | Wholesale... | ES ... | Widget ... | 5% | 18% | -13% |
| 42 | Wholesale... | ES ... | Wocket ... | 20% | 20% | 0% |
| 43 | Wholesale... | FR ... | Sprocket ... | 9% | 30% | -21% |

View Query Close

The data columns **Country**, **Channel**, and **Product** contain data that is repeated. Repeated data is a great candidate for grouping.

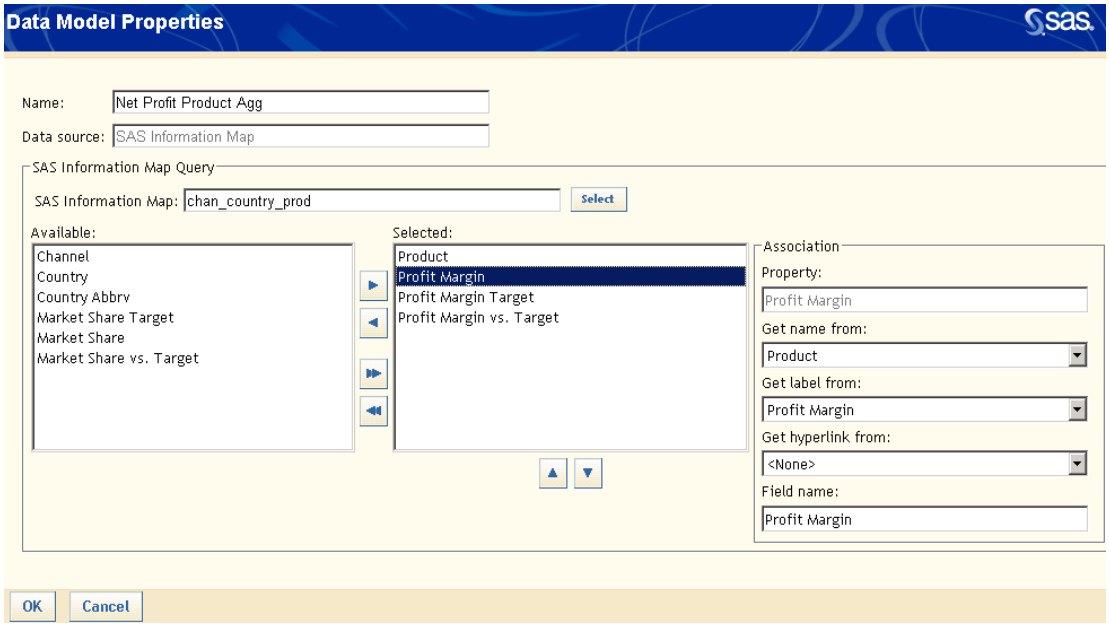
The first indicator (**Overall Product Net Profit And Profit Target**) requires only a single row of data. To specify a single row of data in SAS Information Map Studio, select the numeric values and specify that SAS Information Map Studio aggregate them. In SAS BI Dashboard, the KPI display type shows one gauge per row of data. To create a single gauge, you must aggregate the data so that only a single row of data is returned from the SAS Information Map. The one row of data returns the value by aggregating the data columns according to the aggregation method for the data item. In this example the method is average. The default aggregation method, sum, usually is not desirable for a dashboard, so you must specify the aggregation method on the **Classification/Formats** tab of the Data Item Properties dialog box in SAS Information Map Studio.

Here are the settings for the data model that drives the **Overall Product Net Profit And Profit Target** indicator:



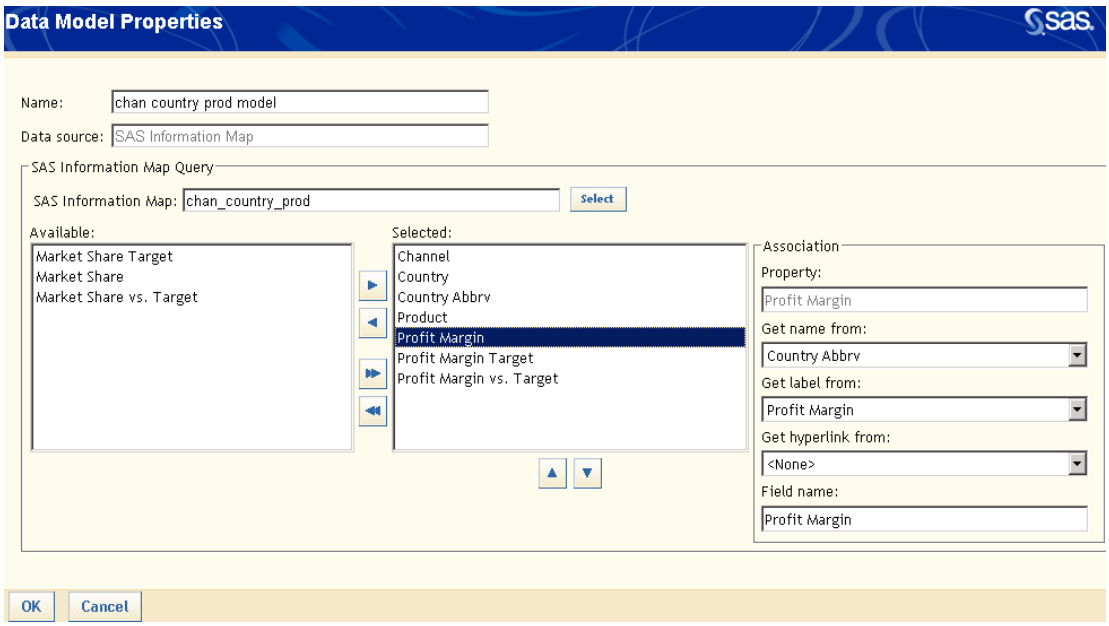

Notice that the **Selected** list contains only the numeric data columns.

For the **Overall Net Profit And Profit Target By Product** indicator, the data columns are different. This indicator displays three gauges, one for each product. For this data model, **Product** is selected, but **Channel** and **Country** are not. (There are also some numeric data columns concerning market share in this SAS Information Map that are not pertinent to this discussion.) For each numeric data column, **Product** is selected in the **Get name from** field so that the gauge is labeled with the appropriate name. Here are the settings for this data model:




For the **Net Profit And Profit Target By Channel** indicator, the data model uses only the relevant numeric data columns and the **Channel** data column. For each numeric data column, **Channel** is selected in the **Get name from** field so that the gauge is labeled with the appropriate name.

For the small multiples gauged graph **Net Profit By Channel And Country Vs. Goal**, all of the details appear in the indicator, including **Product**, **Channel**, and **Country**. Here are the settings for this data model:




Because the labels for the individual bars in the indicator should denote the country, the data column selected in the **Get name from** field for the numeric data column is **Country Abbrv**.

## OLAP Information Maps

The data returned from an OLAP information map is flattened into a two-dimensional table structure. You assign a role for each dimension when you define the data source. The roles are **No Role**, **Column**, **Row**, and **Slicer**.

*Note:* You must assign the role of **Row** to at least one data column. △

For dimensions with the role of **Row**, the levels of each hierarchy are the data fields. The corresponding members of the level are the values of the data field, where the field name is the label for the level. The other data fields are the columns that are typically seen in an OLAP viewer. The field names for the data fields are the comma-delimited levels of the dimensions with the role of **Column**, in the order of the dimensions with the role of **Row**.

One of the data fields available in an OLAP information map is **Full Row Name**. The values of **Full Row Name** are each a comma-delimited list of the members of the dimensions with the **Row** role relevant for that particular row, in order of the dimensions with the **Row** role. To more easily display a gauge value's place within the hierarchies in a cube, use **Full Row Name** as the name for the gauge.

You can use the grouping feature of the gauged graph display with an OLAP information map to create a multi-dimensional display of data.

## Define a SAS Information Map Data Source

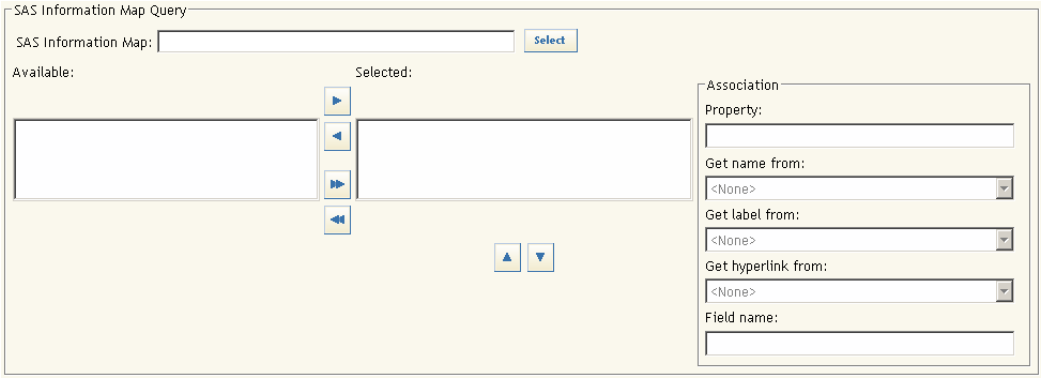
You define a SAS Information Map data source when you create or edit a data model or create or edit an indicator. For more information, see "Create or Edit a Data Model" on page 27 and "Create or Edit an Indicator" on page 47.

To define a SAS Information Map data source:

1 In the **Name** field on the New Data Model page or the Data Model Properties page, type the name of the data source that you want to appear in the list of data models.

2 Next to the **Data source** field, click **Select** and select **SAS Information Map**.

The fields to define a SAS Information Map data source appear.




3 Next to the **SAS Information Map** field, click **Select**.

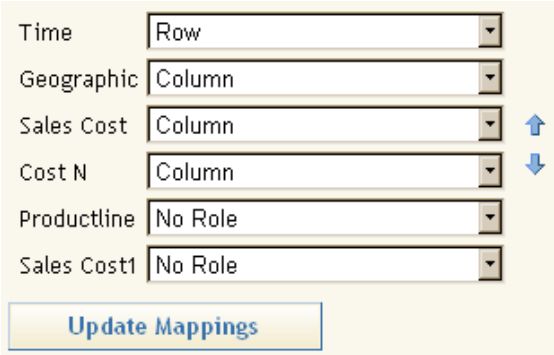
The list of SAS Information Maps appears for the default repository.

4 From the drop-down list at the top, select a repository.

The table is populated with the SAS Information Maps in the selected repository.

5 In the **Name** column, select a SAS Information Map.

If the SAS Information Map is based on an OLAP cube, the dimensions of the OLAP cube are displayed.




6 (Optional) In the **SAS Information Map** field, type the name of the SAS Information Map.

7 If the SAS Information Map is based on an OLAP cube, do the following:

- **a** For each dimension in the OLAP cube, assign a role for the dimension by selecting a value from the drop-down list that is next to the dimension.
- **b** To order the dimensions, click the name of a dimension, and then move it up or down by clicking one of the arrows that are next to the dimensions.
- **c** When the roles are set, click **Update Mappings**.

8 Move data point properties between the **Available** and **Selected** lists by using the arrows between the lists.

9 To order the data point properties in the **Selected** list, select a data point property, and then move it up or down by clicking one of the arrows that are below the list.

**10** To associate a data point property with data columns in the data source:

**a** In the **Selected** list, select a data point property.

**b** From the **Get name from** drop-down list, select a data column in the data source that contains the name of the data point property.

If the data source contains a Name data column, this data column is selected automatically for all data point properties.

**c** From the **Get label from** drop-down list, select a data column in the data source that contains the label for the data point property.

If you need a complicated label, such as one that concatenates data fields and static text, create a data column in the data source to store the concatenation. Then select that data column from the **Get label from** drop-down list.

**d** From the **Get hyperlink from** drop-down list, select a data column in the data source that contains the hyperlink for the data point property.

**e** In the **Field name** field, type the name to display for the data point property in the column header in the KPI table display.

*Note:* The KPI display ignores this value. △

## Define a Dashboard Library (SQL/JDBC) Data Source

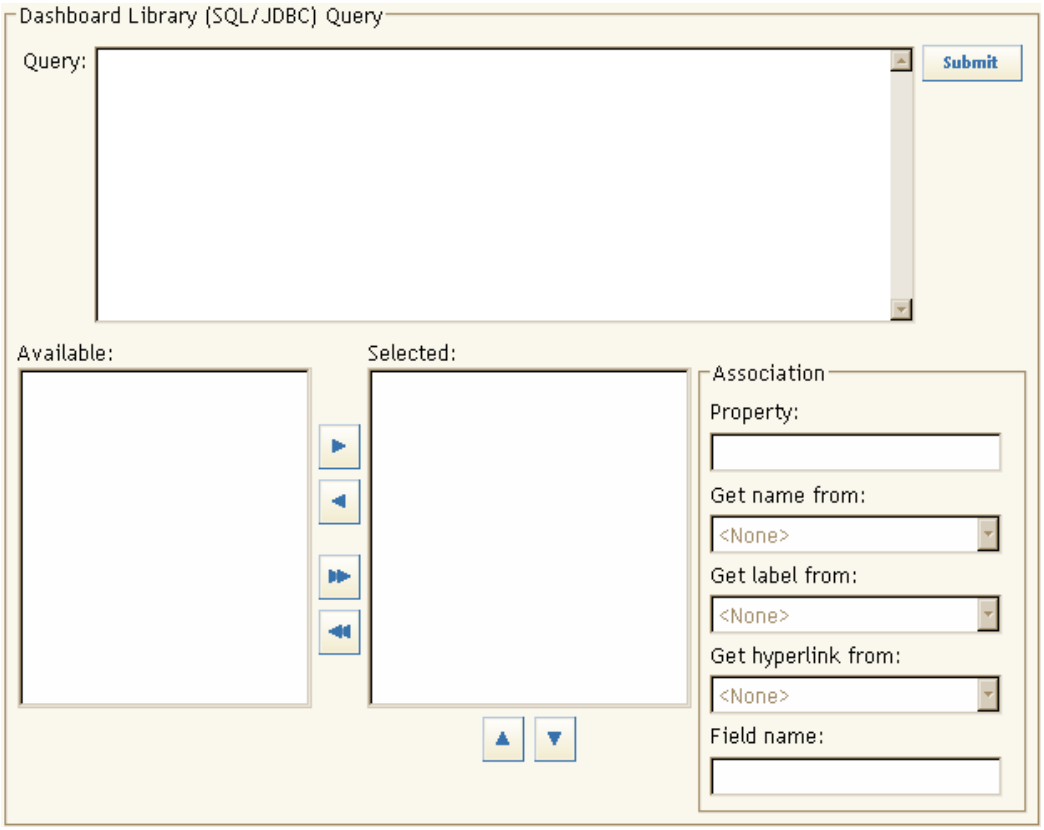
You define a dashboard library (SQL/JDBC) data source when you create or edit a data model or create or edit an indicator. For more information, see “Create or Edit a Data Model” on page 27 and “Create or Edit an Indicator” on page 47.

To define a dashboard library (SQL/JDBC) data source:

**1** In the **Name** field on the New Data Model page or the Data Model Properties page, type the name of the data source that you want to appear in the list of data models.

**2** Next to the **Data source** field, click **Select** and select **Dashboard Library (SQL/JDBC)**.

The fields to define a dashboard library (SQL/JDBC) data source appear.




3 In the **Query** field, type the query code.

4 Click **Submit**.

5 Move data point properties between the **Available** and **Selected** lists by using the arrows between the lists.

6 To order the data point properties in the **Selected** list, select a data point property, and then move it up or down by clicking one of the arrows that are below the list.

7 To associate a data point property with data columns in the data source:

a In the **Selected** list, select a data point property.

b From the **Get name from** drop-down list, select a data column in the data source that contains the name of the data point property.

If the data source contains a Name data column, this data column is selected automatically for all data point properties.

c From the **Get label from** drop-down list, select a data column in the data source that contains the label for the data point property.

If you need a complicated label, such as one that concatenates data fields and static text, create a data column in the data source to store the concatenation. Then select that data column from the **Get label from** drop-down list.

d From the **Get hyperlink from** drop-down list, select a data column in the data source that contains the hyperlink for the data point property.

e In the **Field name** field, type the name to display for the data point property in the column header in the KPI table display.

*Note:* The KPI display ignores this value. △

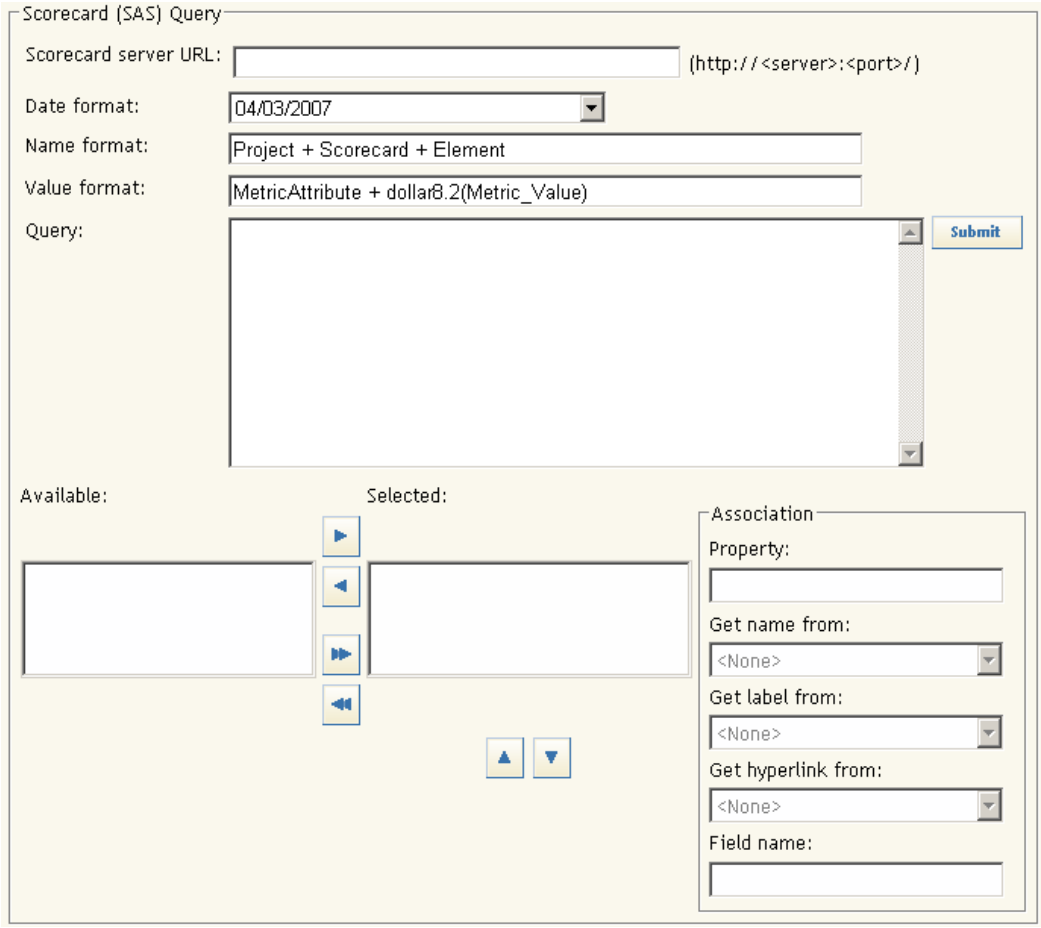
## Define a Scorecard Data Source

You define a SAS scorecard data source when you create or edit a data model or create or edit an indicator. For more information, see “Create or Edit a Data Model” on page 27 and “Create or Edit an Indicator” on page 47.

To define a SAS scorecard data source:

1. In the **Name** field on the New Data Model page or the Data Model Properties page, type the name of the data source that you want to appear in the list of data models.
2. Next to the **Data source** field, click **Select** and select **Scorecard (SAS)**.

   The fields to define a scorecard data source appear.




3. In the **Scorecard server URL** field, type the URL to the location of SAS Strategic Performance Management in the form *http://<server>:<port>/*.
4. From the **Date format** drop-down list, select a date format.

   When you create the query, all dates must be in this format.
5. In the **Name format** field, type the name to appear above the indicator in a dashboard.

   You can type any text. However, keywords supply certain information from SAS Strategic Performance Management. When the query is run, the keywords are replaced with values from SAS Strategic Performance Management for the cell specified in the query. These are the keywords:

| | |
|---|---|
| **TEMPLATE** | is the name of the template on which the scorecard that is associated with the queried cell is based. |
| **PROJECT** | is the name of the project in which the scorecard that is associated with the queried cell is located. |
| **SCORECARD** | is the name of the scorecard that is associated with the queried cell. |
| **ELEMENTTYPE** | is the name of the type of element that is associated with the queried cell. |
| **ELEMENT** | is the name of the element that is associated with the queried cell. |
| **METRICATTRIBUTE** | is the name of the metric attribute that is associated with the queried cell. |
| **DATE** | is the date on which the metric attribute value is based. |
| **METRIC_VALUE** | is the value of the metric attribute that is associated with the queried cell. |

The keywords are case-insensitive.

Use a plus (+) between a literal and a keyword and between keywords. For example, if the queried cell is located in the scorecard Shoe Sales in the project East Coast, **SCORECARD + for the + PROJECT + region** produces **Shoe Sales for the East Coast region**.

You can apply a SAS format such as **dollar8.2(METRIC_VALUE)** to any text.

**6** In the **Value format** field, type the value to appear below the indicator in a dashboard.

This field accepts the same text, keywords, and formats as the **Name format** field.

**7** In the **Query** field, type the query that specifies a cell within SAS Strategic Performance Management from which to retrieve values, and then click **Submit**.

Use a vertical bar (|) to separate the parts of the query that specify a cell. Here is the general format to specify a cell:

*template* | *project* | *scorecard* | *element_type* | *element* | *metric_attribute* | *date* | *URL*

*URL* specifies the hyperlink that appears in the indicator in a dashboard. *URL* is optional.

If you don't include *URL*, one is automatically generated from SAS Strategic Performance Management. The target of the automatically generated URL is either the directive for the queried cell or the scorecard that contains the queried cell.

If you do include *URL*, the string is used exactly as you type it.

Use two vertical bars (||) to separate individual queries as in the following example:

```
tmplt1 | prj1 | score1 | elemtype1 | elem1 | metattr1 | date1 | <url> ||
tmplt2 | prj2 | score2 | elemtype2 | elem2 | metattr2 | date2
```

**8** Move data point properties between the **Available** and **Selected** lists by using the arrows between the lists.

**9** To order the data point properties in the **Selected** list, select a data point property, and then move it up or down by clicking one of the arrows that are below the list.

**10** To associate a data point property with data columns in the data source:

**a** In the **Selected** list, select a data point property.

**b** From the **Get name from** drop-down list, select a data column in the data source that contains the name of the data point property.

If the data source contains a Name data column, this data column is selected automatically for all data point properties.

**c** From the **Get label from** drop-down list, select a data column in the data source that contains the label for the data point property.

**d** From the **Get hyperlink from** drop-down list, select a data column in the data source that contains the hyperlink for the data point property.

**e** In the **Field name** field, type the name to display for the data point property in the column header in the KPI table display.

*Note:* The KPI display ignores this value. △

CHAPTER

# 4

# Ranges

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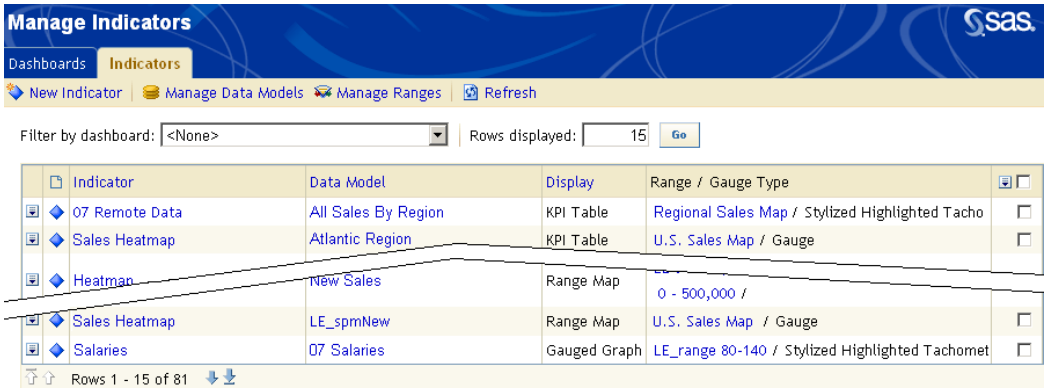
## Manage Ranges

To manage ranges:

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

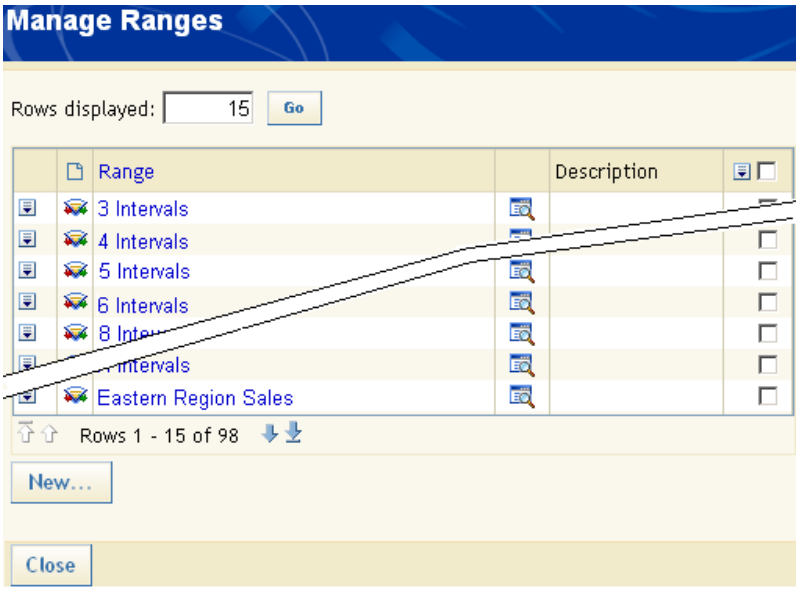
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.




2 Click **Manage Ranges**.

The Manage Ranges page appears.




3 To specify the number of rows to display on the page, type a number in the **Rows displayed** field, and click **Go**.

4 (Optional) Create or edit a range .

5 To change the sort order, click **Range** in the column heading.

6 Scroll through the list.

For more information, see "Scroll Through a List" on page 21.

7 To preview a range, click next to the range.

8 (Optional) Delete one or more ranges from the list.

For more information, see "Delete One or More Items in a List" on page 21.

# Create or Edit a Range

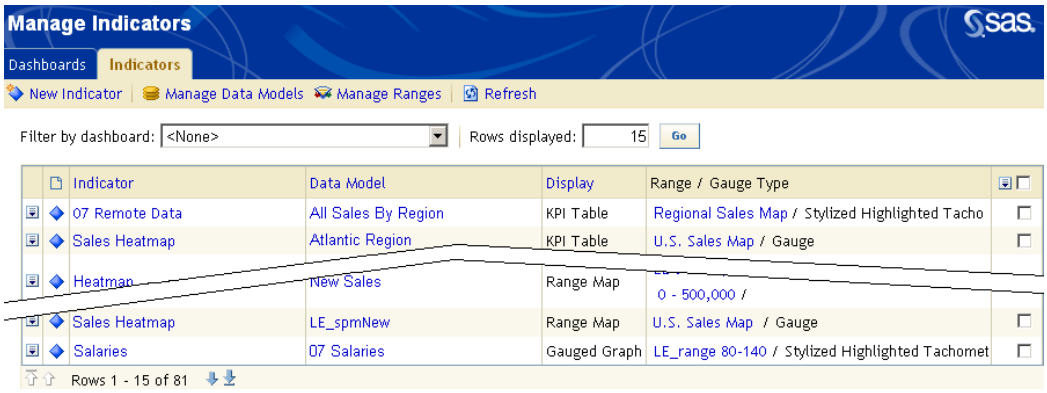
## Start to Create or Edit a Range

To create or edit a range from within the SAS BI Dashboard portlet:

1 In the portlet, click **Manage Dashboards**.

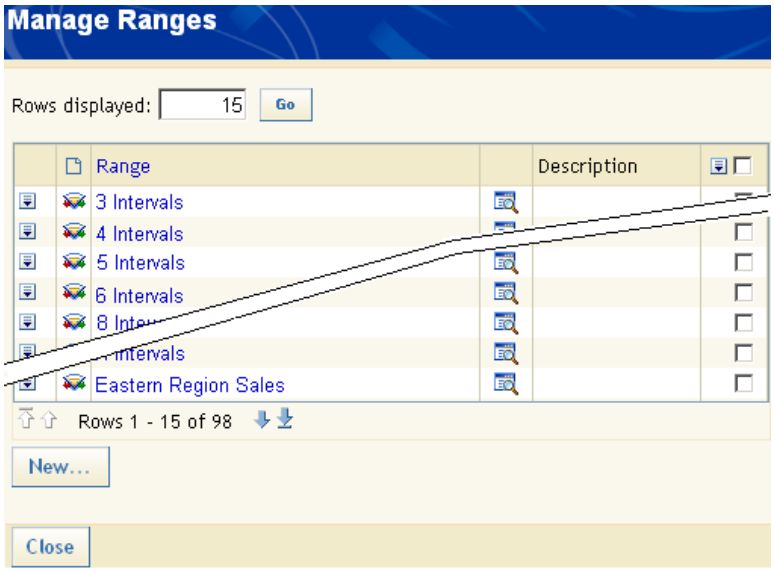
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.



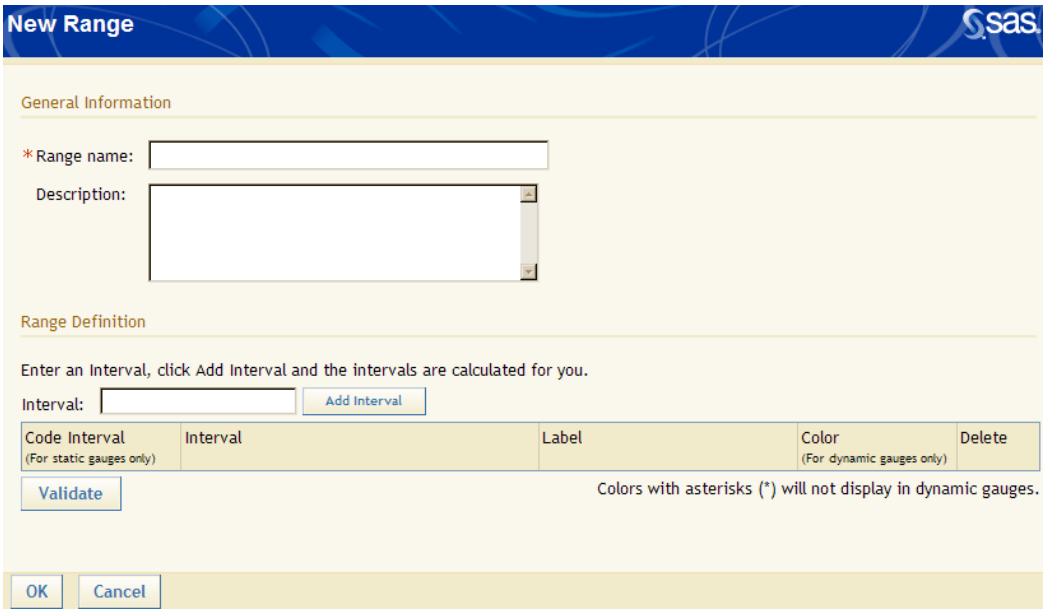

2 Click **Manage Ranges**.

The Manage Ranges page appears.




3 To create a range, click **New**.

The New Range page appears.




4 To edit a range, click the name of the range.

## Define the Range

To define the range:

1 To specify the name and description, type the name and description in the appropriate fields on the New Range page or the Range Properties page.

2 For each interval in the range, type the interval value in the **Interval** field, and click **Add Interval**.

The interval is added to the table of intervals. You can add the values in any order; the software will order them correctly in the table.

3 To define each interval:

a For a static gauge, in the **Code Interval** column, select a code interval from the drop-down list.

The available intervals depend on the gauge.

b In the **Interval** column, select an operator from the drop-down list, and type a value in the adjacent field.

c In the **Label** column, type the label.

d For a dynamic gauge, in the **Color** column, click and select a color.

e To delete an interval, click next to the interval.

f To validate that the intervals are in the correct order after deleting an interval, click **Validate**.

CHAPTER

# 5

# Indicators

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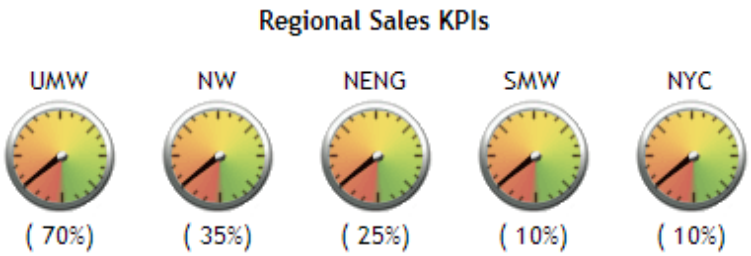
## Overview

An indicator includes a title and a display. The display includes one or more data values, a hyperlink (optional), and one or more gauges, a graph, or an image. Here is an example of a KPI indicator:




The indicator title is **Regional Sales KPIs**. The names of the gauges, such as **NW** and **NYC**, are the values of the data column specified by the **Get name from** field when the data source was defined. The values, such as **10%** and**35%**, are the values of the data column specified by the **Get label from** field. The hyperlink is not shown. For more information about where these items of information appear in each type of display, see "Defining a Data Source" on page 29.

You select the display when you create or edit an indicator. For more information, see "Create or Edit an Indicator" on page 47 and "Indicator Displays" on page 52.

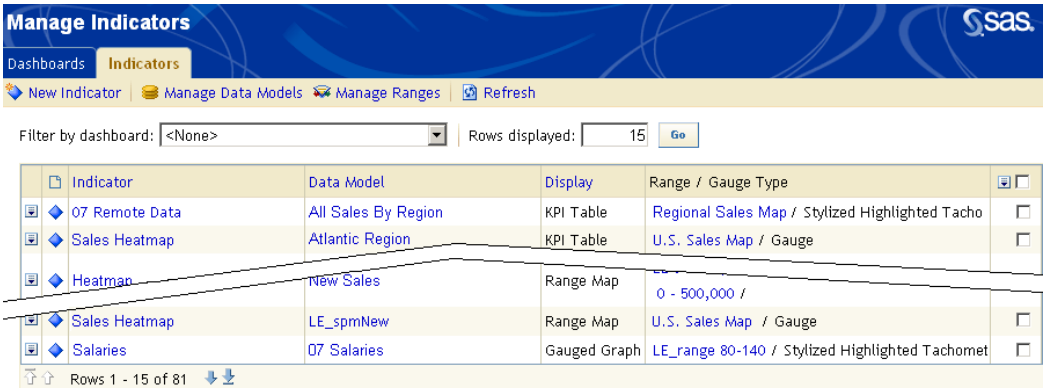
# Manage Indicators

To manage the indicators:

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.




2 To limit the indicators to those used by a specific dashboard, select a dashboard from the **Filter by dashboard** drop-down list on the Manage Indicators page.

3 To specify the number of rows to display on the page, type a number in the **Rows displayed** field, and click **Go**.

4 (Optional) Create or edit an indicator, manage data models, or manage ranges.

5 To change the sort order, click a column heading.

6 Scroll through the list.

For more information, see "Scroll Through a List" on page 21.

7 To view a data model, click the name of the data model.

For more information, see “Define a SAS Information Map Data Source” on page 34, “Define a Dashboard Library (SQL/JDBC) Data Source” on page 36, or “Define a Scorecard Data Source” on page 38.

8 To view a range, click the name of the range.

For more information, see “Define the Range” on page 44.

9 (Optional) Delete one or more indicators from the list.

For more information, see “Delete One or More Items in a List” on page 21.

10 To refresh the list, click **Refresh**.

# Create or Edit an Indicator

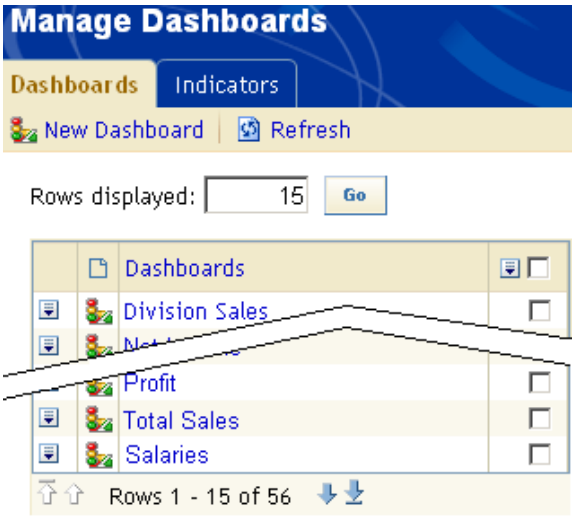
## Start to Create or Edit an Indicator

To start to create or edit an indicator from within the SAS BI Dashboard portlet:

1 In the portlet, click **Manage Dashboards**.

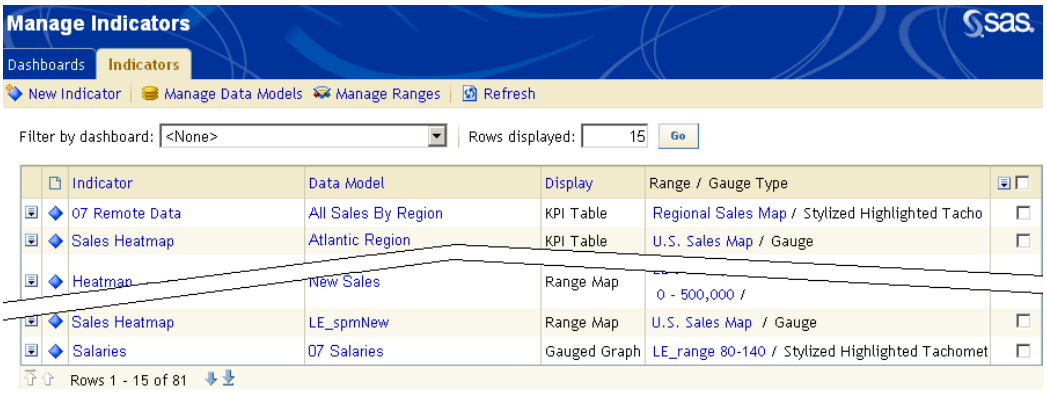
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

If you don’t have the access permission to manage indicators, the Manage Dashboards page appears.

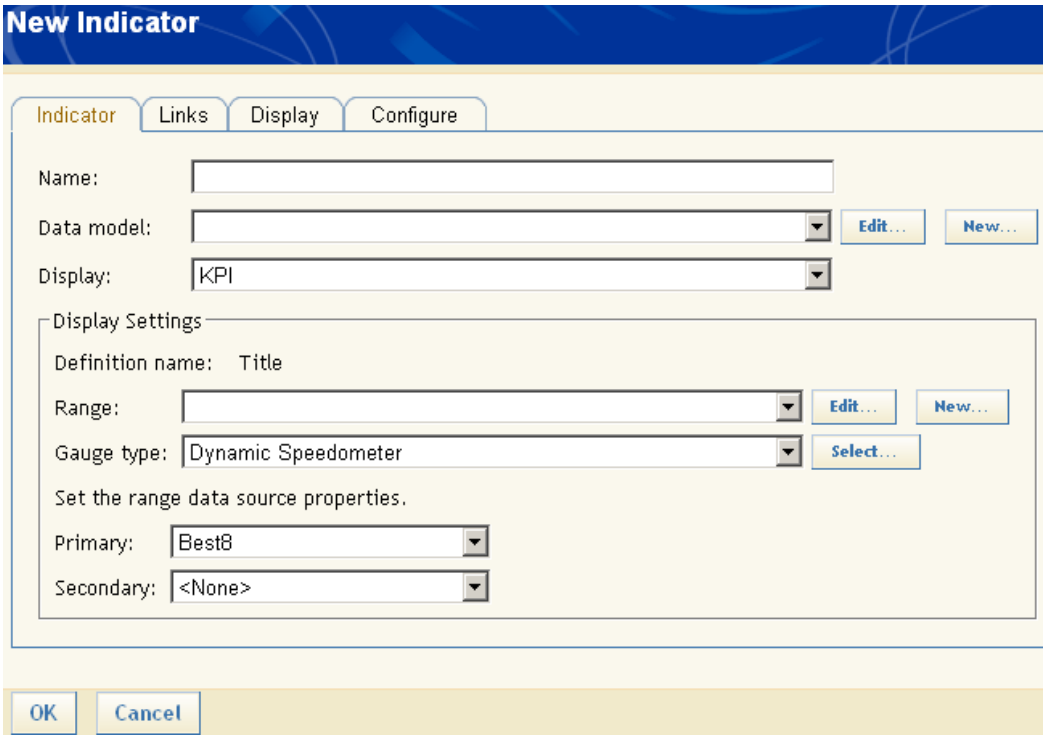



*Note:* If you don’t have the access permission to manage indicators, you cannot create or edit an indicator. If you need to create or edit an indicator, contact your SAS BI Dashboard system administrator. △

If you have the access permission to manage indicators, the Manage Indicators page appears.




2 To create an indicator, click **`New Indicator`** on the Manage Indicators page.
The New Indicator page appears.




3 To edit an indicator, click the name of the indicator.

There are four remaining steps to create or edit an indicator:

1 Define the indicator.
2 Define the links.
3 Define the display.
4 Configure the indicator.

## Define the Indicator

1 To specify the name of the indicator, type the name in the **`Name`** field.
2 To use an existing data model, select one from the **`Data model`** drop-down list.

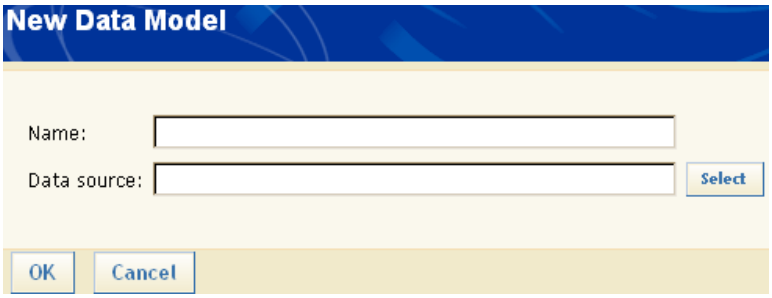
3 To edit the data model, click **Edit**.

For more information, see the following:

- "Define a SAS Information Map Data Source" on page 34
- "Define a Dashboard Library (SQL/JDBC) Data Source" on page 36
- "Define a Scorecard Data Source" on page 38

4 To create a data model:

a Click **New**.
The New Data Model page appears.




b Do one of the following:

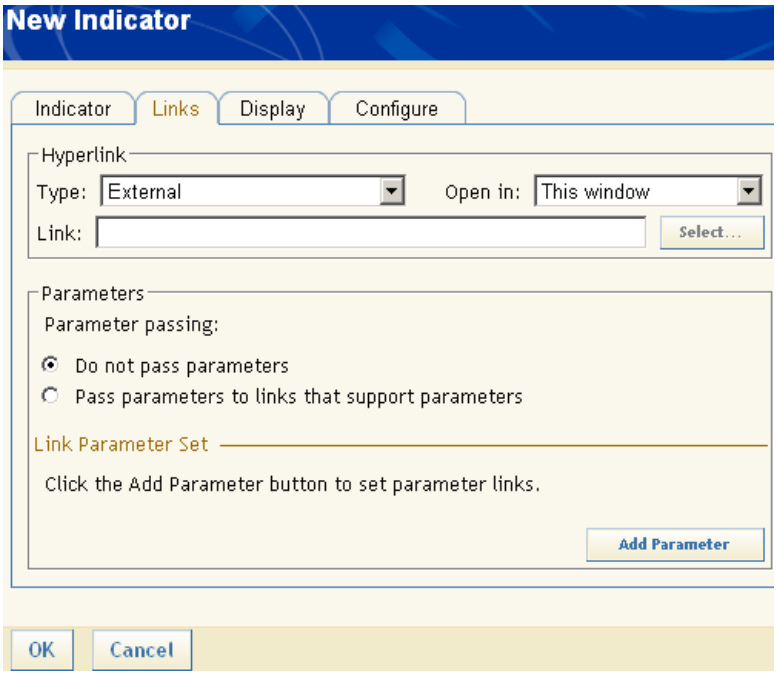
- Define a dashboard library (SQL/JDBC) data source. For more information, see "Define a Dashboard Library (SQL/JDBC) Data Source" on page 36.
- Define a SAS Information Map data source. For more information, see "Define a SAS Information Map Data Source" on page 34.
- Define a scorecard data source. For more information, see "Define a Scorecard Data Source" on page 38.

5 Do one of the following:

- Define a bar and trend display. For more information, see "Define a Bar and Trend Display" on page 55.
- Define a gauged graph display. For more information, see "Define a Gauged Graph Display" on page 53.
- Define a graph display. For more information, see "Define a Graph Display" on page 57.
- Define a range map display. For more information, see "Define a Range Map Display" on page 58.
- Define a KPI display. For more information, see "Define a KPI Display" on page 52.
- Define a KPI table display. For more information, see "Define a KPI Table Display" on page 60.

## Define the Links

1 Click the **Links** tab.




2 From the **Type** drop-down list, select the type of link.

3 From the **Open in** drop-down list, select a window in which to open the link target.

4 If you selected an external link, type the URL of the link in the **Link** field.

5 If you selected a type other than an external link, click **Select** next to the **Link** field and select an item.

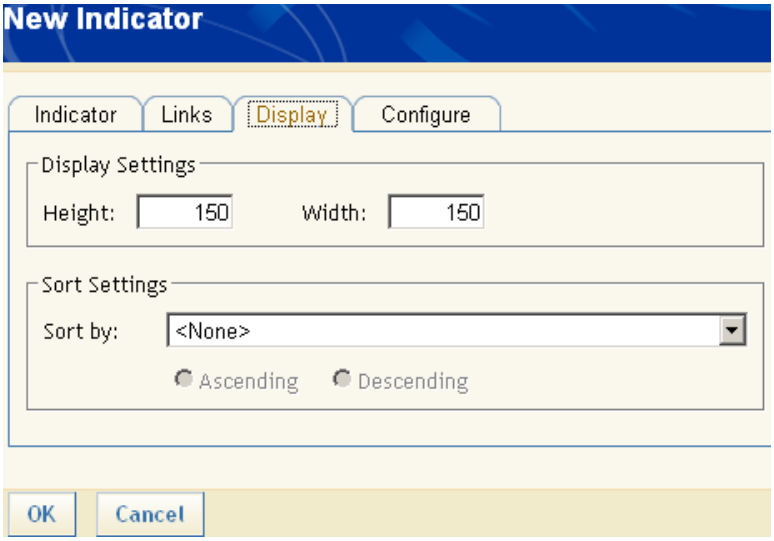
   The available choices depend on the type of link.

6 (Optional) To specify the parameters for a URL specified in the **Link** field that supports parameters:

   a Select **Pass parameters to links that support parameters**.
   b Click **Add Parameter**.
      The name and data point lookup controls appear.
   c Type the name of the parameter, and then select the data point lookup associated with the parameter.
   d Add as many parameters as needed.
   e To delete a parameter, click next to the parameter.

## Define the Display

1 Click the **Display** tab.

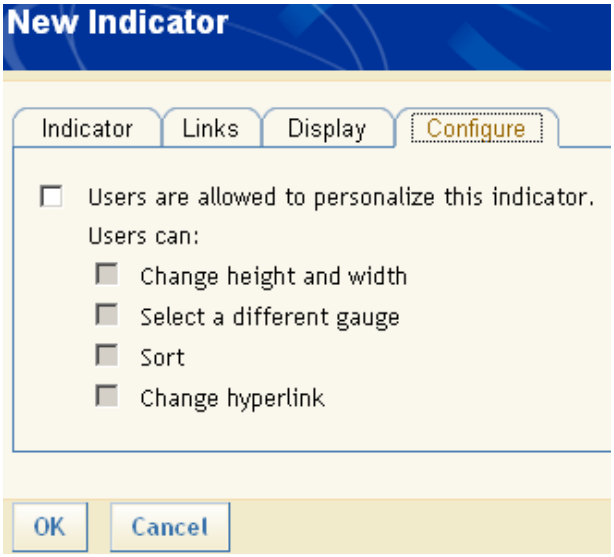



2 Type the height and width of the indicator.

3 Select the value to sort on and the sort method.

## Configure the Indicator

1 Click the **`Configure`** tab.




2 Choose whether to allow users to personalize the indicator and then which aspects that can be personalized.

See also
"Personalize an Indicator" on page 62

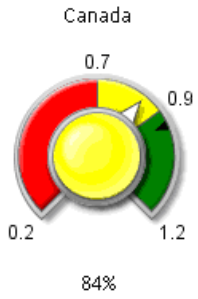
# Indicator Displays

## KPI Display

### Overview

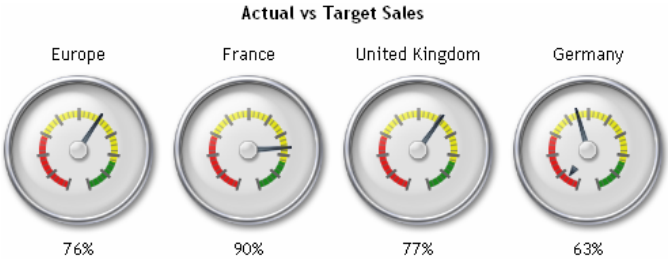
The KPI display shows a single KPI or multiple KPIs. For a single KPI, the display shows the KPI associated with a single data value.

Here is an example of a single KPI display:




For multiple KPIs, the display shows one KPI for each data point that is in scope. For the best results, aggregate related KPIs through a single data model so that a single indicator configuration controls the display of all values.

Here is an example of a multiple KPI display:

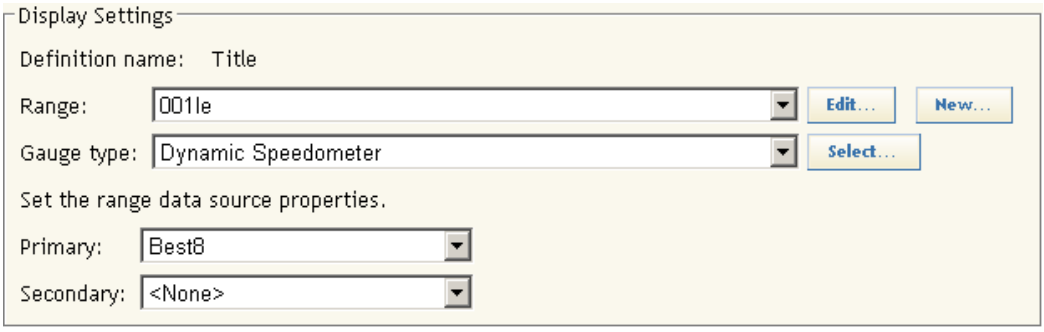



### Define a KPI Display

You define a KPI display when you create or edit an indicator. For more information, see “Create or Edit an Indicator” on page 47.

1 From the **Display** drop-down list on the New Indicator page or the Indicator Properties page, select **KPI**.

The controls to define a KPI display appear.



2 To use an existing range, select a range from the **Range** drop-down list.

3 To create or edit a range, click **New** or **Edit**.

For more information, see “Define the Range” on page 44.

4 From the **Gauge type** drop-down list, select a type of gauge.

You can also click **Select** to view the gauges graphically. For more information, see “Select a Gauge for an Indicator” on page 62.

5 Select the primary range data source property.

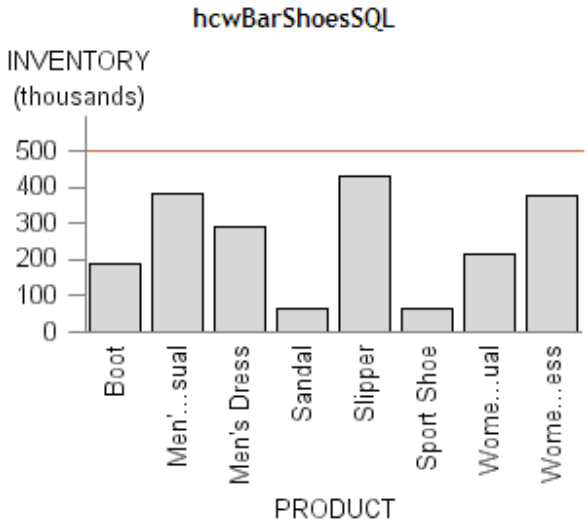
6 Select the secondary range data source property, if the gauge supports it.

# Gauged Graph Display

## Overview

The gauged graph display applies a range to a standard graph display such as bar graph or line graph. For the best results, the data model should return only one value for each unique value in the **Get name from** data column, thereby avoiding aggregation of the data. The category variable is specified by the data column selected for the **Get name from** field when the data source was defined.

Here is an example of a gauged graph display:




If the gauged graph display does aggregate data, the gauged graph displays data points at the average interval for each data series. The indexes of the aggregated intervals are averaged to determine the interval to display and the color of the bar.

Here are some guidelines for using the gauged graph display:

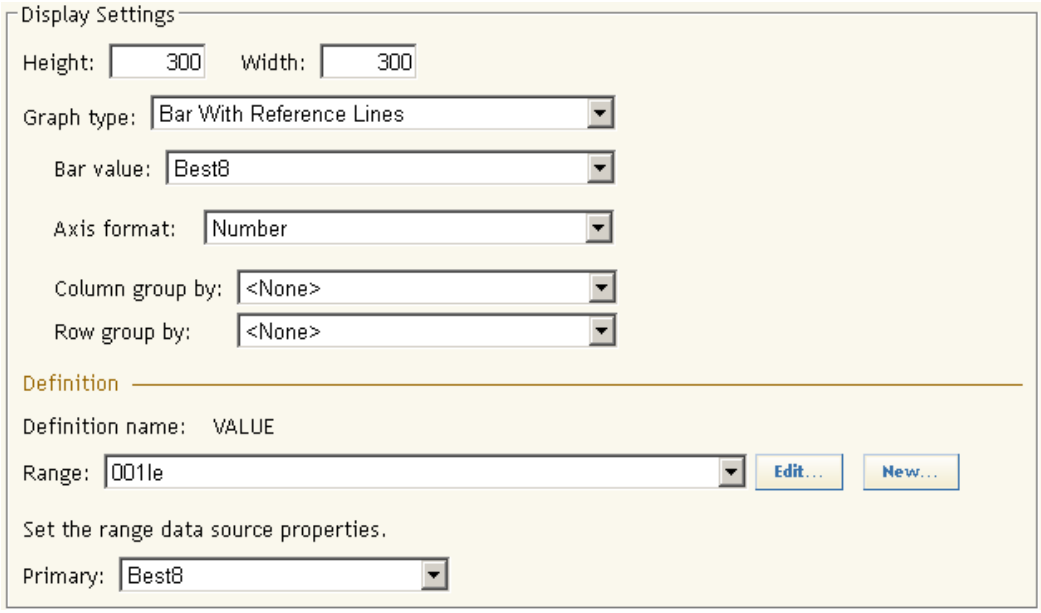
- To display the average interval in a graph, the gauged graph is the easiest method to use.
- The tooltip for each data series indicates that the displayed value is the average interval.
- To prevent aggregation by the gauged graph display, aggregate the data at the data model level.

## Define a Gauged Graph Display

You define a gauged graph display when you create or edit an indicator. For more information, see “Create or Edit an Indicator” on page 47.

1 From the **Display** drop-down list on the New Indicator page or the Indicator Properties page, select **Gauged Graph**.

The controls to define a gauged graph display appear.




2 Type the height and width of the graph area.

3 From the **Graph type** drop-down list, select a type of graph, and then select values to be represented by the graph.

The types of values depend on the type of graph.

4 Select how to display each axis.

The number of axes depends on the type of graph.

5 Select values for the grouping of the columns and rows.

6 To use an existing range, select a range from the **Range** drop-down list.

7 To create or edit a range, click **New** or **Edit**.

For more information, see “Define the Range” on page 44.

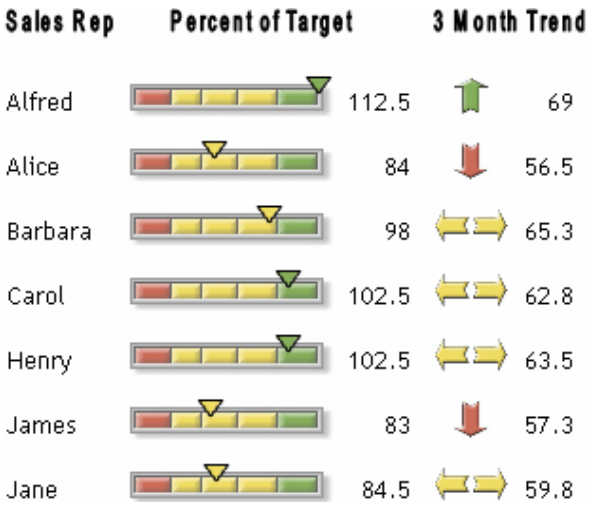
8 Select the primary range data source property.

# Bar and Trend Display

## Overview

The bar and trend display shows two sets of gauges and their corresponding values. The first column displays the name of the data field. The second column displays the first gauge (which is based on the primary and secondary values) and its corresponding value. The third column displays the second gauge (which is based on the primary trend) and its corresponding value.

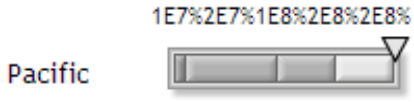
Here is an example of a bar and trend display:




Although you could choose any two data series to represent the value and trend, this display is designed to display a value and a precalculated trend value. To produce the best visual representation possible, follow these guidelines:

- The gauge in the second column is best displayed as a bullet or slider. A bullet or a slider gauge also enables you to specify a secondary value.
- The gauge in the third column is best displayed as a static indicator that does not occupy much space, such as an arrow.
- By default, the range intervals are displayed for a dynamic gauge. If the gauge is too narrow, the text of the range intervals can overlap and become illegible. Clear the option **`Display range intervals`** when you select the gauge. For more information, see "Select a Gauge for an Indicator" on page 62.

  Displaying the range interval also displays a common scale above the bar column. For large numbers, this text can also become illegible. Here is an example:



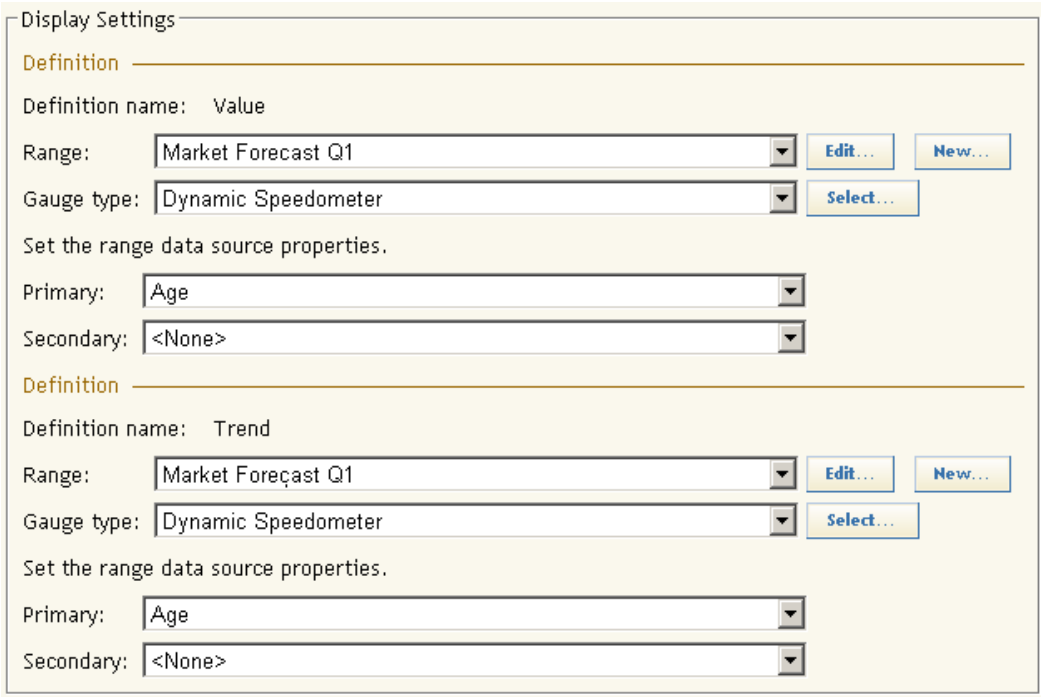

- By default, gray scale ghosting is selected for a dynamic gauge. Gray scale ghosting displays only the color that the primary pointer is pointing to (the active color). Inactive colors appear as shades of gray. To display all colors, clear the option **`Ghost`** when you select the gauge.
- By default, the height for both of the gauges is 30 pixels. The width of the bar value is equal to the width of the gauge (the default width is 120 pixels and the height is 30 pixels). The trend gauge and value are both set to 40 pixels wide and 30 pixels high, neither of which can be changed.

## Define a Bar and Trend Display

You define a bar and trend display when you create or edit an indicator. For more information, see "Create or Edit an Indicator" on page 47.

1 From the **`Display`** drop-down list on the New Indicator page or the Indicator Properties page, select **`Bar and Trend`**.

  The controls to define a bar and trend display appear.




2 Repeat these steps for each definition:

   a To use an existing range, select a range from the **Range** drop-down list.
   b To create or edit a range, click **New** or **Edit**.
      For more information, see "Define the Range" on page 44.
   c From the **Gauge type** drop-down list, select a type of gauge.
   d Select the primary range data source property.
   e Select the secondary range data source property, if the gauge supports it.

# Graph Display

## Overview

The graph display presents information from a variety of sources. The visual representation can be presented in a variety of ways such as images and HTML pages. The output of the graph display is specified by an external URL. The visual representation is not derived from the data in the data model.

## Stored Processes

You can use a stored process with a graph display to produce a graphical display that is not possible with the SAS BI Dashboard itself. To use a stored process, you must create a stored process that is appropriate for inclusion in a dashboard and then derive the URL that renders the stored process output.

Use these guidelines to create a stored process:

- The output for the stored process must be set to streaming.
- The output should be small in size, perhaps no more than 300 X 300 pixels.

  Conserving space is a dashboard is important so that dashboard users can get a broad overview of disparate metrics. Although a stored process that renders a graph might look good when it uses most of the window, the graph will displace all

other information in the dashboard. If you cannot communicate the data in a small amount of space and users need to see other data in the same dashboard, consider using aggregation or another technique to reduce the amount of data that the stored process renders.

Consider modifying the stored process in SAS Enterprise Guide to suppress the title and footnotes, and use the minimal template for output.

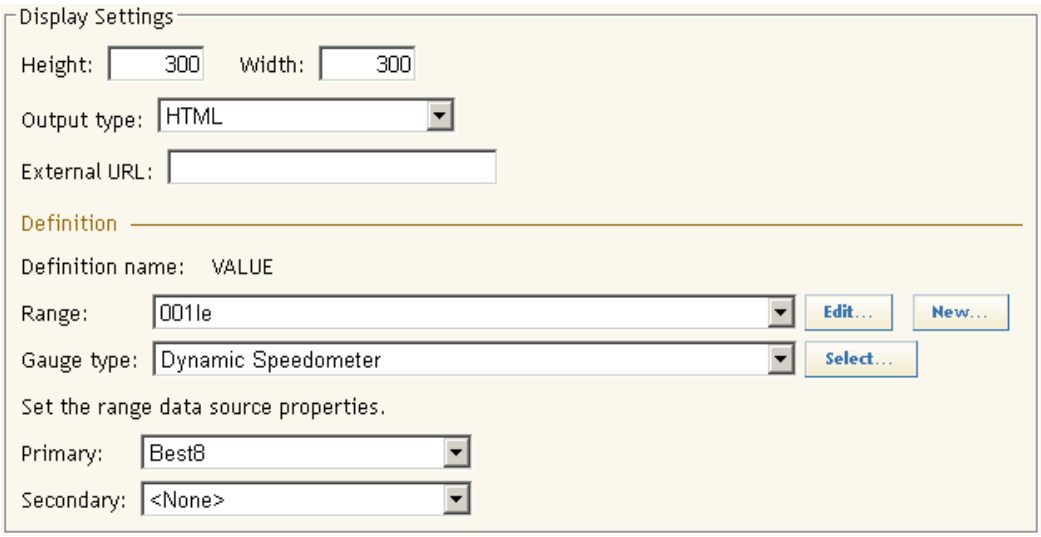
To determine the URL for a stored process, use the SAS Stored Process Web Application.

### Define a Graph Display

You define a graph display when you create or edit an indicator. For more information, see "Create or Edit an Indicator" on page 47.

1 From the **Display** drop-down list on the New Indicator page or the Indicator Properties page, select **Graph**.

The controls to define a graph display appear.




2 Type the height and width of the graph area.

3 From the **Output type** drop-down list, select how to represent the indicator.

4 Type the external URL to associate with the indicator.

This URL can be a Web site (with **HTML** selected for the **Output type**), an image on a Web page (with **Image** selected for the **Output type**), or a stored process (with **HTML** selected for the **Output type**).

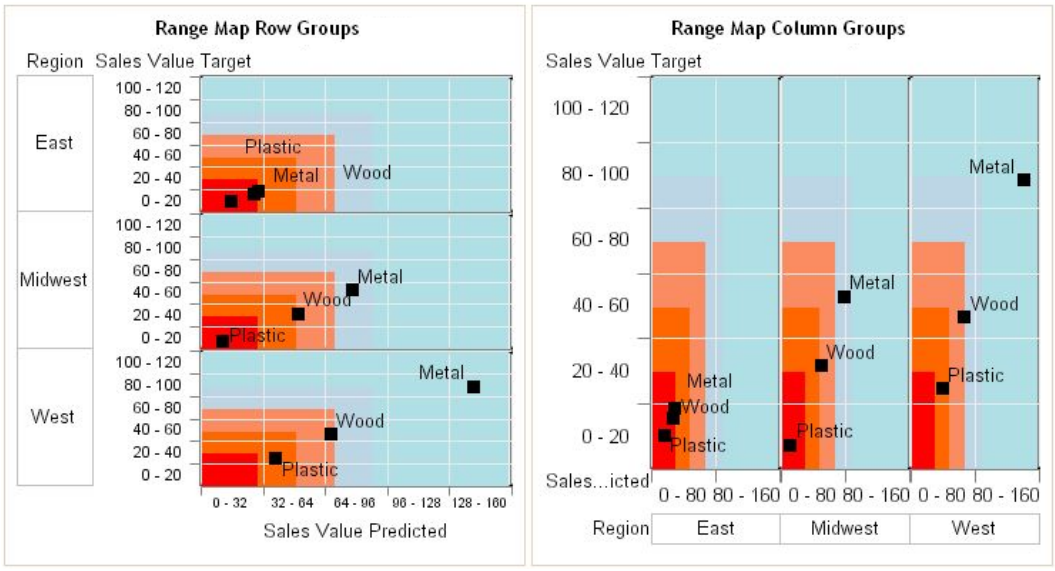
*Note:* If you are familiar with HTML elements, when the **Output type** is set to **HTML**, the URL can be any value that is valid for the **src** attribute of the **<iframe>** HTML element. When the **Output type** is set to **Image**, the URL can be any value that is valid for the **src** attribute of the **<img>** HTML element. △

## Range Map Display

### Overview

The range map display shows graphs with results plotted on color-coded backgrounds that are based on range definitions.

Here are two examples of the range map display:



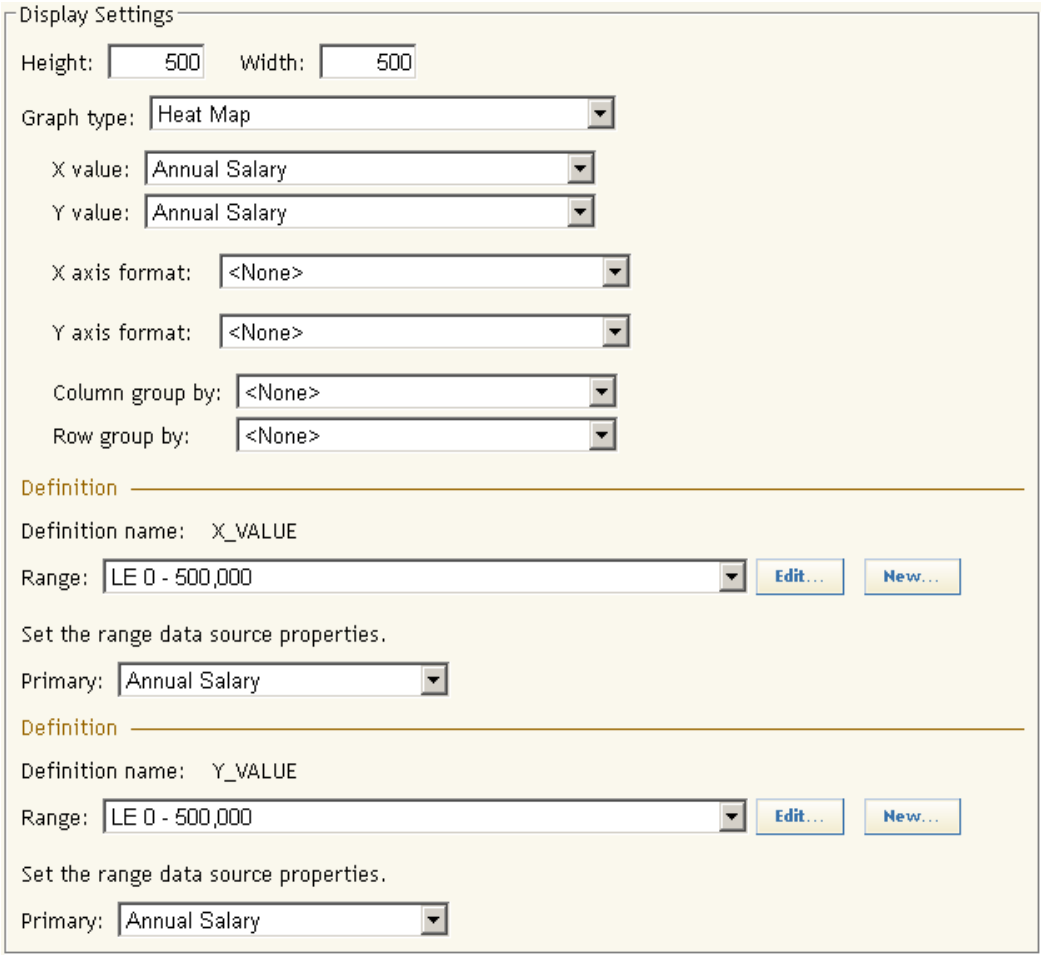

The display on the left is grouped by row. The display on the right is grouped by column.

## Define a Range Map Display

You define a range map display when you create or edit an indicator. For more information, see “Create or Edit an Indicator” on page 47.

1 From the **Display** drop-down list on the New Indicator page or the Indicator Properties page, select **Range Map**.

The controls to define a range map display appear.




2 Type the height and width of the graph area.

3 From the **Graph type** drop-down list, select a type of graph, and then select values to be represented by the graph.

The types of values depend on the type of graph.

4 Select how to display each axis.

The number of axes depend on the type of graph.

5 Select values for the grouping of the columns and rows.

6 Repeat these steps for each definition:

a To use an existing range, select a range from the **Range** drop-down list.

b To create or edit a range, click **New** or **Edit**.

For more information, see “Define the Range” on page 44.

c Select the primary range data source property.

# KPI Table Display

## Overview

The KPI table display shows data points in a table form, with one gauge per table row. The table column headings are the names of the data fields.

Here is an example of a KPI table display:

Regional Sales KPIs

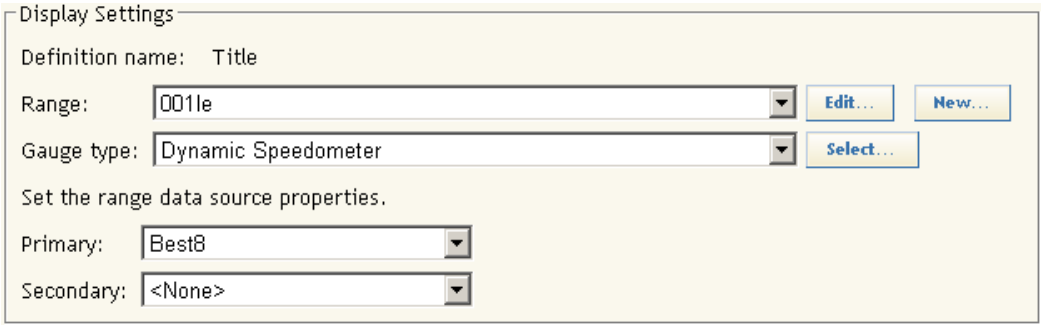
| Location | Performance | Actual | Target |
|---|---|---|---|
| Europe | 80% | 16% | 20% |
| France | 90% | 18% | 20% |
| United Kingdom | 77% | 10% | 13% |
| Germany | 63% | 19% | 30% |

## Define a KPI Table Display

You define a KPI table display when you create or edit an indicator. For more information, see “Create or Edit an Indicator” on page 47.

1 From the **Display** drop-down list on the New Indicator page or the Indicator Properties page, select **KPI Table**.

The controls to define a KPI table display appear.




2 To use an existing range, select a range from the **Range** drop-down list.

3 To create or edit a range, click **New** or **Edit**.

For more information, see “Define the Range” on page 44.

4 From the **Gauge type** drop-down list, select a type of gauge.

You can also click **Select** to view the gauges graphically. For more information, see “Select a Gauge for an Indicator” on page 62.

5 Select the primary range data source property.

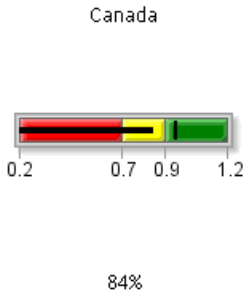
6 Select the secondary range data source property, if the gauge supports it.

# Dynamic Gauges

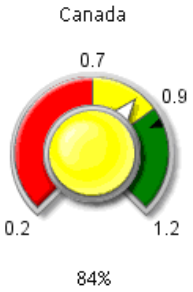
In addition to the static gauges that are displayed in the software, you can choose a gauge that is dynamic. A *dynamic gauge* is drawn by the software based on the type of gauge and the data values in the gauge.

Here are examples of the dynamic gauges:

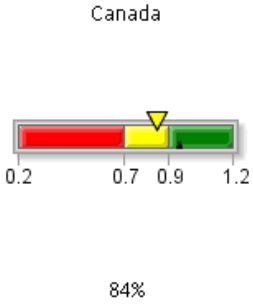
- Dynamic bullet bar




- Dynamic dial meter

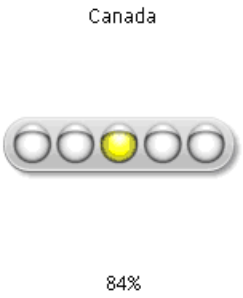



- Dynamic slider




- Dynamic speedometer

□ Dynamic stoplight




## Select a Gauge for an Indicator

You select a gauge for an indicator when you create or edit an indicator or when you personalize an indicator. For more information, see “Create or Edit an Indicator” on page 47 or “Personalize an Indicator” on page 63.

To select a gauge for an indicator:

1 On the Select Gauge page, select a category.

2 If you selected **Dynamic Gauges**, follow these steps:

a From the **Type** drop-down list, select a type of dynamic gauge.
b To create a three-dimensional effect, select **Enhanced (3D)**.
c To display range intervals (tick marks) on the gauge, select **Display range intervals**, and then select the format from the **Format range intervals** drop-down list.
d To specify the dimensions of the gauge, type values for the height and width.
e Select how to orient the gauge: **Flip horizontal** (around the vertical axis) or **Flip vertical** (around the horizontal axis).
f To change the colors in the image to create a ghost effect, select **Ghost** and a method.

These are the methods:

| | |
|---|---|
| **Grayscale** | The selected interval is a darker gray than the other intervals. |
| **Inactive color** | The areas that are not pointed to are a specific color. To select the color, click . |
| **Auto ghost** | The software determines how to best create the ghost colors for the intervals.<br><br>To limit how far away from gray or a neutral color of equal intensity the image varies, type a value in the **Decrease saturation by (%)** field.<br><br>To brighten the image, type a value in the **Brighten by (%)** field. |

3 If you selected something other than **Dynamic Gauges**, click the name of the image that you want to use for the gauge from the **Gauge** table.

# Personalize an Indicator

You can personalize some aspects of an indicator to suit your needs. These changes affect only your view of the indicator, not other users' views.

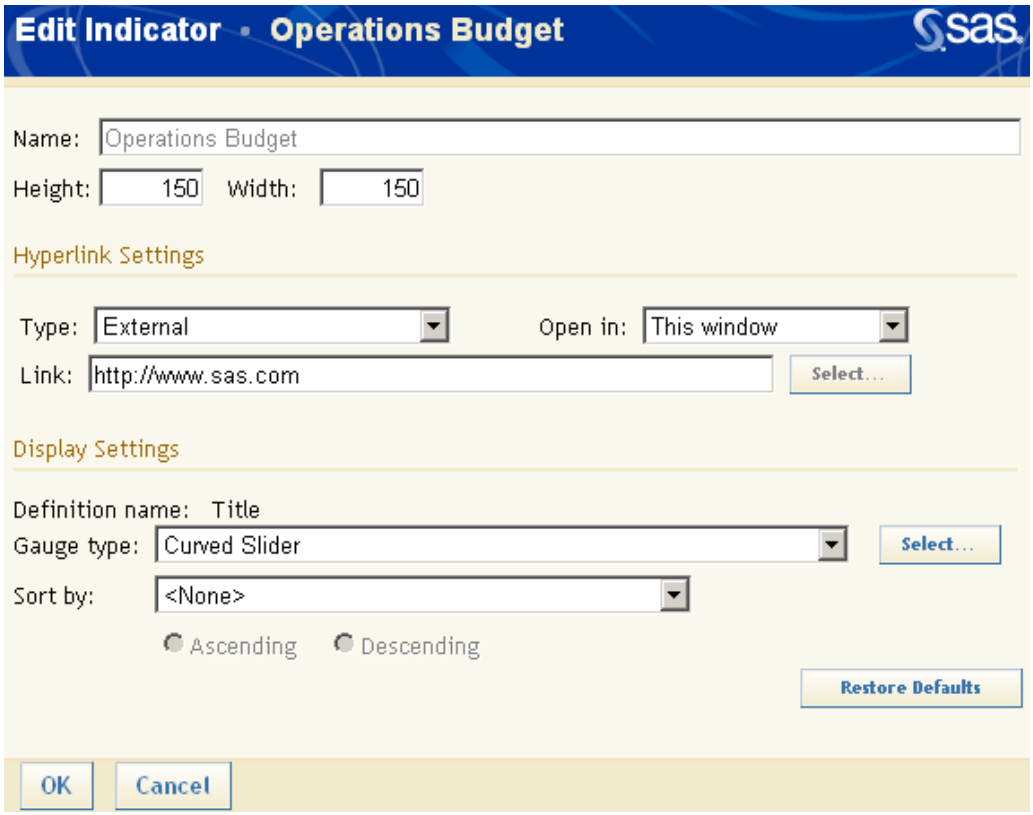
*Note:* You can personalize an indicator only when it has been set to allow personalization. Further, the following aspects appear only when they have been set to allow personalization: height and width, link settings, gauge type, and sorting method. For more information, see "Configure the Indicator" on page 51. △

To personalize an indicator:

1 In the portal, if the indicators do not have borders around them, move the mouse over an indicator.

2 Click in the lower right corner of the border around the indicator.

The Edit Indicator page appears.




3 To change the dimensions, type values for the height and width.

4 To change the link settings:

a From the **Type** drop-down list, select the type of link.
b From the **Open in** drop-down list, select a window in which to open the link target.
c If you selected an external link, type the URL of the link in the **Link** field.
d If you selected a type other than an external link, click **Select** next to the **Link** field and select the URL.

The available choices depend on the type of link.

5 To change the display settings:

   a From the **Gauge type** drop-down list, select a type of gauge.
   You can also click **Select** to view the gauges graphically. For more information, see “Select a Gauge for an Indicator” on page 62.
   b From the **Sort by** drop-down list, select a value to sort on, and then select the sort method.

6 To restore all settings to their states as defined for the indicator, click **Restore Defaults**.

See also
“Create or Edit an Indicator” on page 47

CHAPTER

# 6

# Dashboards

*Manage Dashboards* **65**
*Create or Edit a Dashboard* **66**
*Personalize a Dashboard* **68**
*Controlling the Appearance of a Dashboard* **69**

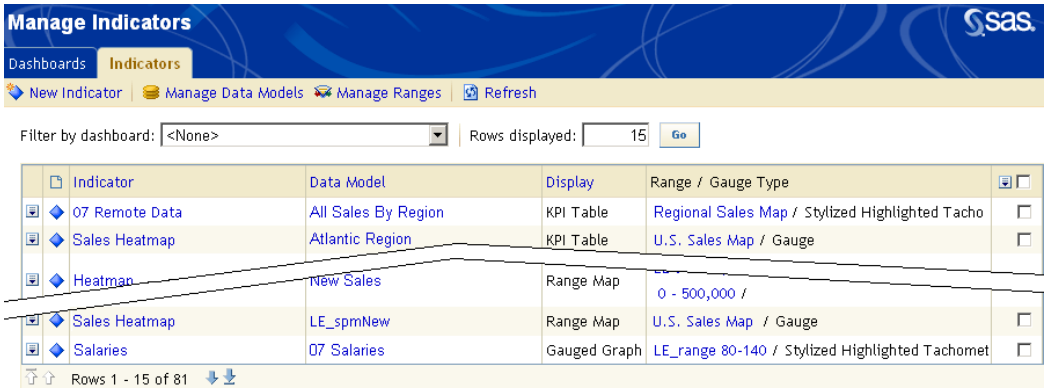
## Manage Dashboards

To manage the dashboards:

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

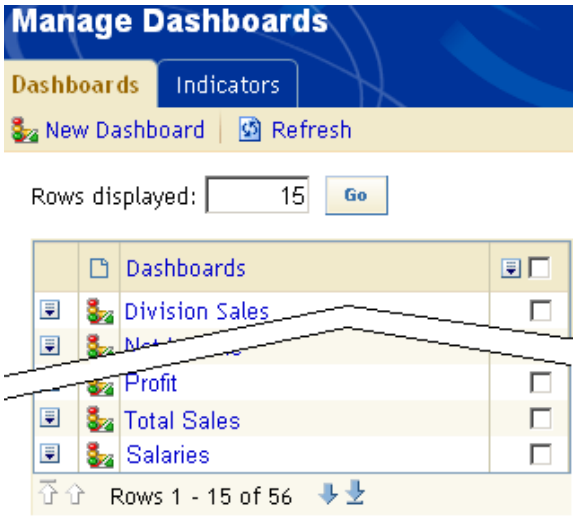
*Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

The Manage Indicators page appears.




2 Click the **Dashboards** tab.

The Manage Dashboards page appears.




3 To specify the number of rows to display on the page, type a number in the **Rows displayed** field, and click **Go**.
4 (Optional) Create or edit a dashboard .
5 Scroll through the list.

   For more information, see "Scroll Through a List" on page 21.
6 To change the sort order, click **Dashboards** in the column heading.
7 (Optional) Delete one or more dashboards from the list.

   For more information, see "Delete One or More Items in a List" on page 21.
8 To refresh the list, click **Refresh**.

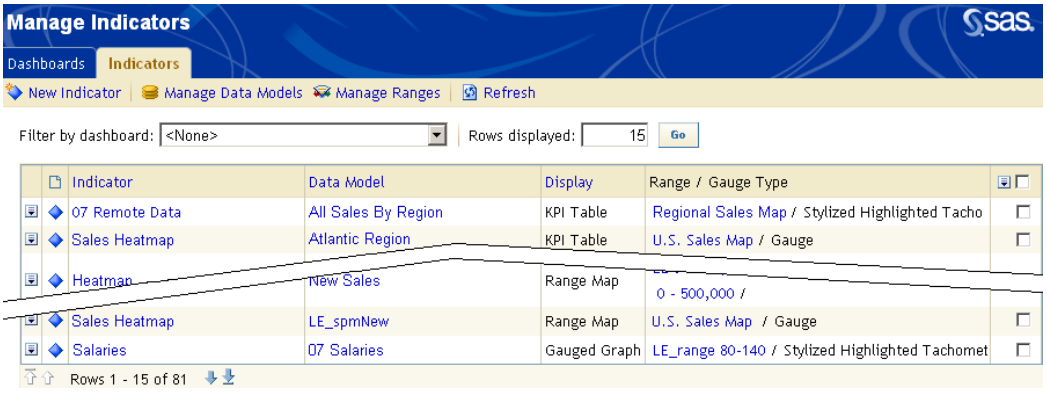
# Create or Edit a Dashboard

When you edit a dashboard you change it for all users.
To create or edit a dashboard:

1 In the SAS BI Dashboard portlet, click **Manage Dashboards**.

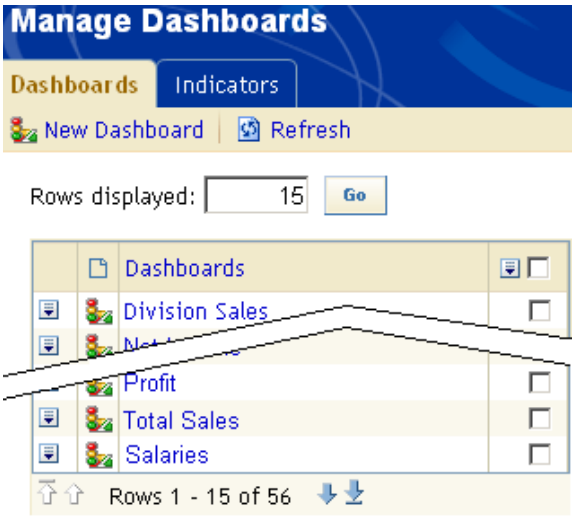
   *Note:* If you do not see **Manage Dashboards**, then you do not have access permission to manage dashboards. If you need to manage dashboards, contact your SAS BI Dashboard system administrator. △

   The Manage Indicators page appears.



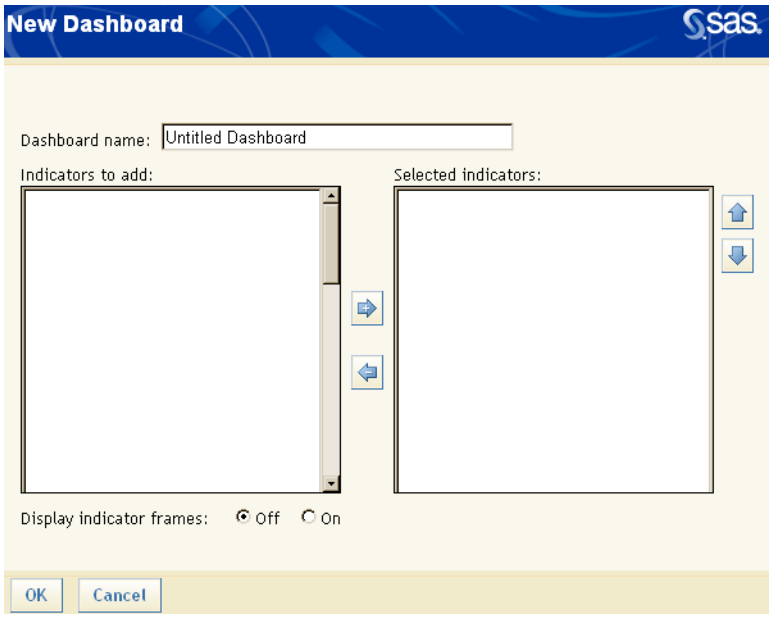
2 Click the **Dashboards** tab.

The Manage Dashboards page appears.




3 To create a new dashboard, click **New Dashboard**.

The New Dashboard page appears.




4 To edit a dashboard, click the name of the dashboard.

The Dashboard Properties page appears.

5 To specify the name of the dashboard, type the name in the **Dashboard name** field.

6 Move indicators between the **Available indicators** list and the **Selected indicators** list by clicking the arrows between the lists.

You can select more than one indicator.

7 To change the order of the indicators in the SAS BI Dashboard portlet, select one or more indicators in the **Selected indicators** list, and click the up and down arrows that are next to the list.

8 To specify whether borders appear around the indicators, select **Off** or **On** next to **Display indicator borders**.

See also
"Personalize a Dashboard" on page 68

# Personalize a Dashboard

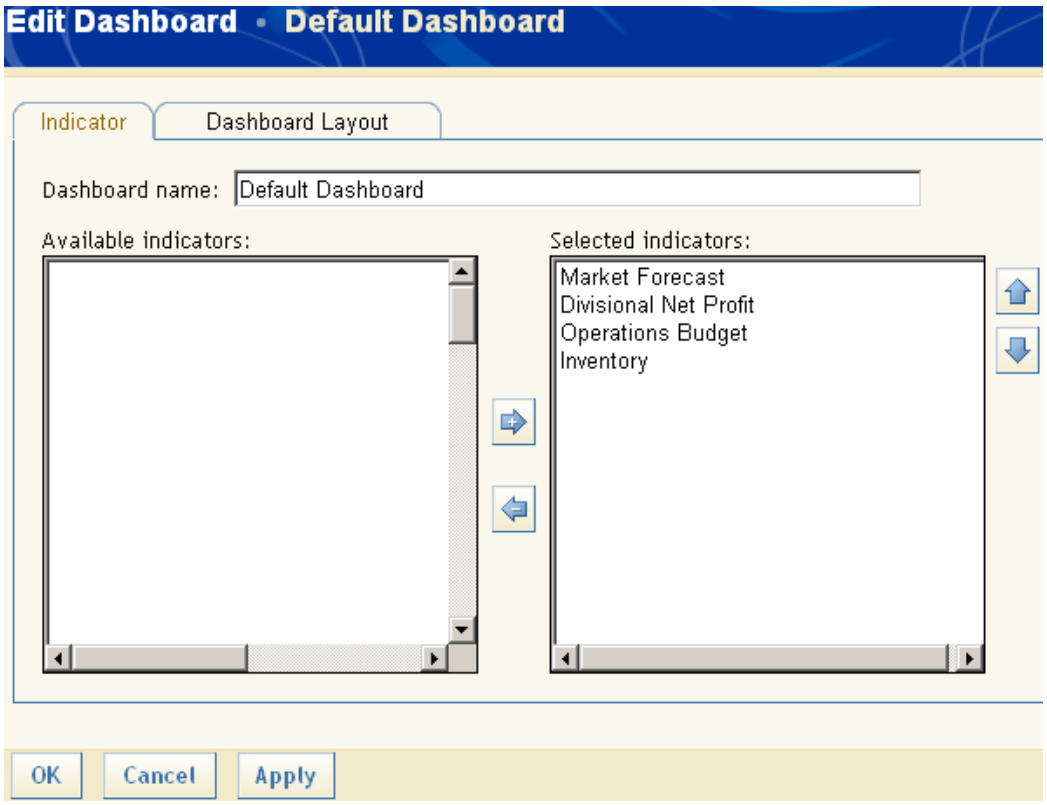
You can personalize some aspects of a dashboard to suit your needs. These changes affect only your view of the dashboard, not other users' views.

To personalize a dashboard:

1 In the SAS BI Dashboard portlet, click .

*Note:* If you do not see , then you do not have access permission to personalize dashboards. Contact your SAS BI Dashboard system administrator. △

The Edit Dashboard page appears. The **Indicator** tab is selected by default.



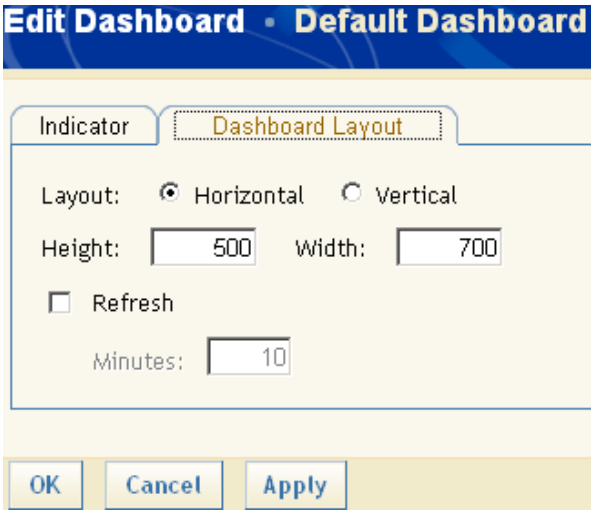

2 To rename the dashboard, type a name in the **Dashboard name** field.

3 To change which indicators are displayed in the dashboard, move indicators between the **Available indicators** list and the **Selected indicators** list by clicking the arrows between the lists.

You can select more than one indicator.

4 To change the order of the indicators in the SAS BI Dashboard portlet, select one or more indicators in the **Selected indicator** list, and click the up and down arrows that are next to the list.

5 Click the **Dashboard Layout** tab.




6 To change the orientation of the indicators in the dashboard, select **Horizontal** or **Vertical**.

7 To change the dimensions of the area that contains the indicators, type values for the height and width.

8 To automatically refresh the indicators, select **Refresh**, and type how often to refresh in the **Minutes** field.

See also
"Create or Edit a Dashboard" on page 66

# Controlling the Appearance of a Dashboard

When SAS BI Dashboard draws the indicators within a dashboard, the indicators are wrapped into rows based on the width specified for the individual indicators. For example, if a dashboard has ten indicators with a width of 180 pixels each, the total required width for the dashboard portlet is 1800 pixels. If the dashboard portlet is only 1000 pixels wide, then two rows of indicators appear. If the first indicator is 900 pixels wide, then three rows of indicators appear.

The dashboard portlet width is specified when you personalize a dashboard. For more information, see "Personalize a Dashboard" on page 68.

The indicator width is specified when you define the display for an indicator. For more information, see "Define the Display" on page 50.

There are two more sizing factors that affect the display of a dashboard. All of these factors interact in different ways to determine how a dashboard is laid out. All of the factors are described in this table:

| Factor | Where to Specify the Values | Purpose | Is It Ignored? |
|---|---|---|---|
| Dashboard portlet dimensions | The dimensions are specified when you personalize a dashboard. For more information, see "Personalize a Dashboard" on page 68. | This factor specifies the dimensions of the dashboard portlet. | Never ignored. If the content is larger than the portlet's dimensions, scroll bars appear. |
| Indicator dimensions | The dimensions are specified when you define the display for an indicator. For more information, see "Define the Display" on page 50. | This factor specifies the *preferred* dimensions of the indicator. | The width is ignored when a graph display type specifies the **`Output type`** as **`Image`** or a gauge width is larger.<br>For example, if a KPI display contains more than one gauge, the gauges are wrapped into rows according to the width of the indicator. The height is ignored. |
| Graph display, gauged graph display, and range map display dimensions | The dimensions are specified when you define the indicator display. For more information, see "Define a Gauged Graph Display" on page 53, "Define a Graph Display" on page 57, and "Define a Range Map Display" on page 58. | This factor specifies the dimensions of a graph inside of an indicator. | Never ignored. If a graph display type specifies the **`Output type`** as **`HTML`** and there is more content than the dimensions allow, scrollbars appear. |
| Dynamic gauge dimensions | The dimensions are specified when you select a gauge for an indicator. For more information, see "Select a Gauge for an Indicator" on page 62 | This factor specifies the dimensions of a dynamic gauge. A dynamic gauge grows to fill the space as long as the gauge image scaling remains 1:1. The gauge is always centered in the available space.<br>For example, a dynamic gauge that is 100x200 does not grow, and whitespace is added around the gauge, until the dimensions are at least 200x400. | Never ignored. |

Based on these factors and how they control the appearance of a dashboard, here are some guidelines that are important to good dashboard layout:

- With a dynamic gauge, you can use disproportionate dimensions to create extra white space around a gauge.
- A single KPI display that contains multiple gauges will manage the horizontal alignment correctly. But if there are several different indicators, each with just one dynamic gauge, then you might need to manipulate the heights of the various dynamic gauges to correctly align the indicators.

  This problem often occurs when the title of one indicator has two lines of text and the adjacent indicators have only one line of text. The extra line of text causes the indicator to be positioned farther down the page than the rest of the indicators in the row. By setting the height for that one indicator to less than the heights of the others, you can get the whole dashboard properly aligned.
- An indicator width that is less than the dynamic gauge width or graph width causes scroll bars to appear in the dashboard portlet. If you want everything to wrap nicely, ensure that the indicator width is larger than the dynamic gauge width or the graph width.
- Use the width of an indicator to create extra whitespace to the left and the right of a graph.

  For example, a graph 400 pixels wide within an indicator 500 pixels wide provides 50 pixels to the left and right of the graph.
- To vertically align several graphs, specify the same width for all of the indicators in the column.

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# Your Turn

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