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SAS[®] BI Dashboard 4.4

User's Guide

Second Edition

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Part 1

Introduction to SAS BI Dashboard

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Chapter 1

About SAS BI Dashboard

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What is SAS BI Dashboard?

SAS BI Dashboard enables users to use dashboards to monitor key performance indicators that convey how well an organization is performing. Dashboards can 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.

SAS BI Dashboard Users

SAS BI Dashboard serves the following users:

- The dashboard designers that are technical users of SAS BI Dashboard.
- The business users that use the views created by the designers in SAS BI Dashboard.

Note: SAS BI Dashboard also requires administrators to set up and maintain the product. See the *SAS BI Dashboard System Administration Guide*.

Benefits of Using SAS BI Dashboard

Benefits for Dashboard Designers

SAS BI Dashboard provides the following benefits to dashboard designers:

- Dashboards are easy to design and build. Drag-and-drop capabilities make the process quick also.
- Dashboards are easy to customize. The following features are simple to customize by using the dashboard designer:
 - interactions
 - alerts
 - zoom
 - links
- Dashboards can use a wide variety of data sources:
 - SAS Information Maps
 - SAS Stored Processes
 - SQL query
 - tables
- Indicators are simple to align and resize.
- Dashboards can be designed to make it easier for business users to visualize and interpret data.

Benefits for Business Users

SAS BI Dashboard provides the following benefits to business users:

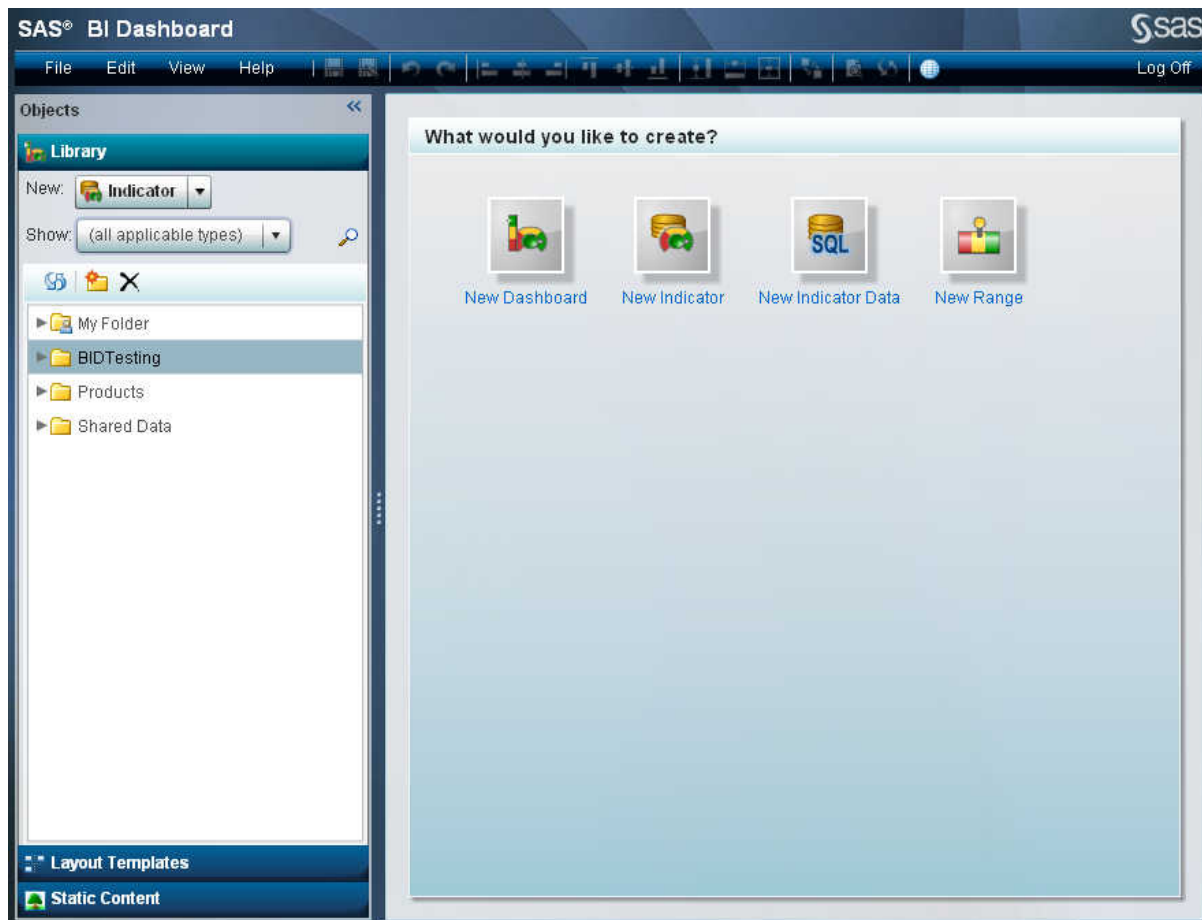
- Collaboration and information sharing are easy. The commenting feature for indicators enables quick communication.
- The alerting feature makes it easy for business users to monitor key performance areas and to be proactively notified of conditions that require follow-up.
- Frequently viewed indicators and dashboards are easy to retrieve by using the favorites feature.
- Details can be viewed up close by using the zoom feature. Zooming maximizes screen space by enlarging indicators.
- Data can be viewed in multiple ways without rebuilding the indicator or dashboard. The interactions and prompts features provide this support.
- Tasks can be completed with a minimum number of clicks. Prompt selections in dashboards now provide additional information that enables users to decide what item to click in the user interface before they actually click. This information includes KPI gauges and range colors that appear for each selection.

SAS BI Dashboard Features

SAS BI Dashboard Designer

The SAS BI Dashboard designer, version 4.3 or later, provides a new, interactive, and intuitive interface. Now you can drag and drop objects onto the dashboard that you are designing. You can also resize indicators by using your mouse. New features assist you in laying out dashboard content precisely. The designer now provides a real-time, what-you-see-is-what-you-get view of the dashboard while you are designing it. The dashboard designer also now provides many more indicator types to use in a dashboard, as well as new graph styles to enhance the appearance of indicators.

Figure 1.1 SAS BI Dashboard Designer



By using the dashboard designer, designers can create and design dashboards that consist of one or more indicators. For information about designing dashboards, see “Part 3. Designing Dashboards.”

SAS BI Dashboard Viewer

By creating dashboards, designers provide data to their business users. Business users can view these dashboards in the SAS BI Dashboard viewer.

The SAS BI Dashboard viewer, version 4.3 or later, provides new features for bookmarking favorite dashboards and indicators, sharing comments with other business users about indicators in a dashboard, creating personalized alerts, and viewing data in a more interactive way.

It is easy to move between the dashboard designer and the new dashboard viewer. Designers can create a new dashboard, effortlessly view it in the dashboard viewer, and then quickly return to the dashboard designer again. Or, designers can use the Preview feature and view the dashboard and most of its features without leaving the dashboard designer at all.

Figure 1.2 SAS BI Dashboard Viewer



For information about viewing dashboards, see “Part 2. Viewing Dashboards.”

SAS BI Dashboard Portlet

SAS BI Dashboard continues to provide a portlet for viewing dashboards in the SAS Information Delivery Portal.

Figure 1.3 SAS BI Dashboard Portlet



For information about viewing dashboards, see “Part 2. Viewing Dashboards.”

Accessing Help and Documentation for SAS BI Dashboard


SAS BI Dashboard provides the following types of documentation:

SAS BI Dashboard: User's Guide

This document, available as a PDF file, provides detailed information about the concepts and tasks that are related to using SAS BI Dashboard. To access this document, go to the SAS BI Dashboard Documentation Web page at <http://support.sas.com/documentation/onlinedoc/bidashboard/index.html>.

Embedded help

Help pop-ups and tooltips provide brief descriptions of various tasks and fields to help you use SAS BI Dashboard application effectively.

To access Help pop-ups for more information about a product feature, click  when it appears next to a field or area in the user interface. You can also place the mouse pointer over an element in the user interface to view the associated tooltip for more information.

Help menu

Help menus provide information about the product and a link to the SAS BI Dashboard product Web page. This page provides product documentation and other support information. The menu also provides links to SAS customer support and the SAS home page.

You can also find information about SAS BI Dashboard on the SAS Customer Support site at <http://support.sas.com/documentation/onlinedoc/bidashboard/index.html>. The product page includes the documentation for the current version of SAS BI Dashboard.

Supported Web Browsers

SAS BI Dashboard is supported by the following Web browsers:

- Microsoft Internet Explorer
- Mozilla Firefox
- Google Chrome

For supported versions of browsers for your operating system and release of SAS, see [Third-Party Software Requirements for Use with SAS® Software and Applications](#).

Adobe Flash Requirement

SAS BI Dashboard requires that the Adobe Flash plug-in be installed in your Web browser.

For supported versions of browser plug-ins for your operating system and release of SAS, see [Third-Party Software Requirements for Use with SAS® Software and Applications](#).

Accessibility Features

For information about the accessibility of this product, see [Accessibility Features of SAS BI Dashboard 4.4 at support.sas.com](#).

Chapter 2

Dashboard Features and How to Use Them

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Why Use a Dashboard?

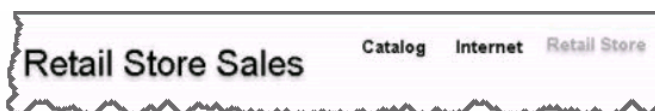
Dashboards provide a way to view data. Users can quickly view critical information in a compact, easy to interpret interface. Dashboards can display key performance indicators in one place to help users monitor information throughout an enterprise. By using the new dashboard designer and dashboard viewer, you can create a single dashboard that contains multiple indicators instead of creating a portal page with multiple dashboard portlets. Coordinating the look and feel of your dashboard and indicators is easier than ever.

Dashboard Design Ideas

SAS BI Dashboard provides many new types of indicators as well as new interactive features. Depending on your design choices, a dashboard can now provide application-like services to its users. With version 4.3 and later, users not only view dashboards, but interact with and use information accessed from dashboards in many ways.

You can build links to other information in your dashboards. The following design ideas use links from static labels and images in a dashboard:

- create a menu or table of contents to list available dashboards, reports, or Web pages



- create tabs along one side of the dashboard to mimic the look and feel of a tabbed portfolio
- link to more detailed SAS Web Report Studio or SAS Stored Process reports

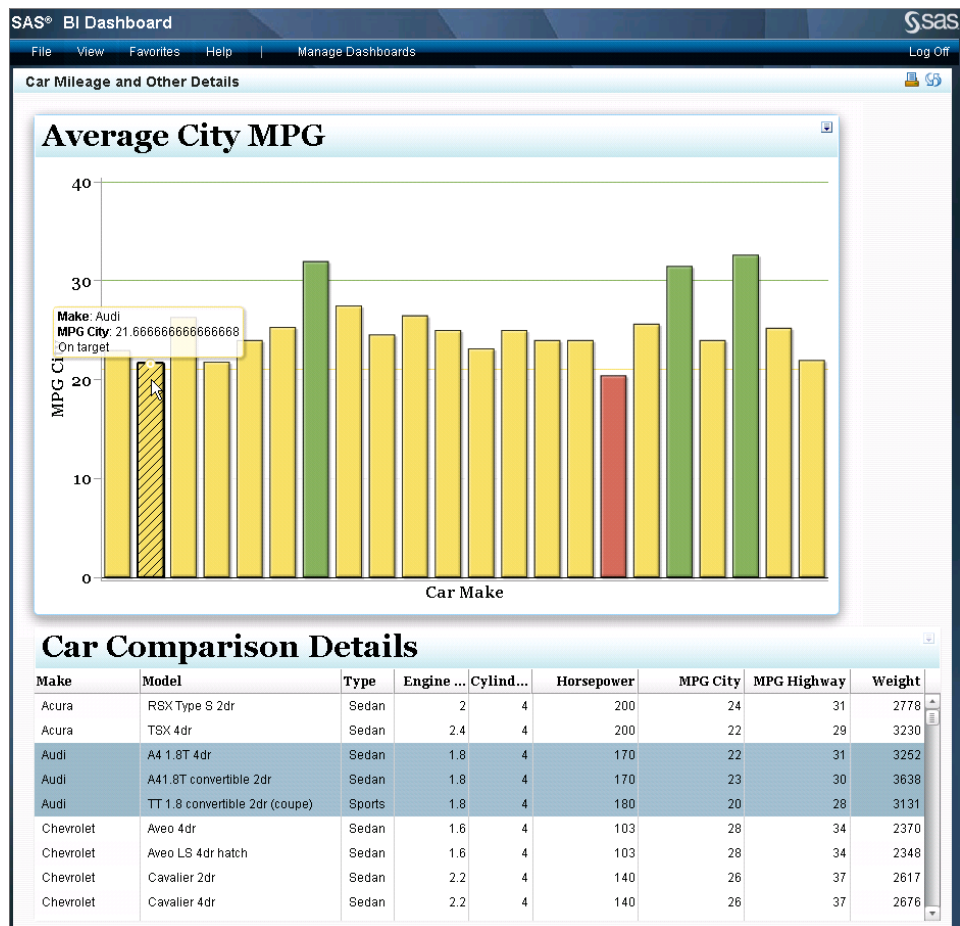
For examples showing how to create links, see [“Linking to Other Information by Adding Static Content”](#) on page 98.

You can also set up interactions between indicators on a dashboard that help analyze information. With these features, dashboards are no longer about viewing information, but about interacting with provided information and data.

- By using an interaction between a dynamic prompt and a chart, you can mimic a menu that enables users to select different categories of data to view.



- By using an interaction between a bar chart and a spark table indicator, users can explore data in the dashboard. When the user select a car manufacturer in the bar chart, the manufacturer data is highlighted in the spark table indicator.



For more information, see “Adding Interactions between Indicators” on page 104.

Part 2

Viewing Dashboards

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Chapter 3

SAS BI Dashboard Viewers

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Viewer Support for SAS BI Dashboard

SAS BI Dashboard provides dashboard viewer support in the following ways:

- the SAS BI Dashboard viewer, part of the SAS BI Dashboard Web application
- a SAS BI Dashboard portlet, defined in the SAS Information Delivery Portal

Viewer Feature Comparison

The following table details the feature support in each viewer.

Note: An X indicates support.

Features	Dashboard Viewers	
	Viewer	Portlet
Viewing dashboards or indicators	X	X
Default dashboard setting ¹	X	
Navigation among dashboards or indicators	X	
Client caching to reduce response times and resource demands	X	
Manual refresh	X	X

¹ The Information Delivery Portal provides a similar feature for the portlet. For more information, see [“Set the Default Dashboard View Setting”](#) on page 38.1

Features	Dashboard Viewers	
	Viewer	Portlet
Automatic refresh	X	X
Zoom	X	X
Print	X	X
Personal indicator alerts	X	
Comments	X	
Favorites	X	

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Dashboard Viewer

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Overview

The dashboard viewer provides the same functionality as the SAS BI Dashboard portlet, as well as enabling you to perform the following tasks:

- set dashboards and indicators as favorites
- create personalized indicator alerts
- make comments about indicators
- start the SAS BI Dashboard designer
- view dashboards and indicators in a larger display area

Access the SAS BI Dashboard Viewer

You can access the SAS BI Dashboard viewer in the following ways:

- by typing the following Web address in your Web browser: **http://*server:port*/SASBIDashboard**.

server:port is the Web address of your SAS BI Dashboard server.

Note: The port and the default root directory for SAS BI Dashboard are set during the installation of the product. The Web address used by your organization might vary.

- by clicking  in the SAS BI Dashboard portlet toolbar.

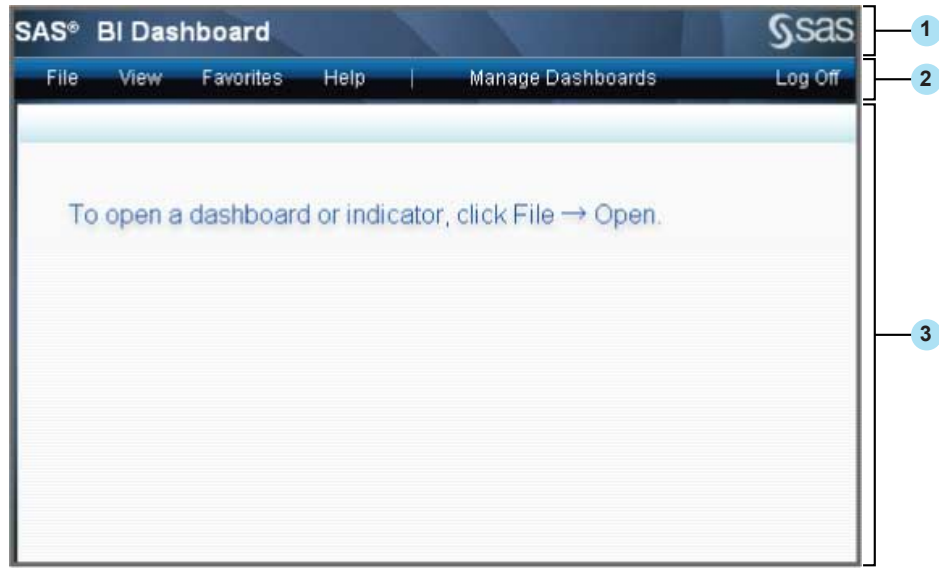
The SAS BI Dashboard Viewer Interface

Your First Look at the SAS BI Dashboard Viewer Interface

The following figure shows how the SAS BI Dashboard viewer appears in the following scenarios:

- when you use the viewer for the first time.
- when you have set the interface to not display the previously open dashboard or indicator. For more information, see “[Clear the Default Dashboard View Setting](#)” on page 20.

Figure 4.1 SAS BI Dashboard Viewer Initial Interface

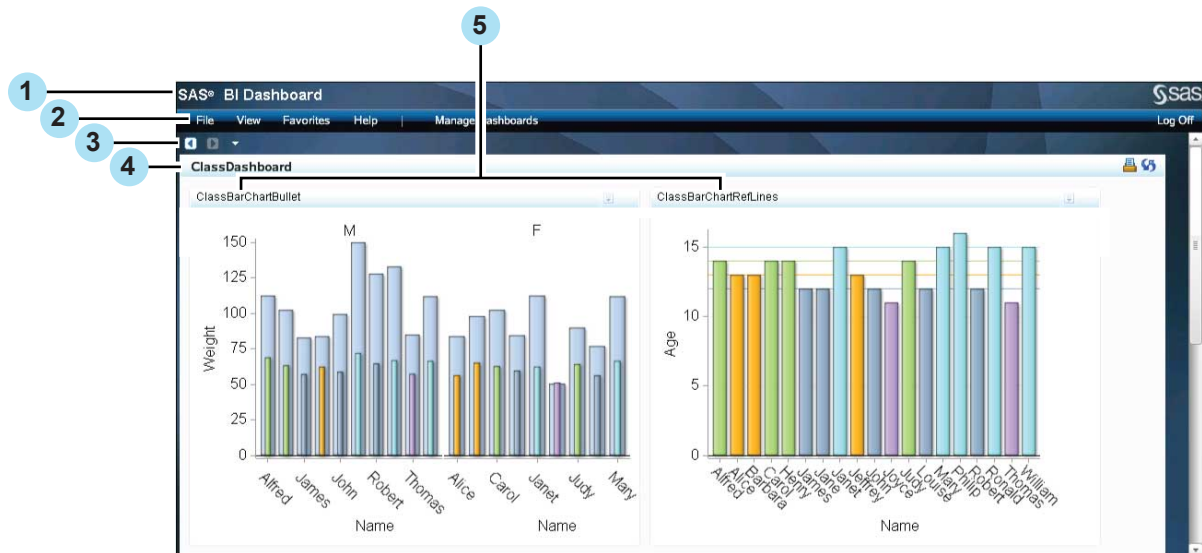


- 1 Banner.
- 2 Menu. For more information, see “The Menu” on page 18.
- 3 Workspace. The dashboard appears in the workspace.

The Interface Displaying a Dashboard

After you choose a dashboard or indicator for viewing, the SAS BI Dashboard viewer interface provides additional features.

Figure 4.2 SAS BI Dashboard Viewer Interface with a Dashboard Displayed



- 1 Banner.
- 2 Menu. For more information, see “The Menu” on page 18.

- 3 Navigation buttons. For more information, see [“Navigate among Multiple Dashboards or Indicators” on page 20](#).
- 4 Dashboard title bar. If you view a dashboard, its title appears here. If you open an indicator, the title bar displays the indicator title. The title bar also provides the following icons:
 - Print. For more information, see [“Print a Dashboard or Indicator” on page 21](#).
 - Refresh. For more information, see [“Manually Refresh the Viewer Contents” on page 20](#).
- 5 Indicators. For more information, see [“The Indicator” on page 18](#).

The Menu

The menu provides tasks and features to use while viewing a dashboard.

File

- For **Open**, see [“Open a Dashboard or Indicator” on page 19](#).
- For **Print**, see [“Print a Dashboard or Indicator” on page 21](#).
- For **Manage Dashboards**, see [“Manage and Design Dashboards” on page 29](#).

View

Provides ways to control how you view a dashboard.

- For **Refresh Dashboard**, see [“Manually Refresh the Viewer Contents” on page 20](#).
- For **Go To**, see [“Navigate among Multiple Dashboards or Indicators” on page 20](#).
- For **Open the Previously Viewed Dashboard by Default**, see [“Clear the Default Dashboard View Setting” on page 20](#).
- For **Set Automatic Refresh Interval**, see [“Set the Automatic Refresh Interval” on page 21](#).

Favorites

For more information, see [“Working with Favorites” on page 28](#).

Help

Provides information about the product and a link to the SAS BI Dashboard product Web page. This page provides product documentation and other support information. The menu also provides links to SAS customer support and the SAS home page.

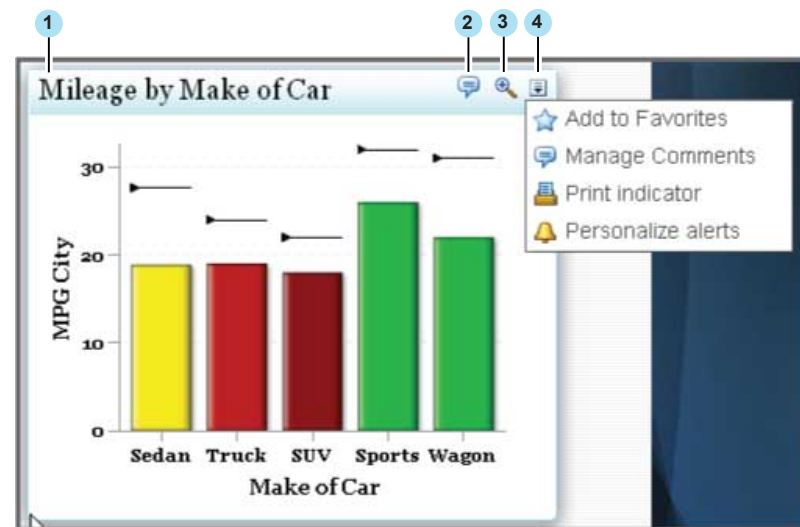
Manage Dashboards

For more information, see [“Manage and Design Dashboards” on page 29](#).

The Indicator

The indicator provides the following features:

Figure 4.3 Indicator Interface



- 1 Indicator title bar.
- 2 Comments. If comments are attached to an indicator, this icon appears on the title bar. For more information, see [“Creating Comments and Replying” on page 26](#).
- 3 Zoom. For more information, see [“Zoom In on an Indicator” on page 21](#).
- 4 **Options** menu. Each indicator title bar provides the **Options** menu. However, the options that are available can vary depending on how the indicator is customized by the dashboard designer.
 - For **Add to Favorites**, see [“Working with Favorites” on page 28](#).
 - For **Manage Comments**, see [“Creating Comments and Replying” on page 26](#).
 - For **Print Indicator**, see [“Print a Dashboard or Indicator” on page 21](#).
 - For **Personalize Alerts**, see [“Setting Personal Indicator Alerts” on page 22](#).

Open a Dashboard or Indicator

To open a dashboard or indicator, complete the following steps:

1. Click **File** ⇒ **Open**. The Select a Dashboard or Indicator window appears and displays only dashboards and indicators.
2. By using the **Show** list, you can filter the list to show only dashboards or indicators.
 - To view only dashboards in the list, click **Dashboard**. Dashboard files use the DCX file extension.
 - To view only indicators in the list, click **Indicator**. Indicator files use the IDX file extension.
3. Navigate to the dashboard or indicator that you want to open, and click that file. The indicator or dashboard appears in the workspace.

Clear the Default Dashboard View Setting

By default, the SAS BI Dashboard viewer displays the last dashboard or indicator that was displayed when the SAS BI Dashboard viewer was closed. However, there might be times when you do not want to display this dashboard or indicator.

To display no dashboard or indicator when you first start the SAS BI Dashboard viewer, click **View** ⇒ **Open the Previously Viewed Dashboard by Default** to clear the default view setting.

Navigate among Multiple Dashboards or Indicators

After you open a second dashboard or indicator, the navigation controls appear below the menu bar.



Dashboard navigation is also available when you click **View** ⇒ **Go To**.

The navigation controls enable you to move backward and forward through the dashboards and indicators that you have opened. The down arrow displays a *navigation history list*. The list is not a recently visited list. Instead, the navigation history list records your flow of navigation. If you back track from an item, that item is no longer in the navigation history. For example, suppose that you view three dashboards in the following order: A, B, and C. Then you click the back arrow to view dashboard B again. Next, you open dashboard D. Dashboard C is no longer in the navigation history list. The navigation arrows cannot display dashboard C either. Dashboard C is no longer in the recorded navigation flow because you back-tracked from that dashboard.

Note: The navigation history list does not persist if you log off from the dashboard designer or if you leave the dashboard designer to use the dashboard portlet and then return to the dashboard designer. For links that persist, use the Favorites feature. For more information, see [“Working with Favorites” on page 28](#).

Manually Refresh the Viewer Contents

To manually refresh the contents of the SAS BI Dashboard viewer, click  in the dashboard title bar.

Set the Automatic Refresh Interval

To automatically refresh the contents of the SAS BI Dashboard viewer, complete the following steps:


1. Click **View** ⇒ **Set Automatic Refresh Interval**. The Refresh Interval window appears.





2. Click **Automatic refresh**, and then specify the time interval in the **Interval** field.
3. Click **OK**.

Note: The automatic refresh feature updates only the underlying data that is used by the indicators on the dashboard. If you change the dashboard by adding, removing, or modifying indicators, these changes are not displayed in the viewer after an automatic refresh. To ensure that dashboard changes are reflected in the viewer, you must manually refresh the viewer. For more information about performing a manual refresh, see [“Manually Refresh the Viewer Contents” on page 20](#).

Zoom In on an Indicator



If an indicator is enabled for zooming, the indicator title bar displays the Zoom + icon .

When an indicator is *not* zoomed, some of the indicator content might not appear or might be difficult to read. When you click , the indicator enlarges and the content appears as designed. However, other indicators in the dashboard might be obscured by the enlarged indicator. Click  to reduce the indicator to its original size.

Note: If your mouse includes a wheel, you can use the mouse wheel to zoom in and out of indicators.

Print a Dashboard or Indicator

You can print an entire dashboard or only an indicator.

- To print a dashboard, click  in the dashboard title bar. The Print window appears.
- To print an indicator, in the indicator title bar, click  and then **Print Indicator**. The Print window appears.

Setting Personal Indicator Alerts

Overview

A *personal indicator alert* is an alert that is sent only to you. This is different from an *indicator alert*, which is sent to a list of one or more alert subscribers. Indicator alerts are defined and attached to an indicator by a dashboard designer. A personal alert is in *addition* to any indicator alerts.

You can choose to receive a notification of an alert in the following ways:

- in an Alert portlet in the SAS Information Delivery Portal
- by e-mail

Note:

- A dashboard designer must enable personal indicator alerts for an indicator before a business user can define a personal indicator alert on the indicator.
- The alerts shown in the Edit Indicator Alerts window are only your personal indicator alerts. Indicator alerts created by a dashboard designer are not shown.

Understanding Alerts

The Alert Definition

When you define an alert, you specify the circumstance that causes that alert to occur. This circumstance is the *trigger*. To define the trigger, you must make the following selections:

- the range to evaluate
- the interval in the range in which the data point values must occur
- the percentage of data points that must occur in that interval

How Alerts Are Triggered

An alert is triggered in the following way:

1. SAS BI Dashboard periodically checks for a change in the indicator data, updates to the indicator alert definition, or both. By default, this check happens every 3 minutes. A SAS BI Dashboard administrator can change this setting.
2. If an update is detected and the percentage of data points in the trigger interval has changed, the alert criteria are evaluated.
3. If the criteria are met, an alert is triggered and a notification is sent to the subscriber.

Note: If the alert criteria are met at the time that you create the alert, the alert is triggered immediately. Afterwards, the alert is triggered only when the data changes and the alert criteria are met.

Alert Criteria and Data Aggregation

If an indicator can aggregate data, it is important to understand that the percentage that is used by alerting is calculated by evaluating the underlying indicator data to determine the number of data points in the interval. The software does *not* evaluate the aggregated results presented in the graph view. For example, if a bar chart has three bars, each bar can represent an average of multiple data points. A given bar might fall within the alert interval. However, it is possible that none of the individual data points associated with that bar fall in the same interval. In this case, the three bars reflect the aggregated data, not the data points used in the alert calculation.

The following indicators support alerts and can aggregate data:

- bar chart with bullet
- bar chart with reference lines
- interactive summary and bar chart
- interactive summary and targeted bar chart
- targeted bar chart
- tile chart
- waterfall chart

Changes That Can Affect Alert Calculations


In addition to underlying data changes, updates to any of the following indicator components can affect the interval percentage calculation and cause the alert to be reevaluated:

- If the indicator source data is changed, the data available for evaluation can change. For example, if you update the filters defined in an information map, the new filter definition can cause a change in the number of data points that are evaluated.
- If the indicator data definition is changed, the data available for evaluation can change. The following changes are examples of what can cause the data that is evaluated to change:
 - updating the indicator data definition to modify an SQL query
 - changing the selected items for an information map
 - updating the **Group by** criteria for a table
- If the range is changed, the calculated percentage can change. For example, if you change the upper limit of the range from 100 to 200, the percentage of data points that exist in the range and in its intervals can change.
- If the indicator definition is changed, the data values that are evaluated can change. For example, if you change the **Y-axis value** setting from *Height* to *Weight*, the data that is evaluated is changed.

Create an Alert

Note: Due to customization by the dashboard designer, this feature might not be available.

To create a personal indicator alert, complete the following steps:

1. In the indicator title bar, click  and then click **Personalize Alerts**. The Create Indicator Alerts window appears.

Create Indicator Alerts

Alert Settings

Alert name: *

Gauge definition: Value

Trigger interval: Below target

Trigger alert when: Any gauge is in the interval
 % of gauges that are in the interval

Delivery Method

Alerts portlet E-mail subscribers

E-mail template: Link-only template

Subject:

Add a message to the e-mail:

Name	Gauge Definition	Trigger Interval	Delivery Method

Note:

- If **Personalize Alerts** is not available, the dashboard designer has not enabled personalization.
- If the Options menu (☰) is not available, the indicator is not displayed in a tile.
- Alerts can be used only with indicators that use a range. For information, see [“Indicator Types That Support Ranges” on page 67](#).

Contact the dashboard designer for assistance.

2. In the **Alert name** field, type the name of the alert.
3. From the **Gauge definition** list, select the range to evaluate.

Note: Most indicators use only one range and this setting defaults to that range.

However, the following indicators use two ranges. Therefore, you must select the range to evaluate:

- interactive summary and scatter plot
 - range map
4. From the **Trigger interval** list, select the interval in which the value must occur to trigger the alert.
 5. Specify how many values (that is, data points or gauges) must be in the selected interval to trigger the alert:
 - **Any gauge is in the interval**

- **% of gauges are in the interval**

Note: If you select this setting, type a value in the field next to the check box.

6. Select the delivery method for the alert: **Alerts portlet** or **E-mail subscribers**.

Note:

- You can select both methods.
- **Alerts portlet** presumes that the recipient has an Alerts portlet defined in the SAS Information Delivery Portal. If there is not an Alerts portlet, the alerts remain saved on the server. If a user adds an Alerts portlet to the portal, all previous alerts appear in the Alerts portlet.
- The business user's e-mail address must be available from SAS metadata. For more information, see the *SAS Management Console: Guide to Users and Permissions*.

7. (Optional) If you selected **E-mail subscribers**, complete the following steps:

a. From the **E-mail template** list, select the template to use for e-mail notifications of alerts.

Note: The items available in this list are controlled by the dashboard designer.

Template Type	Description
Link only	The e-mail includes a link that opens the affected indicator in the SAS BI Dashboard viewer. <i>Note:</i> All indicator types support this template.
Default	The e-mail includes an image of the affected indicator and a link that opens the indicator in the SAS BI Dashboard viewer. <i>Note:</i> The following indicator types support this template: <ul style="list-style-type: none"> • bar chart with reference lines • KPI • line chart with reference lines • range map • scatter plot • targeted bar chart

b. In the **Subject** field, type the subject. Type any additional message to include in the e-mail in the **Add a message to the e-mail** field.

8. Click **Save Alert**. The alert appears in the **Alerts** table.

9. If you want to create another alert, click **New Alert**. To exit the Create Indicator Alerts window, click **OK**.

TIP For personal alerts, the alert is saved to the server when you exit the window.

Note: If the alert criteria are met at the time that you create the alert, the alert is triggered immediately. Afterwards, the alert is triggered only when the data changes and the alert criteria are met.

Edit an Alert

To edit an alert, complete the following steps:

1. Click  and then click **Personalize Alerts**. The Manage Indicator Alerts window appears.

Note: When the Manage Indicator Alerts window appears, the first alert in the **Alerts** table is automatically highlighted and its properties appear in the left side of the window.


2. In the **Alerts** table, select an alert. The properties of the alert appear on the left side of the window.
3. Edit the properties as described in “Create an Alert” on page 23.
4. Click **Save Alert**.
5. Click **OK** to exit the Manage Indicator Alerts window.

TIP For personal alerts, the alert is saved to the server when you exit the window.

Note: If the edit causes a change in the calculated interval percentage since the percentage was last evaluated and the alert criteria are still met, the alert is triggered.

Delete an Alert

To delete an alert, complete the following steps:

1. In the Manage Indicator Alerts window, select an alert in the **Alerts** table.
2. Click .
3. Click **OK** to exit the Manage Indicator Alerts window. The delete is saved to the server when you exit the window.


Creating Comments and Replying

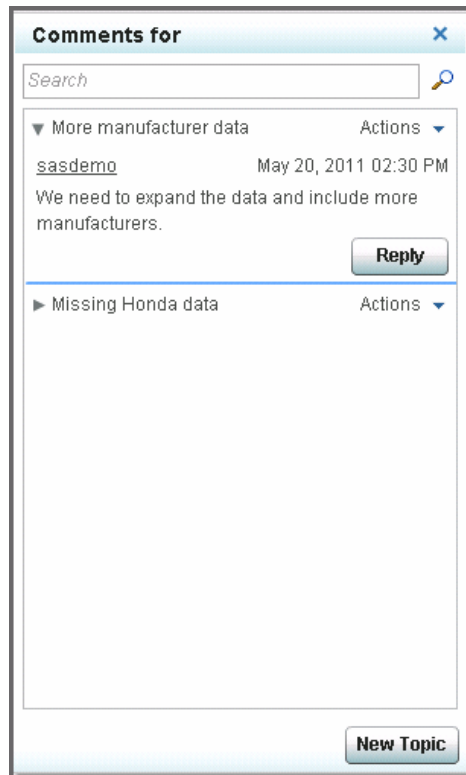
Overview

You and other users that have access to an indicator can make comments about that indicator. Using comments, you can communicate among your coworkers and improve productivity. An indicator can have multiple topics of conversation and each topic can be an extended conversation of comments and replies. If a conversation is extensive, you can sort, filter, and search the comments.

View and Create Comments

If an indicator already has comments,  appears on the indicator title bar. To make a new comment, complete the following steps:

1. In an indicator title bar, click , and then click **Manage Comments**. The Comments window appears.




If there are existing comments about this element, the comments appear in this window.

2. Click **New Topic** to make a comment about a new topic.
3. In the New Topic window, type a topic name and a comment.
4. (Optional) Click **Attachment** to attach a file to the comment. Select one or more files to attach and click **Open**.


Note: To delete the attachment from the comment, click **X** in the New Topic window. After you save the comment, you can no longer delete the attachment.

5. Click **Save** to save and post your comment. When you post a comment, it is added to a topic thread of comments about that indicator. After you post a comment, other users can reply. Their comments are also added to the topic thread of comments.

Reply to a Comment

If an indicator has comments,  appears on the indicator title bar. To reply to a comment, complete the following steps:

1. In an indicator title bar, click . The Comments window appears.
2. Expand the topic thread of comments.
3. Locate the comment that you want to reply to and click **Reply**.
4. In the response window, type a comment.
5. (Optional) Click **Attachment** to attach a file to the comment. Select one or more files to attach and click **Open**.

Note: To delete the attachment from the comment, click  in the New Topic window.

6. Click **OK** to save and post your reply. The comment is added to the thread of comments.

Edit an Existing Comment

Business users cannot edit existing comments. Only users in the Comments Administrator role can edit comments. For more information, see the *SAS 9.3 Middle-Tier Administration Guide* and the *SAS 9.3 Web Application Administration Guide*.

Delete a Comment


Business users cannot delete comments. Only users in the Comments Administrator role can delete comments. For more information, see the *SAS 9.3 Middle-Tier Administration Guide* and the *SAS 9.3 Web Application Administration Guide*.

Sort Comments

To sort comments, in the Comments window, click **Actions** ⇨ **Sort and Filter** and select the way that you want to sort the comments. The comment list is sorted.

Search through Comments

To search comments, complete the following steps:

1. In the Comments window, type one or more characters in the **Search** field.
2. Click . Any comments that include the search string appear in a results list.
3. To view an entire comment, click **Show This Topic**.
4. To view the results list again, click **Back to Search Results**.
5. To view the Comments window again, click **Return to Comments**.

Exit Comments

To exit the Comments window, click **X** in the upper right corner of the window.

Working with Favorites

Overview

To easily bookmark and return to a dashboard or an indicator, you can add it to your favorites.

Add a Dashboard to Your Favorites

To add a dashboard to your favorites, click **Favorites** ⇨ **Add Dashboard to Favorites**. This dashboard now appears in the **Favorites** menu.


Add a Dashboard with Parameters to Your Favorites

As of the second maintenance release of SAS BI Dashboard 4.31, when you save a dashboard as a favorite, you can choose to save the dashboard with its currently selected parameters. If you view a sales chart, for example, you might select a specific year and geographic location to tailor your data view. You can save the dashboard with the selected year and geographic settings.

To add a dashboard with parameters to your favorites, click **Favorites** ⇨ **Add Dashboard to Favorites (with parameters)**. This dashboard now appears in the **Favorites** menu. The parameters saved with the dashboard appear in parentheses after the dashboard name.

Add an Indicator to Your Favorites

To add an indicator to your favorites, click **Favorites** ⇨ **Add Indicator to Favorites** ⇨ *<Name of indicator>*. This indicator now appears in the **Favorites** menu.


Note: You can also add an indicator to your favorites by clicking  and then **Add to Favorites**.

Select a Favorite


To select a favorite, click **Favorites** ⇨ *<Name of favorite>*. The selected favorite appears in the viewer. If you already have a dashboard or indicator displayed in the viewer, the favorite appears over that content.

Organize Favorites

To organize your favorites, click **Favorites** ⇨ **Manage Favorites**. The Manage Favorites window appears. You can organize your favorites in the following ways:

- To create a folder in your favorites, click , and then name the folder.
- To move a favorite or folder, drag the item.

Note: To drag an item into a folder, first expand the folder, and then drag the item into the folder.

- To rename a favorite or folder, click the item's name, and then type the name.
- To delete a favorite or folder, click the item's name, and then click .

Manage and Design Dashboards

If you are a member of the SAS BI Dashboard Administrator group, you can design and modify dashboards as well as view them. If you are a member of this group, **Manage**

Dashboards appears on the toolbar. To open the currently displayed dashboard in the SAS BI Dashboard designer, click **Manage Dashboards**.

For more information, see [Chapter 6, “The SAS BI Dashboard Designer,”](#) on page 43.

Chapter 5

Dashboard Portlet

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Setting Up a SAS BI Dashboard Portlet

Overview

The SAS BI Dashboard portlet is supported by the following portals:

- SAS Information Delivery Portal
- WebSphere Portal

Before you can access the SAS BI Dashboard portlet, you must log on to the SAS Information Delivery Portal and create a portal page. Then you can add a SAS BI Dashboard portlet in which to view a dashboard.

After you set up a SAS BI Dashboard portlet, you can access the portlet by logging on to your portal.

Note:

- For a description of the SAS BI Dashboard portlet interface, see “The SAS BI Dashboard Portlet Interface” on page 36.
- For information about how to use the SAS BI Dashboard portlet, see “Working in the SAS BI Dashboard Portlet” on page 37.

Log On to the SAS Information Delivery Portal

To log on to the SAS Information Delivery Portal, complete the following steps:

1. Open your browser and type the Web address for the portal.

Note: To obtain the Web address, contact your portal administrator.

The Log On page appears.

2. Type your user name and password.
3. Click **Log On**. Your personal portal opens. Typically, most portal users see a page that contains a collection portlet (My Collection) and a bookmark portlet (Bookmarks).

Create a Page

To create a new portal page to contain the SAS BI Dashboard portlet, complete the following steps:

1. Click **Customize** ⇒ **Add Page**. The Add Pages to Profile page appears.

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

Name

is a short name that appears in the page tab in the navigation bar.

Description

is a short description that appears along with the page title in search results.

Keywords

are 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 list of standard keywords and use these keywords consistently.

Page rank

is 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 that have equal rank are listed in the order in which they were created.

Location (group)

specifies the group with which to share the page. If you select a value in the **Location (group)** field, the **Share type** field appears.

Note: This list appears only if you are a group content administrator or a portal administrator.

TIP

- To share with everyone, select **Public** from the list. However, sharing a portal page among potentially hundreds or more users can impact performance. To share with a select group of users, consider using the Templates feature. For more information, see the SAS Information Delivery Portal documentation.
- This selection supports sharing with only one group at a time. To share with more than one group, you must have authorization manager capability in SAS Management Console. In SAS Management Console Permissions, expand **Authorization Manager** ⇒ **By Type** ⇒ **PSPortletPage**. Click your new portal page. In the View Properties dialog box, on the **Authorization** tab, add any users and groups to share. Click **OK**.

Share type

indicates how the page is shared with users.

Note: This list appears only if you are a group content administrator and have made a selection in the **Location (group)** list.

This list provides the following options:

Option	Description
Available	Users in the group can find the page using Search. They can add the page if needed.
Default	Users in the group automatically see the page the next time they log on to the portal. Users can remove the page from the navigation bar if the page is not needed.
Persistent	Users in the group automatically see the page the next time they log on to the portal. However, users cannot remove the page from the navigation bar.

3. Click **Add**. A message appears, indicating that a new page was added.
4. Click **Done**. The new empty page appears in the portal.

Add a SAS BI Dashboard Portlet to the Page

A portal page can contain multiple portlets. Portlets can contain the following types of content:

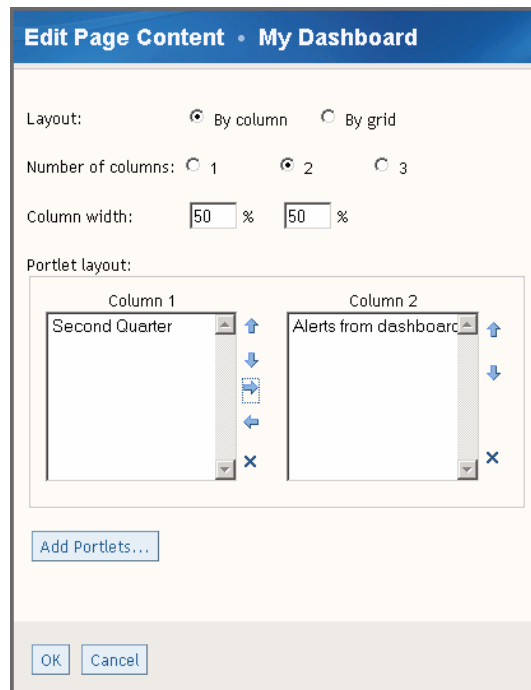
- HTML

- Adobe Flash

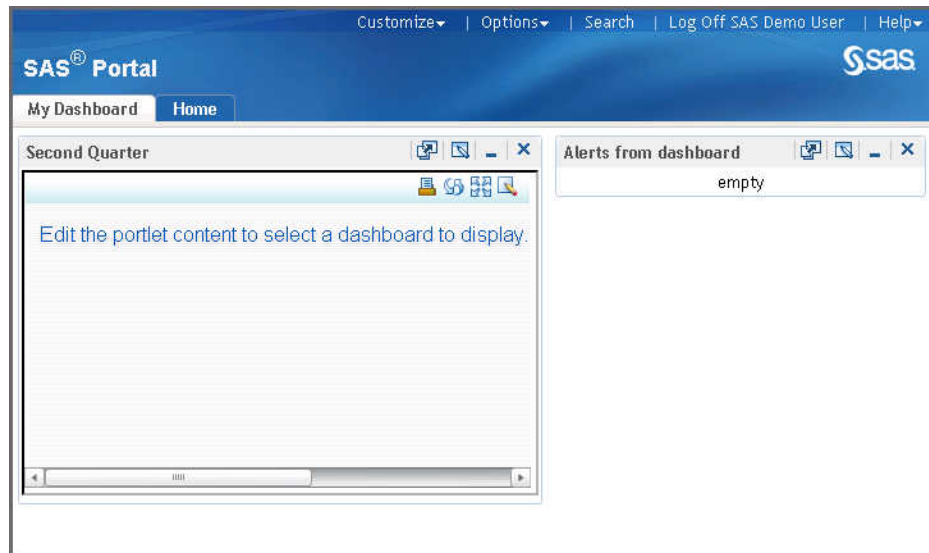
Typically, multiple HTML-based portlets on a portal page do not impact performance. However, each Flash-based portlet must initialize Flash in the client. Therefore, multiple Flash-based portlets on a portal page can impact performance. To avoid a performance impact, do not add multiple portlets that contain Flash-based content to a single portal page. Starting with version 4.3, the SAS BI Dashboard portlet contains Flash-based content.

To add a SAS BI Dashboard portlet to a page, complete the following steps:

1. Navigate to the SAS Information Delivery Portal page to which you want to add a portlet.
2. Click **Customize** ⇒ **Edit Page** ⇒ **Edit Page Content**. The Edit Page Content page appears.




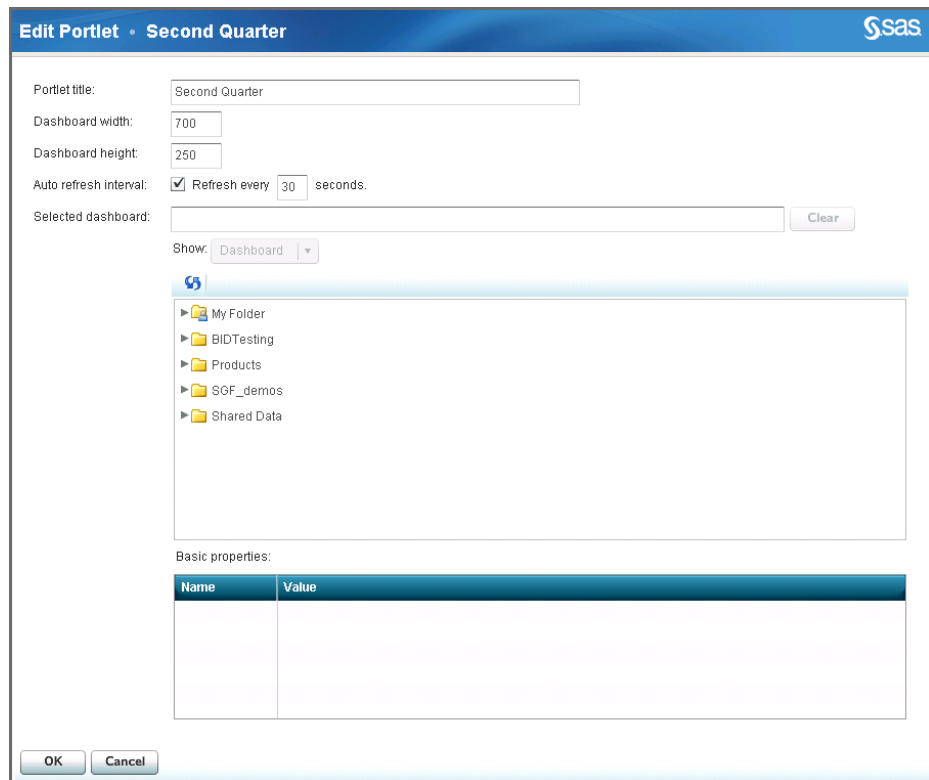
3. Click **Add Portlets**. The Add Portlets to Page page appears.
4. From the **Portlet type** list, select **SAS BI Dashboard Portlet**.
5. Type the name, description, and keywords, if any.
6. Click **Add**.
7. Click **Done**.
8. On the Edit Page Content page, click **OK**. The new portlet appears on the page displaying the portlet dashboard viewer.



Select a Dashboard

To select a dashboard for viewing, complete the following steps:

1. In the SAS BI Dashboard portlet title bar, click . The Edit Portlet page appears.



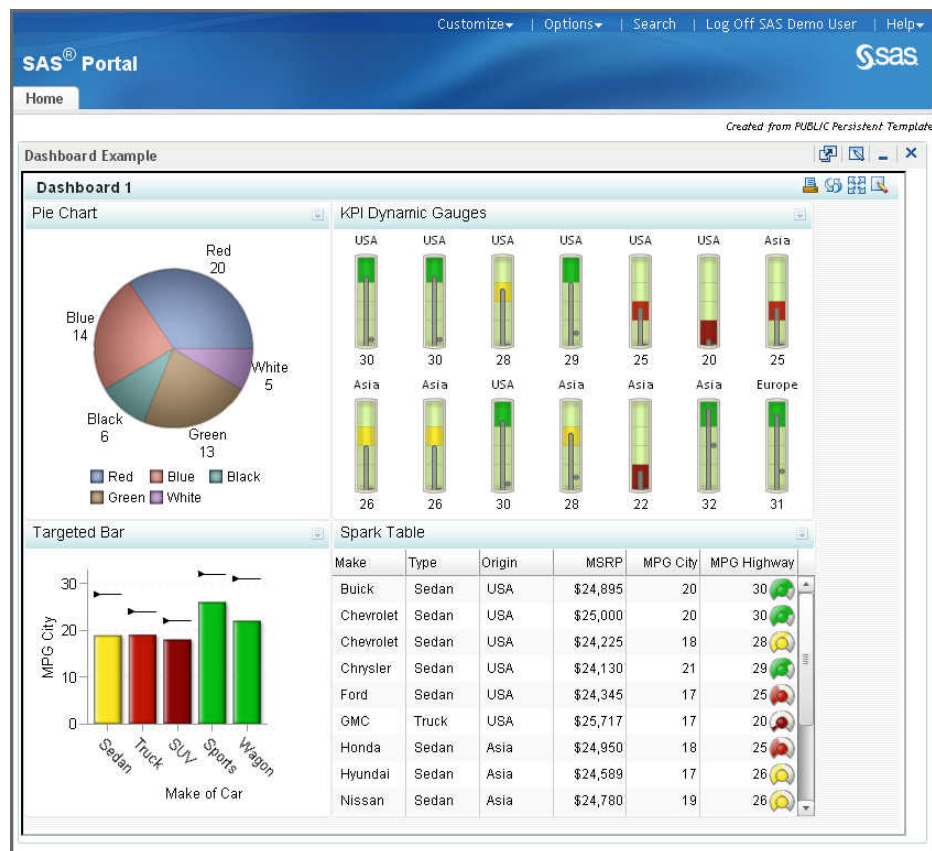
2. From the tree, select a dashboard. This list includes dashboards created by your organization. When you select a dashboard, its properties appear in the **Basic properties** table below the tree.

Note: You can select only those dashboards that you are authorized to view.

- (Optional) You can change the size of the portlet so it is easier to view on the portal page. Type the new dimensions in the **Dashboard width** and **Dashboard height** fields.

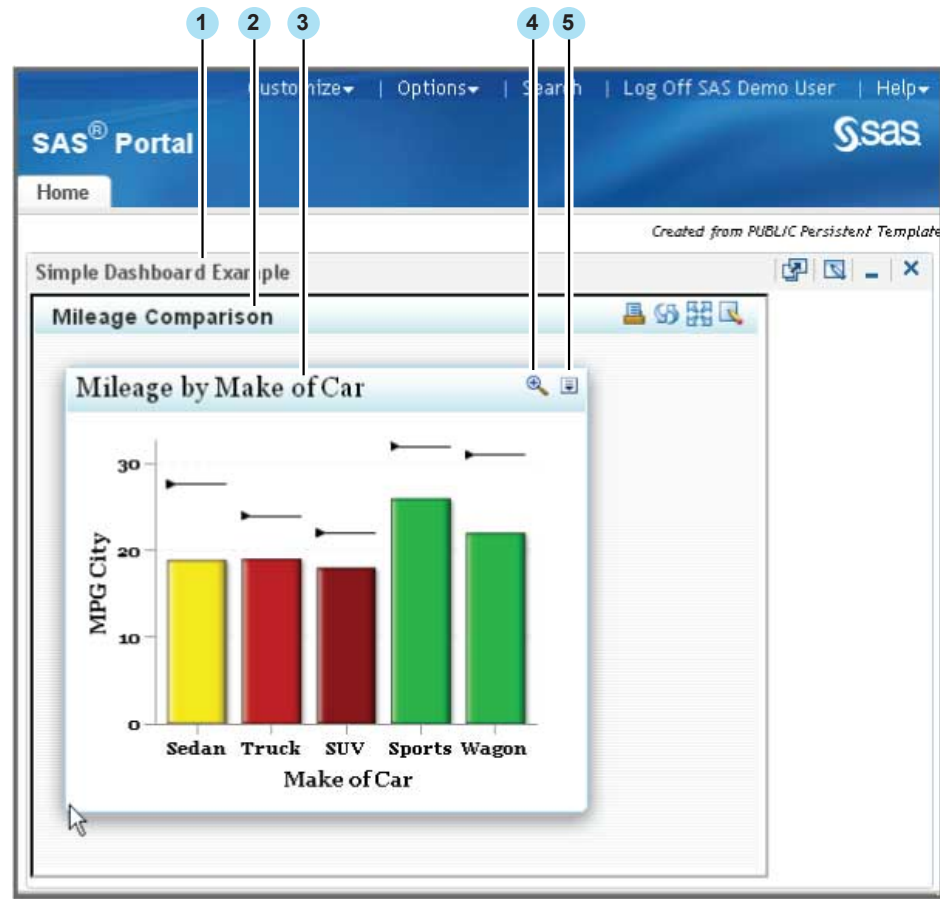
Note: You cannot edit the **Portlet title** field.

- (Optional) You can change how the dashboard is automatically refreshed. For more information, see [“Change How a Dashboard Is Automatically Refreshed”](#) on page 38.
- Click **OK**. The dashboard appears in the portlet.



The SAS BI Dashboard Portlet Interface

The SAS BI Dashboard portlet and its dashboard provides the following features.




- 1 Portlet title bar with tools
- 2 Dashboard title bar with tools
- 3 Indicator title bar
- 4 Zoom
- 5 Options menu

Working in the SAS BI Dashboard Portlet

Change the Size of the Dashboard

You can change the size of the dashboard to make it easier to view in the portlet. To change the dashboard dimensions, complete the following steps:


1. In the SAS BI Dashboard portlet title bar, click . The Edit Portlet page appears.
2. In the **Dashboard width** field, type the value for the width.
3. In the **Dashboard height** field, type the value for the height.
4. Click **OK**.

Navigate between Linked Dashboards

Navigation controls are available to enable you to move backward and forward through the dashboards that you have opened. The controls include forward and backward arrows for sequential navigation, as well as a history list that records the flow of navigation between dashboards.

In the dashboard portlet, navigation support is available only for dashboards that are linked. The navigation controls are not displayed when the portlet initially loads. However, when you activate a link from one dashboard to another in the portlet, the navigation controls are displayed and can then be used.


Manually Refresh the Portlet Contents

To manually refresh the contents of a SAS BI Dashboard portlet, click  in the dashboard title bar.

Change How a Dashboard Is Automatically Refreshed

TIP By default, the automatic refresh interval is set to 30 seconds. If this setting causes excessive flashing or slow response time, you might want to increase the interval or turn off automatic refresh.


To change the automatic refresh interval of the portlet contents, complete the following steps:

1. In the SAS BI Dashboard portlet title bar, click . The Edit Portlet page appears.
2. To turn off automatic refresh, next to **Auto refresh interval**, clear the **Refresh every** check box.
3. To change the interval, click **Refresh every**, and then type a value in the field.
4. Click **OK**.

Note: The automatic refresh feature updates only the underlying data that is used by the indicators on the dashboard. If you change the dashboard by adding, removing, or modifying indicators, these changes are not displayed in the portlet after an automatic refresh. To ensure that dashboard changes are reflected in the portlet, you must manually refresh the portlet. For more information about performing a manual refresh, see “[Manually Refresh the Portlet Contents](#)” on page 38.

Set the Default Dashboard View Setting


You can set the default dashboard to view in the portlet. To change the setting, complete the following steps:



1. In the SAS BI Dashboard portlet title bar, click . The Edit Portlet page appears.
2. In the **Selected dashboard** tree, select the dashboard that you want to view by default when you open this portal page. This tree includes dashboards created by your organization.

Note: You can select only those dashboards that you are authorized to view.

3. Click **OK**.

Zoom In on an Indicator



If an indicator is enabled for zooming, the indicator title bar displays the Zoom + icon .

When an indicator is *not* zoomed, some of the indicator content might not appear or might be difficult to read. When you click , the indicator enlarges and the content appears as designed. However, other indicators in the dashboard might be obscured by the enlarged indicator. Click  to reduce the indicator to its original size.


Note: If your mouse includes a wheel, you can use the mouse wheel to zoom in and out of indicators.

Print a Dashboard or Indicator

You can print an entire dashboard or only an indicator.

- To print a dashboard, click  in the dashboard title bar. The Print window appears.
- To print an indicator, in the indicator title bar, click  and then **Print indicator**. The Print window appears.


Switch to View the Dashboard in the SAS BI Dashboard Viewer

You can choose to view the dashboard in the SAS BI Dashboard viewer. Switching to the SAS BI Dashboard viewer enables you to use comments, favorites, and personal indicator alerts. The SAS BI Dashboard viewer can also provide more space for viewing a dashboard. To switch to the SAS BI Dashboard viewer, in the dashboard title bar, click .


For more information, see [Chapter 4, “Dashboard Viewer,”](#) on page 15.

Change the Dashboard Portlet Title

To change the title of the dashboard portlet, complete the following steps:

1. In the dashboard portlet title bar, click . The Edit Portlet Properties page appears.
2. In the **Name** field, type the new name for the portlet.
3. Click **OK**.

Manage and Design Dashboards

If you are a member of the BI Dashboard Administrators group, you can design and modify dashboards as well as view them. If you are a member of this group, the Manage Dashboards icon appears in the dashboard title bar. To open the dashboard in the SAS BI Dashboard designer, click .

For more information, see [Chapter 6, “The SAS BI Dashboard Designer,”](#) on page 43.

Log Off from the SAS BI Dashboard Portlet

To log off from the SAS BI Dashboard portlet, you must log off from the SAS Information Delivery Portal. Click **Log Off *user name*** in the upper right corner of the user interface, where *user name* is your portal user name.

Note: If your session is inactive longer than the SAS Information Delivery Portal time-out value, you are automatically logged off.

Part 3

Designing Dashboards

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Chapter 6

The SAS BI Dashboard Designer

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Access the Dashboard Designer

Note: You must be a member of the SAS BI Dashboard Administrator group to design and modify dashboards. If you are a member of this group, the following options are available:

- The SAS BI Dashboard viewer toolbar displays **Manage Dashboards**.
- The SAS BI Dashboard portlet toolbar displays .

You can access the dashboard designer in the following ways:

- by typing the following Web address in your Web browser: **http://*server:port*/SASBIDashboard**.

server:port is the Web address of your SAS BI Dashboard server.

Note: The port and the default root directory for SAS BI Dashboard are set during the installation of the product. The Web address used by your organization might vary.

The SAS BI Dashboard viewer appears. To open the dashboard designer, click **Manage Dashboards** in the toolbar.

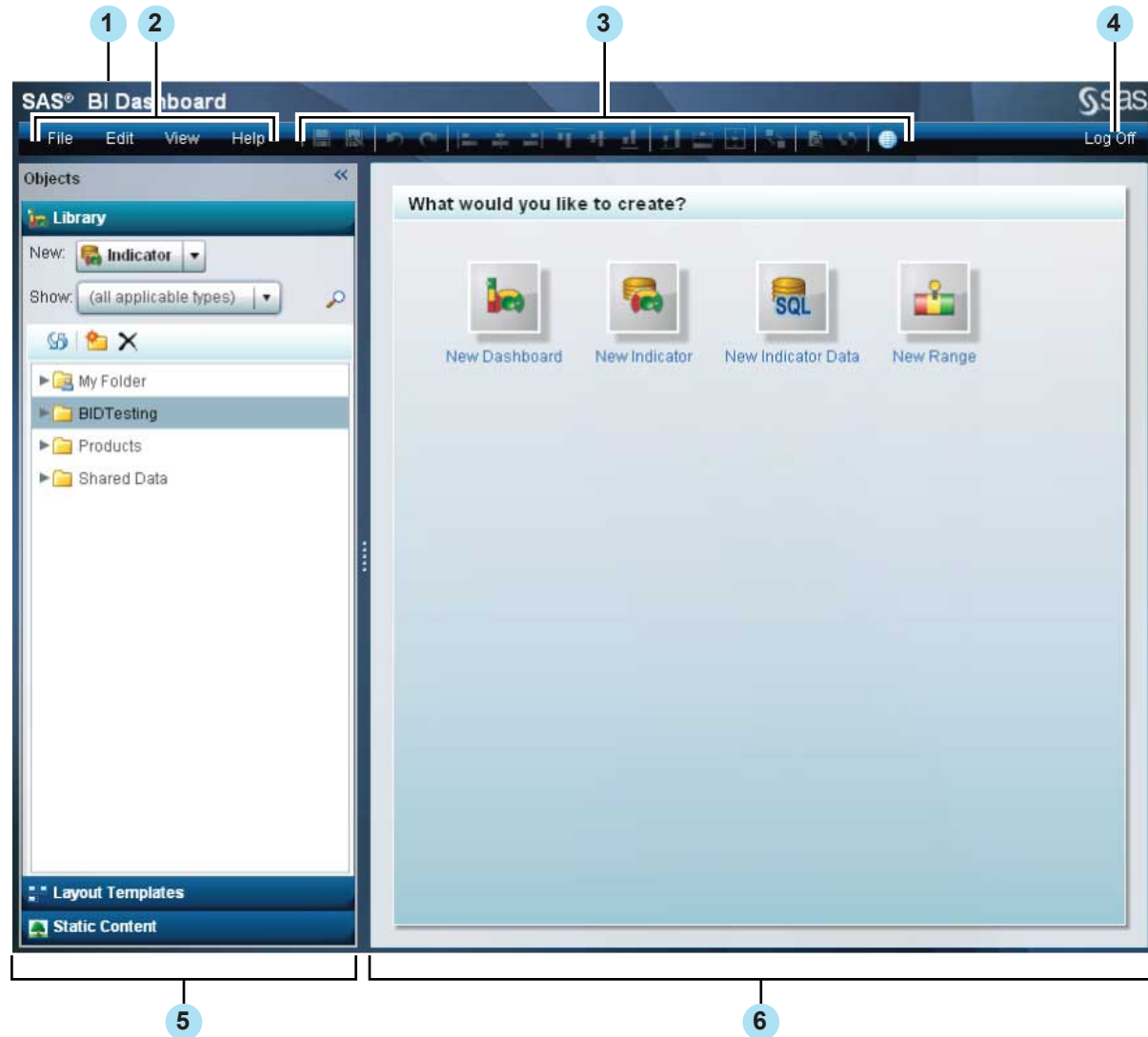
- by clicking  in the SAS BI Dashboard portlet toolbar.

The SAS BI Dashboard Designer Interface

Your First Look at the SAS BI Dashboard Designer Interface

The following figure shows the basic features of the dashboard designer.

TIP In order to view the entire interface, especially when working with indicators and dashboards, it is recommended that you set your display resolution to 1280 x 1024.



- 1 Banner.
- 2 Menu. For more information, see [“The Menu” on page 45](#).
- 3 Toolbar. For more information, see [“The Toolbar” on page 46](#).
- 4 Log Off.

Note: If the SAS BI Dashboard designer is accessed by way of the Information Delivery Portal, this feature is labeled **Return to Portal**.

- 5 Objects pane. For more information, see [“The Objects Pane” on page 47](#).
- 6 Workspace. For more information, see [“The Workspace” on page 48](#).

The Menu

The dashboard designer menu provides the following tasks and features for use while designing a dashboard:

File

- **New.** Creates a new indicator data, range, indicator, or dashboard.
- **Open.** Opens an existing indicator data, range, indicator, or dashboard.
- **Close and Close All.**
- **Save and Save As.**
- **Refresh.** Refreshes the dashboard or indicator in the workspace.

Edit

- **Undo.** Erases the last change that you made to an indicator or dashboard.
- **Redo.** Performs the previously erased change that you made to an indicator or dashboard.
- **Align.** Aligns the layout of the objects in a dashboard in one of the following ways: left margin, right margin, bottom margin, top margin, or horizontal or vertical center. Also adjusts the order of overlapping objects in the following ways: bring to front and send to back. For more information about the alignment tools, see [“Align and Size Objects” on page 95](#).
- **Size.** Sizes the objects in a dashboard or indicator in one of the following ways: to the same height, the same width, or to both the same height and width. For more information about the sizing tools, see [“Align and Size Objects” on page 95](#).
- **Set Up Interactions.** For more information, see [“Adding Interactions between Indicators” on page 104](#).

View














- **Maximize Workspace.** Expands the workspace to its maximum size by collapsing the Objects and Properties panes.
- **Show Layout Guide.** Shows a grid of dots that assists in laying out objects in a dashboard or indicator.
- **Preview Dashboard.** For more information, see [“Test a Dashboard by Using Preview Dashboard” on page 127](#).
- **Go to Dashboard Viewer.** For more information, see [Chapter 4, “Dashboard Viewer,” on page 15](#).







Help

Provides information about the product and a link to the SAS BI Dashboard product Web page. This page provides product documentation and other support information. The menu also provides links to SAS customer support and the SAS home page.

The Toolbar

The dashboard designer toolbar provides easy-to-click icons for tasks that are frequently used with dashboard objects.

Icon	Description
	Saves the contents of the tab that is currently active in the workspace. The contents can be an indicator, range, indicator data, or dashboard.
	Saves the contents of the tab that is currently active in the workspace with a new name. The contents can be an indicator, range, indicator data, or dashboard.
	Erases the last change that you made to an indicator or dashboard.
	Performs a previously erased change that you made to an indicator or dashboard.
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the left edge (position 0) of the dashboard. For more information about the alignment tools, see “Align and Size Objects” on page 95 .
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the horizontal center of the dashboard.
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the right margin of the dashboard.
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the top margin of the dashboard.
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the vertical center of the dashboard.
	Aligns the layout of the selected objects in a dashboard with the object that was selected first. If only one object is selected, it is moved to the bottom margin of the dashboard.
	When an object on a dashboard is partially or completely underneath another object, brings the selected obscured object to the front. For more information about the alignment tools, see “Align and Size Objects” on page 95 .
	When an object on a dashboard is partially or completely covering another object, sends the selected object to the back.
	Sizes the objects to the same height. The height used is that of the currently selected object. For more information about the sizing tools, see “Align and Size Objects” on page 95 .

Icon	Description
	Sizes the objects to the same width. The width used is that of the currently selected object.
	Sizes the objects to the same height and width. The height and width used is that of the currently selected object.
	Opens the Set Up Interactions window. For more information, see “Adding Interactions between Indicators” on page 104.
	Open the current dashboard in the Preview Dashboard window. Click Close to return to the dashboard designer. For more information, see “Test a Dashboard by Using Preview Dashboard” on page 127.
	Refreshes the indicator or dashboard in the workspace.
	Opens the current dashboard in the SAS BI Dashboard viewer. For more information, see Chapter 4, “Dashboard Viewer,” on page 15.




The Objects Pane

Overview

The dashboard designer Objects pane provides the Library, Layout Templates, and Static Content sections. Each section provides objects that you can use to build dashboards.

Library Section

The Library section displays the SAS Folder tree and any available dashboard objects, including indicator data, ranges, indicators, and dashboards.

- Click the **Show** list to filter the objects that are displayed in the tree.
- Double-click an object in the tree to open it. When the object opens, it appears in its own tab in the workspace.
- When a dashboard is open in the workspace, you can drag objects from the section and drop it in the workspace.
- Click  to refresh the Library section.
- Click  to create a new folder in the tree.
- Click  to delete an object from the tree.

Note: You can delete a folder only if it is empty.

Layout Templates Section

The Layout Templates section provides template objects that control the flow of indicators in a dashboard. For more information, see [“Using a Template to Lay Out Dashboard Content”](#) on page 100.

Static Content Section

The Static Content section provides objects for static content in a dashboard: labels and images. For more information, see [“Linking to Other Information by Adding Static Content”](#) on page 98.

The Workspace

When you build a dashboard, you interact with the objects that you use to build a dashboard in the workspace.

If you need more room to display a dashboard in the workspace, you can click **View** ⇒ **Maximize Workspace** to collapse the Objects and Properties panes. Or, you can click << and >> in the upper right corner of each panel. You can expand the panes to their original positions by clicking >> and << on the collapsed panes.

The Properties Pane

Overview

When you open an indicator or a dashboard, the Properties pane appears. The dashboard designer Properties pane provides properties settings for dashboards, indicators, and static objects.

Indicator Properties Pane

If you are viewing an indicator tab, the Properties pane provides the General Settings, Display Settings, and Personalized User Settings sections.

- For information about the General Settings section, see [“Setting Indicator Properties”](#) on page 75.
- For information about the Display Settings section and the display settings for each type of indicator, see [Appendix 1, “Indicator Dictionary,”](#) on page 131.
- For information about the Personalized User Settings section, see [Chapter 13, “Customizing Alerts,”](#) on page 119.

Dashboard Properties Pane

If you are viewing a dashboard tab, the Properties pane is context sensitive. When you first open a dashboard, the properties shown are for the dashboard object only. The Dashboard section provides properties that are specific to the dashboard. If you select an object within the dashboard, additional properties specific to that object are displayed in the Objects section of the Properties pane.

- For information about dashboard properties, see [“Setting Dashboard Properties”](#) on page 95
- For information about dashboard object properties, see [“Setting the Properties of Indicators and Other Objects in a Dashboard”](#) on page 97.
- For examples of using static labels and static images, see [“Linking to Other Information by Adding Static Content”](#) on page 98.

Chapter 7

How Do You Design a Dashboard?

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Overview

When you design a dashboard in the SAS BI Dashboard designer, you must understand the following concepts:

- the components that make up a dashboard
- folder organization and component names
- the information or data that you want to use in a dashboard

Dashboards and Their Components

A dashboard is a container that has a collection of one or more indicators, and labels and images that enhance the dashboard. Dashboards can display critical information in a way that can be interpreted and monitored at a glance. A dashboard can also contain links to additional types of information, including Web pages, reports, and other dashboards. A dashboard can be displayed in the dashboard viewer or in a portlet on a portal page within the SAS Information Delivery Portal.

Dashboards consist of the following components:

- indicator objects
- static objects

An indicator includes associated indicator data and some indicators include a range.

Folder Organization and Component Filenames

Overview

Before you begin to design dashboards, determine the folder organization and file naming conventions that you want to use.

Component Filenames

When you save a component file, the following file extensions are added automatically.

Component	File Extension
Dashboard	.dcx
Indicator	.idx
Indicator data	.imx
Range	.rdx

TIP You cannot rename a component file, but you can use **Save As** to save a copy of the component file with a new name. If you want to use the file with the new name, you must update the other dashboard components that include the affected file. For example, if you save an indicator file with a new name, you must update that filename in any dashboard that uses that indicator.

Folder Organization

In SAS BI Dashboard 4.3 and later, the storage folders for SAS BI Dashboard exist in the following places:

- the foundation SAS Metadata Repository
- the SAS Content Server

This storage implementation is necessary because SAS BI Dashboard objects have both a metadata component and a content component.

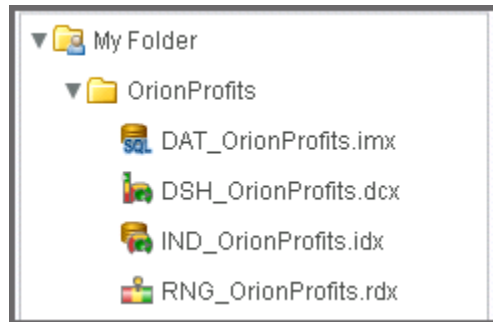
In SAS BI Dashboard 4.3 and later, you can store dashboard component files in SAS folders by using the location of your choice. You can use your own naming conventions and standards. You can organize components into projects that are easier to identify and use.

TIP Organize folders that contain dashboard objects such that any folder does not contain more than 100 objects. The response time for navigating through the folders remains below a second when individual folders contain fewer than about 100 objects.

Although you have complete flexibility to organize and name your component files, it is recommended that you save all component files for a dashboard (indicator data, range,

indicator, dashboard) in the same folder. Use the same name for the folder that you use for the dashboard.

Figure 7.1 Recommended SAS Folder Structure



Steps to Complete Before You Design a Dashboard

The SAS BI Dashboard designer has made dashboards easier than ever to create. However, you still need to think about how you want to design your dashboard before you use the dashboard designer.

1. Determine what type of information the dashboard must convey.
2. Choose the indicators that you want to display in the dashboard.
3. Locate or define the necessary data sources.

The indicators that you choose determine the types of data that are required before you can build the dashboard. You might need to create new data sources, calculated fields, or summary tables.

Designing a Dashboard

Designing a dashboard requires the following steps:

1. Define the indicator data.

For detailed steps for creating indicator data, see [“Create Indicator Data” on page 57](#).

Note: You might need to build a new information map, summary table, or stored process before creating the indicator data object. For more information, see [Chapter 8, “Defining Indicator Data,” on page 53](#).

2. Create a range, if necessary.

For detailed steps for creating a range, see [“Create a Range” on page 69](#).

Note: You might select an indicator that does not require a range. For more information, see [“Indicator Types That Support Ranges” on page 67](#).

3. Create one or more indicators.

For detailed steps for creating an indicator, see [Chapter 10, “Working with Indicators,”](#) on page 73.

4. Create the dashboard and lay out its content.

For more information, see [Chapter 11, “Laying Out Content in a Dashboard,”](#) on page 91.

5. Test the dashboard and its features.

For more information, see [Chapter 14, “Testing Dashboards,”](#) on page 127.

Chapter 8

Defining Indicator Data

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Overview

The SAS BI Dashboard *indicator data* object defines the data source and the query that retrieves data for an indicator.

Note: Previously, indicator data was referred to as the *data model*.

The core object is the indicator; a dashboard is just a collection of indicators. An indicator never has more than one set of indicator data (and is rarely used without indicator data). SAS BI Dashboard supports the use of four types of data sources:

- SAS Information Maps, which can access relational data and OLAP cubes
- SAS Stored Processes, which can access various types of data

Note: SAS BI Dashboard uses a specific type of stored process that generates and publishes WORK data sets to an Archive (.SPK package).

- SQL queries, which can access relational data
- tables, which can access data in a SAS data set that is registered in SAS metadata

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

Data Flow and Dashboards

Before you create a dashboard, you must understand how to create indicator data. 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 and JDBC queries and information maps. A dashboard can also render the output of stored processes that produce static images.

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 indicator data. After you have the data configured, the lack of constraints helps you to set up initial dashboards quickly.

Guidelines for Defining Indicator Data

Define the Data to Suit the Indicator

Use the following guidelines to define data that suits the indicator:

- Determine the indicator types to use with the indicator data and the required appearance of the resulting indicator. Then, plan the indicator data to meet your needs.

For example, gauges in a KPI indicator appear best with indicator data that produces summarized data with a limited number of data rows. If you use indicator data with significant amounts of data to drive a KPI indicator, SAS BI Dashboard attempts to produce one KPI gauge representation for each row of data in the indicator data. For significant amounts of data an indicator type that automatically summarizes the data is preferable. Bar charts are an example of this type of indicator.

- To display a single gauge in a KPI indicator, the indicator data must return a single row of data.
- To display multiple gauges in a KPI indicator, each numeric value should be associated with a descriptive name. After you define indicator data, you select the data fields to include in the indicator.
- An indicator type might support only certain date formats. Make sure that your data uses only the date formats that are supported by your selected indicator type. If the data uses a format that the indicator does not support, the date might not display correctly in the indicator.

To determine the supported date formats for an indicator type, open an indicator of the selected type in the dashboard designer. In the Display Settings section of the Properties pane, check the available values in any format lists (such as the **X-axis format** and **Y-axis format** lists).

Note: Not all indicator types use date format settings.

Design the Data for Efficient and Responsive Dashboards

Create indicator data so that it executes quickly.

- A single slow set of indicator data can slow the entire dashboard. Even when indicator data returns only a single row of data, if it must first join tables that each contain thousands of rows of data, the indicator data will not perform well.
- Information Maps are useful because you can apply filters to the data. However, if you do not require a filter, you can point your indicator data directly to the table registered in the metadata.
- (Information Map data sources) When you open an indicator data object, the Query Results tab is populated with data. If it takes awhile to for the query results to appear, it is a good indication that you should consider summarizing the data or changing the information map to be more efficient. If the query is slow when you are defining the indicator data object, it will also be slow when executing from a dashboard.
- (Information Map data sources) If you have an information map that was built specifically for a SAS Web Report Studio report, consider building an information map specifically intended for a dashboard. Doing so enables you to optimize the information map for the dashboard.

Aggregate or Summarize the Data

It is a best practice to aggregate the data as much as possible. Doing so ensures the best performance in a dashboard and avoids unexpected results, such as too many rows or gauges, or incorrect summaries.

CAUTION:

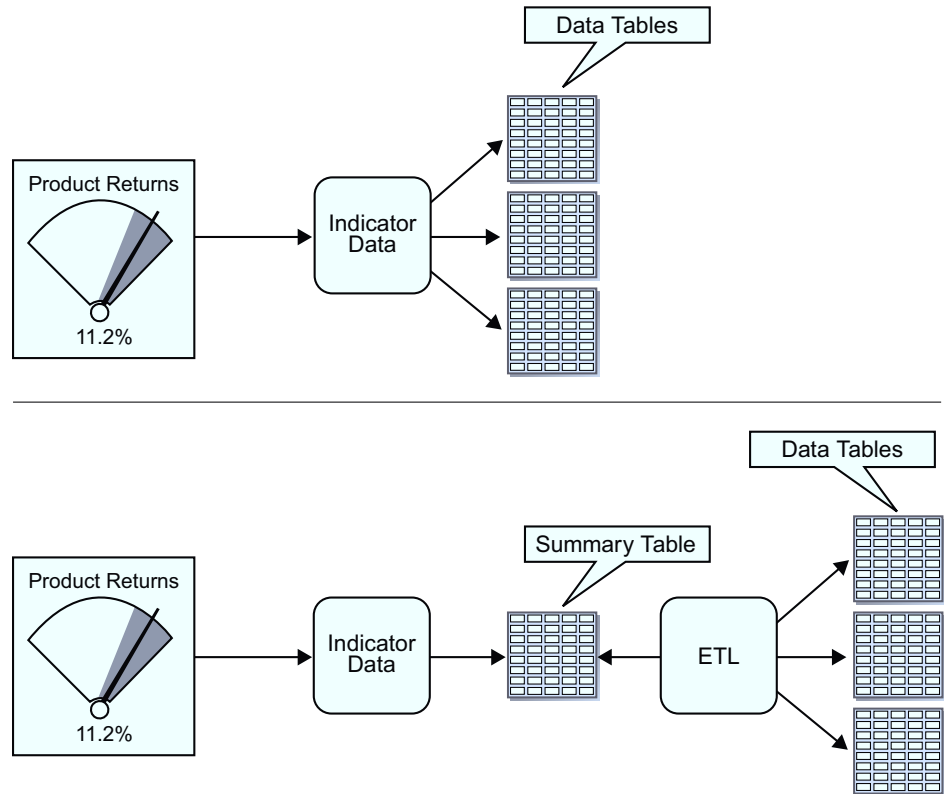
The default maximum number of rows returned by any data source is 10,000. If the source data contains more than 10,000 rows, an error message about making an adjustment appears. If possible, aggregate the data to reduce the number of rows to return.

- If the source data has too many rows, summarize the data.

Summarize data at the indicator data or in the source data. Do not rely on the indicator to perform the summary.

TIP 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. In the following figure, the first illustration shows the SAS BI Dashboard indicator data 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 indicator data then uses this summarized table.

Figure 8.1 Alternative Methods for Summarizing Data

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

- (Information Map data sources) If you choose fewer columns in the query, it is possible to avoid the row limit or an inefficiently large number of rows.
- (Information Map data sources) An information map data source easily aggregates data in such a flexible manner that a single information map can drive several dashboard indicators.
- Some indicator types support summarizing or averaging data. For a list of these indicator types, see [Appendix 2, “Indicator Types that Aggregate Data,”](#) on page 255.

Miscellaneous Guidelines

- (SQL query data sources) The underlying LIBNAME must be pre-assigned.
- (SQL query data sources) When you define an SQL query data source, you create a query that retrieves data from the data source. After you create the query, submit the query for validation. If the query is incorrect, the list is empty, and an error message is displayed.
- (OLAP Information Map data sources) 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 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.

TIP You can use the grouping feature of the bar chart with reference lines indicator with an OLAP information map to create a multi-dimensional display of data.

Create a Stored Process to Use for Indicator Data

Use the following general steps to create a SAS Stored Process that you can use as a source of indicator data in SAS BI Dashboard.

Note: These stored processes do not produce visual output. If you want to use a stored process to produce an image for the custom graph indicator, see [“Example: Creating a Custom Graph That Uses a Stored Process”](#) on page 87.

1. Write the code for the stored process that does the following things:
 - a. creates a SAS data set in the SAS Work library
 - b. publishes the data to a SAS Package file using the SAS Publishing Framework
 - c. sets the macro variable `_ARCHIVE_FULLPATH` to the path of the archive file that the stored process generates

Note: The stored process must **not**:

- include the `%STPBEGIN` and `%STPEND` macros
 - produce HTML output. SAS BI Dashboard does not support the display of HTML content.
2. In SAS Management Console, register the stored process in the SAS metadata, designate it as creating a package, and then specify the target data.

For more information about how to specify the target data, see the SAS Management Console online Help.

3. Save the stored process metadata registration.


The stored process is now ready to use in indicator data.

TIP It is recommended that these stored processes be stored in a descriptive folder indicating that the stored processes are for use as a data source in SAS BI Dashboard. Doing so eliminates confusion about mixed types of stored processes and makes it easy to find the correct stored process types.

Create Indicator Data

To create indicator data, complete the following steps in the SAS BI Dashboard designer.

Note: If any tabs are open in the workspace, close them.

1. In the workspace, click .
2. In the Create Indicator Data window, type the name to use for the indicator data component.
3. Click **OK**. A tab using the specified name appears in the workspace.
4. From the **Data source** list, click the type of data that you want to use for your indicator data.

Information map	Go to step 5.
SQL query	Go to step 6.
Stored process	Go to step 7.
Table	Go to step 8.

CAUTION:

The default maximum number of rows returned by any data source is 10,000. If the source data contains more than 10,000 rows, an error message about making an adjustment appears. If possible, aggregate the data to reduce the number of rows to return.

5. If you selected **Information map**, complete the following steps.

Select the type of data source that you want to use.

Data source: * Information map

Information Map

Select the information map and the data to use. Click **Apply Query Changes** to view your selections in the **Preview** area.

Information map: **Browse...**

Available items: Selected items:

↑
↓

Apply Query Changes

Preview

Use the **Data Mapping** tab to associate properties with data columns in the data source. Use the **Query Results** tab to view the data that is included in the indicator data.

Data Mapping
Query Results

Type	Column Name	Category Label	Label Override	Value	Hyperlink

- a. Next to the **Information map** field, click **Browse**. The Open window appears.
- b. Navigate to an information map, select it, and then click **Open**.
- c. Move data columns and filters between the **Available items** list and the **Selected items** list by selecting one or more items and clicking the arrows between the lists.

A filter is moved under the **Filters** node. By default, a data column is moved under the **Column** node.

Note:

- To make available a filter that contains a user prompt, the prompt must have a default value specified in SAS Information Map Studio.
 - If the information map is based on an OLAP cube, the **Selected items** list includes the nodes **Row** and **Slicer**. To use a data column in either of these roles, select **Row** or **Slicer** before moving the data column from the **Available items** list.
- d. To move a data column between groups, click the name of a data column in the **Selected items** list, and then move it up or down by clicking one of the arrows that are next to the list.

Note: The order of the columns in the **Selected items** list specifies the default sort order for the data that is displayed in an indicator.

- e. Go to step 9.

6. If you selected **SQL query**, complete the following steps.

Select the type of data source that you want to use.

Data source: SQL query ▼

SQL Query

Enter the SQL query to use. Click **Apply Query Changes** to view the query results in the **Preview** area.

SQL query:

Apply Query Changes

Preview

Use the **Data Mapping** tab to associate properties with data columns in the data source. Use the **Query Results** tab to view the data that is included in the indicator data.

☰ Data Mapping ☰ Query Results

Type	Column Name	Category Label	Label Override	Value	Hyperlink

- a. In the **Query** field, type the SQL query code to use.
- b. Go to step 9.

7. If you selected **Stored process**, complete the following steps.

Select the type of data source that you want to use.

Data source: * Stored process

Stored Process

Provide the stored process and data set to use. Click **Apply Query Changes** to view your selections in the **Preview** area.

Stored process: *

Published data set name: *

Always add SAS log to server log

Preview

Use the **Data Mapping** tab to associate properties with data columns in the data source. Use the **Query Results** tab to view the data that is included in the indicator data.

Type	Column Name	Category Label	Label Override	Value	Hyperlink

- a. Next to the **Stored process** field, click **Browse**. The Open window appears.
 - b. Navigate to a stored process, select it, and then click **Open**.
 - c. From the **Published data set name** list, select a data set.

Note: If a stored process does not create a data set, an error message appears when that stored process is selected.
 - d. (Optional) Click **Always add SAS log to server log** to have the SAS log added to the server log.

Note: Selecting this option enables you to review the SAS log information later.
 - e. Go to step 9.
8. If you selected **Table**, complete the following steps.

Select the type of data source that you want to use.

Data source: Table

Table

Select the table and the data to use. Click **Apply Query Changes** to view your selections in the **Preview** area.

Table: Available columns:

Libraries

- 📁 SASApp - SASD#
- 📁 SASApp - wrsdis
- 📁 SASApp - wrsten
- ▶ 📁 STP Samples

Type	Column Name	Summary	Group By

Filters

Apply Query Changes

Preview

Use the **Data Mapping** tab to associate properties with data columns in the data source. Use the **Query Results** tab to view the data that is included in the indicator data.

Data Mapping

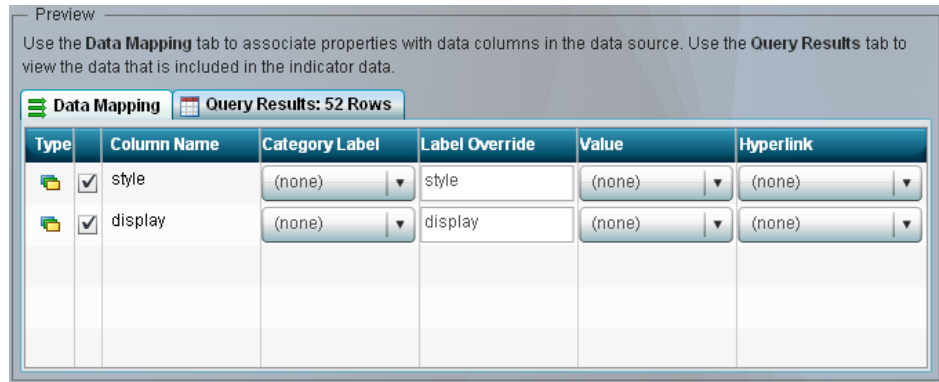
Query Results

Type	Column Name	Category Label	Label Override	Value	Hyperlink

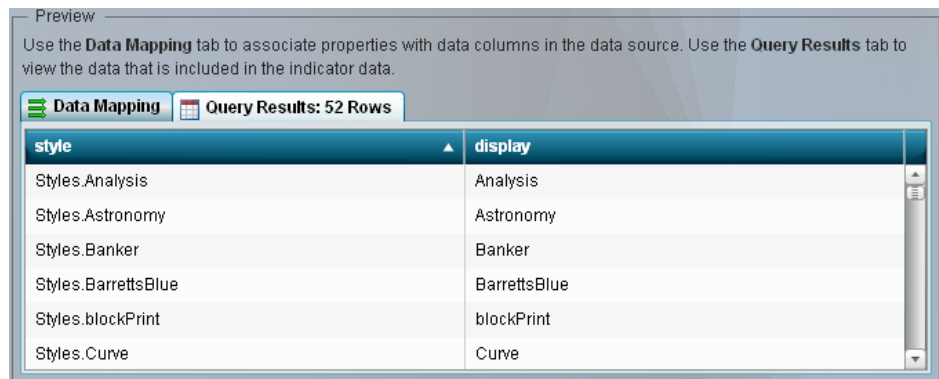
- a. From the **Table** tree, select a table. The data columns in the table appear in the **Available columns** table.
 - b. From the **Available columns** table, select the data columns to include in the indicator data by clicking the check box at the end of a row.
 - c. For each selected data column, select a method to summarize the data from the **Summary** column.

TIP By default, all numeric columns are summarized unless you select **(none)**. Summarization can produce incorrect results for the following values: date, time, and datetime. Be sure to select **(none)** for these values so they are not summarized.
 - d. For each selected data column, choose whether to group the data by clicking the check box in the **Group By** column.
 - e. To specify additional filters, type the filter (using SQL syntax) into the **Filters** field.

Note: Do not type the key word **where**. This causes an error because **where** is automatically supplied.
9. Click **Apply Query Changes**. In the **Preview Design** area, the **Data Mapping** and **Query Results** tabs are updated with the data.

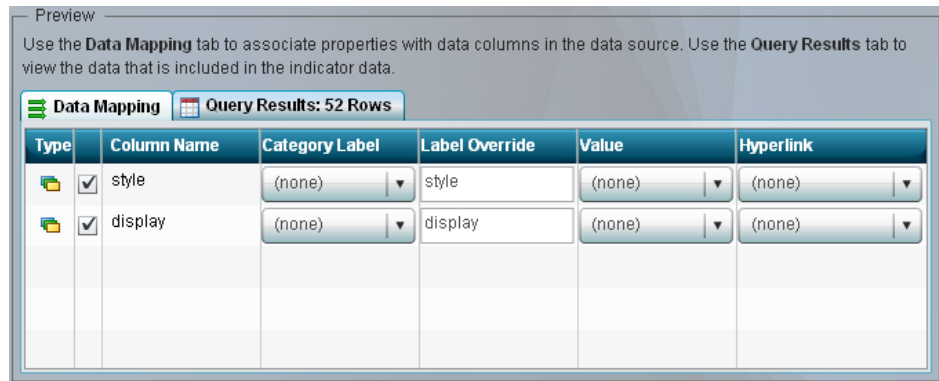


10. To view the data that is included in the indicator data, click the **Query Results** tab.



11. To associate a data point property with data columns in the data source, perform the following steps in the **Data Mapping** tab for each data point property.

Note: For more information, see “Data Column Display Attributes” on page 64.



- Next to the **Column Name** column, click the check box next to each data point property that you want to include in the indicator.
- In the **Label Override** field, type the label to use for the data point property instead of the label from the **Column Name** column.
- In the **Value** field, select the name of the column that contains the formatted value of the original value.

Note: KPI indicator subtypes that are gauges display this value at the bottom of each gauge. The value also appears in a tooltip for the gauge.

- From the **Hyperlink** list, select a data column in the data source that contains the hyperlink for the data point property.

12. Click **File** ⇒ **Save**.
13. In the Save As window, type a name and choose a location, such as **Products** ⇒ **BI Dashboard 4.4** ⇒ **DashboardConfigs**.
14. Click **Save**.
15. In the Library section of the Objects pane, navigate to the location that you selected in the Save As window. The indicator data file is located in this directory.
Note: The filename uses the name that you specified. The file extension is .imx.
16. Close the indicator data tab in the workspace.

Edit Indicator Data

To edit indicator data, complete the following steps in the SAS BI Dashboard designer:

1. In the Library section of the Objects pane, select **Indicator data** from the **Show** list.
2. Navigate to the location of the indicator data file that you want to edit, and then double-click the filename. The indicator data tab appears in the workspace.
3. To complete editing the indicator data, see steps 4 through 16 of “[Create Indicator Data](#)” on page 57.

Including Additional Data in the Indicator Data

When business users view an indicator, they can view information in tooltips when they position the mouse pointer over data points in the indicator. For example, if you have a bar chart that shows revenue by state, the tooltip displays the state and its revenue for each bar. As of the second maintenance release of SAS BI Dashboard 4.4, the tooltip displays only those data fields in the indicator data that are referenced by the indicator.

Data Column Display Attributes

When you define indicator data, part of the information that you specify is the display attributes for each data column that is retrieved.

The following descriptions are for these fields:

Column Name

is the name of the data column. You cannot modify this value.

In each type of indicator, **Column Name** is used as the default value for **Label Override**.

Category Label

is ignored. It is retained for backward compatibility with previous versions of SAS BI Dashboard.

Label Override

overrides the value provided by **Column Name**. Use this to provide an easier to understand or more descriptive name for the column.

The following table describes how **Label Override** appears in some types of indicators:

Indicator Type	Appearance of Label Override
All indicator display settings	Appears in lists that provide Column Name selections.
Custom graph	Appears in the tooltip text to the left of the colon.
Dynamic prompt	If gauges are displayed in the prompt, the label override does not appear in tooltips for the gauge.
Graph indicator types	Replaces the original Column Name value where it is used in the graph and in the graph tooltips.
Spark table	Appears in column headings of the table.
Tooltips	Replaces the original Column Name value.

Value

is the data column that contains the formatted value that is displayed. This column is optional.

The following table describes how **Value** appears in some types of indicator:

Indicator Type	Appearance of Value
Some graphical indicators	Appear as the X-axis label in some indicators such as targeted bar chart, bar chart with reference lines, and line chart with reference lines.
Custom graph	Appears as the range value and in tooltip text to the right of the colon.
Dynamic prompt	Appears as the value in the combo box. It does not appear in tooltip text.
Dynamic text	Appears as the static text value when the column is selected as the range data source.
KPI	Appears as the range value in the tooltip text and appears as the value below the gauge.
Scatter plots and range maps	Appears in point labels.
Spark table	Appears as the column value.

Hyperlink

is the data column that contains hyperlinks.

In each type of indicator, hyperlinks are embedded in gauges or individual data points in graphs.

Chapter 9

Defining Ranges

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Overview

A *range* defines the measurement intervals by which a measure is evaluated, such as below target, on target, and above target. Ranges provide a way for you to separate data values into groups. Ranges also provide options for labels and colors that you can use for each group.

Indicator Types That Support Ranges

Not all types of indicators require that you define a range. The following table describes the range requirements for indicators.

Note: You can define alerts only for indicators that you have associated with a range.

For information about defining alerts, see [Chapter 13, “Customizing Alerts,”](#) on page 119.

Indicator Type	Range		
	Required	Optional	Not Applicable
Bar chart with bullet	X		
Bar chart with reference lines	X		
Bubble plot			X
Chart with slider prompt			X
Clustered bar chart			X

Indicator Type	Range		
	Required	Optional	Not Applicable
Custom graph		X ¹	
Dual line chart			X
Dynamic prompt		X ²	
Dynamic text		X	
Forecast chart			X
Interactive summary and bar chart	X		
Interactive summary and scatter plot	X		
Interactive summary and targeted bar chart	X		
KPI	X		
Line chart with reference lines	X		
Multi-line chart			X
Needle plot			X
Pie chart			X
Range map	X		
Scatter histogram			X
Scatter plot	X		
Schedule chart			X
Simple bar chart			X
Spark table		X	
Stacked bar chart			X
Targeted bar chart	X		


¹ A range is required if you also select indicator data to use with the custom graph indicator.

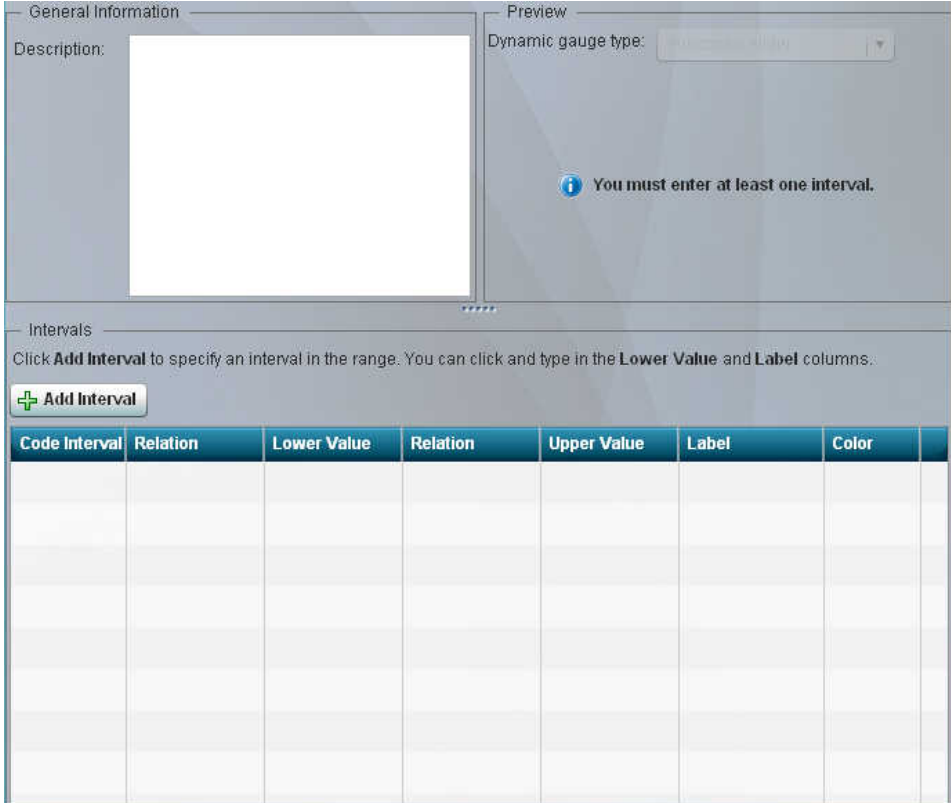
² As of the second maintenance release of SAS BI Dashboard 4.31, a range is no longer required when you create a dynamic prompt indicator. However, the range is required if you select the **Combo box with gauge** setting.

Indicator Type	Range		
	Required	Optional	Not Applicable
Tile chart	X		
Vector plot	X		
Waterfall chart	X		

Create a Range

To create a range, complete the following steps in the SAS BI Dashboard designer:

1. In the workspace, click .
2. In the Create a Range window, type the name to use for the range component.
3. Click **OK**. A tab using the specified name appears in the workspace.



General Information

Description:

Preview

Dynamic gauge type:

You must enter at least one interval.

Intervals

Click **Add Interval** to specify an interval in the range. You can click and type in the **Lower Value** and **Label** columns.

+ Add Interval

Code Interval	Relation	Lower Value	Relation	Upper Value	Label	Color

4. (Optional) In the **Description** field, type a description of the range.
5. For each interval that you want to add to the range, complete the following steps.

TIP You can add the intervals in any order; the software orders the intervals correctly in the table.

- a. Click **Add Interval**. The Add Interval window appears.
- b. Type a numeric interval value in the **Upper bound** field and click **OK**. The interval is added to the table of intervals.

Note: Valid input includes a sign, digits, and a locale-dependent decimal separator.

6. For each interval, complete the following steps in the table to define the interval:

Code Interval	Relation	Lower Value	Relation	Upper Value	Label	Color	
Below t			<	50	Below target		✕
Below t	>=	50	and <	500	Below target		✕
On targ	>=	500	and <	750	On target		✕
Above t	>=	750	and <	1,000	Above target		✕
Above t	>=	1,000			Above target		✕

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

Note: The available intervals vary depending on the gauge.
 - b. In the **Relation** column, select an operator from the list, and specify a value in the adjacent **Lower Value** column.
 - c. In the **Label** column, click in the cell and type the label.
 - d. Click in the **Color** column and select a color from the color palette.

Note: Custom-defined colors ranges are not used by the following indicators:

 - KPI indicator subtypes that are not dynamic. These are any subtypes that do not have *dynamic* in their names.
 - any non-dynamic gauge types that appear in a spark table column.
 - e. To delete an interval, click ✕ next to the interval.
7. To preview how the range will appear, select a gauge type from the **Dynamic gauge type** list.

TIP The **Preview** area provides an easy way to see how the range appears in different types of dynamic gauges. However, some gauge types do not show the upper and lower range segments.

8. Click **File** ⇒ **Save**.
9. In the Save As window, type a name and choose a location, such as **Products** ⇒ **BI Dashboard 4.4** ⇒ **DashboardConfigs**.
10. Click **Save**.
11. In the Library section of the Objects pane, navigate to the location that you selected in the Save As window. The range file is located in this directory.
Note: The filename uses the name that you specified. The file extension is .rdx.
12. Close the range tab in the workspace.

Note: SAS BI Dashboard administrators can control which users can use the range. For more information, see the SAS Management Console online Help.

Edit a Range

To edit a range, complete the following steps in the SAS BI Dashboard designer:

1. In the Library section of the Objects pane, select **Range** from the **Show** list.
2. Navigate to the location of the range file that you want to edit, and then double-click the filename. The range tab appears in workspace.
3. To complete editing the range, see steps 4 through 12 of [“Create a Range” on page 69](#).

Chapter 10

Working with Indicators

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Overview

An *indicator* is an object that defines the display settings, image types, and links for the measures that appear in a dashboard.

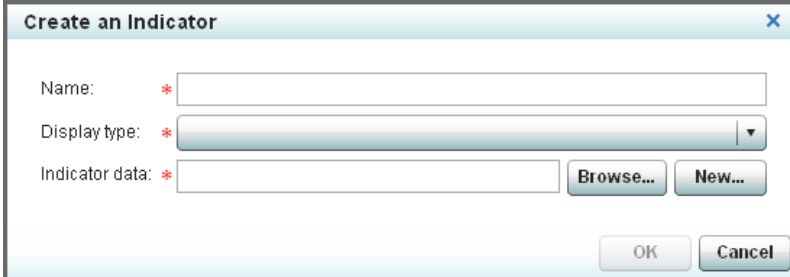
A dashboard can contain one or more indicators. SAS BI Dashboard provides more than 25 types of indicators that you can use. You can select and customize each indicator so that it displays its data in the way that makes the most sense for your organization. Each indicator type has its own *display settings*. The way an indicator displays its data can vary greatly depending on how you customize the display settings.

TIP Appendix 1, “Indicator Dictionary,” on page 131 provides detailed information about display settings for each indicator type. Before you create the indicators for your dashboard, consider exploring the dictionary and its examples.

Create an Indicator

To create an indicator, complete the following steps in the SAS BI Dashboard designer:

1. In the workspace, click . The Create an Indicator window appears.



2. In the **Name** field, type the name.
3. From the **Display type** list, select the indicator type to use.

Note:

- For information about the indicator display types, see [Appendix 1, “Indicator Dictionary,” on page 131](#).
 - You can always change the indicator type later. For more information, see [“Change the Indicator Type” on page 76](#).
 - Depending on your selection, additional controls might appear in the Create an Indicator window.
4. If you selected KPI, select the type of gauge to use in the KPI from the **Gauge type** list.
 5. Specify the indicator data to use.

Note: Some indicator types do not require indicator data.

Existing indicator data	Next to the Indicator data field, click Browse , navigate to the indicator data, and then open it.
-------------------------	--

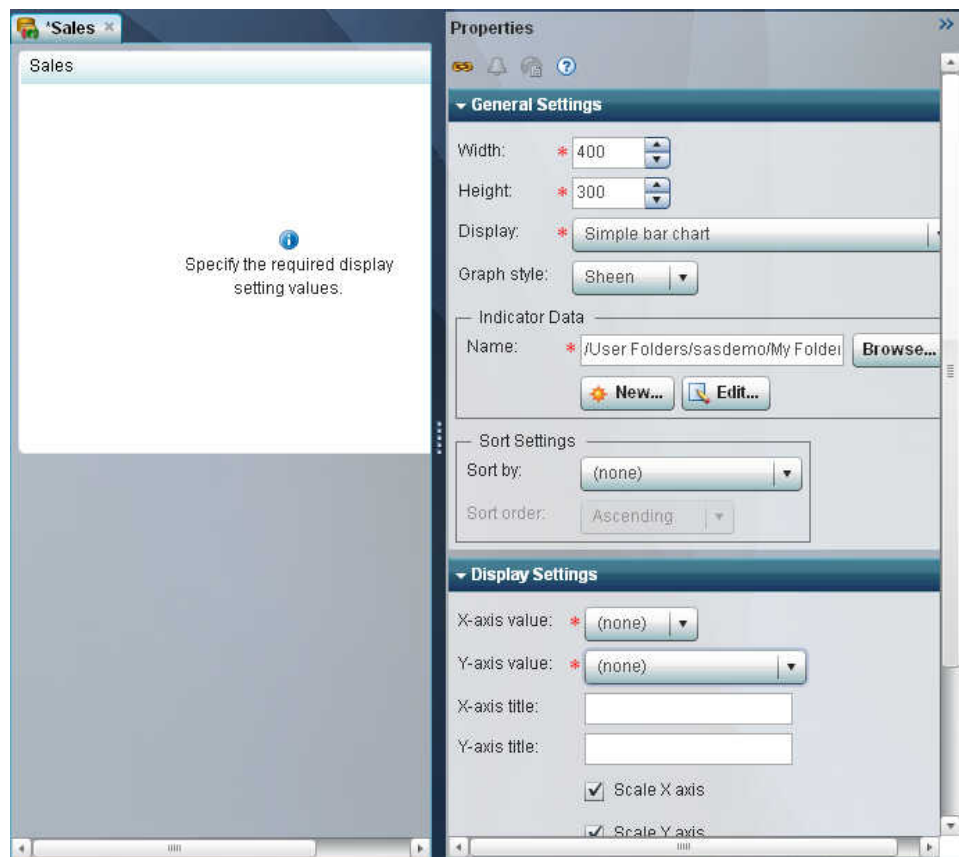
New indicator data	Next to the Indicator data field, click New . For more information, see Chapter 8, “Defining Indicator Data,” on page 53 .
--------------------	--

6. If you selected an indicator type that supports the use of a range, specify the range to use.

Existing range	Next to the Range field, click Browse , navigate to the range file, and then open it.
----------------	---

New range Next to the **Range** field, click **New**. For more information, see [“Create a Range” on page 69](#).

7. If you selected the following indicator types, specify the X-axis range and Y-axis range:
 - Interactive summary and scatter plot
 - Range map
8. Click **OK**. The indicator tab opens in the workspace. Use the **Properties** pane to specify additional settings and features for the indicator. For more information, see [“Setting Indicator Properties” on page 75](#).



Setting Indicator Properties

Specify the Height and Width of the Indicator

You can change the height and width of an indicator in the following ways:

- In the workspace, click the indicator and drag the resize handles.
- In the General Settings section of the Properties pane, change the height and width by editing the values in the **Height** and **Width** fields.

When setting the indicator height and width, remember the following information:

- The height and width settings apply only when the indicator is displayed by itself, not on a dashboard. These width and height properties are the *default* width and height. You can customize these values further when you add the indicator to a dashboard. When displayed on a dashboard, the indicator height and width are specified in the Object section of the dashboard Properties pane.
- The following indicator types have minimum legible dimensions of 380 x 450 pixels:
 - interactive summary and bar chart
 - interactive summary and scatter plot
 - interactive summary and targeted bar chart

Change the Indicator Type

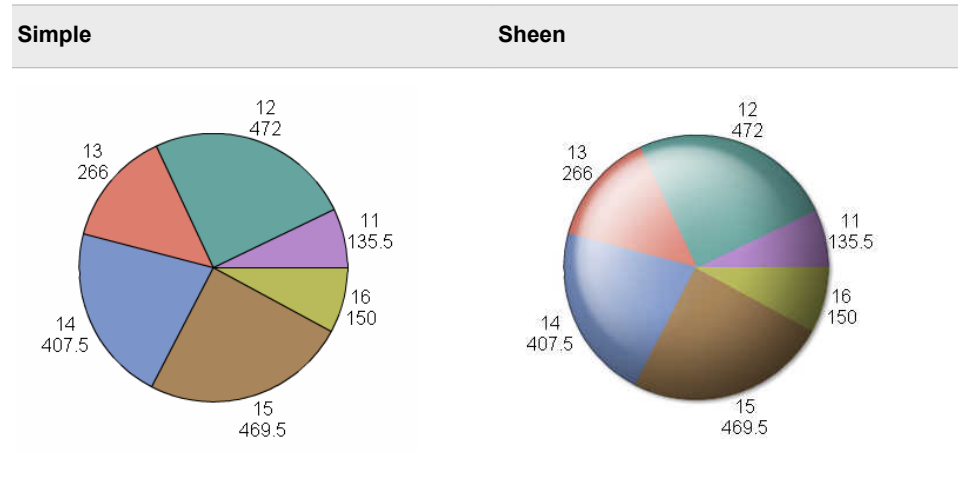
When you created the indicator, you selected the indicator type. However, you can change the selection at any time.

In the General Settings section of the Properties pane, select the indicator type to use from the **Display** list.

Indicator Type	Task
KPI	If you select KPI , see “Customize a KPI Indicator” on page 79 .
Spark table	See “Example: Creating a Spark Table” on page 82 .
All other selections	See “Specify How to Display Data in the Indicator” on page 78 .

Specify the Graph Style

You can specify a graph styling to apply to your selected indicator. Some selections are easier to read than others. For example, **Simple** and **Crisp** are typically easier to read than **Sheen**. You might want to view the different selections on the computer displays that are used by your business users to make sure a graph style is easy to read on the applicable displays.

Table 10.1 Comparing the Simple and Sheen Graph Styles

In the General Settings section of the Properties pane, select the graph styling to use from the **Graph style** list. If you do not want to style the data, select **(none)**.

Change the Indicator Data to Use

When you created the indicator, you selected the indicator data to use. However, you can change the selection at any time.

In the General Settings section of the Properties pane, complete the applicable step:

Existing indicator data	Next to the Indicator data field, click Browse , navigate to the indicator data, and then open it.
-------------------------	--

New indicator data	Next to the Indicator data field, click New . For more information, see Chapter 8, “Defining Indicator Data,” on page 53 .
--------------------	--

Change the Range to Use

When you created the indicator, if you selected an indicator type that supported the use of a range, you selected the range to use. However, you can change the selection at any time.

In the General Settings section of the Properties pane, complete the applicable step:

Existing range	Next to the Range field, click Browse , navigate to the range file, and then open it.
----------------	---

New range	Next to the Range field, click New . For more information, see “Create a Range” on page 69 .
-----------	--

Specify the Sort Order

You can sort the data that is displayed in some indicator types. The Column Names in the indicator data provide the selections to sort by.

In the General Settings section of the Properties pane, select the column name to use from the **Sort by** list. If you do not want to sort the data, select **(none)**. From the **Sort order** list, select whether to sort the data in ascending or descending order.

Note: If no **Sort order** selection is specified, the incoming indicator data sequence is used by default. You can verify the default ordering by editing the indicator data and viewing the data in the **Query Results** tab. For indicator data that uses an information map, you can specify the default sort order by changing the order of the columns in the **Selected items** list.

Specify How to Display Data in the Indicator

The display settings determine which data is included in the indicator, how the data is grouped, how the data is summarized, and so on.

In the Display Settings section of the Properties pane, select the display settings to use for the indicator. The available settings vary depending on the selected indicator. For information about the display settings for each type of indicator, see [Appendix 1, “Indicator Dictionary,”](#) on page 131.

Customize Indicator Alerts

Indicators provide the alerting feature in the SAS BI Dashboard. This feature, which is available in the Personalized User Settings section of the Properties pane, is available only for indicators that support ranges. You can create alerts in the following ways:

- Create indicator alerts for a user or groups of users. See [“Working with Alerts for Another User or a Group of Users”](#) on page 121.
- Enable a user to create personalized indicator alerts. See [“Enable Personalized Indicator Alerts”](#) on page 125.

Define Links in an Indicator

You can define links in an indicator that opens other content. For more information, see [“Adding Links to Indicators or Other Content”](#) on page 112.

Specify Default Parameter Values for an Indicator

If the indicator data supports parameters, you can specify default parameter values for the associated indicator. The following types of indicator data support parameters:

- SAS Information Maps that are based on relational tables and contain a filter
- SAS Stored Processes that have parameters registered in the metadata

If the indicator data supports parameters,  is available at the top of the Properties pane.


Customize a KPI Indicator

If you select **KPI** from the **Display** list, complete the following steps.

Note: For more information, see “KPI (Key Performance Indicator)” on page 189.

1. In the General section of the Properties pane, from the **Gauge** list, select the type of gauge to use for the indicator.
2. If the **Gauge style** list appears, select a gauge style.
3. If you select a dynamic gauge, complete the following steps.

Note: Dynamic gauges include the word “dynamic” in the gauge name.

- a. Click  at the top of the Properties pane. The Gauge Properties window appears. Available settings varies depending on the selected style of gauge.

Gauge properties: Dynamic dial [X]

Display range intervals

Interval format:

[Dropdown menu]

Gauge Size

Dynamically scale gauges

Number of columns: 5

Width: 80 Height: 80

Orientation

Flip horizontal Flip vertical

Ghost

Enabled

Gray scale

Inactive color: [Color swatch]

Automatic ghost

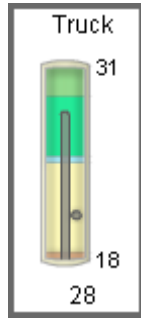
Decrease saturation by (%): 85

Brighten by (%): 10

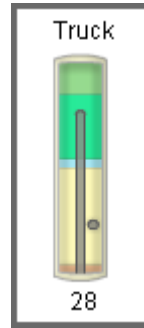
Close

- b. To display range intervals (tick marks) on the gauge, click **Display range intervals**, and then select the format from the **Interval format** list.

With Range Intervals Displayed

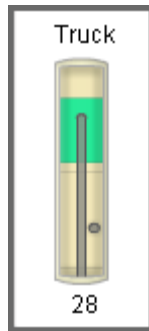


Without Range Intervals Displayed

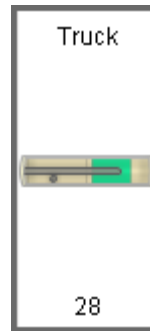


- c. To specify the dimensions of the gauge, perform one of the following steps in the **Gauge Size** area:
- Click **Dynamically scale gauges** and then specify the number of columns.
 - Clear **Dynamically scale gauges** and then type values for the height and width.
- d. Specify how to orient the gauge by selecting one of the following settings:

Flip Vertical

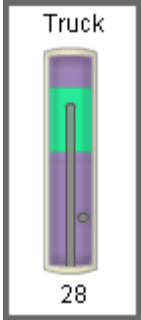

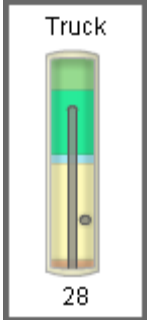


Flip Horizontal

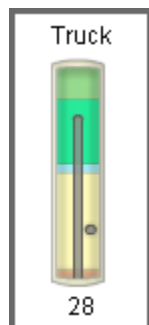


- e. To change the colors in the gauge to create a ghost effect, click **Enabled** and select one of the following settings in the **Ghost** area:

Setting	Effect on Gauge	Description
Gray scale		The selected interval is a darker gray than the other intervals.

Setting	Effect on Gauge	Description
Inactive color		<p>The areas that are not part of the selected interval are a specific color. To select the color, click .</p> <p><i>Note:</i> In this example, the Inactive color setting is set to purple.</p>
Automatic ghost		<p>The software determines how to best create the ghost colors for the intervals.</p> <p>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.</p> <p>To brighten the image, type a value in the Brighten by (%) field.</p> <p><i>Note:</i> In this example, the Decrease saturation by (%) setting is set to 60% and the Brighten by (%) setting is set to 10%.</p>

- f. When complete, click **Close** to exit the Gauge Properties window.
4. (Optional) In the **Sort Settings** area, specify how to sort the displayed data by completing the following steps:
 - a. From the **Sort by** list, select the data column to use to sort your data.
 - b. From the **Sort order** list, select ascending or descending order.
5. In the Display Settings section of the Properties pane, from the **Range value** list, select the value to which you want to apply the defined range intervals.
6. From the **Range value 2** list, select a second data value point to represent in the gauge. An example of this second data value point is the dot in the following gauge:



Note: Not all gauges use this property.

7. From the **KPI title** list, select the title that you want to use for the gauges displayed in the KPI indicator. For example, if you select **Name**, each gauge is titled with a name from the **Name** column in the data.

8. If the values that you selected for the KPI title are long, from the **Lines for title** list, select the number of lines that you want to reserve for displaying the KPI title.

Note: If necessary, word wrapping occurs in the middle of the string, but only if you select multiple title lines. If enough lines are not available, the string is truncated to the width of the gauge.

9. Save the indicator. For more information, see [“Save an Indicator” on page 89](#).









Example: Creating a Spark Table

Overview

This example describes how to create a spark table indicator that displays a sparkline in one column and gauges in another column. Depending on how it's defined, the spark table indicator can show summary data, detailed data, or trend data. Each row can include table data, gauges, or a sparkline.

The following spark table example displays data and gauges in the second column and a sparkline in the third column.

Figure 10.1 Example of a Spark Table Indicator with Gauges and a Sparkline Graph

Product Sales Comparison			
Product Line	2007 Total Sales	Avg Monthly Sales	Monthly Sales Trend
Children	\$1,863,118	\$155,260 	
Clothing	\$5,725,109	\$477,092 	
Outdoors	\$4,706,055	\$392,171 	
Sports	\$7,469,216	\$622,435 	

For more information, see [“Spark Table” on page 227](#).

Identify the Indicator Data to Use

Before you can create the indicator, you must identify the indicator data that you want to use. In this example, the spark table has four columns:

- **Product Line**
- **2007 Total Sales**
- **Avg Monthly Sales**
- **Monthly Sales Trend**

Three of these columns aggregate the data that they use:

- The **2007 Total Sales** column sums its data.
- The **Avg Monthly Sales** column averages its data.
- The **Monthly Sales Trend** column sums its data for the sparkline.

For each of these columns, there must be enough data points in the indicator data to be aggregated.

To display a sparkline, the data must provide the following variables:

- an X-axis variable
- a group-by variable
- a metric variable

This example uses the following indicator data:

Actual	Date Order Was Delivered	Product Line	Region
127348.2	Jan2007	Children	Asia
390431.7025	Jan2007	Clothing	Asia
331445.64	Jan2007	Outdoors	Asia
555983.2925	Jan2007	Sports	Asia
124623.65	Feb2007	Children	Asia
297837.0625	Feb2007	Clothing	Asia
325775.98	Feb2007	Outdoors	Asia
468454.6375	Feb2007	Sports	Asia
124680	Mar2007	Children	Asia
348945.6875	Mar2007	Clothing	Asia
269814	Mar2007	Outdoors	Asia
384947.2375	Mar2007	Sports	Asia


From this indicator data, the column data used for the sparkline variables are:


- an X-axis variable: **Date Order Was Delivered**
- a group-by variable: **Product Line**
- a metric variable: **Actual**

To create the sparkline, the data points that are provided by the source data selection **Actual** are summed for each product line. Then the sum is plotted for each sparkline by using the **Spark X axis** selection **Date Order Was Delivered**. The resulting sparklines show the trend of sales by month for each product line.

Create the Spark Table Indicator

To create a spark table indicator for use in a dashboard, complete the following steps in the SAS BI Dashboard designer:

1. In the workspace, click . The Create an Indicator window appears.
2. In the **Name** field, type the name.
3. From the **Display type** list, select **Spark table**.
4. Next to the **Indicator data** field, click **Browse**, navigate to the indicator data, and then open it.



Create an Indicator

Name * Product Sales Comparison

Display type: * Spark table

Indicator data: * Monthly Product Sales Filtered By Region.imx **Browse...** **New...**

OK **Cancel**

5. Click **OK**. The indicator tab opens in the workspace and the spark table indicator appears with all of the available indicator data columns.


Product Sales Comparison				
Actual	Date Order Was Deliver...	Product Line	Region	
127348.2	2007JAN	Children	Asia	
390431.7025	2007JAN	Clothing	Asia	
331445.64	2007JAN	Outdoors	Asia	
555983.2925	2007JAN	Sports	Asia	
124623.65	2007FEB	Children	Asia	
297837.0625	2007FEB	Clothing	Asia	
325775.98	2007FEB	Outdoors	Asia	
468454.6375	2007FEB	Sports	Asia	
124680	2007MAR	Children	Asia	
348945.6875	2007MAR	Clothing	Asia	
269814	2007MAR	Outdoors	Asia	
384947.2375	2007MAR	Sports	Asia	
141930.45	2007APR	Children	Asia	
425588.5625	2007APR	Clothing	Asia	

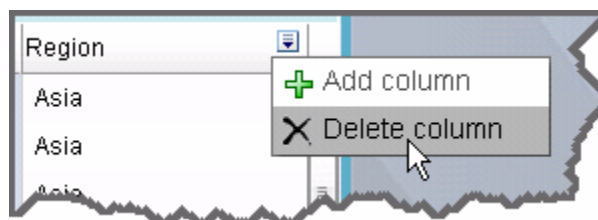
6. You can remove data columns from the spark table that you do not want to display. Complete the following steps.


Note: This removal only affects what the spark table indicator displays. It does not affect the indicator data object itself.

- a. Hover over the column heading of the data column that you want to remove. The column menu appears.



- b. Click  and select **Delete column**. The column is removed from the spark table. In this example, the **Region** column and the **Date Order Was Delivered** column are deleted.



7. In the Properties pane, view the Display Settings section.
- From the **Spark group by** list, select the value that you want to group by. In this example, **Product Line** is selected.
 - From the **Spark X axis** list, select the value that you want to use for the X axis of the sparkline. In this example, **Date Order Was Delivered** is selected.
8. To add a column for the sparkline, hover over the column heading of the data column that is to the left of where you want to add the sparkline column. Click  and select **Add column**. The new column appears in the spark table.
9. To configure the new column to display a sparkline, complete the following steps:

- a. If the new column is not highlighted, click the column heading to highlight it.
- b. In the Properties pane, view the Column section.
- c. From the **Source data** list, select the metric column to display on the Y axis of the sparkline. In this example, **Actual** is selected.
- d. In the **Column title** field, enter a title that labels the sparkline. In this example, **Monthly Sales Trend** is entered. The title labels the trend data for the business user.
- e. In the **Column width (%)** field, select the width to use for the column. In this example, **50** is selected.
- f. From the **Aggregate function** list, select **Sparkline** to use the sparkline feature in the column.

Note: The **Group by** selection is **Product Line**. The data points that are provided by the source data selection **Actual** are summed for each product line. Then the sum is plotted for each sparkline by using the **Spark X axis** selection **Date Order Was Delivered**. The resulting sparklines show the trend of sales by month for each product line.

10. To configure the **Avg Monthly Sales** column, complete the following steps:

- a. Click the column heading to highlight the column and view its properties in the Column section.
- b. From the **Source data** list, select the metric column to display. In this example, **Actual** is selected.
- c. In the **Column title** field, enter a title that labels the column. In this example, **Avg Monthly Sales** is entered.
- d. In the **Column width (%)** field, enter the width to use for the column. In this example, **20** is selected.
- e. From the **Aggregate function** list, select **Average** to provide the average for each product row.

Note: The data points provided by the source data selection **Actual** are averaged for each product line. The **Group by** selection is **Product Line**.


- f. From the **Format** list, select **\$123,456** to format the average monthly sales data.
- g. In the **Range** field, specify a range definition to use.
- h. From the **Gauge type** list, select the type of gauge that you want to use in the column. In this example, **Dynamic radial dial** is selected.
- i. From the **Range Value** list, select the value to which you want to apply the defined range intervals. In this example, **Actual** is selected.

11. To configure the **Sales Amount** column, complete the following steps:

- a. Click the column heading to highlight the column and view its properties in the Column section.
- b. From the **Source data** list, select the metric column to display. In this example, **Actual** is selected.
- c. In the **Column title** field, enter a title that labels the column. In this example, **2007 Total Sales** is entered.
- d. In the **Column width (%)** field, enter the width to use for the column. In this example, **20** is selected.

- e. From the **Aggregate function** list, select **Total** to provide the total for each product row.
Note: The data points provided by the source data selection **Actual** are summed for each product line. The **Group by** selection is **Product Line**.
 - f. From the **Format** list, select **\$123,456** to format the sales total data.
12. To configure the **Product Line** column, complete the following steps:
- a. Click the column heading to highlight the column and view its properties in the Column section.
 - b. From the **Source data** list, select the metric column to display. In this example, **Product Line** is selected.
 - c. In the **Column title** field, enter a title that labels the column. In this example, **Product Line** is entered.
 - d. In the **Column width (%)** field, enter the width to use for the column. In this example, **15** is selected.
13. Adjust the columns in the spark table by clicking to highlight each column heading. Then, in the Column section of the Properties pane, enter the width to use for the highlighted column in the **Column width (%)** field.

TIP

- When adjusting the width of the columns in a spark table, work from left to right in the spark table.
 - Use the **Column width (%)** list to change the column width instead of dynamically resizing the column by dragging the column border. Dragging causes all of the data in the column (such as sparklines) to be recalculated. The recalculation can cause performance delays.
 - Column size changes made by dragging are not saved with the indicator. Only column size changes in the **Column width (%)** field are saved with the indicator.
14. Click  to save the spark table indicator.

Product Sales Comparison			
Product Line	2007 Total Sales	Avg Monthly Sales	Monthly Sales Trend
Children	\$1,863,118	\$155,260	
Clothing	\$5,725,109	\$477,092	
Outdoors	\$4,706,055	\$392,171	
Sports	\$7,469,216	\$622,435	

The spark table is now available for use in a dashboard. For more information about creating a dashboard, see [Chapter 11, “Laying Out Content in a Dashboard,”](#) on page 91.

Example: Creating a Custom Graph That Uses a Stored Process

Overview

This example describes how to create a stored process and a custom graph indicator that uses the stored process. By using a stored process, you can create dashboards that display images created by using SAS/GRAPH.

For more information, see [“Custom Graph” on page 156](#).

Create the Stored Process

When you create the stored process, it must meet the following requirements:

- create an image file in one of the following formats: PNG, JPG, and GIF (but not animated GIF).
- use streaming output.
- write directly to `_WEBOUT`.
- **not** include the `%STPBEGIN` and `%STPEND` macros.
- **not** produce HTML output. SAS BI Dashboard does not support the display of HTML content.

The stored process that you want to use must include `GOPTIONS` statements to direct the output to an image file through the special fileref `_WEBOUT`. Add the following code at the beginning of the SAS/GRAPH code that creates the image:

```
goptions gsfname=_webout gsfmode=replace;
goptions device=png;
```

Note: The device setting must be GIF, JPG, or PNG.

Be sure to use the following settings in SAS Enterprise Guide:

- Turn off stored process macros.

In the Stored Process Manager window, view the SAS Code pane. Turn off stored process macros by clicking **Include code for** and clearing the **Stored process macros** selection. The following message appears:

```
The append macros setting is disabled and the SAS code does not
contain the %stpbeg and %stpend macros.
Would you like to turn on the append macros setting?
```

Click **No** to dismiss the message.

- Specify the stored process server.

In the Stored Process Manager window, view the Execution Options pane. In the **Execution server** field, select **SASApp — Logical Stored Process Server** and specify the location of the Stored Process server.

- Set the result type to **streaming**.

In the Stored Process Manager window, view the Execution Options pane. In the **SAS Result Types this Stored Process can Support** are, select **Streaming**.

Run the stored process to make sure the output file is created. It is also a best practice that detects whether your operating system permissions are adequate.

When the stored process is created successfully, complete the following steps to copy the Web address that executes the stored process:

1. Open the Stored Process Web application.
2. Click **List Available Stored Processes**.
3. Locate the stored process that you created and click to open it.
4. Right-click the stored process image in the right pane and select **Properties**.
5. In the Properties window, select and copy the Web address from the **Address (URL)** field.

Note: In some Web browsers, you might have to scroll down while you select the Web address in order to copy the entire Web address.

Create the Custom Graph Indicator

To create a custom graph indicator for use in a dashboard, complete the following steps in the SAS BI Dashboard designer:

1. Create a new indicator and from the **Display type** list, select **Custom Graph**. For detailed steps, see [“Create an Indicator” on page 74](#).

Note: The custom graph indicator does not require that you select indicator data or a range.


2. In the open indicator, view the Properties pane. In the Display Settings section, in the **Image Web address** field, paste the stored process Web address that you copied from the Stored Process Web application.

When you paste the URL into the field, remove the complete `_ACTION` parameter from the URL. For example:

- Original URL: `http://www.example.com/SASStoredProcess/do?_action=form,properties,execute,no_banner,newwindow&_program=%2FShared+Data%2FSTP%2FCustomGraph`
- Modified URL: `http://www.example.com/SASStoredProcess/do?_program=%2FShared+Data%2FSTP%2FCustomGraph`

Note: This field does not support relative pathnames. If you import or export the custom graph indicator as part of a package, you must update the path in this field.

For more information, see [“Create the Stored Process” on page 87](#).

3. If the stored process image is accessed from another domain, select **Use proxy**.
4. Click  to save the custom graph indicator.

The custom graph is now available for use in a dashboard. For more information about creating a dashboard, see [Chapter 11, “Laying Out Content in a Dashboard,” on page 91](#).

TIP


- When you add the custom graph indicator to a dashboard, if the custom graph is a complex image, consider enabling the zoom feature for the indicator. The

custom graph indicator can appear small in the dashboard, but the user can zoom in on the image to view its detail easily. For more information, see [“Enabling Zoom for an Indicator or Static Content”](#) on page 116.

- Test the custom graph in the dashboard by using the preview feature. For more information, see [“Test a Dashboard by Using Preview Dashboard”](#) on page 127.

Save an Indicator

To save an indicator, complete the following steps in the indicator tab:

1. Click .
2. In the Save As window, type a name and choose a location, such as **Products** ⇒ **BI Dashboard 4.4** ⇒ **DashboardConfigs**.
3. Click **Save**.
4. In the Library section of the Objects pane, navigate to the location that you selected in the Save As window. The indicator file is located in this directory.

Note: The filename uses the name that you specified. The file extension is .idx.

5. Close the indicator tab in the workspace.

Edit an Indicator

To edit an indicator, complete the following steps in the SAS BI Dashboard designer:

1. In the Library section of the Objects pane, select **Indicators** from the **Show** list.
2. Navigate to the location of the indicator file that you want to edit, and then double-click the filename. The indicator tab appears in workspace.

Chapter 11

Laying Out Content in a Dashboard

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Overview

A dashboard is a container that has a collection of one or more indicators, and labels and images that enhance the dashboard. Dashboards can display critical information in a way that can be interpreted and monitored at a glance. A dashboard can also contain links to additional types of information, including Web pages, reports, and other dashboards. A dashboard can be displayed in the dashboard viewer or in a portlet on a portal page within the SAS Information Delivery Portal.

When you create a dashboard, you can lay out dashboard content in the following ways:

- manually. You can specify each aspect of the layout by making changes to the indicator and dashboard property settings.
- by using a template. You can use a layout template to quickly and easily layout the content of your dashboard. The template dynamically flows the indicator layout to the size of the dashboard. For more information, see [“Using a Template to Lay Out Dashboard Content” on page 100](#).

Considerations

When designing a dashboard, remember the following considerations:

- When a user makes comments about an indicator, the comments are tied to that indicator. Any comments made about the indicator in one dashboard might be inappropriate for that indicator in another dashboard.
- Font settings are stored with the dashboard and not the indicator. These settings must be set for an indicator in each dashboard that uses it.
- (When using a template only) When the SAS BI Dashboard draws the indicators within a dashboard, the indicators are wrapped into rows or columns based on the width or height specified for the individual indicators and the dimensions of the template. For example, if a dashboard has ten indicators with a width of 180 pixels each, the total required width for the dashboard is 1800 pixels. If the dashboard 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.

Note: The indicator width is specified when you define the display settings for an indicator. For more information, see [“Specify the Height and Width of the Indicator” on page 75](#).

Because a KPI indicator can contain multiple gauges, special considerations apply when adding KPI indicators to a dashboard:

- A single KPI indicator that contains multiple gauges manages its horizontal alignment correctly. But if there are several indicators, each with only one dynamic gauge, 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 align the entire dashboard correctly.

- (Dynamic gauge styles only) You can use disproportionate dimensions to create extra white space around a gauge.
- (Dynamic gauge styles only) A KPI indicator width that is less than the dynamic gauge width causes scroll bars to appear in the dashboard. If you want the indicators to wrap correctly, ensure that the KPI indicator width is larger than the dynamic gauge width.
- (Dynamic gauge styles only) 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. For example, a dynamic gauge that is 100x200 does not grow, and white space is added around the gauge until the dimensions are at least 200x400. For more information about gauge size, see [“Customize a KPI Indicator” on page 79](#).
- Gauge styles with a fixed size can cause the KPI indicator to flow outside its boundary box. The box is still shown at the original size, but the gauges extend outside the box. If you add more indicators to the dashboard, the gauges in the KPI indicator that extend outside the boundary box are obscured. The results can be difficult to read and this situation should be avoided.

Create a Dashboard

To create a new dashboard in the SAS BI Dashboard designer, complete the following steps:

1. Click  in the workspace when you first open the dashboard designer. The Create a Dashboard window appears.
2. Type the name, and then click **OK**.
3. You can add content to the dashboard in the following ways:
 - To add an indicator to the dashboard, drag an indicator from the Library section of the Objects pane onto the dashboard or into a container.
Note: You can add an indicator to the same dashboard only once.
 - To add a label or an image, drag one from the Static Content section of the Objects pane onto the dashboard. For information about static content, see [“Overview” on page 98](#).
 - To add a template to the dashboard, drag one from the Layout Templates section of the Objects pane onto the dashboard. For more information, see [“Using a Template to Lay Out Dashboard Content” on page 100](#).
4. Set the dashboard properties. For information, see [“Setting Dashboard Properties” on page 95](#).
5. Set the properties of the objects that you added to the dashboard. For information, see [“Setting the Properties of Indicators and Other Objects in a Dashboard” on page 97](#).
6. Click  to save the dashboard.
7. In the Save As window, type a name and choose a location, such as **Products** ⇒ **BI Dashboard 4.4** ⇒ **DashboardConfigs**.

TIP Organize your folder structure before you create a dashboard and its components. Changing file locations afterwards is difficult.

8. Click **Save**.
9. In the Library section of the Objects pane, navigate to the location that you selected in the Save As window. The dashboard file is located in this directory.

Note: The filename uses the name that you specified. The file extension is .dcx.

10. Test the dashboard. For information about testing and viewing the dashboard, see [Chapter 14, “Testing Dashboards,” on page 127](#).
11. Close the dashboard tab in the workspace.

For information about features that you can use in the dashboard workspace, see [“Working in the Dashboard Workspace” on page 94](#).

Working in the Dashboard Workspace

Change Object Definitions

You can change the definitions of objects (indicators or static content) in a dashboard in the following ways:

- To edit how an object appears or behaves in the dashboard, select the object. In the Object section of the Properties pane, change the property settings for the object.
- To edit the object itself, select the object. The object toolbar appears.



The toolbar provides the following functions if they are applicable to the selected object:

Icon	Description
	Deletes the object from the dashboard.
	Opens the indicator in the Indicator workspace so you can edit the indicator. For more information, see Chapter 10, “Working with Indicators,” on page 73 .
	Opens the indicator data definition in the Indicator Data workspace so you can edit the indicator data definition. For more information, see Chapter 8, “Defining Indicator Data,” on page 53 .
	Opens the range definition in the Range workspace so you can edit the range definition. For more information, see Chapter 9, “Defining Ranges,” on page 67 . <i>Note:</i> This selection is available only for indicators that support ranges.

Align and Size Objects

For information about the alignment and sizing toolbar icons, see “The Toolbar” on page 46.

TIP To make aligning an object easier, display a grid of dots on the dashboard background by clicking **View** ⇒ **Show Layout Guide**.

To align and size objects in the dashboard, complete the following steps:

1. Click the object that you want to use to align or size other selected objects.



Note: If there is only one object on the dashboard and you select the object and then an alignment, the object is aligned to the dashboard itself. For example, selecting a single indicator in the dashboard and then clicking **Edit** ⇒ **Align** ⇒ **Align Top** moves the indicator to the top of the dashboard.

2. Hold down the CTRL key, and then click one or more objects.
3. Select one of the following alignment or sizing options:
 - For alignment options, click **Edit** ⇒ **Align**, and then select an alignment method.
 - For size options, click **Edit** ⇒ **Size**, and then select a size method.

Note: The height or width used is that of the currently selected object.

Undo and Redo Changes

When you make changes to a dashboard or an object in the dashboard, you can undo or redo your changes.

- To undo a change, click .
- To redo a change, click .

Setting Dashboard Properties

Specify the Height and Width of the Dashboard

In the Dashboard section of the Properties pane, change the height and width by editing the values in the **Height** and **Width** fields.

Specify How the Dashboard Is Laid Out

You control how objects in a dashboard are laid out in the following ways:

Horizontal flow	Positions objects horizontally on a dashboard, and then wraps to new rows as needed.
-----------------	--

Precision	Positions objects on a dashboard at the precise location that is specified by the Left and Top settings for the object. You can find these settings in the Object section of the Properties pane. <i>Note:</i> Objects can overlap or completely cover other objects when displayed in the dashboard viewer. Such overlapping might prevent business users from interacting correctly with the objects.
Vertical flow	Positions objects vertically on a dashboard, and then wraps to new columns as needed.

To specify the layout setting, view the Properties pane in the dashboard tab. In the Dashboard section, select a layout from the **Layout** list.

View a Graphical Representation of Interactions

If you create interaction between indicators, select **Show interactions** to display arrows between the affected indicators. The arrows show which indicators are source and target indicators. For more information, see “[Adding Interactions between Indicators](#)” on page 104.

TIP The **Show interactions** feature is a useful way to make sure the interactions are correct.

Specify the Fonts Used in the Dashboard

In the **Font Settings** group, select the type and style of font that you want to use in the dashboard. The selection affects the indicator title bar and indicator labels.

Note:

- For the best appearance of fonts in a dashboard, specify the same zoom value for all of the indicators in the dashboard. Set the zoom width and height to the same value, generally between 100% and 300%.
- In the **Font Settings** area, some of the types that you can select include **(preferred)** in the name. Preferred means that the size of the font that you specify applies only if the indicator is large enough to accommodate the text. However, the indicator component determines the best size of the font, which is based on the size of the indicator and an algorithm that shrinks text so that the indicator and the text are legible at smaller sizes.
- Font settings are available for indicators only when indicators are contained in a dashboard. When editing the indicator as an object in a dashboard, select the indicator and view the Object section of the Properties pane.

Setting the Properties of Indicators and Other Objects in a Dashboard

View Indicator or Object Properties

Dashboards can contain indicators, static images, and static labels. To view and edit the properties on an indicator or object, you must select it in the dashboard. Then, in the Properties pane, the Object section appears and you can edit the properties of the selected indicator or object.

Specify the Title Bar Text or Label Text

In the **Setup** group, you can specify the object name. For indicators and static images, the name appears on the title bar. For static labels, the name is the label itself.

Locate the Indicator File

In the **Setup** group, the location of the indicator file is provided.

TIP If you have multiple indicators that use the same name, but are located in different directories, the location information helps you identify which indicator you are working with.

Specify the Position of the Object

If you set the dashboard **Layout** setting to **Precision**, use the **Position** group to set the position of the top left corner of the object on the dashboard.

Size the Object in the Dashboard

You can size an object by either dragging its resize handles to the size that you want or by using the **Size** group to set the size of the object.

Note: For indicator objects, this size takes precedence over the dimensions set in the indicator definition. This means that you can use the same indicator in different dashboards and the indicator is displayed with different dimensions in each dashboard.

Enable the Zoom Feature for an Object

Use the **Zoom (%)** group to set the zoom feature on an object. For more information, see [“Enabling Zoom for an Indicator or Static Content”](#) on page 116.

Add Links from an Object

For static labels and images, use the **Link Setup** group to define a link from the object to another source of information. For indicators, you must set up the link in the indicator

definition. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.

Enable the Object Title Bar and Tools When Viewing the Dashboard

For each object, you control whether business users have access to the object title bar and its tools when they view the dashboard. This title bar provides the features for printing, making comments, zooming, and adding favorites. It also displays the object title. To enable the title bar, select **Show toolbar and border** in the **Options** group.

Specify the Image to Use for Static Image

If you add a static image to the dashboard, you must specify the image to display in this object. Enter the location of the image in the **Image Web address** field in the **Options** group.

When you specify an image, you must also specify whether to use a proxy.

- If the image file is available on the same network domain as the SAS BI Dashboard server, do not select **Use proxy**.
- If the image is on a different network domain, select **Use proxy**.

Note: Authentication of the image is not supported. If the image is not authenticated, no image appears.

Specify the Font to Use for Static Label

In the **Options** group, you can specify the font and text alignment for the static label. You can also remove the drop shadow effect. These settings are not affected by the dashboard font setting.

TIP If the static label includes a link, specify a **Rollover color**. When the business user hovers over the link, the color changes to indicate the link presence.

Linking to Other Information by Adding Static Content

Overview

You can include content in a dashboard that is not an indicator. This content is called *static content*. SAS BI Dashboard provides two types of static content objects: image and label. Both of these objects can link to other information. By using static content, you can create menus and other ways to navigate from a dashboard to other types of information.

TIP You can improve the performance of your dashboard if you provide links in the dashboard that display other dashboards in the same instance of SAS BI Dashboard viewer. Creating a menu in a dashboard is way to provide such links. See the following example for more information.

Example: Add a Menu to a Dashboard by Using Labels

This example uses the static content label type to add a menu of Web pages to a dashboard. In this example, the Web page menu provides the product pages associated with the products that are on the dashboard.

To add a menu to a dashboard, complete the following steps:

1. Open a dashboard in which you want to add a menu of links.
2. In the Objects pane, expand the Static Content section.
3. Click and drag the **Label** object onto the dashboard.
4. In the dashboard, click the label object. The label properties appear in the Properties pane.
5. In the **Name** field, enter a name for the menu item, for example, **Orion Star Golf Clubs**.
6. (Optional) In the **Options** group, you can specify the font to use for the label. For more information, see [“Specify the Font to Use for Static Label” on page 98](#).
7. In the **Link Setup** group, you can specify the link that the label opens. For example, if you are specifying a menu of product Web pages, you can specify the Web address for golf clubs. For more information, see [“Adding Links to Indicators or Other Content” on page 112](#).
8. If you want to adjust the position and size of the label, you can change the property settings in the **Position** and **Size** groups, or you can drag the label object in the dashboard and size the label by adjusting its border. For more information, see [“Specify the Position of the Object” on page 97](#) and [“Size the Object in the Dashboard” on page 97](#).
9. To add more menu selections to the dashboard, repeats steps 3 through 8.

Example: Add a Contact List to a Dashboard by Using Images

This example uses the static content image type to add a contact list of salespeople to a dashboard. The contact list provides the salespeople associated with the products that are on the dashboard.

To add a contact list to a dashboard, complete the following steps:

1. Open a dashboard in which you want to add a contact list.
2. In the Objects pane, expand the Static Content section
3. Click and drag the **Image** object onto the dashboard.
4. In the dashboard, click the image object. The image properties appear in the Properties pane.
5. In the **Name** field, enter a name for the object (for example, the name of one of the salespeople).
6. (Optional) In the **Options** group, specify the Web address location for the image file (for example, a picture of the salesperson). For more information, see [“Specify the Image to Use for Static Image” on page 98](#).

7. In the **Link Setup** group, set up the link that the image opens (for example, the telephone number for the salesperson). For more information, see “[Adding Links to Indicators or Other Content](#)” on page 112.
8. If you want to adjust the position and size of the label, you can change the property settings in the **Position** and **Size** groups, or you can drag the label object in the dashboard and size the label by adjusting its border. For more information, see “[Specify the Position of the Object](#)” on page 97 and “[Size the Object in the Dashboard](#)” on page 97.
9. (Optional) In the **Zoom** group, you can enable zooming for the image. For more information, see “[Enabling Zoom for an Indicator or Static Content](#)” on page 116.
10. To add more salespersons to the contact list, repeats steps 3 through 9.

Using a Template to Lay Out Dashboard Content

Overview

SAS BI Dashboard provides two layout templates that you can use when designing dashboard content:

- horizontal
- vertical

Each layout template controls the flow of the indicators that are displayed in the template. The horizontal and vertical flow templates automatically arrange (in the indicated direction) the indicators that they contain. When the indicators exceed the width or height of the template, the layout of the indicators is wrapped.

Note: When an indicator is contained by a horizontal or vertical template, the following behaviors occur:


- The zoom setting of the template affects all of the contained indicators in the same way.
- No titles appear on the indicators.

Lay Out Dashboard Contents by Using a Template

To lay out dashboard content by using a template, complete the following steps in a dashboard:

1. In the Objects pane, expand the Layout Templates section. The available templates appear.
2. Drag a template onto the dashboard workspace.

Note:

- You can add more than one template to a dashboard. However, you must manually adjust their location in the dashboard.
- To delete a template from the dashboard, hover your mouse over the template. The template toolbar appears. Click .

3. In the dashboard workspace, click the template. The Objects section appears in the Properties pane.
4. In the **Setup** group, type a name for the template in the **Name** field and press Enter. The name appears in the template title bar.
5. In the Objects pane, expand the Library section.
6. Locate an indicator and drag the indicator onto the template in the dashboard workspace.
7. Continue to add indicators to the template until you are satisfied.
Note: You can add an indicator to the same dashboard only once.

Edit an Existing Dashboard

To edit an existing dashboard, complete the following steps in the SAS BI Dashboard designer:

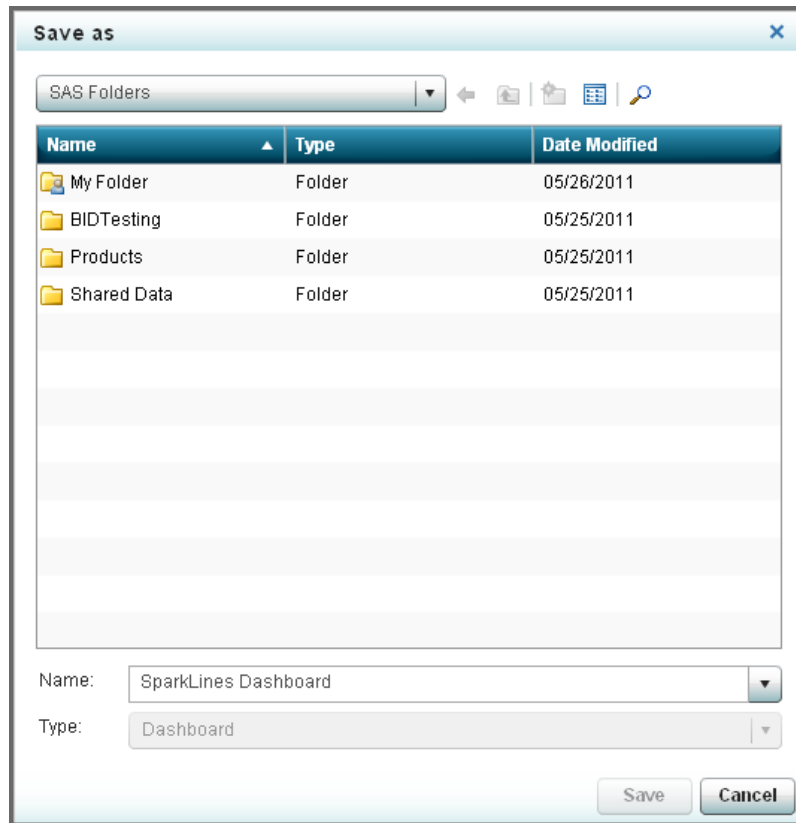
Note: When you edit a dashboard, you change it for all users.

1. In the Library section of the Objects pane, select **Dashboard** from the **Show** list.
2. Expand the tree to view available dashboards.
3. Double-click a dashboard to open it.

Save a Dashboard with a New Name

In SAS BI Dashboard, you cannot rename a dashboard. However, you can save a dashboard with a new name. Complete the following steps:

1. Select **File** ⇒ **Save As**. The **Save As** window appears.



2. Navigate to a location.
3. Type the new name in the **Name** field, and then click **Save**.


Chapter 12

Adding Interactive Features to Dashboards

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Overview

You can add the following types of interactive features to a dashboard:

- Add two indicators to the dashboard and specify an interaction between them. When users click data in one indicator, the second indicator updates its data display.
- Add a link in an indicator. When users click a data point in the indicator, a link can open additional content, such as a Web page, a portal page, a SAS Stored Process, a Web report, and more.
- Enable zooming of an indicator. When users click , they can zoom in, or magnify, the indicator.
- Add an indicator that includes a slider prompt to the dashboard. Users can move the slider on the chart to view how the data varies across time.

Adding Interactions between Indicators

Overview

When you add two or more indicators to a dashboard, you can choose to have one indicator interact with one or more other indicators. The first indicator (the source) influences a second indicator (the target). Interactions enable business users to explore data directly within the dashboard.

Types of Interactions

There are three types of interactions:

Highlight data interactively

Also called data brushing, this type of interaction specifies that when the business user selects a specific value in the source indicator, related values in the target indicator are highlighted.

Filter data on a local system

Also called client-side filtering, this type of interaction specifies that when the business user selects a specific value in the source indicator, data in the target indicator is filtered, based on the selection.

This interaction filters data that is stored on the business user's computer. The filter can operate against any target parameter, and the filter can be very responsive. However, because this filter requires that a target indicator first load all data onto the business user's computer, load times might be long, and there is an upper limit to how much data can be used. If you are filtering more than 1000 lines of data, you must filter data on a remote server.

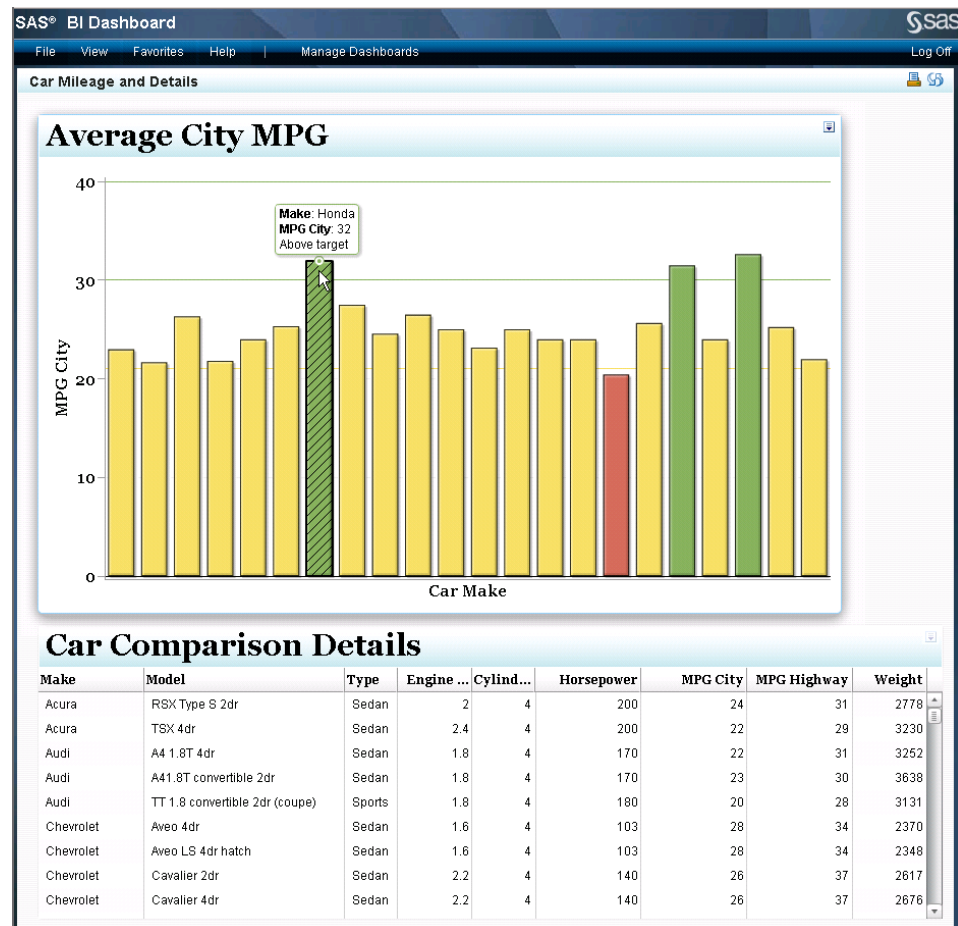
Filter data on a remote server

Also called server-side filtering, this type of interaction is conceptually the same as filtering data on a local system, except that the parameters are put into the query and the query is sent to the middle tier (the server) with the new parameters. Typically, this type of filter is not as responsive as a filter on a local system because of the time required to communicate with the middle tier, and the target parameters can be only parameters that are understood by the query. However, if you are filtering more than 1000 lines of data, you must filter data on a remote server.

Note: As of the second maintenance release of SAS BI Dashboard 4.31, all types of interaction support multiple selection. This enables the business user to select multiple items in the source indicator and highlight all of the affected items in the target indicator. For example, if you select more than one bar in a bar chart, all the affected rows in a target table indicator are highlighted. To select more than one item in a source indicator, press the CTRL key while clicking the items in the indicator. To support multiple selection in a filter data interaction, you must set up the indicator data source as required. For information, see [“Supporting Multiple Selections in a Filtered Data Interaction”](#) on page 111.

Example of Interactive Highlighting

The following display is an example of a dashboard with two indicators. There is no interaction set up between the indicators, so as a business user explores data in one indicator, the other indicator remains static.



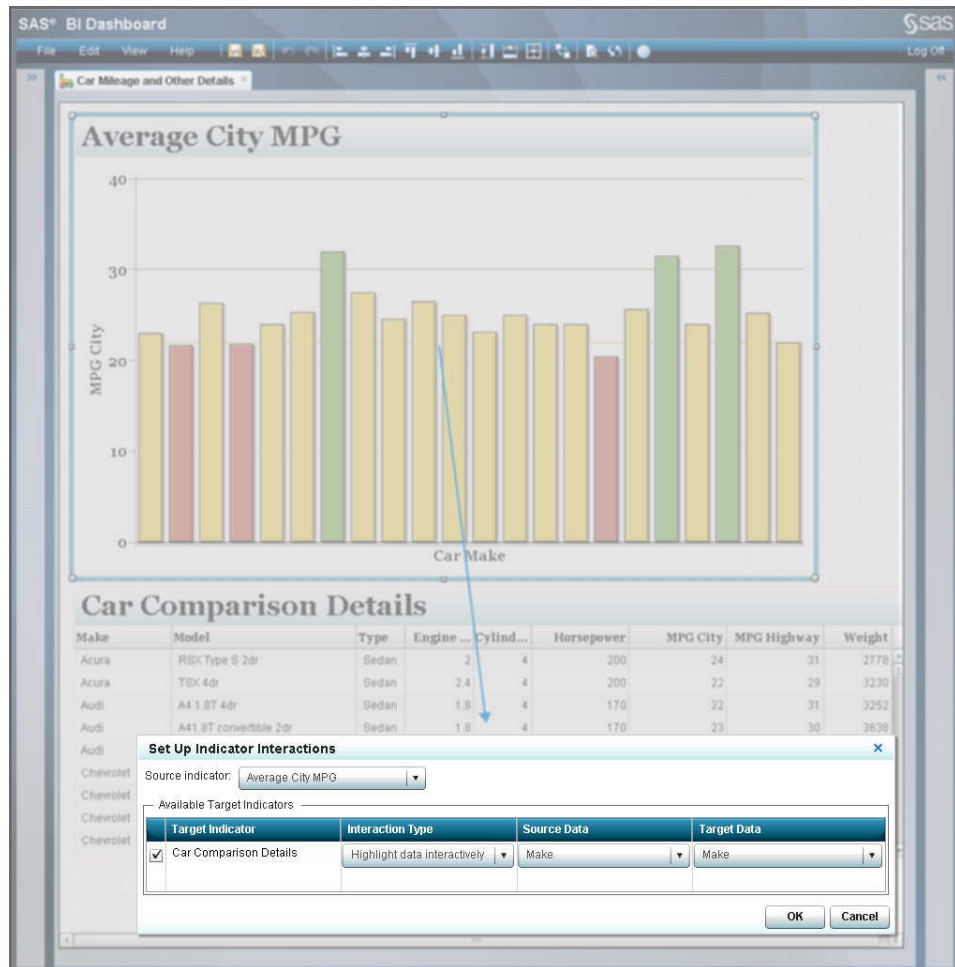
A dashboard designer then modifies the dashboard that contains the indicators in the SAS BI Dashboard designer:

1. The dashboard designer sets up an interaction so that the source data **Make** in the bar chart indicator is mapped to the target data **Make** in the spark table indicator.
2. The designer selects the interaction type **Highlight data interactively**.

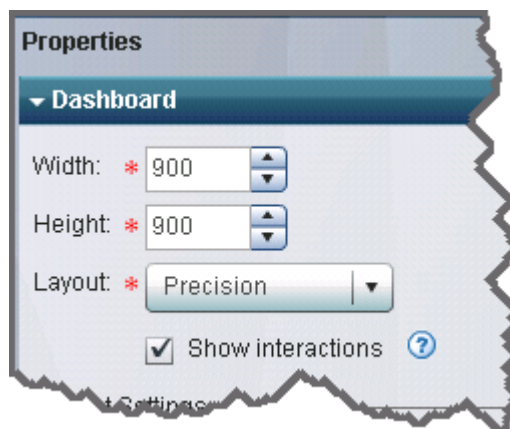
When a business user clicks a car make in the Average City MPG bar chart indicator, the following actions occur:

1. The data **Make** in the bar chart indicator is set to the car make that the business user clicked.
2. The data **Make** in the spark table indicator is also set to the car make that the business user clicked. This is because the data **Make** in the bar chart indicator is mapped to the data **Make** in the spark table indicator.
3. The interaction is then processed, which results in the car make being highlighted in the spark table indicator.

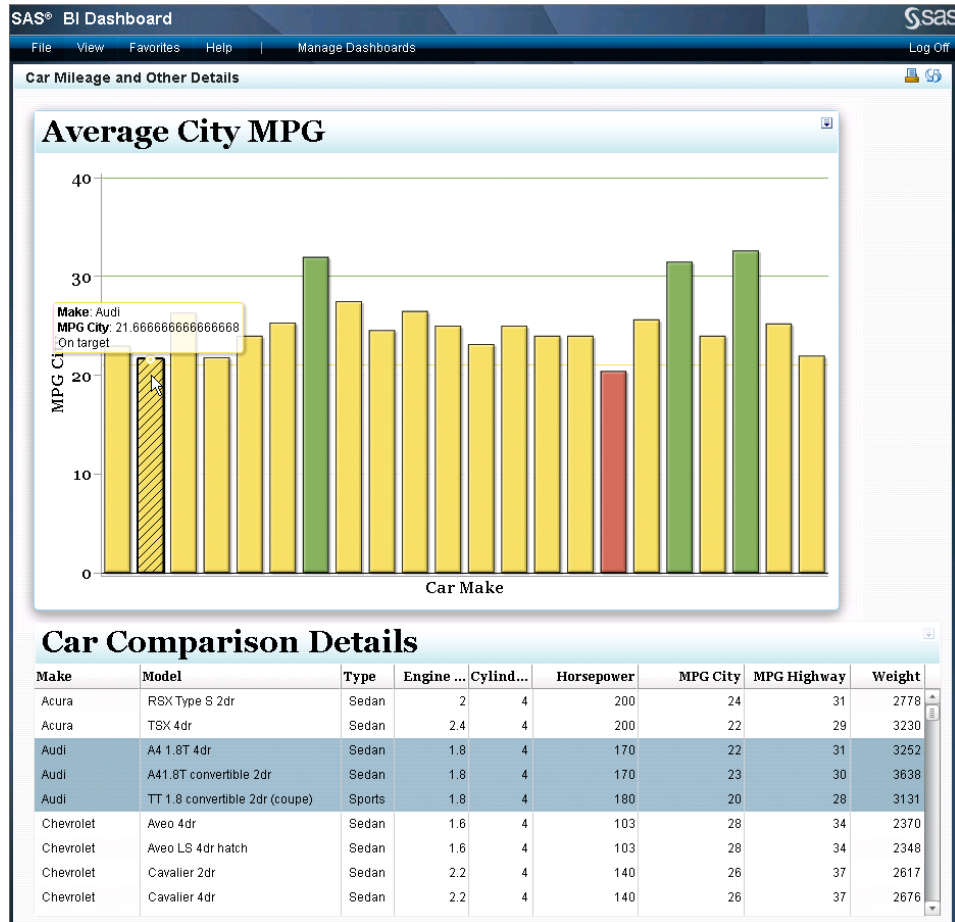
In the SAS BI Dashboard designer, this indicator interaction is shown by an arrow from the bar chart indicator to the spark table indicator.



To display this arrow, the dashboard designer selects **Show interactions** in the dashboard Properties pane.



Later, when the business user explores data in the modified dashboard, the car make clicked by the user in the bar chart indicator highlights the car make data in the spark table indicator.



Indicator Types That Support Interactions

Support for Data Filtering

When you click a data point in the source indicator, the data displayed by the target indicator changes to reflect the data point that you clicked. To set up data filtering, you must select a source indicator and a target indicator.

Not all indicator types support data filtering. The following tables list the exceptions to support. If an indicator type is not in the table, you can use that indicator type either as a source or a target indicator.

Note: If you are filtering more than 1000 lines of data, you must use filtering on a remote server.

Table 12.1 Exceptions to Indicator Type Support for Filtering Data on Local Systems

Indicator Type	Use as Source	Use as Target
Dynamic text	No	Yes

Indicator Type	Use as Source	Use as Target
Interactive summary and bar chart	No	No
Interactive summary and scatter plot	No	No
Interactive summary and targeted bar chart	No	No
KPI ¹	Yes	No
Spark table	Yes	Yes ²

Table 12.2 Exceptions to Indicator Type Support for Filtering Data on Remote Servers

Indicator Type	Use as Source	Use as Target
Chart with slider prompt	No	Yes
Dynamic text	No	Yes
Interactive summary and bar chart	No	No
Interactive summary and scatter plot	No	No
Interactive summary and targeted bar chart	No	No

Support for Interactive Highlighting

To set up interactive highlighting (also called data brushing), you must select a source indicator and a target indicator. Unless an indicator type is listed in the following table, you can use an indicator type either as a source or a target indicator.

Not all indicator types support interactive highlighting. The following table lists the exceptions to support. If an indicator type is not in the table, you can use that indicator type either as a source or a target indicator.

Table 12.3 Exceptions to Indicator Type Support for Interactive Highlighting

Indicator Type	Use as Source	Use as Target
Chart with slider prompt	No	No
Dynamic prompt	No	No
Dynamic text	No	No
Interactive summary and bar chart	No	No

¹ Includes all KPI indicator subtypes.

² To use a spark table indicator as a target, the **Spark group by** and **Spark X axis** settings must be set to **(none)**. This means that you cannot show a sparkline when you use a spark table indicator as a target for a filter.

Indicator Type	Use as Source	Use as Target
Interactive summary and scatter plot	No	No
Interactive summary and targeted bar chart	No	No
KPI ¹	Yes ²	No

Guidelines for Defining Interactions

General

Use the following guidelines when designing interactions.

- (Interactive highlighting) You can specify more than one target indicator.
- (Interactive highlighting) You can specify only one parameter for highlighting.
- You can chain interactions, such as indicator A that interacts with indicator B, which in turn interacts with indicator C.
- When you define an indicator with both a link and an interaction, the link takes precedence over the interaction when the link opens in the same window as the interaction. For example, if you create a dashboard that opens a report and that interacts with another indicator, when the business user clicks the indicator, the report opens in the current window. If the link opens in a new window, then the business user sees the interaction in the current window and the link in a new window. For more information about defining an indicator with a hyperlink, see [“Adding Links to Indicators or Other Content” on page 112](#).

Parameter Mapping

You can specify how one indicator influences another indicator by using parameters. A source indicator parameter is mapped to a target indicator parameter.

Note: In order to pass parameters between indicators, the target indicator must be based on either of the following data sources:

- information map with prompted filters
- stored process with parameters defined
- You can specify more than one target indicator parameter.
- The source indicator parameter and the target indicator parameter are not required to have the same name, but they must reference the same type of data. For example, the source indicator can have a data column named REGION_ID and the target indicator can have similar data contained in a data column named SALES_REGION_ID. By mapping REGION_ID to SALES_REGION_ID, you link together the two data columns.
- The data can be contained in different data sources and different types of data sources. For example, a source indicator can have indicator data from an SQL query that maps to a target indicator that has indicator data from a stored process.
- Optional parameters are not available for the following link types:

¹ Includes all KPI indicator subtypes.

² The KPI does not support selection of multiple gauges.

- dashboard
- SAS Information Map

Indicator Data

The following guidelines describe data restrictions when using interaction.

Interactive highlighting

Any type of indicator data can be used for interactive highlighting.

Filtering data on a local system

Any type of indicator data can be used for this type of interaction.

CAUTION:

Do not specify a default value for the mapped parameters that severely limits the amount of data returned by the indicator data. This limited data, when filtered further on the local system, can reduce the amount of data to few, or no, matching rows.

Filtering data on a remote server

- The only indicator data that can be used with this type of interaction is a stored process or an information map that is based on relational tables. In both cases, you must supply a default value for a prompt.
- Unlike filtering data on a local system, which can be based on a target parameter that does not have a prompt defined in the target indicator data, filtering data on a remote server can be based only on a target parameter that is defined in the target indicator data.
- An information map must have at least one filter defined, and this filter must be a mapped parameter.


CAUTION:

Do not change the default value of a prompt in another application while SAS BI Dashboard is running. Log off from SAS BI Dashboard, change the value, and then log in again.

- When using a prompt based on a date with an information map, ensure that you pass values to the prompt in a format that the prompt accepts. For more information, see [Appendix 3, “Valid Date Formats for Information Maps,”](#) on [page 257](#).

Set Up an Indicator Interaction

To set up an interaction between one or more indicators, complete the following steps in the dashboard workspace:

1. Add at least two indicators to a dashboard.
2. Select the indicator to be the source of the interaction, and then click . The Set Up Indicator Interactions window appears.

Set Up Indicator Interactions

Source indicator: Cholesterol

Available Target Indicators

Target Indicator	Interaction Type	Source Data	Target Data
<input type="checkbox"/> Coronary Data			
<input type="checkbox"/> Results			
<input checked="" type="checkbox"/> Weight	Highlight data interactively	Chol_Status	Weight

OK Cancel

3. In the **Available Target Indicators** group, the table lists the other indicators that are available in the dashboard. Select one or more of these indicators to be targets of the interaction.
4. For each selected indicator, select the type of interaction to use from the list in the **Interaction Type** column.
5. For each selected indicator, select the source data column to use from the list in the **Source Data** column. When the user clicks this data in the source indicator, the interaction is initiated.
6. For each selected indicator, select the target data column to use from the list in the **Target Data** column. When the user clicks the source data in the source indicator, the target data reacts in the target indicator.

Note: The target indicator data, either information map or stored process, must have a prompted filter. When you set up the interaction, the only Target Parameter choices that are available are prompted filters.

7. Click **OK** to save the interaction and exit the window.

TIP After you have set up the interactions, click **Show interactions** in the dashboard Properties pane to graphically view the interactions. To test the interaction, you must open the dashboard in the SAS BI Dashboard viewer or SAS BI Dashboard portlet.

Supporting Multiple Selections in a Filtered Data Interaction

Overview

As of the second maintenance release of SAS BI Dashboard 4.31, you can now add support in a source indicator such that multiple selections affect the data filtering in the target indicator.

The indicator data used by the target indicator must be one of the following types:

- SAS Information Map with prompted filters

- SAS Stored Process with parameters defined

Support for Multiple Selection in Filtered Data

To set up multiple selection support for data filtering, you must select a source indicator that supports multiple selection for data filtering.

Not all indicator types support multiple selection. The following indicators do not provide this support. If an indicator type is not in this list, you can use that indicator type as a source indicator.

- chart with slider prompt
- custom graph
- dynamic prompt
- dynamic text
- interactive summary and bar chart
- interactive summary and scatter plot
- interactive summary and targeted bar chart
- KPI

Requirements for SAS Information Maps

For a SAS Information Map to support multiple selections, you must make the following selection when creating a prompted filter in SAS Information Map Studio:

1. In the **Edit Prompt** window, click the **Prompt Type and Values** tab.
2. In the **Number of values** list, select **Multiple values**.
3. Click **OK**.

Requirements for SAS Stored Processes

For a SAS Stored Process to support multiple selections, you must use the `%_EG_WHEREPARAM` macro that is provided by SAS Enterprise Guide. The following code shows an example of how to use this macro:

```
PROC SQL;
CREATE TABLE WORK.RESULTS AS
  SELECT * from mydata.sales WHERE %_eg_WhereParam(year, yearPrompt,
    IN, TYPE=N);
QUIT;
```

`yearPrompt` is the prompt for a year, `yearPrompt0` represents the first value, and `yearPromptN` represents the Nth value.

See the SAS Enterprise Guide documentation for more information about this macro.

Adding Links to Indicators or Other Content

Overview

You can add a link from an indicator to any of the following content:

- another SAS BI Dashboard indicator

- a SAS BI Dashboard dashboard
- an external link to a Web address or a portal page
- a SAS Information Map
- a SAS Stored Process
- a SAS Web Report Studio report

Note: When you define an indicator with both a link and an interaction, the link takes precedence over the interaction when the link opens in the same window as the interaction. For example, if you create a dashboard that opens a report and that interacts with another indicator, when the business user clicks the indicator, the report opens in the current window. If the link opens in a new window, then the business user sees the interaction in the current window and the link in a new window. For more information, see [“Adding Interactions between Indicators” on page 104](#).

Indicator Types That Support Linking

You can define a link for an indicator that opens another source of information.

Note: The following indicator types do not support links:

- chart with slider prompt
- dynamic prompt
- dynamic text

You can define a link to another indicator.

Note: You cannot link to the following indicator types:

- interactive summary and bar chart
- interactive summary and scatter plot
- interactive summary and targeted bar chart

TIP When you link to an indicator, the indicator does not use any font settings. Font settings are applied to indicators only when they are contained in a dashboard.

Link Types that Support Parameters

Some link destinations support the passing of parameters. You can use these parameters to customize how a link destination opens. If you open a dashboard, for example, you can specify the initial values of the prompts in the dashboard. The following link types support passing parameters:

- a SAS BI Dashboard indicator
- a SAS BI Dashboard dashboard

Note: Support was added as of the second maintenance release of SAS BI Dashboard 4.31.

- a SAS Stored Process
- a SAS Web Report Studio report


Note: You can pass parameters only if you are linking to a prompted Web report.

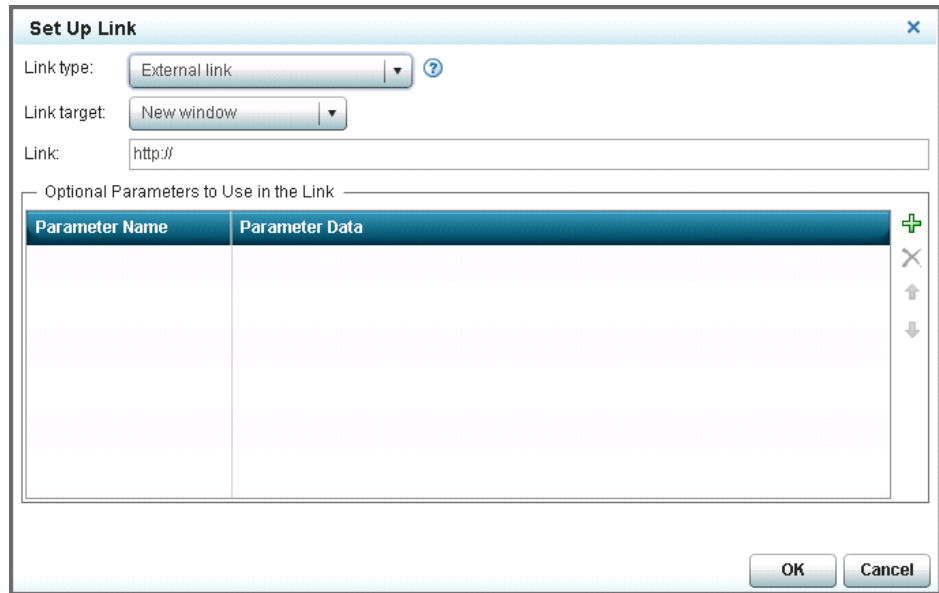
- an external link to a Web address

If the selected link type supports parameters, you can select the column data that contains the parameter values that you want to use from the **Parameter Data** list when you set up the link.

Set Up a Link in an Indicator

To set up a link in an indicator, complete the following steps in the indicator tab:

1. Click  at the top of the **Properties** pane. The Set Up Link window appears.



Note: The following indicator types do not support links:

- chart with slider prompt
- dynamic prompt
- dynamic text

2. From the **Link type** list, select the type of link that you want to set up.

Note: As of SAS BI Dashboard 4.4, the **Portal page** option from previous versions is no longer supported for links. To add a link to a portal page, select **External link** as the link type, and then provide the URL of the portal page in the **Link** field.

3. From the **Link target** list, select to open the link target in either the current window or a new window.
4. In the **Link** field, complete the applicable step:


For an external link	Type the Web address of the link in the Link field.
----------------------	--

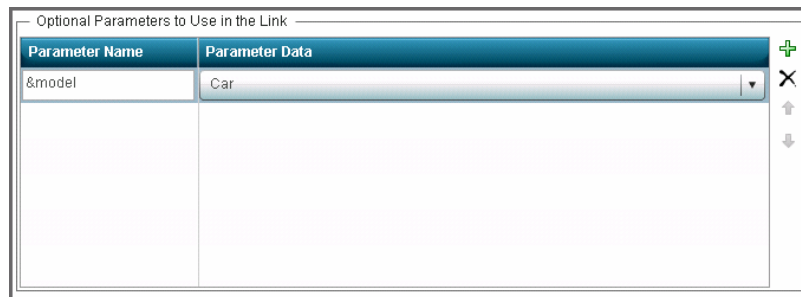
For all other selections	Click Browse next to the Link field, and then select an item. The available choices vary depending on the type of link.
--------------------------	---

5. (Optional) For an external link, indicator, dashboard, SAS Stored Process, and SAS Web Report Studio report, complete the following steps in the **Optional Parameters**

to Use in the Link table. For more information, see “Examples of Passing Parameters” on page 116.

Note:

- (Indicators and dashboards only) Any available parameters are automatically provided in the **Optional Parameters to Use in the Link** table. If the target object does not accept parameters, the **Optional Parameters to Use in the Link** table is empty.
 - (SAS Web Report Studio report only) You can pass parameters only if you are linking to a prompted Web report.
- a. Click . The **Parameter Name** field and **Parameter Data** list appear in the table.



Parameter Name	Parameter Data
&model	Car

Note: If you select **SAS Web Report Studio report** for the link type, the **Displayed Text** field appears in the first column of the table.


- b. In the **Parameter Name** field, enter the name of the parameter that you want to pass in the link.

Note:


- If you select SAS Stored Process, the **Parameter Name** points to the parameter in the stored process. You must type & before the parameter name (for example, *&model*).
 - The name must match the expected name exactly, including case.
 - If you select **SAS Web Report Studio report** for the link type, enter the text that you want displayed by the report in the **Displayed Text** field.
- c. From the **Parameter Data** list, select the data that you want to pass in the link.

Note: The parameter data is the corresponding data column in the indicator data (for example, Car).

- d. You can add more parameters to the table. To change the order of the parameters, select a parameter, and then click the arrow buttons next to the parameter table.

To delete a parameter, select a row and then click  next to the row.

6. To save the link and exit the window, click **OK**.

7. Click  to save the link definition in the indicator.

TIP To test the link, you must open the indicator, or the dashboard that contains the indicator, in the SAS BI Dashboard viewer or SAS BI Dashboard portlet.

Examples of Passing Parameters

In this first example, an external link to the Google Web page is specified. The parameters in the link generate a search on Google. In this example, the following optional link parameters are specified:

- In the **Parameter Name** column, **select_date** is selected.
- In the **Parameter Data** column, **date** is selected.

The following link is generated:

```
http://www.google.com/search?hl=en&q={select_date}
```

The second example describes linking to a SAS Stored Process. In this example, a KPI indicator references SASHELP.CLASS and the indicator display setting called **Range Value** is set to AGE. The following optional link parameters are specified:


- In the **Parameter Name** column, **select_age** is selected.
- In the **Parameter Data** column, **Age** is selected.

The selected stored process called *Stored Process with Parameter* is defined as follows:

```
(stpWithParamater.sas)
  goptions gsfname=_webout gsfmode=replace;
  goptions device=png;
  data temp; set sashelp.class;
    if age="&select_age" then output;
  run;
  proc gchart data=temp; vbar age / discrete; run; quit;
```



Enabling Zoom for an Indicator or Static Content

Overview

The zoom feature enables the user to zoom in on, or magnify, the affected indicator. Not only does this feature enable zooming, but it also specifies how large the indicator can appear when zoomed. When zooming is enabled, the indicator title bar displays the Zoom + icon .

Note: The zoom feature is enabled only if the indicator title bar is enabled also. Select **Show toolbar and border** to enable the title bar.

Dashboard Design and the Zoom Feature

When an indicator is *not* zoomed, some of the indicator content might not appear or might be difficult to read. When you click , the indicator enlarges and the content appears as designed. However, other indicators in the dashboard might be obscured by the enlarged indicator. Click  to reduce the indicator to its original size.

When you enable the zoom feature, you can specify the percentage to magnify the indicator when the user chooses to zoom. For example, if you want to magnify an indicator two times, you specify a zoom factor of 200%.

Note: To disable the zoom feature, specify a zoom factor of 100%.




You can use the zoom feature to save space by making an indicator small in the dashboard, but giving users the ability to zoom in if they want more details. You can assign a different zoom setting to each indicator in a dashboard. Although the zoom feature is set on the indicator, the setting is actually associated with the dashboard that contains the indicator. If you use the indicator in more than one dashboard, the indicator can have a different zoom setting in each dashboard that contains it.

Note:

- All indicator types support this feature except dynamic prompt.
- Static content also supports zoom.
- When an object is contained by a horizontal or vertical layout template, the zoom setting of the template affects the contained objects in the same manner. For more information, see [“Using a Template to Lay Out Dashboard Content” on page 100](#).


Enable Zoom

To enable zoom in an indicator, complete the following steps:

1. In an open dashboard, click an indicator. In the Properties pane, the Object section appears.
2. In the **Zoom (%)** group, set the width and height that you want to use for the magnified indicator.
3. In the **Options** group, make sure that **Show toolbar and border** is selected.
4. Click  to save the setting.
5. To make sure the zoom setting is appropriate, click . The Preview window appears.
6. On the title bar of the affected indicator, click . The indicator expands to its zoom setting.
7. To adjust the zoom setting, click **Close** in the Preview window to return to the dashboard workspace. Change the settings in the **Zoom (%)** group and then preview the dashboard again.

Disable Zoom

To disable zoom in an indicator, complete the following steps:

1. In an open dashboard, select an indicator. In the Properties pane, the Object section appears.
2. In the **Zoom (%)** group, set the width and height to **100**.
3. Click  to save the setting.

Adding Indicators with an Interactive Slider

SAS BI Dashboard provides indicator types that include an interactive slider. The interactive slider enables the user to view how a data set varies over time. For information about creating an indicator, see [“Create an Indicator” on page 74](#). For detailed information about the indicator type, see its entry in the indicator dictionary.

The following indicator types provide an interactive slider:

- chart with slider prompt (See [“Chart with Slider Prompt” on page 150](#).)
- interactive summary and bar chart (See [“Interactive Summary and Bar Chart” on page 172](#).)
- interactive summary and scatter plot (See [“Interactive Summary and Scatter Plot” on page 178](#).)
- interactive summary and targeted bar chart (See [“Interactive Summary and Targeted Bar Chart” on page 184](#).)

Chapter 13

Customizing Alerts

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Overview

Dashboard designers can customize indicator features in the following ways:

- create indicator alerts for a user or groups of users
- enable a user to create personalized indicator alerts

Note:

- You can define alerts only for indicators that you have associated with a range. For information, see [“Indicator Types That Support Ranges”](#) on page 67.
- In SAS BI Dashboard 4.4, the only available personalized user setting is for enabling personalized alerts.

Understanding Alerts

The Alert Definition

When you define an alert, you specify the circumstance that causes that alert to occur. This circumstance is the *trigger*. To define the trigger, you must make the following selections:

- the range to evaluate
- the interval in the range in which the data point values must occur
- the percentage of data points that must occur in that interval

How Alerts Are Triggered

An alert is triggered in the following way:

1. SAS BI Dashboard checks for a change in the indicator data, updates to the indicator alert definition, or both. By default, this check happens every 3 minutes. A SAS BI Dashboard administrator can change this setting.
2. If the percentage of data points in the interval has changed, the alert criteria are evaluated.
3. If the criteria are met, an alert is triggered and a notification is sent to the subscriber.

Note: If the alert criteria are met at the time that you create the alert, the alert is triggered immediately. Afterwards, the alert is triggered only when the data changes and the alert criteria are met.

When alert criteria are evaluated, it is evaluated by subscriber. If a subscriber has multiple alerts, each alert is evaluated for that subscriber before proceeding to the next subscriber. Therefore, if there are a number of subscribers for the same alert, it is possible for one subscriber to receive the alert notification later than another subscriber. The lapse in time might even cause the alert to be evaluated differently. However, a group with multiple members is treated as one subscriber. Therefore, it is more efficient to setup an alert for a group subscriber, than to add multiple subscribers individually to an alert.

Alert Criteria and Data Aggregation

If an indicator can aggregate data, it is important to understand that the percentage that is used by alerting is calculated by evaluating the underlying indicator data to determine the number of data points in the interval. The software does *not* evaluate the aggregated results presented in the graph view. For example, if a bar chart has three bars, each bar can represent an average of multiple data points. A given bar might fall within the alert interval. However, it is possible that none of the individual data points associated with that bar fall in the same interval. In this case, the three bars reflect the aggregated data, not the data points used in the alert calculation.

The following indicators support alerts and can aggregate data:

- bar chart with bullet
- bar chart with reference lines
- interactive summary and bar chart
- interactive summary and targeted bar chart
- targeted bar chart
- tile chart
- waterfall chart

Changes That Can Affect Alert Calculations

In addition to underlying data changes, updates to any of the following indicator components can affect the interval percentage calculation and cause the alert to be reevaluated:

- If the indicator source data is changed, the data available for evaluation can change. For example, if you update the filters defined in an information map, the new filter definition can cause a change in the number of data points that are evaluated.
- If the indicator data definition is changed, the data available for evaluation can change. The following changes are examples of what can cause the data that is evaluated to change:
 - updating the indicator data definition to modify an SQL query
 - changing the selected items for an information map
 - updating the **Group by** criteria for a table
- If the range is changed, the calculated percentage can change. For example, if you change the upper limit of the range from 100 to 200, the percentage of data points that exist in the range and in its intervals can change.
- If the indicator definition is changed, the data values that are evaluated can change. For example, if you change the **Y-axis value** setting from *Height* to *Weight*, the data that is evaluated is changed.

Working with Alerts for Another User or a Group of Users

Overview

Dashboard designers can create alerts for another user or for a group of users. Business users cannot create or edit these alerts.


TIP The alert definition is saved in the indicator definition file. When setting up alerts for other users, make sure that the indicator definition file is saved in a location that all affected subscribers can access. For example, if you save an indicator definition file to a specific user's My Folder location, the file is not visible to other subscribers. The alerts might not function as expected.

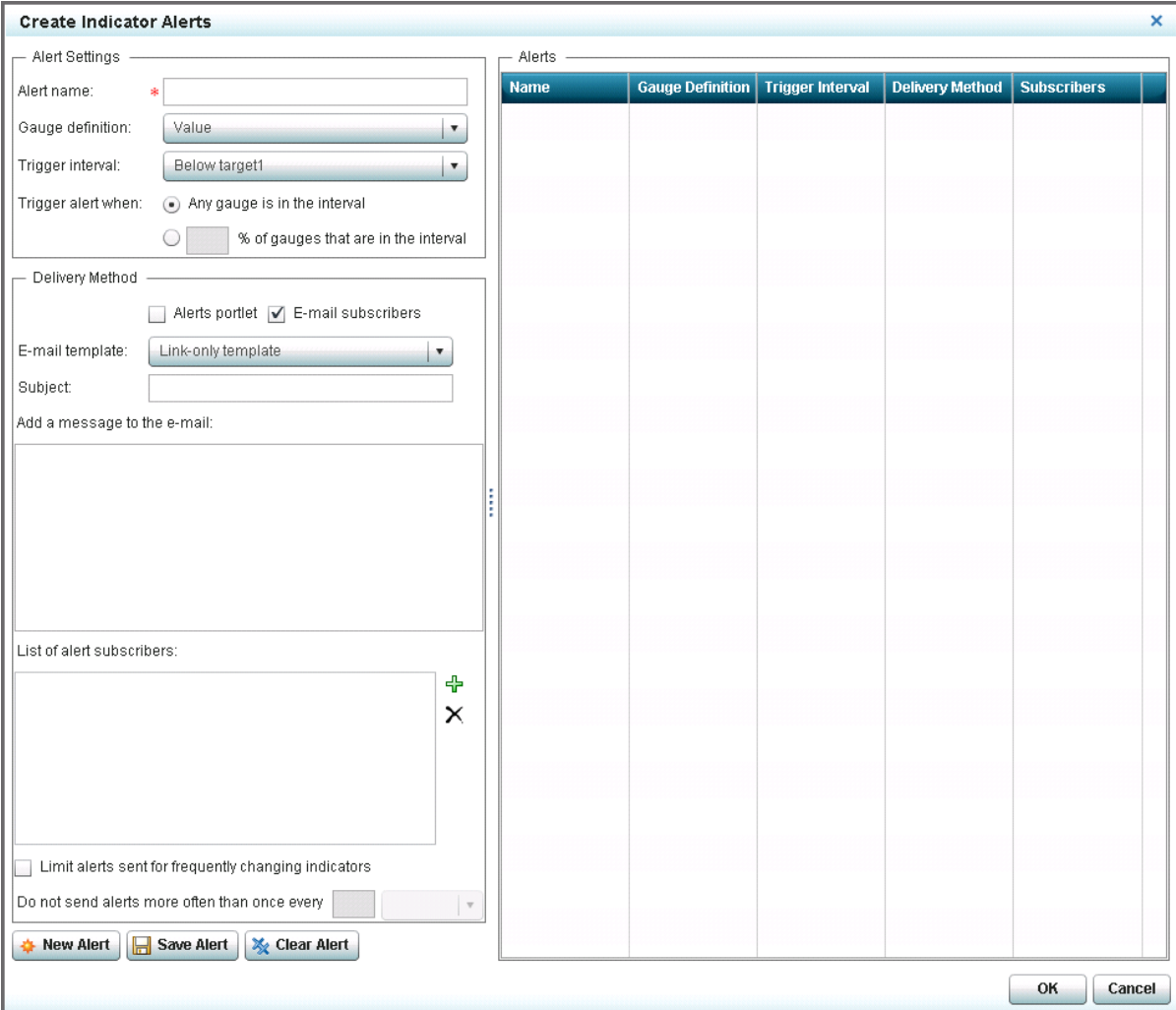
Create an Indicator Alert

When you create an indicator alert, you must specify the *trigger interval*. The trigger interval relies on a range. Therefore, you can create an indicator alert only for indicator types that include a range. For more information, see [“Indicator Types That Support Ranges” on page 67](#).

To create an indicator alert, complete the following steps:

1. In the SAS BI Dashboard designer, open an indicator for which you want to create an alert.

- Click  at the top of the Properties pane. The Create Indicator Alerts window appears.



Name	Gauge Definition	Trigger Interval	Delivery Method	Subscribers

- In the **Alert name** field, type the name of the alert.
- From the **Gauge definition** list, select the range to evaluate.

Note: Most indicators use only one range and this setting defaults to that range. However, the following indicators use two ranges. Therefore, you must select the range to evaluate:


 - interactive summary and scatter plot
 - range map
- From the **Trigger interval** list, select the interval in which the value must occur to trigger the alert.
- Specify how many values (that is, data points or gauges) must be in the selected interval to trigger the alert:
 - Any gauge is in the interval**
 - % of gauges are in the interval**

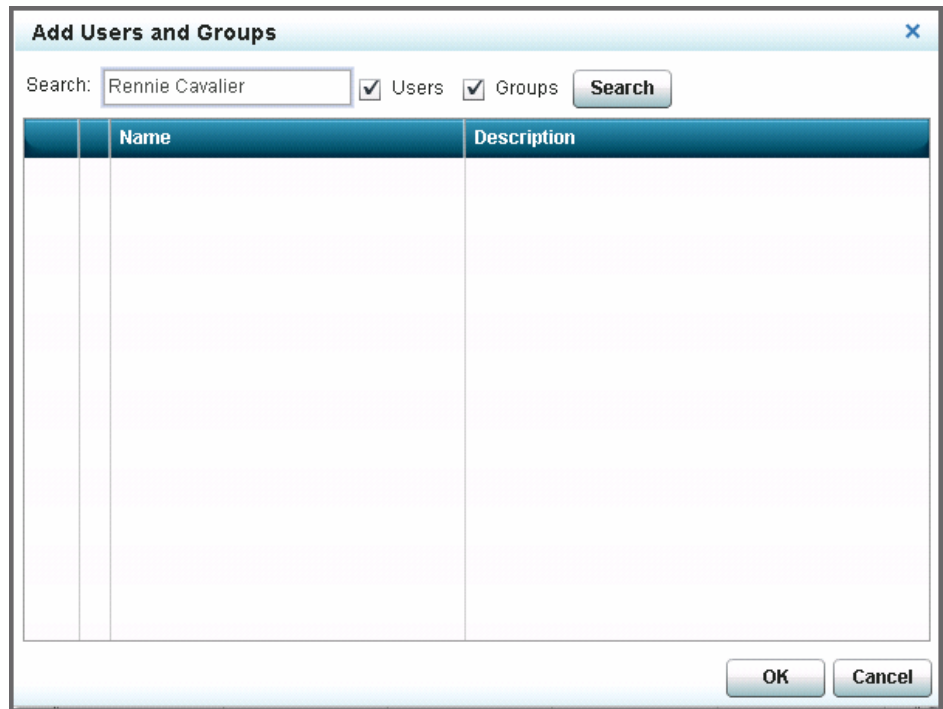
Note: If you select this setting, type a value in the field next to the check box.
- Select the delivery method for the alert: **Alerts portlet** or **E-mail subscribers**.

Note:

- You can select both methods.
 - **Alerts portlet** presumes that the recipient has an Alerts portlet defined in the SAS Information Delivery Portal. If there is not an Alerts portlet, the alerts remain saved on the server. If a user adds an Alerts portlet to the portal, all previous alerts appear in the Alerts portlet.
 - The business user's e-mail address must be available from SAS metadata. For more information, see the *SAS Management Console: Guide to Users and Permissions*.
8. (Optional) If you selected **E-mail subscribers**, complete the following steps:
- a. From the **E-mail template** list, select the template to use for e-mail notifications of alerts.

Template Type	Description
Link only	The e-mail includes a link that opens the affected indicator in the SAS BI Dashboard viewer. <i>Note:</i> All indicator types support this template.
Default	The e-mail includes an image of the affected indicator and a link that opens the indicator in the SAS BI Dashboard viewer. <i>Note:</i> The following indicator types support this template: <ul style="list-style-type: none"> • bar chart with reference lines • KPI • line chart with reference lines • range map • scatter plot • targeted bar chart


- b. In the **Subject** field, type the subject. Type any additional message to include in the e-mail in the **Add a message to the e-mail** field.
- c. To select users and user groups, click  next to the list of alert subscribers. The Add Users and Groups window appears.



- d. Type the text to search for in the **Search** field.

Note: Partial text is valid. The wildcard value * is supported.
 - e. Select the category (**Users**, **Groups**, or both) to search.
 - f. Click **Search**. A table appears with all entries that match the search criteria.
 - g. From the table, select the check box next to each entry that you want to add.



Note: You can also drag an entry from the table into the **List of alert subscribers**.
 - h. To remove a subscriber, select a user from the list and click **X**.
 - i. Click **OK** to close the Add Users and Groups window.
9. To limit the number of alerts, select **Limit alerts sent for frequently changing indicators**, type a value in the field, and then select a time interval from the list next to the field.

TIP Depending on the size of your window, you might have to scroll down the left pane to view this selection.
 10. Click **Save Alert**. The alert appears in the **Alerts** table.
 11. If you want to create another alert, click **New Alert**. To exit the Create Indicator Alerts window, click **OK**.
 12. In the indicator workspace, click  to save the changes to the alert definition in the indicator.

Note: If the alert criteria are met at the time that you create the alert, the alert is triggered immediately. Afterwards, the alert is triggered only when the data changes and the alert criteria are met.

Edit an Indicator Alert



To edit an indicator alert, complete the following steps:

1. In SAS BI Dashboard designer, open the indicator with the alerts that you want to edit.
2. Click  at the top of the Properties pane. The Manage Indicator Alerts window appears.
Note: When the Manage Indicator Alerts window appears, the first alert in the **Alerts** table is automatically highlighted and its properties appear in the left side of the window.
3. In the **Alerts** table, select an alert. The properties of the alert appear in the left side of the window.
4. Edit the properties as described in “Create an Indicator Alert” on page 121.
5. Click **Save Alert**.
6. Click **OK** to exit the Manage Indicator Alerts window.
7. In the indicator workspace, click  to save the changes to the alert definition in the indicator.

Note: If the edit causes a change in the calculated interval percentage since the percentage was last evaluated and the alert criteria are still met, the alert is triggered.

Delete an Indicator Alert

To delete an alert, complete the following steps:

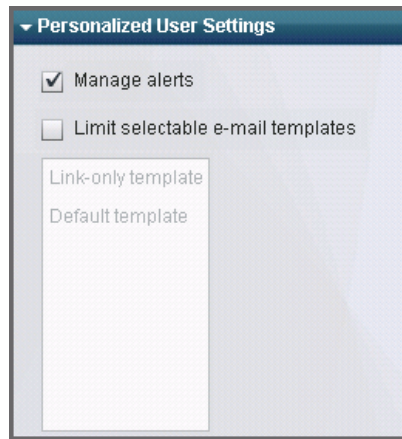
1. In the Manage Indicator Alerts window, select an alert from the **Alerts** table.
2. Click .
3. Click **OK** to exit the Manage Indicator Alerts window.
4. In the indicator workspace, click  to save the changes to the alert definition in the indicator.

Enable Personalized Indicator Alerts

Dashboard designers can enable a business user to create and edit a personal indicator alert. A *personal indicator alert* is sent only to the user that created the alert. Personal indicator alerts are sent in addition to any alerts that are created for an indicator by a dashboard designer.


To enable a user to create personalized indicator alerts, complete the following steps:

1. In the SAS BI Dashboard designer, open the indicator for which you want to enable alerts.
2. In the Properties pane, expand the **Personalized User Settings** section at the bottom of the pane.



3. Select **Manage alerts**.
4. Select **Limit selectable e-mail templates** if you want to customize the templates that a business user can select to use for e-mail notifications of alerts.

Template Type	Description
Link only	The e-mail includes a link that opens the affected indicator in the SAS BI Dashboard viewer. <i>Note:</i> All indicator types support this template.
Default	The e-mail includes an image of the affected indicator and a link that opens the indicator in the SAS BI Dashboard viewer. <i>Note:</i> The following indicator types support this template: <ul style="list-style-type: none"> • bar chart with reference lines • KPI • line chart with reference lines • range map • scatter plot • targeted bar chart

5. Click  to save the indicator.

In the dashboard viewer, the **Personalize Alerts** selection appears in the  menu.

Chapter 14

Testing Dashboards

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Overview

You can test dashboards in the following ways:


- by using the Preview Dashboard feature in the SAS BI Dashboard designer
 - by viewing the dashboard in the SAS BI Dashboard viewer
 - by viewing the dashboard in the SAS BI Dashboard portlet
-

Test a Dashboard by Using Preview Dashboard

Note: Preview dashboard does not support testing of the following functionality:


- links
- alerts
- comments

To test a dashboard by using the preview feature, complete the following steps:


1. Open a dashboard in the SAS BI Dashboard designer.
2. From the toolbar, click . The Preview Dashboard window appears.
3. When you are satisfied with the preview, click **Close**.

Note: The **Close** button is in the lower right corner of the Preview window.

Test a Dashboard by Using the SAS BI Dashboard Viewer

To test a dashboard by using the SAS BI Dashboard viewer, click  in the SAS BI Dashboard designer toolbar. The SAS BI Dashboard viewer opens and displays the current dashboard. When you are satisfied with the dashboard test, click **Manage Dashboards** to return to the dashboard designer.

Test a Dashboard by Using the SAS BI Dashboard Portlet

To test a dashboard by using the SAS BI Dashboard portlet, open your portal and navigate to the SAS BI Dashboard portlet. Open the dashboard. When you are satisfied with the dashboard test, click  to return to the dashboard designer.

Part 4

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Appendix 1

Indicator Dictionary

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How to Use This Dictionary












This dictionary describes all of the available indicators provided by SAS BI Dashboard. The indicators are listed in alphabetical order, but a table that cross references the indicator by category is also provided.



Each indicator entry in the dictionary provides the following information:









- a definition and an example figure. The example figure also illustrates sample display settings and indicator data for the indicator.
- usage information that describes what data the indicator is suited and not suited for. The information also lists whether the indicator supports data aggregation, ranges, alerts, links, and interactions.
- information about general settings and how to change the settings.
- a description of each available display setting. Example display settings for the example figure are provided as a way to show how the settings affect the way the indicator is displayed.
- a sample of the indicator data structure for the example figure. This information is provided as a way to show what indicator data is required for use with the indicator. Any specific information about the indicator data requirements is also provided.












Indicator Types by Category











Category	Indicator Type	Icon	Page
Dynamic gauges	Dynamic bullet bar		These gauges are subtypes of the KPI indicator type. See “KPI (Key Performance Indicator)” on page 189.
	Dynamic dial		
	Dynamic slider		
	Dynamic speedometer		
	Dynamic thermometer		
	Dynamic traffic light		

Category	Indicator Type	Icon	Page
Dials	Gauge		These gauges are subtypes of the KPI indicator type. See “KPI (Key Performance Indicator)” on page 189.
	Simple tachometer		
	Solid tachometer		
	Reversed tachometer		
	Stylized tachometer		
	Stylized highlighted tachometer		
	Dynamic dial		
	Dynamic speedometer		
	Simple dial		
	Marked dial		
	Radial thermometer		

Category	Indicator Type	Icon	Page
Sliders	Dynamic slider		These gauges are subtypes of the KPI indicator type. See “KPI (Key Performance Indicator)” on page 189.
	Stylized slider		
	Vertical slider		
	Slider		
	Curved slider		
	Cylinder		
Traffic Lights	Dynamic traffic light		These gauges are subtypes of the KPI indicator type. See “KPI (Key Performance Indicator)” on page 189.
	Traffic light		
Indicators	Pointers		These gauges are subtypes of the KPI indicator type. See “KPI (Key Performance Indicator)” on page 189.
	Arrows		
	Simple arrows		
	Fancy arrows		
	Button		

Category	Indicator Type	Icon	Page
Gauged Graphs	Bar chart with reference lines		See “Bar Chart with Reference Lines” on page 143.
	Targeted bar chart		See “Targeted Bar Chart” on page 240.
	Line chart with reference lines		See “Line Chart with Reference Lines” on page 196.
	Scatter plot		See “Scatter Plot” on page 216.
	Scatter histogram		See “Scatter Histogram” on page 213.
	Custom graph		See “Custom Graph” on page 156.
Range Map	Range map		See “Range Map” on page 209.
	Tree map (formerly tile chart)		See “Tile Chart” on page 243.

Category	Indicator Type	Icon	Page
Charts and Plots	Simple bar chart		See “Simple Bar Chart” on page 223.
	Stacked bar chart		See “Stacked Bar Chart” on page 232.
	Stacked bar and line chart		See “Stacked Bar and Line Chart” on page 235.
	Bar chart with bullet		See “Bar Chart with Bullet” on page 139.
	Clustered bar chart		See “Clustered Bar Chart” on page 152.
	Line chart with reference lines		See “Line Chart with Reference Lines” on page 196.
	Dual line chart		See “Dual Line Chart” on page 160.
	Multi-line chart		See “Multi-Line Chart” on page 200.
	Forecast chart		See “Forecast Chart” on page 169.
	Bubble plot		See “Bubble Plot” on page 146.
	Needle plot		See “Needle Plot” on page 203.

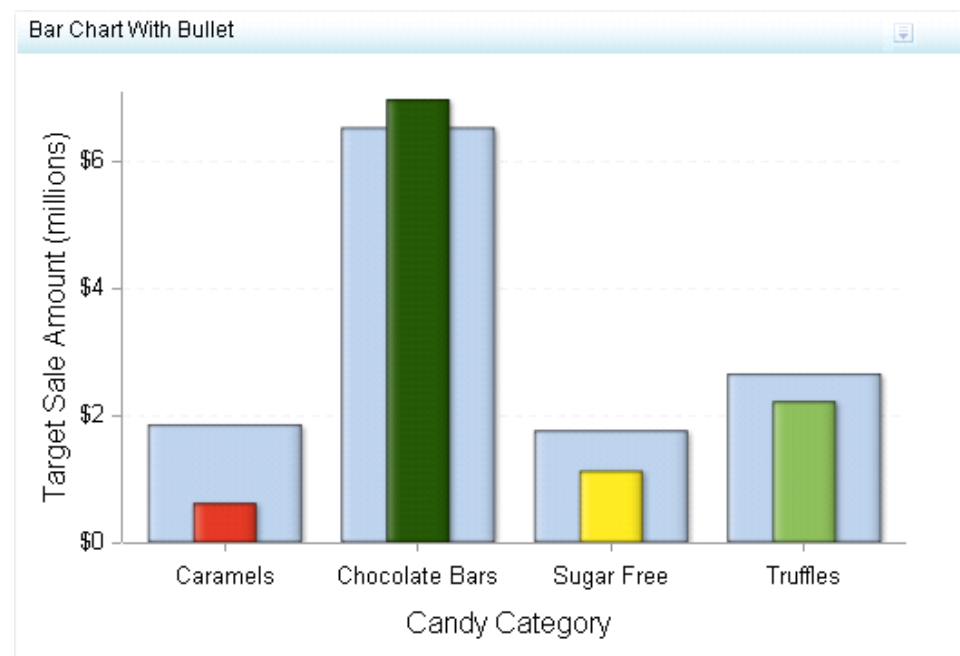
Category	Indicator Type	Icon	Page
Charts and Plots (continued)	Spark table		See “Spark Table” on page 227.
	Schedule chart		See “Schedule Chart” on page 220.
	Vector plot		See “Vector Plot” on page 246.
	Waterfall chart		See “Waterfall Chart” on page 250.
Interactions	Dynamic prompt		See “Dynamic Prompt” on page 163.
	Dynamic text		See “Dynamic Text” on page 166.
	Chart with slider prompt		See “Chart with Slider Prompt” on page 150.
	Interactive summary with bar chart		See “Interactive Summary and Bar Chart” on page 172.
	Interactive summary with scatter plot		See “Interactive Summary and Scatter Plot” on page 178.
	Interactive summary with targeted bar chart		See “Interactive Summary and Targeted Bar Chart” on page 184.

Bar Chart with Bullet

Definition

A bar chart with bullet consists of a grid and some vertical or horizontal columns (bars) with bullet lines inside each bar. The length of each bar represents a quantitative measure, and the bullet inside it compares this measure to another measure, such as a target. The bar and its bullet enables the business user to quickly see how the bullet measure compares to the value of the bar.

Figure A1.1 Example of a Bar Chart with Bullet Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use bar charts with bullets when comparing a primary measure to another measure. For example, bar charts with bullets work well when comparing sales revenue to targets or the current temperature to average or high temperatures.
Not suited for	Do not use bar charts with bullets when comparing two measures that cannot be compared easily or are not related to each other.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.

Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	Sale Amount
X-axis value	Category
Bar value	Target Sale Amount
Bullet value	Sale Amount

Display Setting	Selection Used for Figure
X-axis title	Set to <i>Candy Category</i>
Y-axis title	<blank> (defaults to Target Sale Amount) <i>Note:</i> The Scale Y axis setting adds the label (millions) to the title.
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.

Note: This setting affects the colors of the bullet bars that are drawn in the indicator.
- (Required) From the **Bar value** list, select the value that you want to use for the bars that are drawn in the indicator.

Note: This setting affects the light blue, wide bar in the indicator. The color cannot be changed.
- (Required) From the **Bullet value** list, select the value that you want to use for the bullets that are drawn in the indicator.

Note: This setting affects the thin bar that responds to the defined range colors.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Bar value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.

- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Horizontal** if you want to change the orientation of the bars and labels from vertical to horizontal. This option is particularly useful if you have long labels that are difficult to read when they are displayed vertically.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a bar chart with bullet, you must provide one variable (X-axis value) and at least two measures (bar value and bullet value). In this example, only two measures are provided.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Category (X-axis value)	Sale Amount (Bar value)	Target Sale Amount (Bullet value)
Caramels	\$625,601	\$1,862,471
Chocolate Bars	\$6,988,757	\$6,544,357
Sugar Free	\$1,133,940	\$1,770,507
Truffles	\$2,230,216	\$2,666,718

Bar Chart with Reference Lines

Definition

A bar chart with reference lines consists of a grid and some vertical or horizontal columns (bars). Each column represents quantitative data. Moreover, reference lines are drawn to emphasize specific data values on the chart.

Figure A1.2 Example of a Bar Chart with Reference Lines Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	If you want to display the average interval in a graph, the bar chart with reference lines is the easiest method to use. The tooltip for each data series indicates that the displayed value is the average interval.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The reference lines especially help users to easily determine which interval the values are in and quickly get an idea of the value’s distance from the interval thresholds.
Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.

Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Product_Line
Bar value	Profit
X-axis title	Set to <i>Product Line</i>
Y-axis title	<blank> (defaults to Profit) <i>Note:</i> The Scale Y axis setting adds the label (thousands) to the title.
Scale Y axis	This setting is selected.
Y-axis format	\$123,456 is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Bar value** list, select the value that you want to use for the bars that are drawn in the indicator.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Click **Hide reference lines** if you want to hide the reference lines when a user zooms out the view of an indicator. When the user zooms in, the reference lines reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Horizontal** if you want to change the orientation of the bars and labels from vertical to horizontal. This option is particularly useful if you have long labels that are difficult to read when they are displayed vertically.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a bar chart with reference lines, you must provide a variable (X-axis value) and a measure (bar value). Optionally, you can specify additional variables by using the **Row group by** and **Column group by** lists.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Line (X-axis value)	Profit (Bar value)
Children	4,123
Clothes & Shoes	9,947
Outdoors	5,010
Sports	15,213

Note: To prevent aggregation by the bar chart with reference lines indicator, aggregate the data at the indicator data level.

For the best results, the indicator data should return only one value for each unique value in the **Category Label** data column. If the indicator data returns only one value, the bar chart with reference lines indicator does not need to aggregate the data. The category variable is specified by the data column selected for the **Category Label** field when the data source is defined.

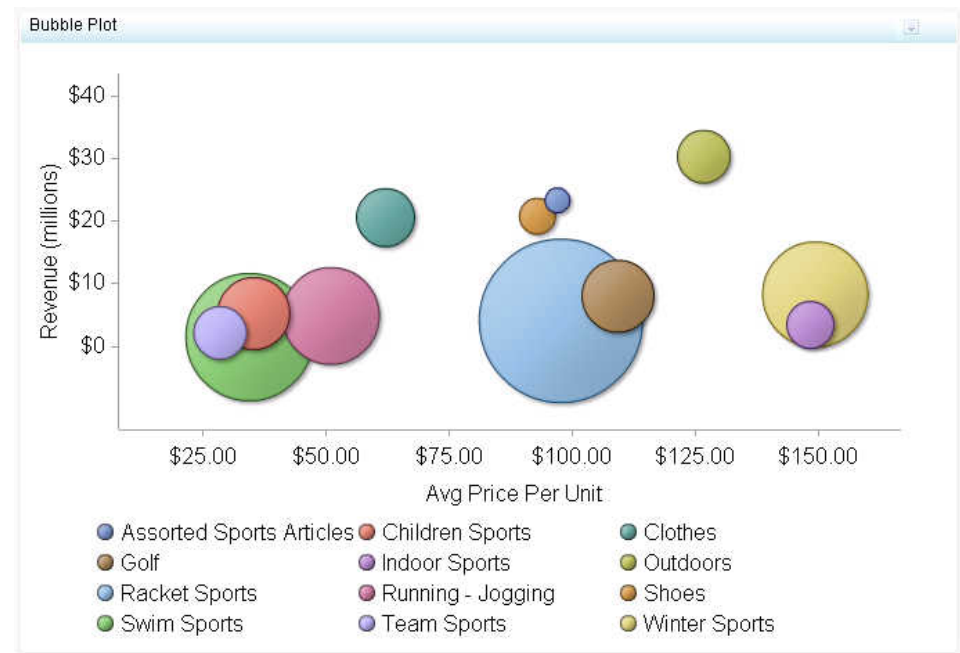
If the bar chart with reference lines indicator does aggregate data, the bar chart with reference lines does two things:

1. It displays data points at the average interval for each data series.
2. It averages the indexes of the aggregated intervals to determine the interval to display and the color of the bar.

Bubble Plot

Definition

A bubble plot is a chart that consists of a set of data points that are plotted to show the relation of one value against another. Each data point in the plot is a bubble that is sized to indicate how a third variable is affected by the correlation.

Figure A1.3 Example of a Bubble Plot Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	You can use the diameters of the bubbles to represent company size, the X axis to represent company growth, and the Y axis to represent current company revenue. You can use transparent bubbles when some bubbles overlap and all bubbles need to be visible. Use colored bubbles to group similar bubbles together.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. However, it is essential to provide a clear and easy-to-read legend with a bubble plot so that the user can interpret what the different dimensions (bubble placement, size, and color) mean.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Graph Style” on page 76](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Group by value	Product Category
X-axis value	Avg Price per Unit
Y-axis value	Revenue
Bubble size value	Profit %
X-axis title	<blank> (defaults to Avg Price per Unit)
Y-axis title	<blank> (defaults to Revenue) <i>Note:</i> The Scale Y axis setting adds the label (millions) to the title.
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Group by value** list, select the value that you want to use to group the data that is displayed in the indicator.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Bubble size value** list, select the value that you want to use for the size of the bubbles that are drawn in the indicator.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a bubble plot, you must provide a variable (group by value) and three measures (X-axis value, Y-axis value, bubble size value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Category (Group by value)	Average Price Per Unit (X-axis value)	Revenue (Y-axis value)	Profit % (Bubble size value)
Golf	\$109.38	\$8,040,846	54.06%

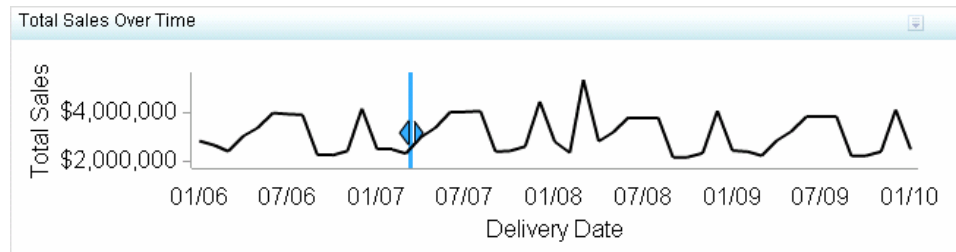
Product Category (Group by value)	Average Price Per Unit (X-axis value)	Revenue (Y-axis value)	Profit % (Bubble size value)
Racket sports	\$97.81	\$4,072,029	60.21%
Swim sports	\$34.59	\$1,486,572	57.81

Chart with Slider Prompt

Definition

A line chart with slider prompt is a graph that consists of a grid and a line with a slider that can be moved across the line. The slider prompt provides a way to see the values of the chart in relation to time, or other values related to specific data points on the chart.

Figure A1.4 Example of a Chart with Slider Prompt Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	A chart with slider prompt is commonly used when time is a factor that is of relevance. Time values are usually along the horizontal axis. Use a chart with slider prompt when data greatly varies in relation to time and it is necessary for the user of the chart to understand values at specific points in time.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The ability to choose what time period the chart will show provides value and relevance to the user.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.

Alert support	Alerts are not supported.
Link support	This indicator type can be used as the destination of a link only. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: <ul style="list-style-type: none"> • (For data filtering on local systems) This indicator can be used as either a source or target indicator. • (For data filtering on remote servers) This indicator can be used as a target indicator only. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Date Delivered
Y-axis value	Sales
X-axis title	Set to <i>Delivery Date</i>
Y-axis title	Set to <i>Total Sales</i>
Y-axis format:	\$123,456 is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column.

The selections available in the **X-axis value** list are all of the values in the **Column Name** column.

- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a chart with slider prompt, you must provide one variable (X-axis value) and one measure (Y-axis value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

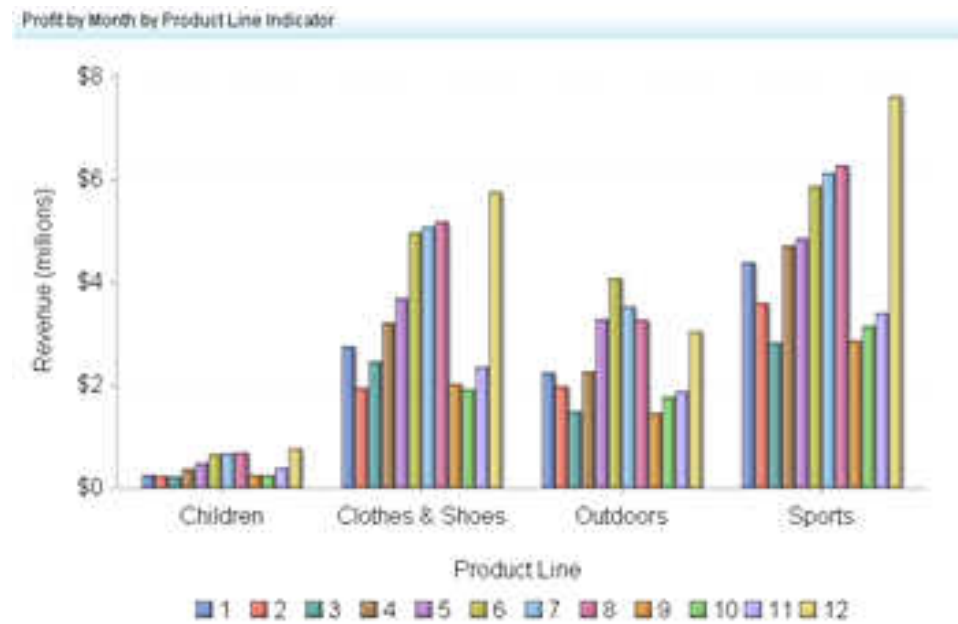
Date Delivered (X-axis value)	Sales (Y-axis value)
12/1/2009	4099652.48
1/1/2010	4099652.48

Clustered Bar Chart

Definition

A clustered bar chart consists of a grid and some vertical or horizontal columns (bars) that are arranged in groups, or clusters. Each bar represents quantitative data. The bars of each data series are always in the same position in each cluster throughout the chart. Different colors, shades, or patterns typically distinguish each data series.

Figure A1.5 Example of a Clustered Bar Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a clustered bar chart when you want to compare the value of a specific subdimension across multiple dimensions. A bar chart enables you to compare values across a related dimension (time or some other variable). Clustering adds the ability to break down a higher-level trend into more detail across a subdimension (time or some other variable) to provide more relevant information. The subdimensions represent discrete portions of the total, and the value of one subdimension is not related to the value of another subdimension.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type sums the applicable indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Graph Style” on page 76](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Product Line
Cluster group	Month
Y-axis value	Sales
X-axis title	<blank> (defaults to Product Line)
Y-axis title	Set to <i>Revenue</i> <i>Note:</i> The Scale Y axis setting adds the label (millions) to the title.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.

- (Required) From the **Cluster group** list, select the value that you want to use to define the cluster in the indicator.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a clustered bar chart, you must provide two variables (one for the bar and one for the cluster) and one measure.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Line (X-axis value)	Month (Cluster group)	Sales (Y-axis value)
Children	1	\$256,803
Clothes & Shoes	1	\$2,762,409
Outdoors	1	\$2,253,080

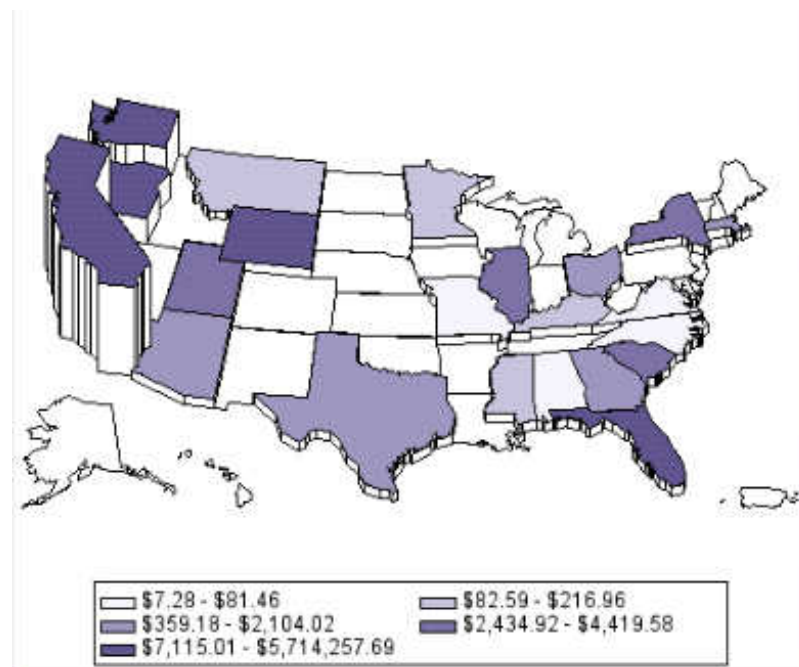
Product Line (X-axis value)	Month (Cluster group)	Sales (Y-axis value)
Sports	1	\$4,393,168
Children	2	\$237,388
Clothes & Shoes	2	\$1,953,145
Outdoors	2	\$1,977,344
Sports	2	\$3,607,938

Custom Graph

Definition

A custom graph is a graph that exists as an image. The information in that image does not have to be a graph, but can be anything represented by an image.

Figure A1.6 Example of a Custom Graph Indicator That Uses a Stored Process



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

You can use this indicator in the following ways:

- by specifying indicator data. When you make this specification, additional settings become available that enable you to select a simple gauge that is displayed with your image. This single gauge reads only the first row of data in the selected indicator data. The gauge applies the range intervals of the specified range to that row of data.

Note: The gauge might not have any relationship to the image that you specify, and specifying an image is optional.

- without specifying indicator data. You can specify an image for the indicator to display, but there is not an accompanying gauge.

For an example of using this indicator, see [“Example: Creating a Custom Graph That Uses a Stored Process”](#) on page 87.


Data best suited for	<p>The custom graph indicator is a combination of a gauge and an external image that is used by reference in SAS BI Dashboard. You reference the image by specifying a Web address. Custom graphs can be used for a variety of purposes, but are especially useful when a picture is needed to illustrate a result or status. For example, if a company sells a wide variety of similar products, you can display an image of a product next to its sales data.</p> <p>You can also use a stored process with a custom graph indicator 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 Web address that renders the stored process output. For more information about using stored processes, see “Sample Data Structure” on page 159.</p>
Not suited for	<p>Do not use this indicator to display static images. Instead, use the static image component provided by SAS BI Dashboard. For information about static content, see “Linking to Other Information by Adding Static Content” on page 98.</p>
Target audience	<p>Some audiences might not be familiar with gauges. However, gauges are not difficult to interpret, so even if a user is unfamiliar with this indicator type, they should be able to understand it. Adding a custom image provides context for the user that might improve understanding. Audiences that might be familiar with this indicator type include business analysts, business users, executives, and financial analysts.</p>
Data aggregation support	<p>This indicator type does not aggregate the indicator data.</p>
Range support	<p>Ranges are optionally supported.</p> <p><i>Note:</i> A range is required if you also select indicator data to use with the custom graph indicator.</p>
Alert support	<p>Alerts are supported only if a range is associated with the indicator. For information, see Chapter 13, “Customizing Alerts,” on page 119.</p>

Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “ Adding Links to Indicators or Other Content ” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- “[Specify the Height and Width of the Indicator](#)” on page 75
- “[Change the Indicator Type](#)” on page 76
- “[Change the Indicator Data to Use](#)” on page 77
- “[Change the Range to Use](#)” on page 77
- “[Specify the Graph Style](#)” on page 76
- “[Specify the Sort Order](#)” on page 78

If you click  to select the custom graph indicator type and you have specified indicator data, the **Gauge** and **Range** lists appears. From these lists, you can select a gauge subtype and range to use. See [Table A1.1 on page 190](#) for the available subtypes.

Display Settings

The following display settings are used in the preceding figure. For more information, see “[Sample Data Structure](#)” for this indicator.

Display Setting	Selection Used for Figure
KPI title	Set to (none) .
Image Web address	<code>http://sasbi.demo.sas.com:8080/SASStoredProcess/do?_action=form,properties,execute,nobanner,newwindow&program=%2FOrion+Star%2FSales+Department%2FStored+Processes%2FUSGeoSales_Map</code>

You can customize the following display settings for this indicator:

- From the **Range value** list, select the value to which you want to apply the defined range intervals.

Note: If you do not specify indicator data and a range, this setting is not available.
- From the **KPI title** list, select the value to use as the title for the gauge.

Note: If you do not specify indicator data and a range, this setting is ignored.

- In the **Image Web address** field, type the Web address to use for an image or other information in the indicator. The following image file types are supported: JPG, PNG, and GIF (but not animated GIF). For more information, see [“Sample Data Structure” on page 159](#).

Note: This field does not support relative pathnames. If you import or export the custom graph indicator as part of a package, you must update the path in this field.

- When you specify an image in the Web address, you have the choice of using a proxy. Click **Use proxy** to specify that a server proxy is used in the indicator.

If you use a proxy	The image file must be in the same network domain as the SAS BI Dashboard server.
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Note: You can enable Adobe Flash to load images from other domains by creating a cross-domain policy file in the root of the Web server. For more information, search the Adobe Web site for **cross-domain policy file specification**.

If you do not use a proxy	The image file must be accessible to the SAS middle tier. Ensure that the SAS middle tier has the correct user credentials to access the Web address.
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Note: When using a stored process, select **Use proxy** so that the proxy server detects from the Web address that the target is a stored process request. The proxy server then adds authentication for the current user to the SAS middle tier.

Sample Data Structure

If you opt to use this indicator with indicator data and a range, the resulting gauge reads only the first row of data provided by the indicator data.

The custom graph indicator type displays an image. The image can be the output of a stored process or other software. For more information about using a stored process, see [“Example: Creating a Custom Graph That Uses a Stored Process” on page 87](#).

Use the following guidelines when using a stored process:

- The output type for the stored process must be set to streaming.
- To determine the Web address for a stored process, use the Stored Process Web application. Open the Properties window and highlight the Web address. Then, press CTRL + C to copy the Web address.

TIP While highlighting, you might have to drag the mouse downwards to force the page to scroll and reveal the entire Web address.

- HTML output is not supported. The stored process output must create only an image that is streamed back to the indicator.
- Do not use the %STPBEGIN and %STPEND macros.
- The stored process must write to the reserved fileref _WEBOUT.

- When using a stored process, select **Use proxy** so that the proxy server detects from the Web address that the target is a stored process request. The proxy server then adds authentication for the current user to the SAS middle tier.

Dual Line Chart

Definition

A dual line chart shows two data series, each as a line, on the same chart. A data series shows the relationship of one variable to another, often as movements or trends in the data over a period of time. Line charts summarize source data and typically are used to chart response values against discrete categorical values.

Figure A1.7 Example of a Dual Line Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a dual line chart when it is critical to compare multiple values for two different categories at a given point in time or at a given state. It is critical that each line has a different color (which is done automatically) so that the lines can be clearly distinguished if they overlap. The dual line chart is best used when the summarized values for the Y axis are relatively close together, or if the specific value is not as important to view compared to the relative trend. The dual line chart supports no more than two lines.
Not suited for	The dual line chart indicator supports displaying only one Y axis. Do not use this indicator if both lines cannot be represented by one Y axis. Also, it is preferable that the X-axis value be numeric data and not character data.

Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Month
Y-axis value	Sales
Second Y-axis value	Profit
X-axis title	<blank> (defaults to Month)

Display Setting	Selection Used for Figure
Y-axis title	Set to <i>Revenue</i> <i>Note:</i> The Scale Y axis setting adds the label (millions) to the title.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Second Y-axis value** list, select the value to use for point values that constitute a second line in the line chart.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a dual line chart, you must provide one variable and two measures (for each line).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Month (X-axis value)	Sales (Y-axis value)	Profit (Second Y-axis value)
1	\$9,665,459	\$5,183,824
2	\$7,775,815	\$4,196,567
3	\$7,014,698	\$3,755,988
4	\$10,574,099	\$5,515,781
5	\$12,339,657	\$6,524,972

Dynamic Prompt

Definition

A dynamic prompt is a drop-down list (or menu) that consists of selections that can be used to dynamically change another indicator type based on the menu value that is selected.

Figure A1.8 Example of a Dynamic Prompt Indicator with the Dynamic Radial Thermometer Gauge Selection



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use dynamic prompts when working with unique menu values for which the data related to each value is different and informative enough by itself. An example of a dynamic prompt is when the following values are included in the prompt: 2005, 2006, 2007, 2008, 2009, 2010. Whenever the user selects one of these years, another indicator dynamically changes based on the selection of the year.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. Adding KPI indicators to the values in the list provides users with additional information to help them quickly choose among the options given in the list.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are optionally supported. <i>Note:</i> As of the second maintenance release of SAS BI Dashboard 4.31, a range is no longer required when you create a dynamic prompt indicator. However, the range is required if you select the Combo box with gauge setting.
Alert support	Alerts are supported only if a range is associated with the indicator. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used as the destination of a link only. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator can be used as either a source or target indicator. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

Note: The dynamic prompt indicator does not use the SAS Prompting Framework and cannot automatically establish dependencies between prompts to create cascading prompts. To achieve similar behavior you must do the following:

1. Use either an information map or stored process as the indicator data.
2. Manually create the prompts in the information map or stored process.
3. Manually create the filter combinations for each dynamic prompt in the indicator data.
4. Manually define interactions in the dashboard between the prompts. The interactions can be either client-side or server-side, depending on your underlying data needs.

General Settings

The General Settings section provides controls that support the following tasks:

- “Specify the Height and Width of the Indicator” on page 75
- “Change the Indicator Type” on page 76
- “Change the Indicator Data to Use” on page 77
- “Change the Range to Use” on page 77
- “Specify the Graph Style” on page 76
- “Specify the Sort Order” on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
Range value	Sale Amount
Range value 2	Sale Amount
Menu value	Country
Prompt type	Combo box with gauge

You can customize the following display settings for this indicator:

- From the **Range value** list, select the value to which you want to apply the defined range intervals.

Note: As of the second maintenance release of SAS BI Dashboard 4.31, you no longer must specify a range when you create a dynamic prompt indicator.

- (Required) From the **Menu value** list, select the parameter to provide the values available in the list in a dynamic prompt indicator.

CAUTION:

If you select Combo box with gauge, ensure that each menu value is unique. Duplicate menu values cause unexpected behavior.

- From the **Prompt type** list, select the type of prompt to display for a dynamic prompt indicator. As of the second maintenance release of SAS BI Dashboard 4.31, the default setting is **Combo box**. For more information, see “[Sample Data Structure](#)” on page 166.

Note: If you select **Combo box with gauge**, then you must select a gauge. If you select **Combo box**, then you cannot select a range.

- In the **Prompt label** field, type the label for the prompt.
- From the **Prompt label width** list, select the width to use, in pixels, for the label. The width of the combo box is reduced by the width of the prompt label.

- Click **Include (all) selection** if you want the prompt to provide a selection that displays all values.

Sample Data Structure

To create a dynamic prompt that is a list box with a gauge, provide values for the menu selections (menu value) and an associated range value for each menu selection (range value), and select **Combo box with gauge** from the **Prompt type** list. When including a gauge, make sure that the data is aggregated such that there is only one row for each menu value. For example, in the following data sample, you should not have more than one row of data for each country. Otherwise, the menu will display a selection and gauge for each row and a country with multiple rows will appear in the menu multiple times.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Country (Menu value)	Sales Amount (Range value and Range value 2)
Canada	\$7,334,520
France	\$899,771
UK	\$1,395,636
United States	\$619,852,310

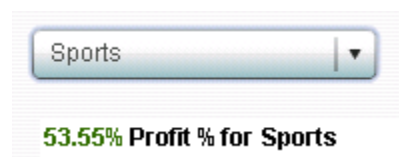
To create a dynamic prompt that is a list box only, provide only menu values and select **Combo box** from the **Prompt type** list. Typically, this type of dynamic prompt is used as a source indicator to interact with another target indicator. The target indicator must include a data column with the same values as those specified for the dynamic prompt menu value. The column names do not have to match. However, the values in the columns must match in order for the dynamic prompt to filter the target indicator. For more information, see [“Adding Interactions between Indicators” on page 104](#).

Dynamic Text

Definition

Dynamic text is text that can vary within a sentence or text-based label.

Figure A1.9 Example of a Dynamic Text Indicator Shown with an Associated Dynamic Prompt Combo Box



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	The dynamic text is the only value in the text that is not static. Dynamic text can be combined with a range to show the interval color of the range. In the following example of dynamic text, “medium” is the dynamic value: “The current security level is medium”.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret if the dynamic text is given within context, as in the example in the previous paragraph. Dynamic text is useful to users by helping them quickly find a specific value of interest.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are optionally supported.
Alert support	Alerts are supported only if a range is associated with the indicator. For information, see Chapter 13, “Customizing Alerts,” on page 119 .
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112 .
Interaction support	<ul style="list-style-type: none"> • Data filter support: For both local system and remote server data filtering, this indicator can be used as a target indicator only. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Change the Range to Use” on page 77](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
Static text	@var1@ Profit % for
Range	Product Category
Range data source	Profit %

You can customize the following display settings for this indicator:

- (Required) In the **Static text** field, type the text to display for a dynamic text indicator. The text can be a text string, a column from the data source, or both.

Note:

- If you want to display a column from the data in the static text, type **@var1@**. The range value is applied to the column from the data, and the resulting value replaces the **@var1@** string. For an example, see the static text setting in the preceding table.
- You are not required to include static text in this field. You can include **@var1@** only.
- For each dynamic text indicator, you can include data from only one column in the indicator data source.
- In the **Range** field, type the filename of a previously saved range, or click **Browse** and navigate to the file. Select the file and click **OK**.

Note: A range is optional. If you select a range, the range value's text is colored based on the range interval colors.

- (Required) From the **Range data source** list, select the column from the data source to use for the range.
- From the **Format** list, select the format to apply to the data in a column.

Sample Data Structure

To create a dynamic text indicator, you must provide a data source for the range (range data source) and the text to display (static text).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Category (Range)	Profit % (Range data source)
Indoor sports	54.06%
Swim sports	57.81%

Product Category (Range)	Profit % (Range data source)
Winter sports	56.25%

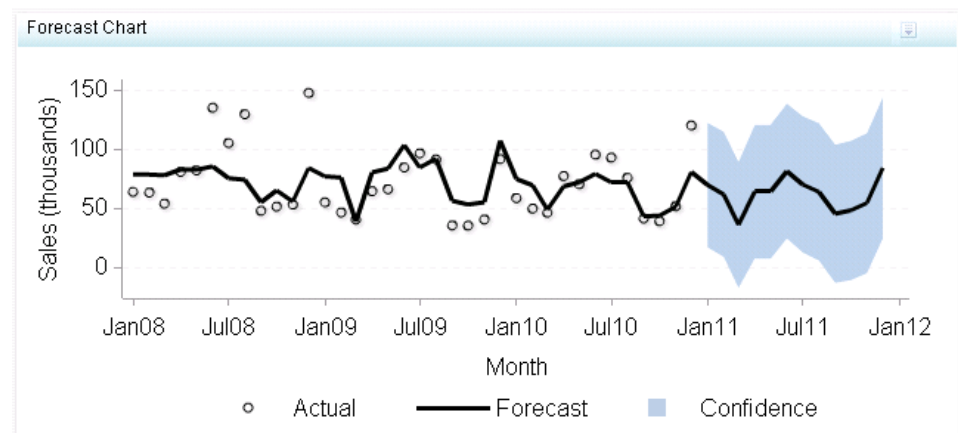
Forecast Chart

Definition

A forecast chart is a type of line chart that is designed to show actual and forecasted data over time. Moreover, the forecast chart can show the confidence intervals for the future forecasted values.

Note: The forecasted data and confidence intervals are provided by indicator data that is generated by using SAS Time Series Forecasting. The applicable task is the Basic Forecasting task in the Time Series group.

Figure A1.10 Example of a Forecast Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	A forecast chart can be used when forecasted data is present. Note that the dashboard designer would have to determine a forecasting method and provide this data as a data source in order to display a forecast. Forecasts should have a time frame tied to them so that the business user is aware of how far out the forecasting is available or has been done.
Target audience	This indicator type is appropriate for all user audiences. Most people will find this indicator type easy to interpret, especially those with background knowledge of statistics.

Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Month
Actual value	ColumnACTUAL
Forecasted value	ColumnFORECAST
Lower band	ColumnL95
Upper band	ColumnU95
X-axis title	<blank> (defaults to Month)

Display Setting	Selection Used for Figure
Y-axis title	Set to <i>Sales</i> <i>Note:</i> The Scale Y axis setting adds the label (thousands) to the title.
Actual legend label	Set to <i>Actual</i>
Forecasted legend label	Set to <i>Forecast</i>
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Actual value** list, select the value to use for the actual value in a forecast chart indicator.
- (Required) From the **Forecasted value** list, select the value to use for the forecasted value in a forecast chart.
- (Required) From the **Lower band** list, select the value to use for the lower confidence band in a forecast chart.
- (Required) From the **Upper band** list, select the value to use for the upper confidence band in a forecast chart.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- In the **Actual legend label** field, type the text that replaces the default legend label for the actual value in a forecast chart indicator.
- In the **Forecasted legend label** field, type the text that replaces the default legend label for the forecasted value in a forecast chart.
- In the **Band legend label** field, type the text that replaces the default title for the band legend in a forecast chart.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if

the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.

- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a forecast chart, you must provide one variable or measure (X-axis value) and four measures (actual value, forecasted value, lower band, and upper band).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting. Note that this data was generated when 2011 dates were in the future.

Month (X-axis value)	Actual (Actual value)	Forecast (Forecasted value)	Lower Limit (Lower band)	Upper Limit (Upper band)
10/01/2010	\$39,482.29	\$44,163.35		
11/01/2010	\$52,031.64	\$51,549.97		
12/01/2010	\$120,083.94	\$80,948.36		
01/01/2011		\$69,889.80	\$17,457.73	\$122,321.88
02/01/2011		\$61,965.83	\$9,231.34	\$114,700.31
03/01/2011		\$36,283.89	(\$16,767.06)	\$89,334.85

Interactive Summary and Bar Chart

Definition

An interactive summary and bar chart is a graph that consists of a grid and some vertical or horizontal columns (bars) with a slider that can be moved across the bars.

An interactive display enables dashboard users to interactively traverse large amounts of detail data by sliding along a summary chart. Detail data can be easily compared using the following two methods:

- When the display is defined, the dashboard designer selects a column by which to group data.
- While viewing the display, the business user can select different detail slices to compare.

Note: This indicator can show actual and forecasted data over time. Additionally, it can show the confidence intervals for the future forecasted values. These values are provided by indicator data that is generated using SAS Time Series Forecasting.

Figure A1.11 Example of an Interactive Summary and Bar Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Note: SAS BI Dashboard 4.3 and later provides this indicator for support of environments that have been migrated from SAS BI Dashboard 4.2. It is not recommended that users of SAS BI Dashboard 4.3 or later use this indicator. Instead, use the chart with slider prompt indicator and either bar chart indicators, and define an interaction between the two indicators to achieve the same functionality, but with superior control by way of the display settings.

- For more information, see “[Adding Interactions between Indicators](#)” on page 104.
- See “[Bar Chart with Bullet](#)” on page 139.
- See “[Bar Chart with Reference Lines](#)” on page 143.
- See “[Chart with Slider Prompt](#)” on page 150.

Data best suited for	An interactive summary and bar chart is most commonly used when data greatly varies across time and multiple categories can be defined (to represent the different bars). This chart can also be used with ranges by representing the length of each bar as the progress made toward a certain range value. Because the interactive summary and bar chart has many components, be sure to identify what role each value or data point plays in the chart and think about how to display the value or data point.
Not suited for	The indicator data must be suitable for a bar chart. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for this indicator.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The ability to choose the time period that is displayed by the chart provides value and relevance to the user.
Data aggregation support	This indicator type averages the applicable indicator data. <i>Note:</i> The detail bar chart always averages the data. However, you can select the aggregation method to use when summarizing data for the summary chart in the indicator. The default selection is Sum .
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link only. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator does not support data filtering. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77

Note: When setting the height and width of this indicator type, remember that it has minimum legible dimensions of 380 x 450 pixels.

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Product_Line
Bar value	ACTUAL
Forecasted value	FORECAST
Lower confidence	Lower Limit
Upper confidence	Upper Limit
Summarization graph type	Line is selected.
Summarization function	Sum is selected.
Default data color	Blue is selected.
Show legend	This setting is selected.
Summarize by	Delivery Date
Column group by	Customer_Group
Detail axis format	\$123,456 is selected.
Summary axis format	\$123,456 is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Bar value** list, select the value that you want to use for the bars that are drawn in the indicator.
- (Required) From the **Forecasted value** list, select the value to use for the forecasted value in a forecast chart.
- From the **Lower confidence** list, select the value to use for the lower confidence boundary in an interactive display.
- From the **Upper confidence** list, select the value to use for the upper confidence boundary in an interactive indicator.

- From the **Alternate value to summarize** list, select the value to use for the summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate forecasted value to summarize** list, select the value to use for the forecasted value summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate lower confidence to summarize** list, select the value to use for the lower confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate upper confidence to summarize** list, select the value to use for the upper confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Summarization graph type** list, select the type of graph to use to represent summary data in an interactive indicator.
- From the **Summarization function** list, select the function to use to summarize data in an interactive indicator.
- In the **Custom label for summary graph** field, type the text to use to replace the default title for the summary graph in an interactive indicator.
- From the **Default data color** field, select the default color for representing data in an interactive indicator.
- Select **Show legend** to specify that the legend is displayed in the indicator.
- (Required) From the **Summarize by** list, select the value to use to summarize data in an interactive indicator.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **Detail axis format** list, select the SAS format to apply to the data on the detail axis.
- From the **Summary axis format** list, select the format to apply to the data on the summary axis.

Sample Data Structure

To create an interactive summary and bar chart, you must provide two variables (X-axis value and summarize by) and at least two measures (bar value, forecasted value). In this example, the data from 2011 also provides values for the optional lower and upper confidence settings.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Region/ Country (Column group by)	Product Line (X-axis value)	Delivery Date (Summarize by)	Actual (Bar value)	Forecast (Forecasted value)	Lower Limit (Lower confidence)	Upper Limit (Upper confidence)
Asia	Children	01/01/2009	\$4,454.00	\$5,418.00		
Asia	Children	02/01/2009	\$3,456.10	\$5,418.00		

Region/ Country (Column group by)	Product Line (X-axis value)	Delivery Date (Summarize by)	Actual (Bar value)	Forecast (Forecasted value)	Lower Limit (Lower confidence)	Upper Limit (Upper confidence)
Asia	Children	01/01/2011		\$11,292.68	\$4,451.85	\$18,141.50
Asia	Children	02/01/2011		\$10,281.50	\$3,349.61	\$17,213.39
Europe	Children	01/01/2009	\$18,045.60	\$24,646.82		
Europe	Children	02/01/2009	\$17,145.60	\$25,983.78		
Europe	Children	01/01/2011		\$48,590.64	\$9,029.84	\$88,151.43
Europe	Children	02/01/2011		\$49,339.80	\$9,342.16	\$89,337.44
U.S.	Children	01/01/2009	\$24,677.70	\$26,960.89		
U.S.	Children	02/01/2009	\$20,917.20	\$28,943.96		
U.S.	Children	01/01/2011		\$88,852.77	\$41,141.66	\$136,563.88
U.S.	Children	02/01/2011		\$82,747.69	\$34,497.79	\$130,997.59

For the best results when using this interactive indicator, the indicator data must meet the following requirements:

- The indicator data must be suitable for a bar chart. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for an interactive indicator.
- The indicator data must contain one low-cardinality grouping column that is used to summarize the data. A *low-cardinality grouping column* is a column that has a small number of unique values to group by.
- (Optional) To enable an interactive indicator to express forecasting data to business users, the indicator data must contain a column for forecasted values, for lower confidence values, and for upper confidence values.

An interactive indicator can summarize either the detail data expressed in the detail charts or can summarize a different field of data.

At the indicator level, the setup of the interactive indicator is essentially the same as for bar charts, except that the use of data for the interactive indicators is more sophisticated. The only significant difference is that the interactive indicators support the concept of dependent ranges. A dependent range takes the value of another range for the range definition. This scheme enables a data set generated by the SAS Forecast Server to be useful to the SAS BI Dashboard and the interactive indicators without the need for complicated intermediary data transformations.

Interactive Summary and Scatter Plot

Definition

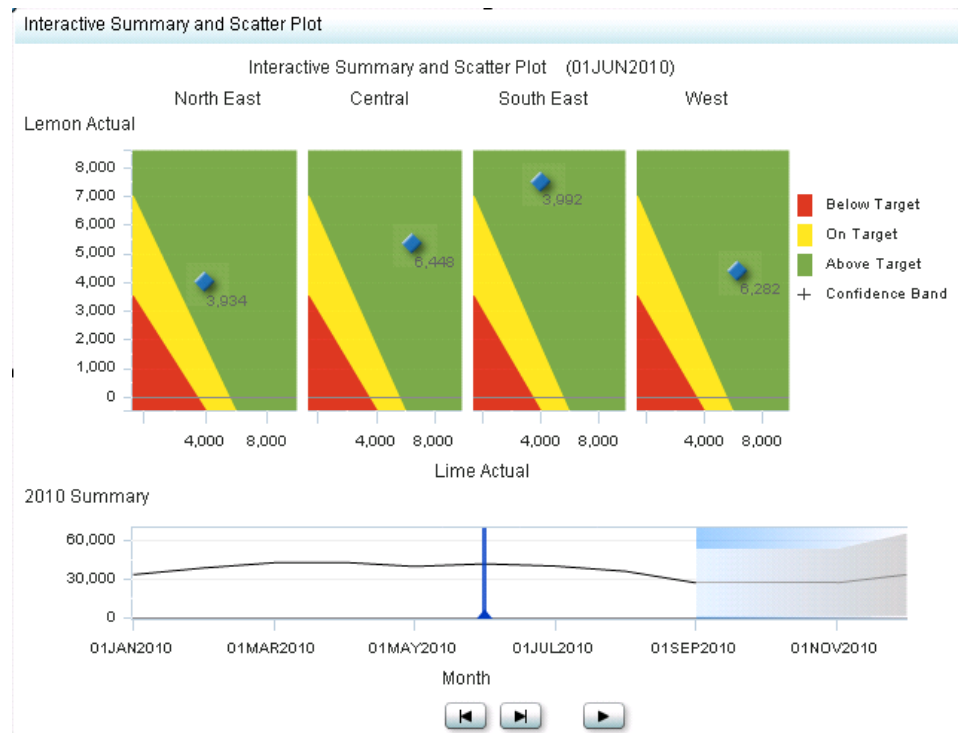
An interactive summary and scatter plot is a combination of graphical charts that shows how individual data points change over time when a slider is moved across a line graph that represents time. The scatter plot consists of a set of data points that are plotted to show the relation of one value against others. The interactive summary enables the user to see how the data points change over time.

An interactive display enables dashboard users to interactively traverse large amounts of detail data by sliding along a summary chart. Detail data can be easily compared using the following two methods:

- When the display is defined, the dashboard designer selects a column by which to group data.
- While viewing the display, the business user can select different detail slices to compare.

Note: This indicator can show actual and forecasted data over time. Additionally, it can show the confidence intervals for the future forecasted values. These values are provided by indicator data that is generated using SAS Time Series Forecasting.

Figure A1.12 Example of an Interactive Summary and Scatter Plot Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Note: SAS BI Dashboard 4.3 and later provides this indicator for support of environments that have been migrated from SAS BI Dashboard 4.2. It is not recommended that users of SAS BI Dashboard 4.3 or later use this indicator. Instead, use the chart with slider prompt indicator and the scatter plot indicator, and define an interaction between the two indicators to achieve the same functionality, but with superior control by way of the display settings.

- For more information, see [“Adding Interactions between Indicators” on page 104.](#)
- See [“Chart with Slider Prompt” on page 150.](#)
- See [“Scatter Plot” on page 216.](#)

Data best suited for	The interactive summary and scatter plot indicator is commonly used to show sales revenue numbers over time, compared to targets. Each plotted data point can represent sales versus target for a certain point in time. By moving the slider, the data points change to represent new sales versus target values. A range can color the background of the plot to add the target dimension.
Not suited for	The indicator data must be suitable for a scatter plot. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for this indicator.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The ability to choose the time period that is displayed by the chart provides value and relevance to the user.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link only. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator does not support data filtering. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- “Specify the Height and Width of the Indicator” on page 75
- “Change the Indicator Type” on page 76
- “Change the Indicator Data to Use” on page 77
- “Change the Range to Use” on page 77

Note: When setting the height and width of this indicator type, remember that it has minimum legible dimensions of 380 x 450 pixels.

This indicator requires that you specify two ranges: the X-axis range and the Y-axis range. In the preceding example, the following ranges are used:

General Setting	Selected Range
X-axis range	Lime Range
Y-axis range	Lemon Range

Remember the following guidelines when specifying the ranges:

- Both ranges must have the same number of intervals defined. Otherwise, the following message is displayed:
The X range and the Y range must have the same number of intervals.
- Only the Y-axis range colors are displayed in the indicator.
- The intersection of the X-axis range and the Y-axis range defines the triangular shadings in the graph.

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Lime Actual
Forecasted X-axis value	Lime Forecast
X-axis lower confidence	Lime Low
X-axis upper confidence	Lime Up
Y-axis value	Lemon Actual
Forecasted Y-axis value	Lemon Forecast

Display Setting	Selection Used for Figure
Y-axis lower confidence	Lemon Low
Y-axis upper confidence	Lemon Up
Summarization graph type	Line is selected.
Summarization function	Sum is selected.
Custom label for summary graph	Set to <i>2010 Summary</i>
Default data color	Blue is selected.
Show legend	This setting is selected.
Summarize by	Month
Column group by	Store Region
Detail X-axis format	123,456 is selected.
Detail Y-axis format	123,456 is selected.
Summary axis format	123,456 is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
The value of this setting is used in the graph tooltips. It is not possible to display additional information in the tooltip to distinguish points. However, you can use the **Column group by** setting to provide information about the points.
- (Required) From the **Forecasted X-axis value** list, select the value to use for the forecasted value for the X axis.
- From the **X-axis lower confidence** list, select the value to use for the lower confidence boundary on the X axis in an interactive indicator.
- From the **X-axis upper confidence** list, select the value to use for the upper confidence boundary on the X axis in an interactive indicator.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- From the **Forecasted Y-axis value** list, select the value to use for the forecasted value for the Y axis.

- From the **Y-axis lower confidence** list, select the value to use for the lower confidence boundary on the Y axis in an interactive indicator.
- From the **Y-axis upper confidence** list, select the value to use for the upper confidence boundary on the Y axis in an interactive indicator.
- From the **Alternate value to summarize** list, select the value to use for the summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate forecasted value to summarize** list, select the value to use for the forecasted value summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate lower confidence to summarize** list, select the value to use for the lower confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate upper confidence to summarize** list, select the value to use for the upper confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Summarization graph type** list, select the type of graph to use to represent summary data in an interactive indicator.
- From the **Summarization function** list, select the function to use to summarize data in an interactive indicator.
- In the **Custom label for summary graph** field, type the text to use to replace the default title for the summary graph in an interactive indicator.
- From the **Default data color** field, select the default color for representing data in an interactive indicator.
- Select **Show legend** to specify that the legend is displayed in the indicator.
- (Required) From the **Summarize by** list, select the value to use to summarize data in an interactive indicator.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select (**none**).
- From the **Detail X-axis format** list, select the format to apply to the data on the detail X axis.
- From the **Detail Y-axis format** list, select the format to apply to the data on the detail Y axis.
- From the **Summary axis format** list, select the format to apply to the data on the summary axis.

Sample Data Structure

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Month (Summarize by)	Store Region (Column group by)	Lime Actual (X-axis value)	Lime Forecast (Forecasted X- axis value)	Lime Low (X-axis lower confidence)	Lime Up X-axis upper confidence)	Lemon Actual (Y-axis value)	Lemon Forecast (Forecasted Y- axis value)	Lemon Low (Y-axis lower confidence)	Lemon Up (Y-axis upper confidence)
01AUG2010	North East	3509	3899.25			5180	4010.1666667		
01AUG2010	West	3479	4028.5714286			4379	4309.2619048		
01AUG2010	Central	3934	4157.8928571			4033	4608.3571429		
01AUG2010	South East	6448	4545.8571429			5370	5505.6428571		
01SEP2010	North East		3769.9285714	473.67952229	7066.1776206		3711.0714286	1072.0041191	6350.138738
01SEP2010	West		3381.9642857	-699.7096296	7463.638201		2813.7857143	-454.1142645	6081.685693
01SEP2010	Central		3511.2857143	-284.3073884	7306.8788169		3112.8809524	74.025111133	6151.7367936

For the best results when using this interactive indicator, the indicator data must meet the following requirements:

- The indicator data must be suitable for a scatter plot. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for an interactive indicator.
- The indicator data must contain one low-cardinality grouping column that is used to summarize the data. A *low-cardinality grouping column* is a column that has a small number of unique values to group by.
- (Optional) To enable an interactive indicator to express forecasting data to business users, the indicator data must contain a column for forecasted values, for lower confidence values, and for upper confidence values.

An interactive indicator can summarize either the detail data expressed in the detail charts or can summarize a different field of data.

At the indicator level, the setup of the interactive indicator is essentially the same as for scatter plots, except that the use of data for the interactive indicators is more sophisticated. The only significant difference is that the interactive indicators support the concept of dependent ranges. A dependent range takes the value of another range for the range definition. This scheme enables a data set generated by the SAS Forecast Server to be useful to the SAS BI Dashboard and the interactive indicators without the need for complicated intermediary data transformations.

Interactive Summary and Targeted Bar Chart

Definition

An interactive summary and targeted bar chart is a graph that consists of a grid and some vertical or horizontal columns (bars) with a slider that can be moved across the bars. A target value is represented by a reference line that is drawn in each bar.

An interactive display enables dashboard users to interactively traverse large amounts of detail data by sliding along a summary chart. Detail data can be easily compared using the following two methods:

- When the display is defined, the dashboard designer selects a column by which to group data.
- While viewing the display, the business user can select different detail slices to compare.

Note: This indicator can show actual and forecasted data over time. Additionally, it can show the confidence intervals for the future forecasted values. These values are provided by indicator data that is generated using SAS Time Series Forecasting.

Figure A1.13 Example of an Interactive Summary and Targeted Bar Chart Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Note: SAS BI Dashboard 4.3 and later provides this indicator for support of environments that have been migrated from SAS BI Dashboard 4.2. It is not recommended that users of SAS BI Dashboard 4.3 or later use this indicator. Instead, use the chart with slider prompt indicator and the targeted bar chart indicator, and define an interaction between the two indicators to achieve the same functionality, but with superior control by way of the display settings.

- For more information, see [“Adding Interactions between Indicators”](#) on page 104.
- See [“Chart with Slider Prompt”](#) on page 150.
- See [“Targeted Bar Chart”](#) on page 240.

Data best suited for	Use an interactive summary and targeted bar chart when a target for each category (each bar in the chart) clearly needs to be displayed. If there is no need for this, a regular interactive summary and bar chart will suffice.
Not suited for	The indicator data must be suitable for a targeted bar chart. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for this indicator.

Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The ability to choose the time period that is displayed by the chart provides value and relevance to the user. Associating the bars in the chart to a target and range enables the user to quickly see the performance of each category.
Data aggregation support	This indicator type averages the applicable indicator data. <i>Note:</i> The detail bar chart always averages the data. However, you can select the aggregation method to use when summarizing data for the summary chart in the indicator. The default selection is Sum .
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link only. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator does not support data filtering. • Interactive highlighting support: This indicator does not support interactive highlighting. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77

Note: When setting the height and width of this indicator type, remember that it has minimum legible dimensions of 380 x 450 pixels.

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	Percent Difference

Display Setting	Selection Used for Figure
Forecasted range value	Predicted
X-axis value	Product Line
Bar value	Actual
Forecasted value	Predicted
Target value	Predicted
Lower confidence	LCL
Upper confidence	UCL
Summarization graph type	Line is selected.
Summarization function	Sum is selected.
Custom label for summary graph	Set to <i>Total Sales — Trend</i>
Default data color	Black is selected.
Show legend	This setting is selected.
Summarize by	Delivery Date
Column group by	(none) is selected.
Detail axis format	\$123,456 is selected.
Summary axis format	\$123,456 is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- From the **Forecast range value** list, select the value to use for the forecasted value, which is used for range coloring of the forecasted values in an interactive summary and targeted bar chart indicator.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Bar value** list, select the value that you want to use for the bars that are drawn in the indicator.
- (Required) From the **Forecasted value** list, select the value to use for the forecasted value in a forecast chart.

- From the **Target value** list, select the value that you want to use for the target markers in the indicator.
- From the **Lower confidence** list, select the value to use for the lower confidence boundary in an interactive display.
- From the **Upper confidence** list, select the value to use for the upper confidence boundary in an interactive indicator.
- From the **Alternate value to summarize** list, select the value to use for the summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate forecasted value to summarize** list, select the value to use for the forecasted value summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate lower confidence to summarize** list, select the value to use for the lower confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Alternate upper confidence to summarize** list, select the value to use for the upper confidence summarization. The summarized value is used to draw the summary line or bar chart at the bottom of the interactive charts.
- From the **Summarization graph type** list, select the type of graph to use to represent summary data in an interactive indicator.
- From the **Summarization function** list, select the function to use to summarize data in an interactive indicator.
- In the **Custom label for summary graph** field, type the text to use to replace the default title for the summary graph in an interactive indicator.
- From the **Default data color** field, select the default color for representing data in an interactive indicator.
- Select **Show legend** to specify that the legend is displayed in the indicator.
- (Required) From the **Summarize by** list, select the value to use to summarize data in an interactive indicator.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **Detail axis format** list, select the SAS format to apply to the data on the detail axis.
- From the **Summary axis format** list, select the format to apply to the data on the summary axis.

Sample Data Structure

To create an interactive summary and targeted bar chart, you must provide two variables (X-axis value and summarize by) and at least three measures (bar value, forecasted value, and range value). In this example, the data from 2011 also provides values for the optional lower and upper confidence settings.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Line (X-axis value)	Delivery Date (Summarize by)	Actual (Bar value)	Predicted (Forecasted value, Forecasted range value, and Target value)	Upper Limit (Upper confidence)	Lower Limit (Lower confidence)	Percentage Difference (Range value)
Children	1/1/2009	51,065	69,125	98,581	39,669	-26.13%
Clothes & Shoes	1/1/2009	564,101	647,098	854,784	439,413	-12.83%
Outdoors	1/1/2009	502,799	439,984	609,154	270,814	14.28%
Sports	1/1/2009	917,930	871,717	1,191,439	551,994	5.30%

For the best results when using this interactive indicator, the indicator data must meet the following requirements:

- The indicator data must be suitable for a targeted bar chart. Indicator data that returns a single row and that is suitable for a KPI indicator is not suitable for an interactive indicator.
- The indicator data must contain one low-cardinality grouping column that is used to summarize the data. A *low-cardinality grouping column* is a column that has a small number of unique values to group by.
- (Optional) To enable an interactive indicator to express forecasting data to business users, the indicator data must contain a column for forecasted values, for lower confidence values, and for upper confidence values.

An interactive indicator can summarize either the detail data expressed in the detail charts or can summarize a different field of data.

At the indicator level, the setup of the interactive indicator is essentially the same as for targeted bar charts, except that the use of data for the interactive indicators is more sophisticated. The only significant difference is that the interactive indicators support the concept of dependent ranges. A dependent range takes the value of another range for the range definition. This scheme enables a data set generated by the SAS Forecast Server to be useful to the SAS BI Dashboard and the interactive indicators without the need for complicated intermediary data transformations.

KPI (Key Performance Indicator)

Definition

A key performance indicator (KPI) is a measurement that shows whether an organization is progressing toward its stated goals. In SAS BI Dashboard, KPIs can be speedometers, thermometers, tachometers, sliders, dials, arrows, traffic lights, and other types of gauges.

Figure A1.14 Example of a KPI, Subtype Dynamic Radial Thermometer



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

KPI Subtypes



















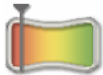

















When you click  to select the KPI indicator type, the **Gauge** list appears. From this list, you can select a gauge subtype to use.

Table A1.1 Gauge Subtypes

Category	Gauge subtype	Icon
Dynamic <i>Note: Dynamic gauge subtypes are the only subtypes that respond to a user-defined range.</i>	Dynamic bullet bar	
	Dynamic dial	
	Dynamic radial thermometer	
	Dynamic slider	
	Dynamic speedometer	
	Dynamic thermometer	
	Dynamic traffic light	

Category	Gauge subtype	Icon
Arrows and pointers	Arrow	
	Arrow (small)	
	Fancy arrow	
	Simple arrow	
	Pointer	
Dials	Simple dial	
	Marked dial	
	Dynamic dial	
	Dynamic radial thermometer	

Category	Gauge subtype	Icon
Sliders	Slider	
	Curved slider	
	Dynamic slider	
	Stylized slider	
	Vertical slider	
Tachometers	Simple tachometer	
	Highlighted tachometer	
	Solid tachometer	
	Reversed tachometer	
	Stylized tachometer	
Traffic lights	Traffic light	
	Traffic light (small)	
	Dynamic traffic light	

Category	Gauge subtype	Icon
Others	Button	
	Cylinder	
	Dynamic bullet bar	
	Dynamic speedometer	
	Dynamic thermometer	
	Gauge	

Usage Information

Data best suited for	<p>A gauge displays the status or measure of a variable or variables in relation to a target, goal, or interval. Gauges are designed to achieve this goal in a way that is familiar to the user: Many gauges can be found in real-life objects such as cars and machines. Gauges can be used to display a quantity, range, variable, or status.</p> <p>Gauges are most effective when they are used to instantly alert the business user of a status, without the user having to know many details. Business users should be able to grasp information at a glance. Gauges, especially round ones, can use up quite a bit of screen real estate, so keep this in mind. They are commonly used, however, due to their familiarity and ease of use.</p>
Not suited for	<p>KPI gauges are not suitable for significant amounts of data. KPI gauges appear best with indicator data that produces summarized data with a limited number of data rows. If you use indicator data with significant amounts of data to drive a KPI, SAS BI Dashboard attempts to produce one KPI gauge representation for each row of data in the indicator data. For significant amounts of data, an indicator type that automatically summarizes the data is preferable. Bar charts are an example of this type of indicator.</p>

Target audience	Some audiences might not be familiar with gauges. However, gauges are not difficult to interpret, so even if users are unfamiliar with this indicator type, they should be able to understand it. Be sure to label the value, the interval threshold values, and colors used to represent intervals (red for below target, yellow for on target, and green for above target).
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: <ul style="list-style-type: none"> • (For data filtering on local systems) This indicator type can be used as a source indicator only. • (For data filtering on remote servers) This indicator type can be used as either a source or a target indicator. • Interactive highlighting support: This indicator type can be used as a source indicator only. <p><i>Note:</i> The KPI does not support selection of multiple gauges.</p> <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is not supported.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
Range value	Sale Amount
KPI title	Category is selected.
Lines for title	2

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.

Note: The following KPI indicator gauge types support custom range color settings:

- arrow
- arrow (small)
- button
- cylinder
- fancy arrow
- pointer
- simple arrow
- slider
- solid tachometer
- traffic light (small)
- From the **Range value 2** list, select a second data point value that you want to represent in the gauge. If you do not want to use a second value, click **(none)**.
Note: Not all KPI ranges use this setting.
- From the **KPI title** list, select the column name data to use as titles for the gauges in the KPI.
- From the **Lines for title** list, select the number of lines that you want to reserve for the title of a KPI. If there is no text on the line, the line is displayed as a blank.
- Click **Hide titles when zoomed out** if you want to hide the indicator titles when a user zooms out the view of an indicator. When the user zooms in, the titles reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Click **Hide values when zoomed out** if you want to hide the indicator values when a user zooms out the view of an indicator. When the user zooms in, the values reappear. Select this setting to avoid visual clutter when the view is zoomed out.

Sample Data Structure

To create a KPI, you must provide a measure (range value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

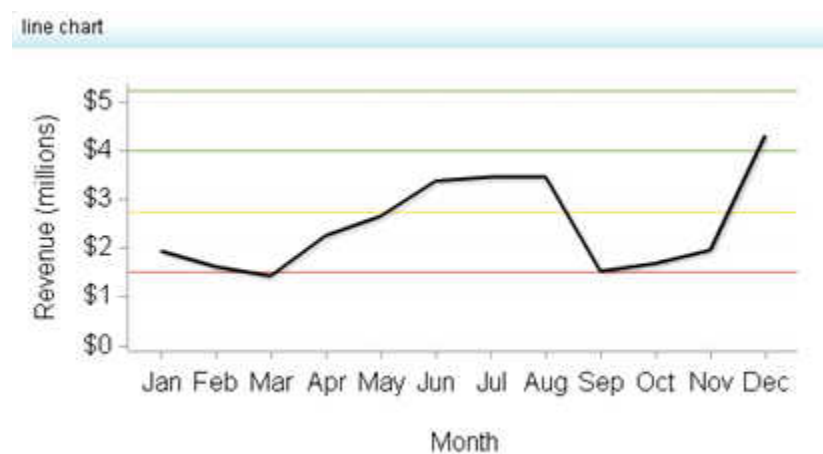
Category (KPI title)	Sale Amount (Range value)
Caramels	\$625,601
Chocolate Bars	\$6,988,757
Sugar Free	\$1,133,940
Truffles	\$2,230,216

Line Chart with Reference Lines

Definition

A line chart shows the relationship of one variable to another, often as movements or trends in the data over a period of time. Line charts summarize source data and typically are used to chart response values against discrete categorical values.

Figure A1.15 Example of a Line Chart with Reference Lines Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use line charts when the change in a variable or variables clearly needs to be displayed or when trending or rate of change information is of value. When lines are stacked, line charts can be used to compare the trend or individual values for several variables.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Month
Primary value	Revenue
X-axis title	<blank> (defaults to Month)
Y-axis title	<blank> (defaults to Revenue) <i>Note: The Scale Y axis setting adds the label (millions) to the title.</i>
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Primary value** list, select the parameter to use for the primary data line in a line chart with reference lines or a primary tick mark in a KPI gauge.
- From the **Secondary value** list, select the parameter to use for the secondary data line in a line chart or a secondary tick mark in a KPI gauge. If you do not want to specify a secondary value, select (**none**).
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.

- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Click **Hide reference lines** if you want to hide the reference lines when a user zooms out the view of an indicator. When the user zooms in, the reference lines reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a line chart, you must provide one variable (X-axis value) and one measure (primary value).

Note: Although the sample data does not do so, you can provide an optional measure to create a reference line (secondary value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

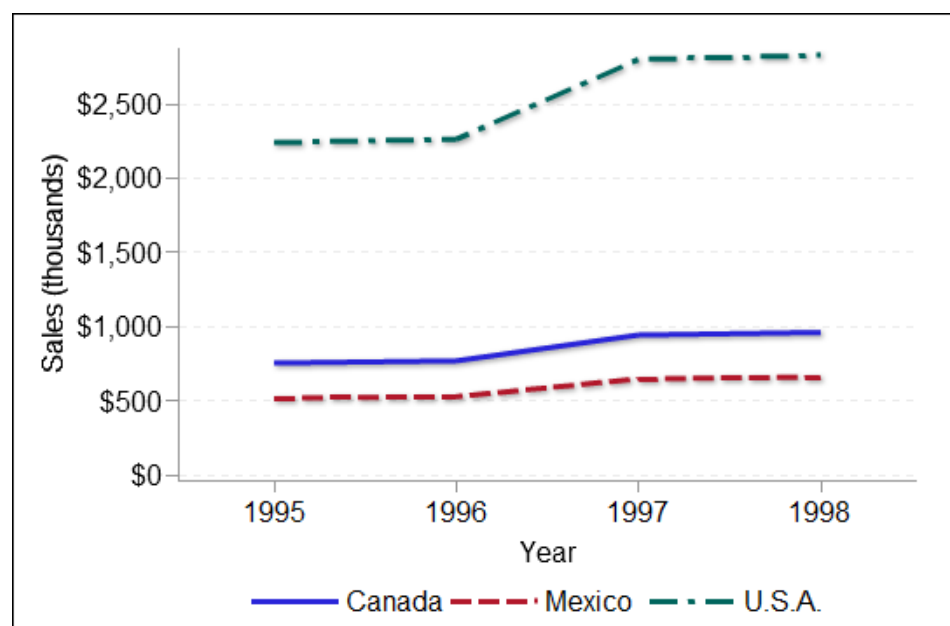
Month (X-axis value)	Revenue (Primary value)
January	\$1,956,055
February	\$1,632,174
March	\$1,433,003
April	\$2,265,200
May	\$2,669,076

Multi-Line Chart

Definition

A multi-line chart shows multiple data series, each as a line, on the same chart. A data series shows the relationship of one variable to another, often as movements or trends in the data over a period of time. Line charts summarize source data and typically are used to chart response values against discrete categorical values.

Figure A1.16 Example of a Multi-line Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a multi-line chart when it is critical to compare multiple values for two or more different categories at a given point in time or at a given state. It is critical that each line has a different color (which is done automatically) so that the lines can be clearly distinguished if they overlap. The multi-line chart is best used when the summarized values for the Y axis are relatively close together, or if the specific value is not as important to view compared to the relative trend.
Not suited for	The multi-line chart indicator supports displaying only one Y axis. Do not use this indicator if all of the lines cannot be represented by one Y axis. Also, it is preferable that the X-axis value be numeric data and not character data.

Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	YEAR
Line group	COUNTRY
Y-axis value	sales
X-axis title	Set to <i>Year</i>

Display Setting	Selection Used for Figure
Y-axis title	Set to <i>Sales</i> <i>Note:</i> The Scale Y axis setting adds the label (thousands) to the title.
Scale Y axis	This setting is selected.
Y-axis format	Set to \$123,456
X-axis labels	Set to Rotate

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Line group** list, select the value that you want to use to define the lines in the indicator.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a multi-line chart, you must provide two variables (one for the X axis and one for the lines) and one measure (Y axis).

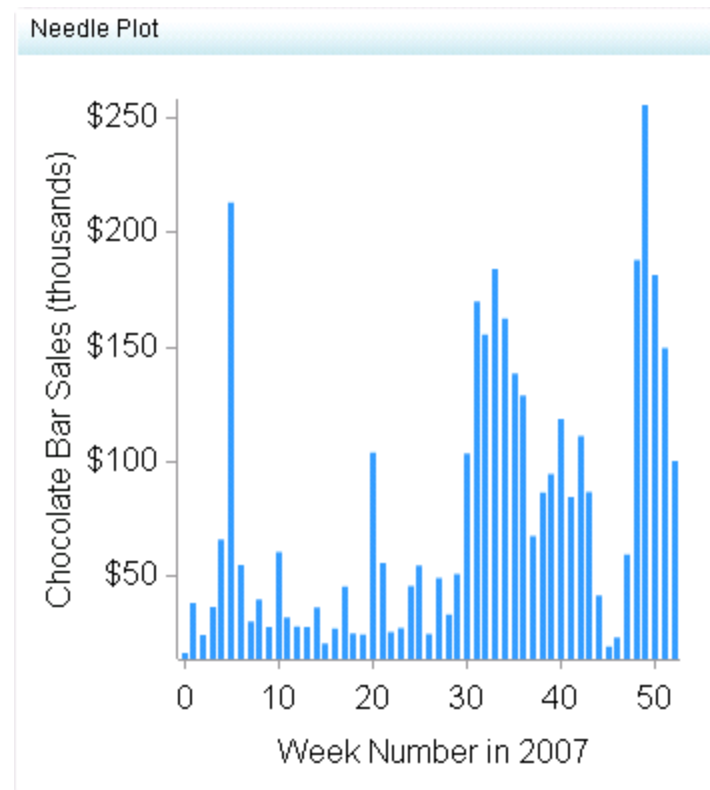
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Year (X-axis value)	Country (Line group)	Sales (Y-axis value)
1995	Canada	755785.60
1995	Mexico	518103.99
1995	U.S.A.	2240967.12
1996	Canada	769110.40
1996	Mexico	528722.40
1996	U.S.A.	2264190.73

Needle Plot

Definition

A needle plot is a plot in which data points are connected by a vertical line that connects to a horizontal baseline. The baseline intersects the 0 value, or the minimum value on the vertical axis.

Figure A1.17 Example of a Needle Plot Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Needle plots can be used when working with many data points that all extend from the same baseline. A common example of needle plot is the magnitude of earthquakes, which are represented by the needles in a needle plot. The horizontal axis typically represents time. Use a needle plot whenever there are too many data points to represent the data as a bar chart.
Target audience	Most people find this indicator type familiar and easy to interpret. However, it can sometimes be difficult for users to read. It is best for helping users to identify patterns, rather than read individual values.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Week Number
Y-axis value	Sale Amount
X-axis title	Set to <i>Week Number in 2007</i>
Y-axis title	Set to <i>Chocolate Bar Sales</i>
Scale X axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.

- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a needle plot, you must provide two measures (X-axis value and Y-axis value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

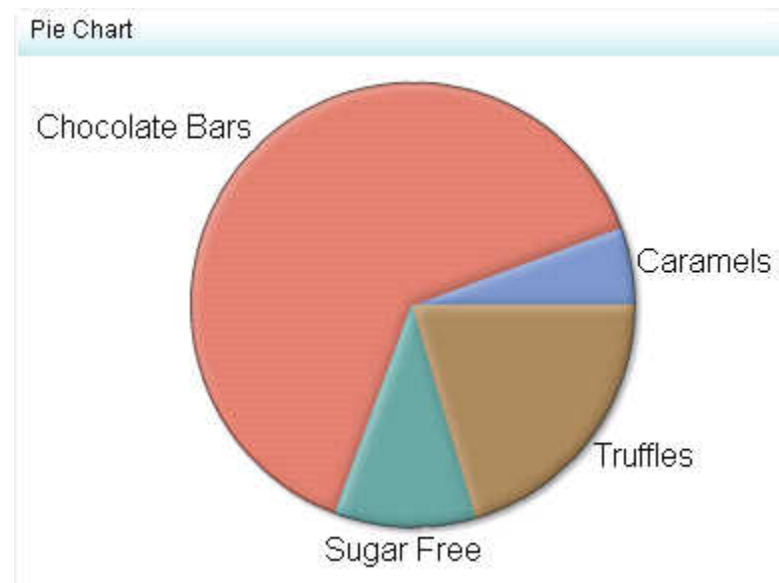
Week Number (X-axis value)	Sale Amount (Y-axis value)
0.00	\$16,653
1.00	\$38,456
2.00	\$24,601
3.00	\$66,171

Pie Chart

Definition

A pie chart is a circular chart that is divided into slices by radial lines. Each slice represents the relative contribution of each part to the whole.

Figure A1.18 Example of a Pie Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Pie charts work best when working with limited components (five or fewer) and when including text in either a legend or next to the pie itself so that the business user does not have to guess the meaning and value of each slice.
Not suited for	<p>Although pie charts are commonly used in reports and presentations, they can be difficult to interpret because the human eye can have difficulty estimating area and comparing angles, both of which are necessary to draw conclusions from a pie chart. Due to these difficulties, avoid pie charts with many slices or slices with values that are close to each other.</p> <p>Also note that pie charts take up a lot of space because they are round, and are therefore not an efficient use of space on an indicator. A bar chart is usually a more efficient and easier to interpret indicator type option.</p>
Target audience	This indicator type is appropriate for all user audiences. Most people will find this indicator type familiar and easy to interpret if the previous suggestions are used.

Data aggregation support	This indicator type sums the applicable indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Category value	Product Line
Response value	Sales
Show labels	This setting is selected.
Show legend	This setting is not selected.

You can customize the following display settings for this indicator:

- (Required) From the **Category value** list, select the value that you want to use for the indicator.
- (Required) From the **Response value** list, select the response value that you want to use for the pie slices that are drawn in the indicator.
- Select **Show labels** if you want the indicator to include the labels for each map portion or pie slice.
- Select **Show legend** to specify that the legend is displayed in the indicator.

Sample Data Structure

To create a pie chart, you must provide a variable (category value) and a measure (response value).

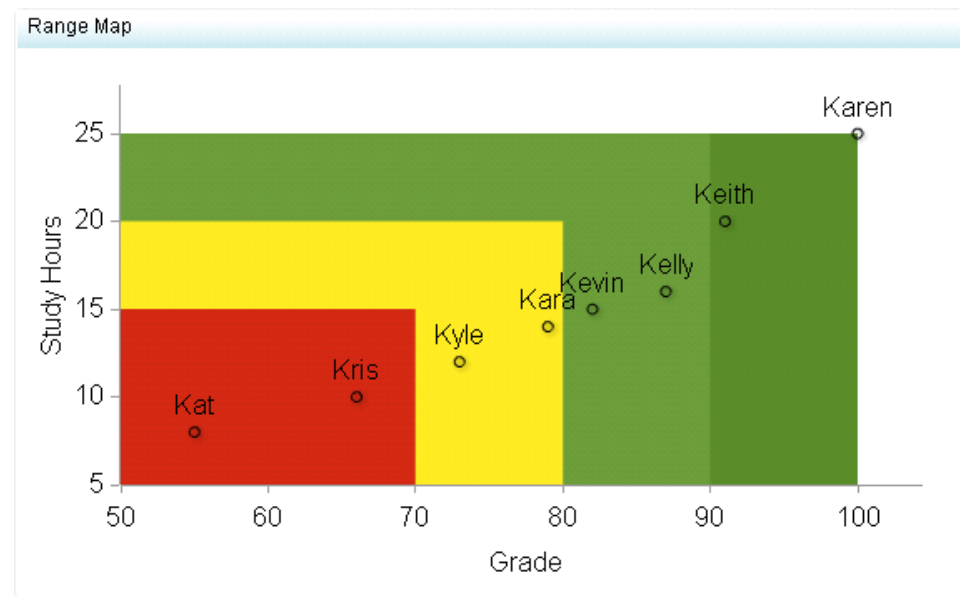
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Line (Category value)	Sales (Response value)
Caramels	\$625,601
Chocolate Bars	\$6,988,757
Sugar Free	\$1,133,940
Truffles	\$2,230,216

Range Map

Definition

A range map is a chart that compares data points in terms of position and range. The ranges in a range map are defined by colors and border each other such that every part of the map represents a certain range.

Figure A1.19 Example of a Range Map Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Range maps can be used when comparing data points in terms of position and range. Use range maps when there are many data points in different ranges. For example, range maps can be used when representing the body weight of males across different ranges: underweight, healthy, overweight, and obese. Each data point should fall into one of these ranges on the map.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. The addition of zones related to a range help the user quickly compare data points based on meaningful performance intervals.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Change the Range to Use” on page 77](#)

This indicator requires that you specify two ranges: the X-axis range and the Y-axis range. In the preceding figure, the X-axis range uses a range defined for grades, and the Y-axis range uses a range defined for study hours.

Note: Both ranges must have the same number of intervals defined. Otherwise, the following message is displayed:

The X range and the Y range must have the same number of intervals.

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Point label	Student
X-axis value	Grade
Y-axis value	Study Hours
Show labels	This setting is selected.
X-axis title	<blank> (defaults to Grade)
Y-axis title	<blank> (defaults to Study Hours)
Scale X axis	This setting is selected.

Display Setting	Selection Used for Figure
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Point label** list, select the value that you want to use to label the data points.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- Select **Show labels** if you want the indicator to include the labels for each map portion or pie slice.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a range map, you must provide a variable (point label) and two measures (X-axis value and Y-axis value).

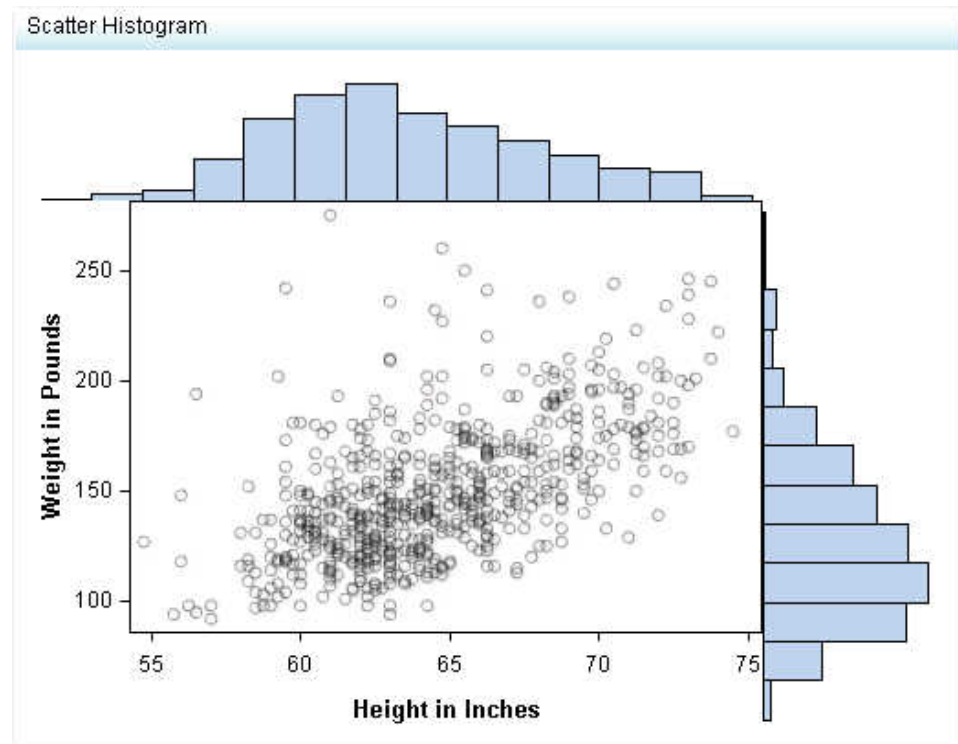
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Student (Point label)	Grade (X-axis value)	Study Hours (Y-axis value)
Kara	79.00	14.00
Karen	100.00	25.00
Kat	55.00	8.00
Keith	91.00	20.00

Scatter Histogram

Definition

A scatter histogram is a type of scatter plot that has a horizontal and vertical histogram along the top and right side of the graph. The purpose of the horizontal and vertical bars is to show the frequency of the data points taken as columns and rows.

Figure A1.20 Example of a Scatter Histogram Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a scatter histogram when it is necessary to display both individual data points and summaries of the points. An example of this might be test scores for a class over a range of six years. The individual test scores for each year can be displayed as data points on the graph itself, while the histogram displays the count of the scores in bar format.
Target audience	Most users will be unfamiliar with this indicator type. It is not recommended that you use this indicator type unless you are sure your audience knows how to interpret it, or you provide instructions on how to interpret it.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “ Adding Links to Indicators or Other Content ” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Height
Y-axis value	Weight
X-axis title	Set to <i>Height in Inches</i>
Y-axis title	Set to <i>Weight in Pounds</i>
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column.

The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.

- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.

Sample Data Structure

To create a scatter histogram, you must provide two measures (X-axis value and Y-axis value).

TIP This indicator does not provide many display settings that can cluster or group data. Therefore, make sure that the indicator data is aggregated to produce a meaningful representation of data.

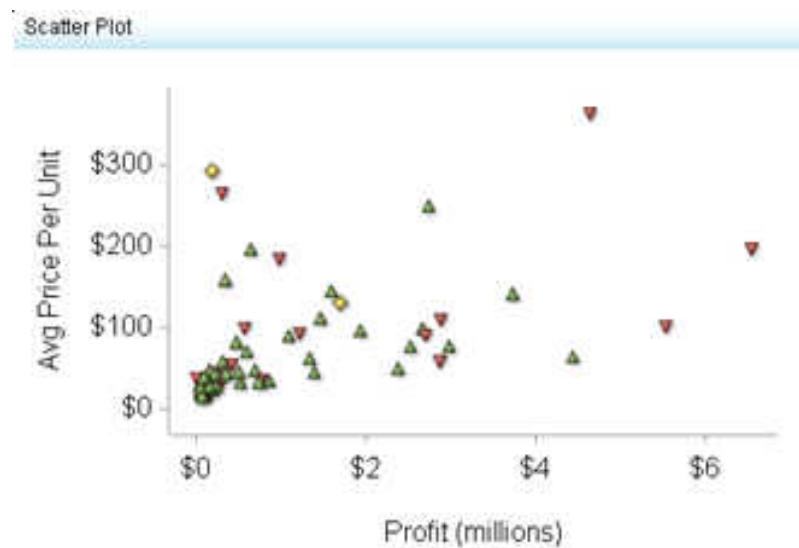
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Height (X-axis value)	Weight (Y-axis value)
54.75	127.00
55.75	94.00
58.00	131.00

Scatter Plot

Definition

A scatter plot is a chart that consists of a set of data points that are plotted on horizontal and vertical axes to show the relation of one value against another.

Figure A1.21 Example of a Scatter Plot Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Scatter plots can be used when many data points are present and there is interest in determining whether a correlation exists between the data points. For example, to determine whether there is a correlation between the outside temperature and the number of forest fires in a given region, each forest fire could be plotted at the outside temperature at the time of the forest fire. When all data points are plotted, the user can either visually determine whether data points are related, or can use an equation to determine the correlation between data points by using best-fit procedures. Note that this determination is not automatically done by simply creating the scatter plot.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “ Adding Links to Indicators or Other Content ” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Change the Range to Use” on page 77](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	Profit %
Point label	Product Group
X-axis value	Profit
Y-axis value	Avg Price Per Unit
Show labels	This setting is selected.
X-axis title	<blank> (defaults to Profit) <i>Note:</i> The Scale X axis setting adds the label (millions) to the title.
Y-axis title	<blank> (defaults to Avg Price Per Unit)
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **Point label** list, select the value that you want to use to label the data points.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- Select **Show labels** if you want the indicator to include the labels for each map portion or pie slice.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a scatter plot, you must provide a variable (point label) and three measures (range value, X-axis value, Y-axis value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

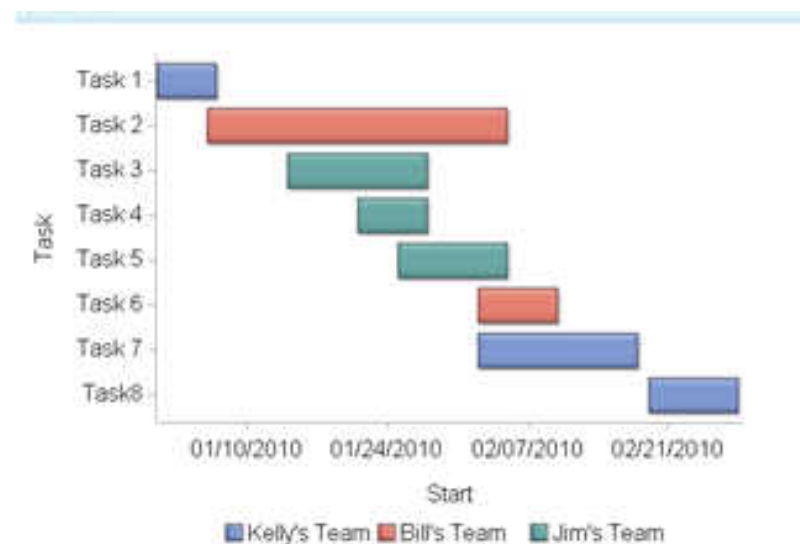
Profit percentage (Range value)	Product Group (Point label)	Profit (X-axis value)	Average Price Per Unit (Y-axis value)
71.46%	Golf clothes	\$2,052,303	\$111.41
56.29%	Gymnastic clothing	\$303,411	\$47.03
57.81%	Bathing suits	\$1,486,572	\$34.59

Schedule Chart

Definition

A schedule chart (also called Gantt chart) is a graphic representation of the tasks that make up a project. The chart shows start and finish dates, the duration of each task, the order of the tasks, and any dependencies among the tasks.

Figure A1.22 Example of a Schedule Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Schedule charts are commonly used to display how certain tasks, events, or activities are scheduled over time. Although not required, displaying the task on the vertical axis and the time factor on the horizontal axis makes the chart easier to read. Schedule charts are especially useful for comparing task length and frequency. A third factor can be introduced by assigning a different color to each bar. This color can represent items such as categories, importance, or urgency.
Target audience	Use caution when choosing the schedule chart because most people might not be familiar with this indicator type. However, it is not difficult to interpret, so even users who are unfamiliar with this indicator type should be able to understand it. Audiences that might be familiar with this indicator type include business analysts, business users, executives, and financial analysts.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
Task value	Task
Group by value	Team
Start date	Start date
Finish date	End date
X-axis title	Set to <i>Start</i>
Y-axis title	<blank> (defaults to Task)

You can customize the following display settings for this indicator:

- (Required) From the **Task** list, select the value that you want to use for the task axis in the indicator.
- (Required) From the **Group by value** list, select the value that you want to use to group the data in the indicator.
- (Required) From the **Start date** list, select the start date for the tasks in the indicator.
- (Required) From the **Finish date** list, select the finish date for the tasks in the indicator.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a schedule chart, you must provide two variables and two dates (start and finish).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

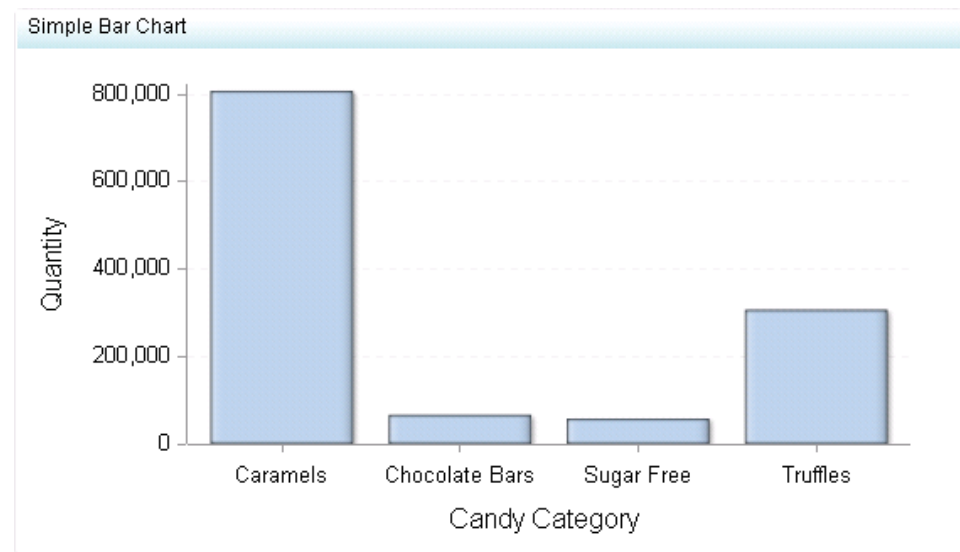
Team (Group by value)	Task (Task)	Start Date (Start date)	End Date (Finish date)
Kelly's Team	Task 1	01/01/2010	01/07/2010
Bill's Team	Task 2	01/06/2010	02/05/2010
Jim's Team	Task 3	01/14/2010	01/28/2010
Jim's Team	Task 4	01/21/2010	01/28/2010
Jim's Team	Task 5	01/25/2010	02/05/2010
Bill's Team	Task 6	02/02/2010	02/10/2010

Simple Bar Chart

Definition

A simple bar chart consists of a grid and some vertical or horizontal columns (bars). Each column represents quantitative data.

Note: This indicator only supports vertical bars.

Figure A1.23 Example of a Simple Bar Chart Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Bar charts are one of the most commonly used charts. They allow the user to quickly compare the value for different variables, values, or categories of data. Use a simple bar chart when values are distinct enough that differences in the bars can be detected by the human eye.
Not suited for	When values are very close together, it becomes more difficult to easily compare bars against each other.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. It is popular and commonly used to compare values of different categories. All audiences should be familiar with the horizontal and vertical versions of this indicator type and find them both easy to interpret.
Data aggregation support	This indicator type sums the applicable indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “ Adding Links to Indicators or Other Content ” on page 112.

Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	<p>Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.</p>

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Specify the Graph Style” on page 76](#)
- [“Specify the Sort Order” on page 78](#)

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Candy Category
Y-axis value	Quantity
X-axis title	<blank> (defaults to Candy Category)
Y-axis title	<blank> (defaults to Quantity)
Scale X axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column.

The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.

- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a simple bar chart, you must provide a variable (X-axis value) and a measure (Y-axis value).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Candy Category (X-axis value)	Quantity (Y-axis value)
Caramels	808,183
Chocolate Bars	66,451
Sugar Free	57,717
Truffles	307,045

Spark Table

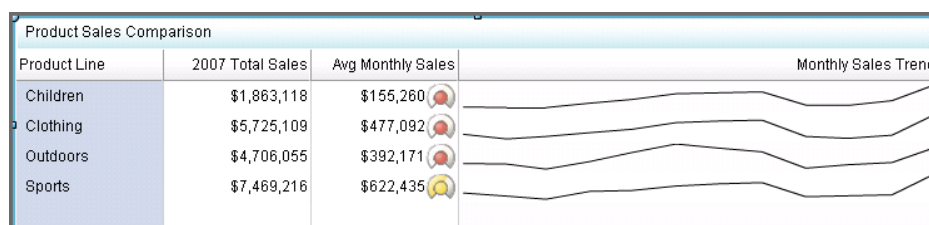
Definition

A spark table is a collection of data rows that can be summarized and represented with a sparkline. Each sparkline shows a trend associated with a data measurement. Spark tables can also include associated data and gauges.

Note:

- Depending on the specified settings, a spark table indicator can display any number and combination of data columns (variable and metric), gauges, and sparkline trending graphs.
- The spark table indicator type replaces the KPI table and bar and trend indicator types that were available in earlier versions of SAS BI Dashboard.

Figure A1.24 Example of a Spark Table Indicator with Gauges and a Sparkline Graph



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

For an example of using this indicator, see “[Example: Creating a Spark Table](#)” on page 82.

Data best suited for	Spark tables should be used when sparklines can add useful information at a glance for the user. Sparklines provide simple linear graphic representations of complex data. Spark trend lines should be used in spark tables when individual data points do not have to be displayed in line chart format. In other words, a general trend should give the business user a sense for where the data is heading, but not every data point on the spark table has to be revealed in order to get value out of the table. Use spark tables when there is ample data to form trend lines and when data can translate into a status to create ranges for small KPIs.
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Target audience	Some audiences might not be familiar with sparklines. However, sparklines are designed to be easy to interpret, so even if users are unfamiliar with this indicator type, they should be able to understand it. Adding graphics to the spark table provides context for the user that might improve understanding. Audiences that might be familiar with this indicator type include business analysts, business users, executives, and financial analysts.
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Data aggregation support	You can configure a spark table indicator to aggregate data, and you can select the type of aggregation to use for each column in the spark table.
Range support	Ranges are optionally supported.
Alert support	Alerts are supported only if a range is associated with the indicator. For information, see Chapter 13, “Customizing Alerts,” on page 119 .
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112 .
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. <i>Note:</i> (Filtering data on a local system only) To use a spark table indicator as a target, the Spark group by and Spark X axis settings must be set to (none). This means that you cannot show a sparkline when you use a spark table indicator as a target for a filter. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111 .

General Settings

The General Settings section provides controls that support the following tasks:


- [“Specify the Height and Width of the Indicator” on page 75](#)
- [“Change the Indicator Type” on page 76](#)
- [“Change the Indicator Data to Use” on page 77](#)
- [“Change the Range to Use” on page 77](#)
- [“Specify the Sort Order” on page 78](#)

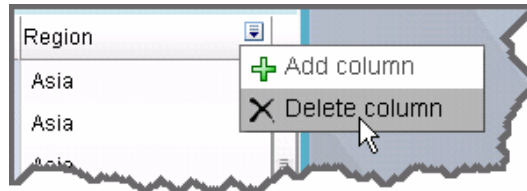
Spark Table Columns

You can add and delete columns in the spark table.

- To delete a column, hover over the column heading of the data column that you want to remove. The column menu appears.



Click  and select **Delete column**. The column is removed from the spark table. This only deletes the column from the indicator. The deletion does not affect the indicator data source.



- To add a column, click the column to the left of the location that you want for the new column. Then click **Add column**.

Display Settings

The following display settings are used in the preceding figure. For more information, see “Sample Data Structure” for this indicator.

Display Setting	Selection Used for Figure
Spark group by	Product Line
Spark X axis	Date Order Was Delivered

You can customize the following display settings for this indicator:

- From the **Spark group by** list, select the value by which to group a spark table.
Note: Multiple rows of data are condensed into a single row.
- From the **Spark X axis** list, select the value to use for a column’s gauge or the X axis for a column’s sparkline (graph).
Note: If there are multiple sparkline data columns in the indicator source data, each data column must use the same X-axis value.
- Click **Highlight last row** if you want the last row in a spark table to be highlighted. When the source data table uses the last column for summarization, highlighting the last row emphasizes the summarized values.

Column Properties

Use the Column section to specify how each column in the spark table is displayed. To view the current property settings for a column, click the column in the spark table.

TIP Make sure that the column is highlighted. You might have to click another column heading and then click the new column again.

The following column settings for the sparkline column are used in the preceding figure.

Column Setting	Selection Used for Figure
Source data	Actual
Column title	Set to <i>Monthly Sales Trend</i>

Column Setting	Selection Used for Figure
Column width (%)	Set to 50
Aggregate function	Sparkline is selected.

You can customize the following properties for each column in the spark table.

- (Required) From the **Source data** list, select the source data that you want displayed in this column. Depending on the **Aggregate function** selection, the data is used for the Y axis of a sparkline or for a gauge.
- In the **Column title** field, type the title to use for the data in this column. Use a title that describes the sparkline or gauge that you have specified.
- From the **Column width (%)** list, select the width to use, as a percentage, for the selected column width in the spark table.

TIP

- When adjusting the width of the columns in a spark table, work from left to right in the spark table.
- Use the **Column width (%)** list to change the column width instead of dynamically resizing the column by dragging the column border. Dragging causes all of the data in the column (such as sparklines) to be recalculated. The recalculation can cause performance delays.
- Column size changes made by dragging are not saved with the indicator. Only column size changes in the **Column width (%)** field are saved with the indicator.
- Click **Unfold when zoomed** if you want to hide the column when a user zooms out and the table is viewed at 100%. When the user zooms in, the table enlarges and the affected column unfolds and is visible. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Aggregate function** list, select the type of function to use for aggregating the data in the column. If you select **Sparkline**, the gauge settings are unavailable,

Function	Description
Start	Displays the starting data value of the source data on a gauge for each row.
End	Displays the ending data value of the source data on a gauge for each row.
Total	Displays the total of the source data on a gauge for each row.
Average	Displays the average of the source data on a gauge for each row.
Minimum	Displays the minimum data value of the source data on a gauge for each row.
Maximum	Displays the maximum data value of the source data on a gauge for each row.

Function	Description
Sparkline	Displays the source data as a trending graph for each row. <i>Note:</i> In order for a sparkline to appear, the Spark Group by property must be set.

- From the **Format** list, select the format to apply to the data in a column.
- In the **Range** field, type the filename of a previously saved range, or click **Browse** and navigate to the file. Select the file and click **OK**.
- From the **Gauge type** list, select the type of gauge that you want to use in the column.
- Click **Enable ghosting** if you want to remove all the colors from the KPI gauge except where the value intersects the range segment.
Note: Select this setting to make it easier to see the correct range value with a small KPI gauge.
- Click **Hide gauge label** if you do not want to display the labels for the gauges. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Range value** list, select the value to which you want to apply the defined range intervals.
- From the **Range value 2** list, select a second data point value that you want to represent in the gauge. If you do not want to use a second value, click **(none)**.

Note: Not all gauges use this setting.

Sample Data Structure

To create a spark table with a sparkline, you must provide two variables (spark group by and spark X-axis) and a measure (source data). Depending on the selection in the **Aggregate function** list, the Actual column is displayed as a sparkline or a gauge.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

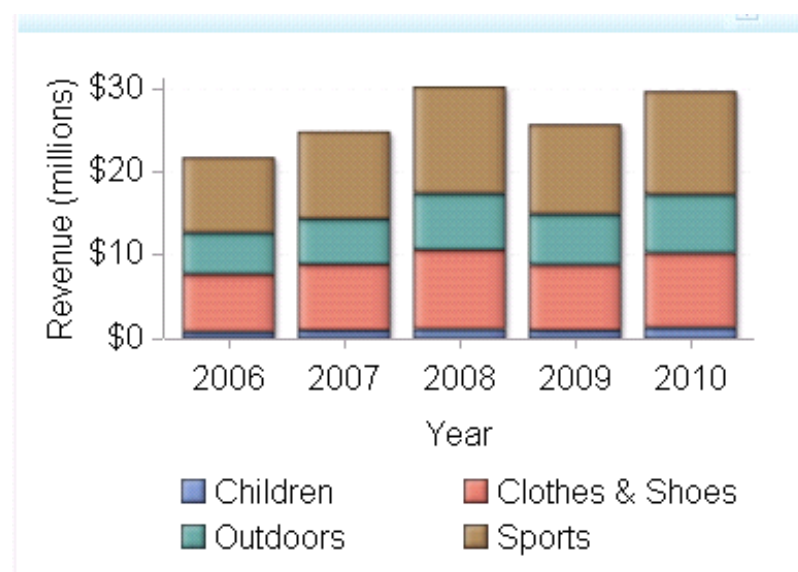
Date Order Was Delivered (Spark X axis)	Product Line (Spark group by)	Actual (Source data)
2007JAN	Children	127348.2
2007JAN	Clothing	390431.7025
2007JAN	Outdoors	331445.64
2007JAN	Sports	555983.2925

Stacked Bar Chart

Definition

A stacked bar chart consists of a grid and some vertical or horizontal columns (bars) that include subgroups, or stacks, of data. Each column represents quantitative data. Bar charts can contain horizontal or vertical bars that are each subdivided into multiple components. Each of these components shows its relative contribution to the entire bar and the entity as a whole.

Figure A1.25 Example of a Stacked Bar Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a stacked bar chart when each bar (such as a category) can be broken down into smaller components that add up to the entire value of the bar. An example of this is when each bar represents sales for a year and each year is broken down into sales for each quarter. In this example, each bar consists of four subcomponents, each representing sales for a specific quarter.
Not suited for	Stacked bar charts are not as effective when the subcomponents have values that are very similar or close together. The goal with a stacked bar chart is to show the breakdown of an entity. If there is little or no breakdown, a simple bar chart is more appropriate.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.

Data aggregation support	This indicator type sums the applicable indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Year
Stack group	Product Line
Y-axis value	Sales
X-axis title	<blank> (defaults to Year)

Display Setting	Selection Used for Figure
Y-axis title	Set to <i>Revenue</i> <i>Note:</i> The Scale Y axis setting adds the label (millions) to the title.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Stack group** list, select the value that you want to use to define the stacked grouping in the indicator.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a stacked bar chart, you must provide two variables (one for the bar and one for the stack) and one measure.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

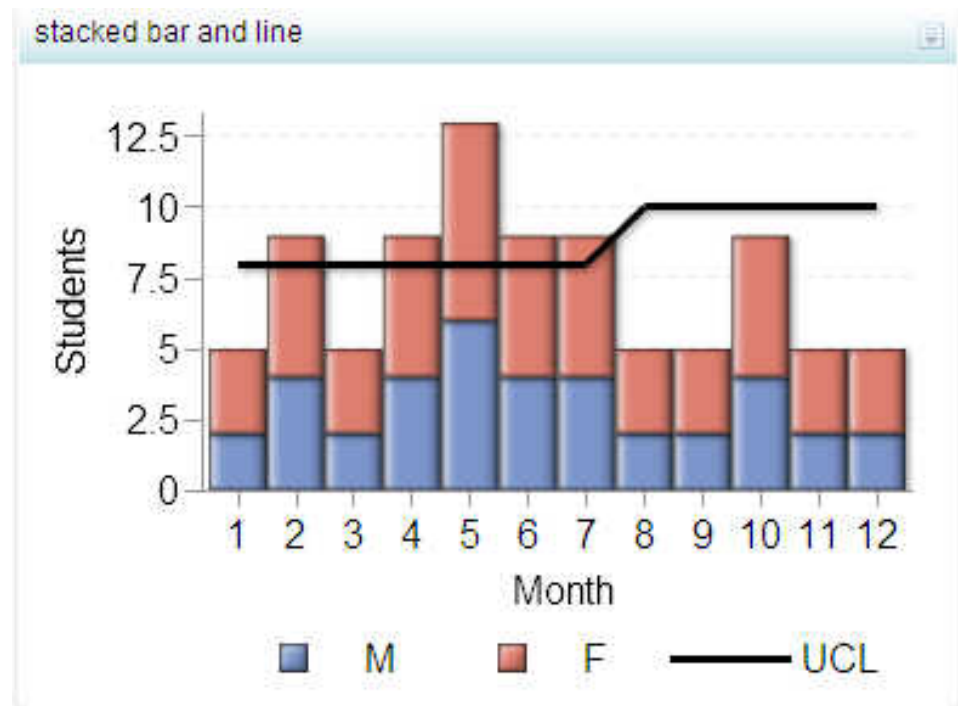
Year (X-axis value)	Product Line (Stack group)	Sales (Y-axis value)
2008	Children	35,000
2008	Clothes & Shoes	50,500
2008	Outdoors	40,000
2008	Sports	20,000
2009	Children	35,000
2009	Clothes & Shoes	52,500
2009	Outdoors	42,000
2009	Sports	18,5000

Stacked Bar and Line Chart

Definition

A stacked bar and line chart has two parts:

- a grid and some vertical or horizontal columns (bars) that include subgroups, or stacks, of data. Each column represents quantitative data. Bar charts can contain horizontal or vertical bars that are each subdivided into multiple components. Each of these components shows its relative contribution to the entire bar and the entity as a whole.
- a line that represents a data series. A data series shows the relationship of one variable to another, often as movements or trends in the data over a period of time. Line charts summarize source data and typically are used to chart response values against discrete categorical values.

Figure A1.26 Example of a Stacked Bar and Line Chart Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Use a stacked bar and line chart when the following criteria apply: <ul style="list-style-type: none"> • Each bar (such as a category) can be broken down into smaller components that add up to the entire value of the bar. • It is critical to compare multiple values for another category at a given point in time or state, as compared to the categories that are represented by the bars.
Not suited for	Stacked bar and line charts are not as effective when the subcomponents have values that are very similar or close together. The goal with a stacked bar and line chart is to show the breakdown of an entity. If there is little or no breakdown, a simple bar chart is more appropriate.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret.
Data aggregation support	This indicator type sums the applicable indicator data.
Range support	Ranges are not supported.
Alert support	Alerts are not supported.

Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
X-axis value	Month
Stack group	Sex
Y-axis value	Students
X-axis title	<blank> (defaults to Month)
Y-axis title	<blank> (defaults to Students)
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column.

The selections available in the **X-axis value** list are all of the values in the **Column Name** column.

- (Required) From the **Stack group** list, select the value that you want to use to define the stacked grouping in the indicator.
- (Required) From the **Y-axis value** list, select the column in your data that you want to use for the Y-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **Y-axis value** list are all of the values in the **Column Name** column.
- From the **Target value** list, select the value that you want to use for the line chart.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a stacked bar and line chart, you must provide two variables (X-axis and stack) and two measures (Y-axis and target value for the line).

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Month (X-axis value)	Sex (Stack group)	Students (Y-axis value)	UCL (Target value)
1	M	2	8

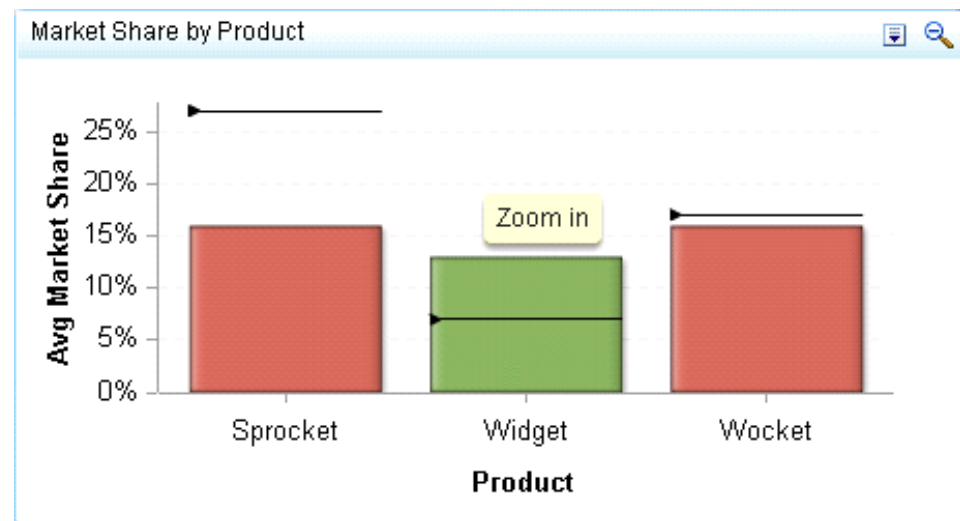
Month (X-axis value)	Sex (Stack group)	Students (Y-axis value)	UCL (Target value)
1	F	3	8
2	M	4	8
2	F	5	8
3	M	2	8
3	F	3	8
4	M	4	8
4	F	5	8
5	M	6	8
5	F	7	8
6	M	4	8
6	F	5	8
7	M	4	8
7	F	5	8
8	M	2	10
8	F	3	10
9	M	2	10
9	F	3	10
10	M	4	10
10	F	5	10
11	M	2	10
11	F	3	10
12	M	2	10
12	F	3	10

Targeted Bar Chart

Definition

A targeted bar chart consists of a grid and some vertical or horizontal columns (bars), each of which contains a target value represented by a reference line. Each column represents quantitative data.

Figure A1.27 Example of a Targeted Bar Chart Indicator



For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	A targeted bar chart helps the user to quickly compare the values of different categories, as well as compare the level of performance across different categories based on a specified target.
Target audience	This indicator type is appropriate for all user audiences. Most people find this indicator type familiar and easy to interpret. Associating the bars in the chart to a target and range enables the user to quickly see the performance of each category.
Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.

Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	market_share_vs_target
X-axis value	Product
Bar value	avg_market_share
Target value	avg_market_share_target
X-axis title	<blank> (defaults to Product)
Y-axis title	Set to <i>Avg Market Share</i>
Hide axes when zoomed	This setting is selected.

Display Setting	Selection Used for Figure
Y-axis format	-123% is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Bar value** list, select the value that you want to use for the bars that are drawn in the indicator.
- From the **Target value** list, select the value that you want to use for the target markers in the indicator.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Horizontal** if you want to change the orientation of the bars and labels from vertical to horizontal. This option is particularly useful if you have long labels that are difficult to read when they are displayed vertically.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **X-axis labels** list, select the style to apply to the data labels that are used on the X axis. Depending on your labels, one style might be easier to read than others.

Sample Data Structure

To create a targeted bar chart, you must provide one variable (X-axis value) and three measures (bar value, target value, and range value). Optionally, you can specify additional variables by using the **Row group by** and **Column group by** lists.

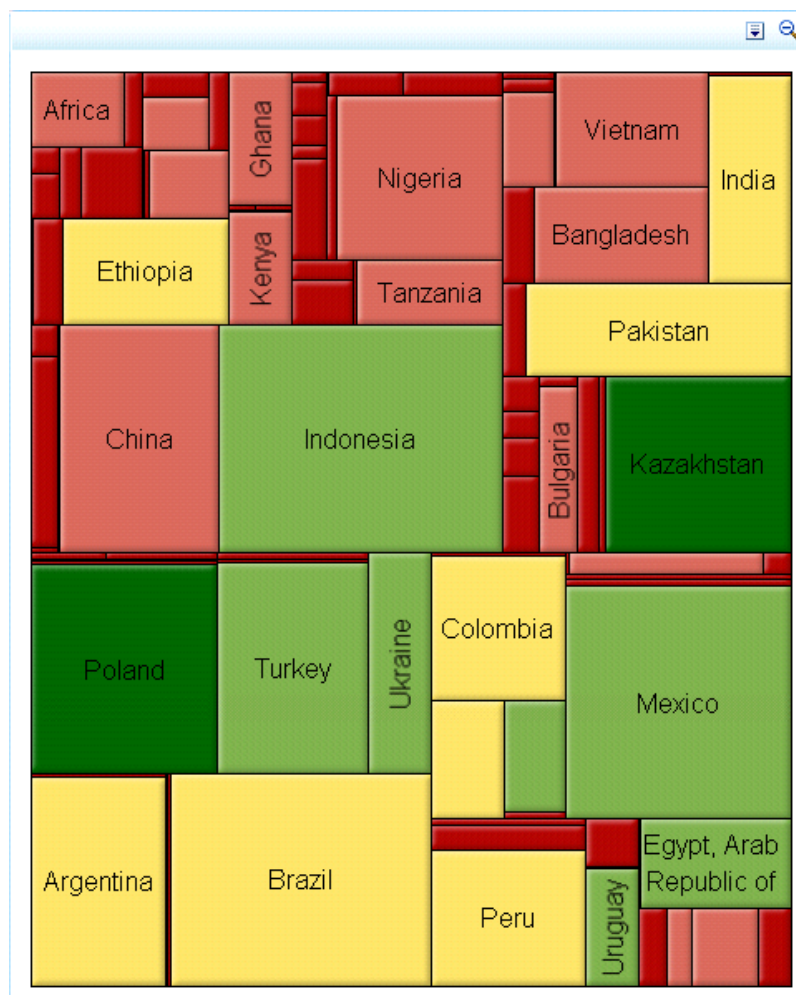
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Market Share versus Target (Range value)	Product (X-axis value)	Average Market Share (Bar value)	Average Market Share Target (Target value)
Sprocket	0.16	0.27	—0.11
Widget	0.13	0.07	0.06
Wocket	0.16	0.17	—0.01

Tile Chart

Definition

A tile chart (also called a treemap) is a graphical representation that uses nested rectangles to display hierarchical data.

Figure A1.28 Example of a Tile Chart Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for

A tile chart uses rectangular tiles to represent data. The tiles vary according to size to represent a value for different categories. Because the size of each tile is proportional to the value, not to the category, it provides a clear overview of the status or contribution of each category. For example, suppose that each tile represents rice production in different countries. The tile for Vietnam would be quite large compared to the tile for the US, even though the US is a larger country. Because of this difference, the business user can clearly see who the top contributors are in a single map. Tile charts are therefore most effective when there is a need to display a lot of information in a small amount of space. The individual tiles can also be colored to represent ranges.

Not suited for

Tile charts are not intended to show detailed information. Although tooltips and legends can reveal details of each tile, the main point is for the business user to get a rough sense of top contributors (good or bad), or patterns such as the largest categories for a given map.

Target audience	Some audiences might not be familiar with tile charts, and can find them difficult to interpret. It is a good idea to check whether your audience is familiar with this indicator type before using it.
Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	Amount per Operation
Tile by	Country

Display Setting	Selection Used for Figure
Tile size	Amount
Show labels	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **Tile by** list, select the value to use to create individual tiles in the indicator.
- (Required) From the **Tile size** list, select the value to use to size individual tiles in the indicator.
- Select **Show labels** if you want the indicator to include the labels for each map portion or pie slice.

Sample Data Structure

To create a tile chart, you must provide one variable (tile by) and two measures (tile size and range value).

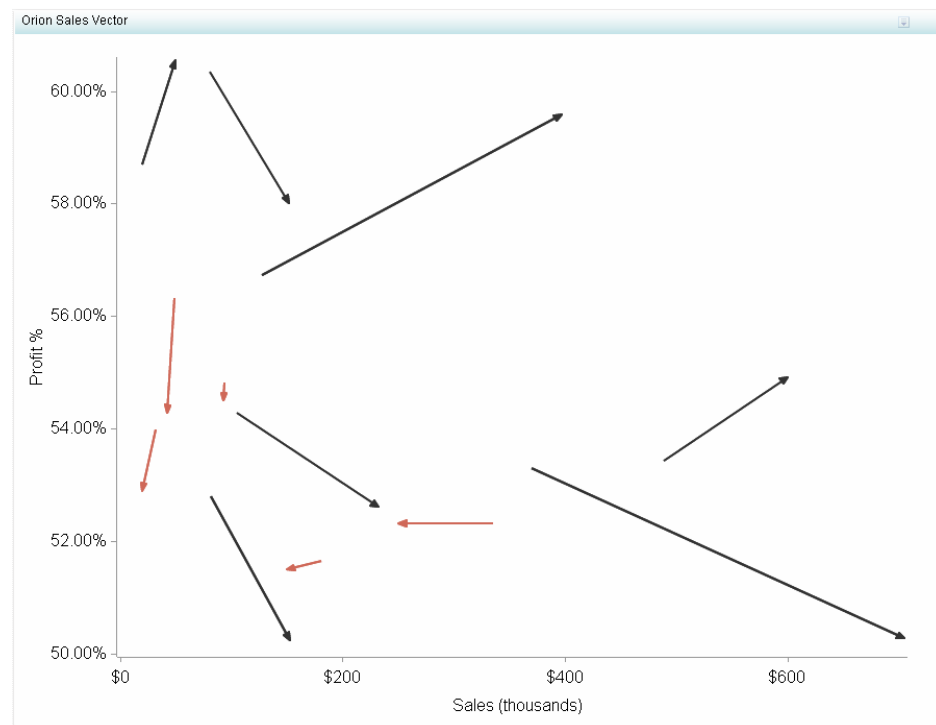
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Country (Tile by)	Amount (Tile size)	Amount Per Operation (Range value)
Brazil	3,604.20	300.35
Ethiopia	1,145.00	229.0
Indonesia	4,225.00	469.44

Vector Plot

Definition

A vector plot is a plot consisting of directed line segments.

Figure A1.29 Example of a Vector Plot Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	Vector plots can only be used when direction and magnitude are both present in the data and must be displayed. Unlike a line plot, a vector plot can display how two variables interact with each other over a third variable that identifies each individual vector. Note that vector plots are less commonly used in business and more commonly used when dealing with physics and earth sciences. However, vector plots can be used to represent certain aspects of business. For example, a vector plot can be used to determine the direction of sales, given the resources and effort that went into making a sale.
Target audience	Most users will be unfamiliar with this indicator type. Do not use this indicator type unless you are sure your audience understands how to interpret it, or you provide instructions about how to interpret it.
Data aggregation support	This indicator type does not aggregate the indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.

Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	SALES_PER_CHANG
Point label	PROD_CAT
X-axis start value	SALES_NOV
Y-axis start value	PROFIT_PER_NOV
X-axis end value	SALES_DEC
Y-axis end value	PROFIT_PER_DEC
X-axis title	Set to <i>Sales</i> <i>Note:</i> The Scale X axis setting adds the label (thousands) to the title.

Display Setting	Selection Used for Figure
Y-axis title	Set to <i>Profit %</i>
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **Point label** list, select the value that you want to use to label the data points.
- (Required) From the **X-axis start value** list, select the first value to use on the X axis.
- (Required) From the **Y-axis start value** list, select the first value to use on the Y axis.
- (Required) From the **X-axis end value** list, select the last value to use on the X axis.
- (Required) From the **Y-axis end value** list, select the last value to use on the Y axis.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Click **Hide vector arrows** if you want to hide the arrow heads in the indicator.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.

- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a vector plot, you must provide one variable (point label) and five measures (range value, X-axis start value, X-axis end value, Y-axis start value, and Y-axis end value).

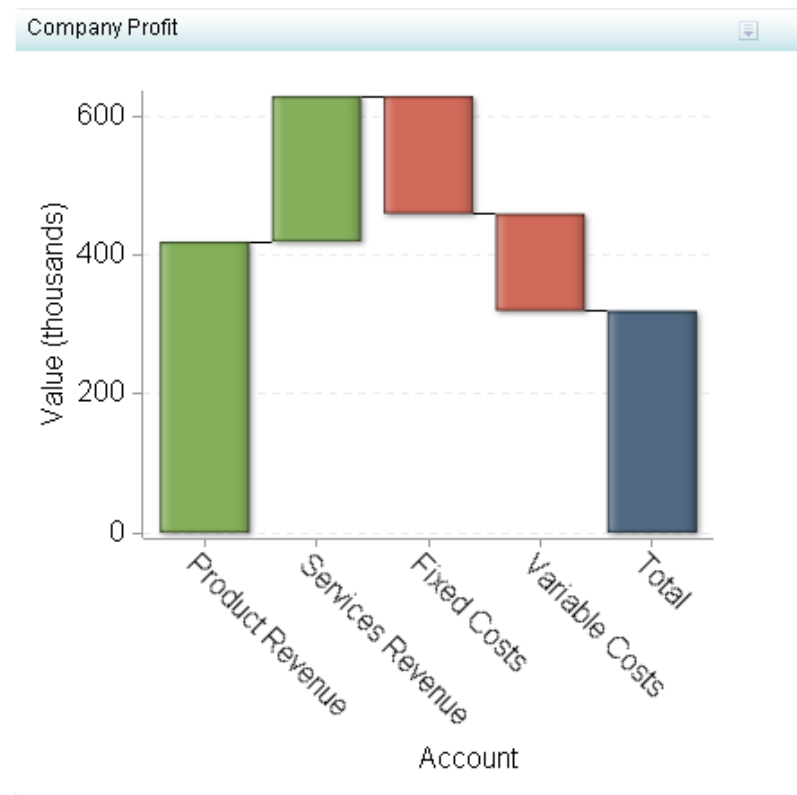
The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Product Category (Point label)	Sales (November) (X-axis start value)	Sales (December) (X-axis end value)	Profit (November) (Y-axis start value)	Profit (December) (Y-axis end value)	Sales per Change (Range value)
Running — Jogging	\$49,444	\$42,698	56.32%	54.27%	-13.64%
Swim Sports	\$19,901	\$50,056	58.70%	60.56%	151.53%
Winter Sports	\$127,347	\$397,544	56.73%	59.59%	212.17%

Waterfall Chart

Definition

A waterfall chart is a visualization of the sequence of positive and negative values that arrive at a final value. This chart is also called a progressive bar chart.

Figure A1.30 Example of a Waterfall Chart Indicator

For a sample of the indicator data that was used to create this indicator, see “Sample Data Structure” for this indicator.

Usage Information

Data best suited for	<p>Waterfall charts are most often used when representing account or revenue data. They display how an initial value is increased or decreased by intermediate values. Use waterfall charts when you want to display details about how a value was increased or decreased, as well as the beginning and ending values.</p> <p>Waterfall charts work well for the following scenarios:</p> <ul style="list-style-type: none"> • illustrating cash flow over time, including beginning and ending balances • financial data
Not suited for	<p>Do not use waterfall charts for the following scenarios:</p> <ul style="list-style-type: none"> • when the end results are the only items that are of importance • when displaying point-in-time data
Target audience	<p>Most users will be unfamiliar with this indicator type. It is not recommended that you use this indicator type unless you are sure your audience knows how to interpret it, or you provide instructions on how to interpret it.</p>

Data aggregation support	This indicator type averages the applicable indicator data.
Range support	A range is required.
Alert support	Alerts are supported. For information, see Chapter 13, “Customizing Alerts,” on page 119.
Link support	This indicator type can be used to define a link or as the destination of a link. For more information about defining an indicator with a hyperlink, see “Adding Links to Indicators or Other Content” on page 112.
Interaction support	<ul style="list-style-type: none"> • Data filter support: This indicator type can be used as either a source or target indicator. • Interactive highlighting support: This indicator type can be used as either a source or target indicator. <p>For more information, see “Adding Interactions between Indicators” on page 104.</p>
Filter multiple items support	Filtering multiple items is supported. For more information, see “Supporting Multiple Selections in a Filtered Data Interaction” on page 111.

General Settings

The General Settings section provides controls that support the following tasks:

- [“Specify the Height and Width of the Indicator”](#) on page 75
- [“Change the Indicator Type”](#) on page 76
- [“Change the Indicator Data to Use”](#) on page 77
- [“Change the Range to Use”](#) on page 77
- [“Specify the Graph Style”](#) on page 76
- [“Specify the Sort Order”](#) on page 78

Display Settings

The following display settings are used in the preceding figure. For more information, see [“Sample Data Structure”](#) for this indicator.

Display Setting	Selection Used for Figure
Range value	Color
X-axis value	Account
Difference	Value
X-axis title	<blank> (defaults to Account)

Display Setting	Selection Used for Figure
Y-axis title	<blank> (defaults to Value) <i>Note:</i> The Scale Y axis setting adds the label (thousands) to the title.
Scale X axis	This setting is selected.
Scale Y axis	This setting is selected.

You can customize the following display settings for this indicator:

- (Required) From the **Range value** list, select the value to which you want to apply the defined range intervals.
- (Required) From the **X-axis value** list, select the column in your data that you want to use for the X-axis value in the indicator. When you view your indicator data, the columns in the data set are described by the values in the **Column Name** column. The selections available in the **X-axis value** list are all of the values in the **Column Name** column.
- (Required) From the **Difference** list, select the value to use for each bar. This value is an offset of the ending value for the previous bar in a waterfall chart indicator.
- In the **X-axis title** field, type the title to use for the X axis in the indicator. If you do not specify a title, the value that you selected from the **X-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale X axis**, a measurement label is added to the title.
- In the **Y-axis title** field, type the title to use for the Y axis in the indicator. If you do not specify a title, the value that you selected from the **Y-axis value** list is used by default. If you do not want a title, type a space in the field. If you select **Scale Y axis**, a measurement label is added to the title.
- Select **Scale X axis** if you want to scale that axis. When you make this selection, a measurement label is added to the X-axis title if the data is numeric. For example, if the X-axis title is set to *Revenue* and you select **Scale X axis**, the X-axis title is displayed as *Revenue (millions)*.
- Select **Scale Y axis** if you want to scale that axis. When you make this selection, a measurement label is added to the Y-axis title if the data is numeric. For example, if the Y-axis title is set to *Revenue* and you select **Scale Y axis**, the Y-axis title is displayed as *Revenue (millions)*.
- Select **Hide axes when zoomed out** if you want to hide the axes when a user zooms out the view of an indicator. When the user zooms in, the axes reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- Select **Hide axis tick labels** if you want to hide the axis tick labels when a user zooms out the view of an indicator. When the user zooms in, the axis tick labels reappear. Select this setting to avoid visual clutter when the view is zoomed out.
- From the **Row group by** list, select the value that you want to use to group rows of data. If you do not want to group the rows, select **(none)**.
- From the **Column group by** list, select the value that you want to use to group columns of data. If you do not want to group the columns, select **(none)**.
- From the **Difference axis format** list, select the format to apply to the data on the Difference axis.

- From the **X-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.
- From the **Y-axis format** list, select the format that you want to apply to the data on that axis. If you do not want to specify a format, select **(none)**. When set to **(none)**, the indicator uses the format that is used in the data source.

Sample Data Structure

To create a waterfall chart, you must provide a minimum of three data columns: range value, X-axis value, and difference.

Note: The Order column is included for managing the order of the X-axis values. Order column is the selection in the **Sort by** field for this example indicator. For more information, see “Specify the Sort Order” on page 78.

The following data sample is associated with the figure previously shown. Underneath each column heading is its associated display setting.

Account (X-axis value)	Value (Difference)	Color (Range value)	Order
Product Revenue	420,000	1	1
Services Revenue	210,000	1	2
Fixed Costs	-170,000	-1	3
Variable Costs	-140,000	-1	4
Total	-320,000	0	5

Note: The indicator source data includes a Total column as an observation. However, that observation is not used in the waterfall chart. The total is excluded in order to force the data to start from the X axis. The waterfall chart cannot provide the total automatically, so you must use this workaround.

Appendix 2

Indicator Types that Aggregate Data

Some indicator types in SAS BI Dashboard aggregate data. The following table lists these indicator types and the type of aggregation, sum or average, that they use.

Indicator Type	How the Data is Aggregated
Bar chart with bullet	Average
Bar chart with reference lines	Average
Clustered bar chart	Sum
Interactive summary and bar chart	Average ¹
Interactive summary and targeted bar chart	Average ¹
Pie chart	Sum
Simple bar chart	Sum
Spark table	You can configure a spark table indicator to aggregate data, and you can select the type of aggregation to use for each column in the spark table. See “Spark Table” on page 227 .
Stacked bar chart	Sum
Targeted bar chart	Average
Tile chart	Average
Waterfall chart	Average

¹ The detail bar chart always averages the data. However, you can select the aggregation method to use when summarizing data for the summary chart in the indicator. The default selection is **Sum**.

Appendix 3

Valid Date Formats for Information Maps

Use the following formats when specifying a date.

Format	Example
DAY	You can pass values such as <i>August 04, 2010</i> , <i>Aug 04, 2010</i> , or <i>04AUG2010</i> . No other format is accepted. ²
WEEK	You can pass a value such as <i>Week 31 2010</i> . ³
MONTH	You can pass a value such as <i>Jan 2009</i> . No other format is accepted. ³
QUARTER	You can pass a value such as <i>3rd quarter 2010</i> . ³
YEAR	You can pass a value such as <i>2010</i> .

² The easiest way to ensure that the proper date format is accepted is to use a prompt with a format of DATE9 or MMDDYY10.

³ There is no SAS format that can create such as value. You must create a custom data set or use SQL to create a data column with the correct format. Then, pass this data column as the source in the interaction or link.

Glossary

aggregation

the act or process of grouping data by using an operation that produces a statistic such as a sum, average, minimum, or maximum.

alert

an automatic notification of an electronic event that is of interest to the recipient.

Alerts portlet

a portlet that lists alert messages that have been issued to the user.

bar chart

a chart that consists of a grid and some vertical or horizontal columns (bars). Each column represents quantitative data.

cache

a small, fast memory area that holds recently accessed data. The cache is designed to speed up subsequent access to the same data.

confidence

in association analyses, a measure of the strength of the association. In the rule $A \rightarrow B$, confidence is the percentage of times that event B occurs after event A occurs.

data set

See [“SAS data set”](#).

filter

a set of specified criteria that are applied to data in order to identify the subset of data for a subsequent operation, such as continued processing.

forecast

a numerical prediction of a future value for a time series.

format

See [“SAS format”](#).

indicator (service level indicator,SLI)

a representation of the performance of an objective that is being measured, expressed as a numeric value.

information map

a collection of data items and filters that provides a user-friendly view of a data source. When you use an information map to query data for business needs, you do not have to understand the structure of the underlying data source or know how to program in a query language.

key performance indicator (KPI)

a type of measurement that evaluates the success of an organization or of an activity in which it engages. Success might be defined as the periodic achievement of one or more operational goals, or in terms of progress toward strategic goals. Results are usually measured at regular intervals, against threshold values that are carefully selected according to their importance.

KPI

See “[key performance indicator](#)”.

layout

a generic term for a rectangular container that lays out the positions and sizes of its child components.

legend

a visual key to graphic elements in a graph. The legend consists of values, value descriptions, labels, and often a frame.

log

See “[log file](#)”.

log file (log)

a file in which information about software processing is recorded as the processing occurs. A log file typically includes error messages and warning messages, but it can also include informational messages and statistics such as the number of records that have been processed or the amount of CPU time that a program required.

needle plot

a plot in which data points are connected by a vertical line that connects to a horizontal baseline. The baseline intersects the 0 value, or the minimum value on the vertical axis.

pie chart

a circular chart that is divided into slices by radial lines. Each slice represents the relative contribution of each part to the whole.

proxy server

a special type of web server that acts as an agent to represent a server to a client and to represent the client to the server. Usually a proxy is used as a cache of items that are available on other servers when those other servers are slower or more expensive to access.

range

a defined interval with distinct lower and upper boundaries that serve to collect or distinguish data values. Ranges are combined to form range sets.

reference line

a vertical line on a plot that indicate whether the values of plotting variables are less than, greater than, or equal to a particular value.

SAS data set (data set)

a file whose contents are in one of the native SAS file formats. There are two types of SAS data sets: SAS data files and SAS data views.

SAS format (format)

a type of SAS language element that is used to write or display data values according to the data type: numeric, character, date, time, or timestamp.

SAS Stored Process (stored process)

a SAS program that is stored on a server and defined in metadata, and which can be executed by client applications.

service level indicator

See [“indicator”](#).

SLI

See [“indicator”](#).

stored process

See [“SAS Stored Process”](#).

tile chart

See [“treemap”](#).

treemap (tile chart)

a graph that represents the relative values of data by using nested rectangular areas. The color or pattern of each area represents the value of one measure in the query. The size of each area represents the value of the another measure in the query.

Uniform Resource Locator (URL)

a character string that is used by a web browser or other software application to access or identify a resource on the Internet or on an intranet. The resource could be a web page, an electronic image file, an audio file, a JavaServer page, or any other type of electronic object. The full form of a URL specifies which communications protocol to use for accessing the resource, as well as the directory path and filename of the resource.

URL

See [“Uniform Resource Locator”](#).

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