One Design
One Server
One User Experience

Building BIRT Dashboards

Contains information proprietary to:
Actuate Corporation, 2207 Bridgepointe Parkway, San Mateo, CA 94404

www.actuate.com
www.birt-exchange.com

Document No. 110812-2-749303 July 8, 2011

Contents

About *Building BIRT Dashboards*

Building BIRT Dashboards includes the following chapters:

- *About Building BIRT Dashboards.* This chapter provides an overview of this guide.
- *Chapter 1. Getting started.* This chapter explains how to start using BIRT dashboards.
- *Chapter 2. Designing a dashboard.* This chapter explains how to personalize the dashboard layout.
- *Chapter 3. Building operational dashboards.* This chapter explains how to use report and extras gadgets to build operational dashboards.
- *Chapter 4. Building analytic dashboards.* This chapter provides information about using data gadgets to build analytic dashboards.
- *Chapter 5. Sharing dashboards and gadgets.* This chapter explains the different options for sharing dashboard and gadget files.
- *Chapter 6. Linking and scripting gadgets.* This chapter provides information about linking and scripting gadgets on a dashboard.
- *Chapter 7. Managing dashboard resources.* This chapter provides information about using BIRT data objects and using external resources with BIRT Gadgets.
- *Chapter 8. Building custom gadgets.* This chapter provides information about building gadgets for use on BIRT dashboards.

Chapter

1

Getting started

This chapter contains the following topics:

- About Actuate BIRT Dashboards
- Using a BIRT dashboard
- Types of dashboards and gadgets
- Integrating BIRT files

About Actuate BIRT Dashboards

An Actuate BIRT Dashboard is a self-contained web application which delivers business performance data in interactive charts, cross-tab tables, formatted text, and Adobe Flash visualizations. Users have a personal dashboard to organize existing dashboards or to add new ones. Each dashboard contains gadgets that display data on the dashboard. Users add dashboards by subscribing to shared dashboard files or building their own using the browser-based dashboard builders.

Advanced users build analytic dashboards using a variety of gadgets for data display and selection. Analytic dashboards either query data sources on-demand or use in-memory data stores for fast analysis.

Network content with a URL, such as images, text, video, web pages, and Google gadget files, display on dashboards. Dashboard developers link network content and business data together for enhanced analysis and selection of related information.

Figure 1-1 shows a sample view of Actuate Information Console with BIRT Dashboards activated.

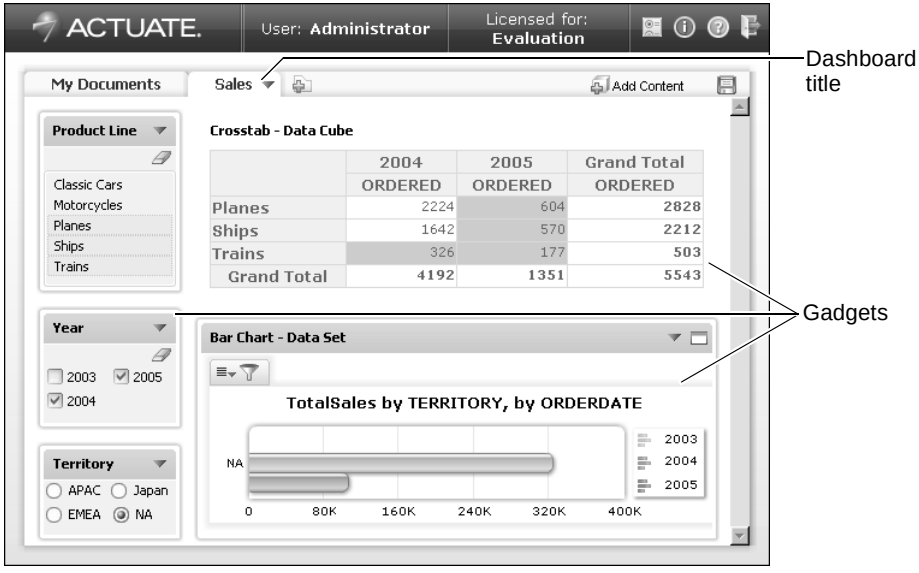


Figure 1-1 Displaying an example of dashboard layout

Actuate BIRT dashboards help users interact with business data in the following ways:

- Building web-based reports for performance monitoring using charts, tables, cross tabs, and Adobe Flash objects.

- Using multiple BIRT document or design files at the same time.
- Viewing part of a BIRT document or design file instead of the entire file.
- Displaying and linking multiple data sources.
- Interacting with gadgets by launching browser-based tools such as BIRT Data Analyzer.
- Keeping information current using dashboard and gadget refresh timers.
- Exploring and exporting data using dynamic filtering and drill-down analysis.
- Mixing external web services with existing business data.

Gadgets display data from existing Actuate BIRT documents, from BIRT data objects, or from external web sources. Users can select and filter data across multiple, linked gadgets. For example, a user choice in a list can filters the data displayed in other gadgets.

The BIRT 360 Option for BIRT iServer is required to use dashboard and gadget files. If this option is not available, users cannot open dashboards or gadgets.

Some features require appropriate BIRT iServer options. For example, to use browser-based tools, such as BIRT Interactive Viewer, the BIRT iServer requires the appropriate license options.

Using a BIRT dashboard

Dashboards contain one or more gadgets that display data. Users can analyze, download, filter, and monitor the data shown in each gadget. For example, a user searches data by selecting a country name in a list gadget which filters data in a linked chart gadget. The chart gadget shows data for the selected country. Users can select different perspectives of the chart data to view, such as viewing a chart data for selected years.

Users log in to Information Console to access dashboards. Users then view existing dashboards, make new dashboards, or subscribe to shared dashboards.

Each user has a personal dashboard that contains all the information about dashboards created by the user or dashboards that the user subscribes to. Changes on a user's personal dashboard persist across sessions in the user's Information Console account.

Subscribing to a dashboard

A user adds dashboard files to their personal dashboard by subscribing to the dashboard files. Users subscribe to dashboards shared by other users or dashboards they have saved in their home folder. A user cannot change the subscribed dashboard files but can interact with the displayed data. Subscribed

dashboards update to the latest version when a new version of the dashboard file is available.

Users copy a shared dashboard to enable editing. Copied dashboards do not receive updates from the original, shared dashboard file. Changes to copied dashboards do not affect the original, shared dashboard file.

Building a dashboard

Users build their own dashboards to display information they want to see. When adding gadgets, users configure gadget options such as data source, filtering, display formatting and linking to other gadgets.

When a user builds a new dashboard they have full control over dashboard layout and the gadgets that they add to the dashboard.

Opening dashboards and gadgets

Users can open dashboard or gadget files using Information Console's file explorer. Changes to dashboards opened as a file can be saved as the same or a new dashboard file.

Actuate JavaScript API commands embeds both dashboard and gadget files into web pages. For more information about JSAPI, see *Using Actuate JavaScript API*.

Building a gadget

Dashboard and gadget developers build custom gadgets in the following ways:

- Add custom HTML and JavaScript code in an HTML gadget
- Add a URL to a web application into an HTML gadget
- Create a custom Google gadget and load it into an import gadget

Building HTML gadgets and import gadgets is described later in this document. Creating Google gadgets is also discussed later in this document.

Types of dashboards and gadgets

Dashboards belong to one of the following types:

- Operational dashboards display BIRT design and document files, or external files and web pages located on external servers. The following gadget categories are used for operational dashboards:
  - Report gadgets display entire BIRT document and design files. Reportlet gadgets display only the bookmarked portion of BIRT document and design files.

    - Extras gadgets display external web pages, embedded HTML and JavaScript code, Google gadgets, external images and video on the dashboard.
- Analytic dashboards present one or more data sources using data visualizations and data selection gadgets. The following gadget categories are used for analytic dashboards:
    - Data visualization gadgets use charts, cross tabs, tables, and flash gadgets to help users analyze and explore data.
    - Data selection gadgets help users to select data using lists, calendars, check boxes. Other gadgets link to these selections to filter the data that is displayed to the user.
- Mixed dashboards that display operational and analytic gadgets together

Dashboards are either private dashboards that are only available to the user that created them, or shared dashboards for other users to access. Private dashboard files reside in a user's personal dashboard file or in a folder with sharing disabled. Shared dashboard files reside in the shared folders where users access them using the dashboard gallery.

Integrating BIRT files

Files created by BIRT Designer Professional or BIRT Studio are displayed on the dashboard using report or reportlet gadgets. Using BIRT files brings interactivity and rich visual displays of BIRT applications to the dashboard environment.

For example, BIRT Designer Professional offers several Adobe Flash objects for visualizing data, supports BIRT business charts in multiple image formats for mobile web-browsers, multiple dynamic hyperlinks, full-page output formats such as Adobe PDF, and custom business logic solutions. These features are available using report or reportlet gadgets to display BIRT files in the dashboard.

Chapter

2

Designing a dashboard

This chapter contains the following topics:

- About dashboard organization
- Adding dashboards and gadgets
- Formatting a dashboard
- Personalizing a dashboard
- Planning dashboard design

About dashboard organization

Organizing dashboards helps each user make efficient and productive use of dashboards. Users organize dashboards on their personal dashboard. Dashboard developers set organization options for shared dashboard files.

Users can organize dashboards in groups and add additional information to the dashboard for user assistance or corporate identity. For example, text gadgets can include instructions and logos or corporate web links can be added to the top or bottom of dashboards.

Subscribed dashboards limit organization options for a user because updates to the latest version of a dashboard file replaces user changes. When users copy a subscribed dashboard, they can customize the copied dashboard and its gadgets. Copying a subscribed dashboard breaks the link to the original, shared dashboard file and future updates do not change the new, copied dashboard. Changes made to the copied dashboard do not affect the original files.

Each dashboard supports gadget layout for freeform or one, two, or three columns. Freeform layout supports resizing gadgets and placing them anywhere on the dashboard. This layout also supports overlapping gadgets.

Using the dashboard column layout supports:

- Automatic width resizing for gadgets within a column
- Adjusting column width to a value relative to the size of the web browser
- Changing the order of gadgets within the same column
- Moving gadgets from one column to another
- Adjusting gadget height to a fixed value
- Changing individual gadgets to floating for placement outside of columns

Dashboard layout options for all new dashboards is set in Information Console user options. Once the dashboard is created, you can change the layout.

Adding dashboards and gadgets

When a user creates a dashboard, it is added to their personal dashboard. When a user subscribes to a shared dashboard, a link to the shared dashboard file is added to the user's personal dashboard. The personal dashboard is a file that is used to display all dashboards that appear when a user logs in to Information Console. Dashboards built by users exist inside this file.

One personal dashboard file is created for each user and is in the user's home directory or, if the user does not have a home directory, in the root directory of the

Encyclopedia volume. All layout and configuration settings for a users's dashboards reside in this file. The personal dashboard file is created when a user creates a new dashboard or subscribes to one. Deleting this file removes all the dashboards from the user's personal dashboard.

Sharing a dashboard makes a copy of the selected dashboard and gadgets in a dashboard file. These dashboard files are saved in BIRT iServer.

Subscribing to a dashboard

Subscribed dashboard files contain one or more dashboards. Users can refresh, rename, reorder, copy, or delete a shared dashboard. Users also can interact with gadgets on a subscribed dashboard. For example, you can print a chart gadget, interact with tables and BIRT files, or use data selection gadgets to filter a report. Modifications to gadgets on subscribed dashboards are reset when the dashboard refreshes or updates.

Subscribed dashboards appear using the share icon in the dashboard title.

If new versions of the a subscribed dashboard exists, subscribers to this dashboard receive the latest version the next time they open or refresh the dashboard. Users can change subscribed dashboard files when they have write permissions to the file or by copying the subscribed dashboard.

How to subscribe to a dashboard

1 Log in to Information Console.

2 To subscribe to a new dashboard, choose Add content, as shown in Figure 2-2.

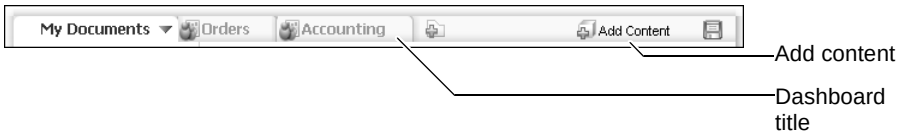


Figure 2-2 Subscribing to a shared dashboard

Select Dashboard Gallery if necessary. Dashboard Gallery appears as shown in Figure 2-3.

Figure 2-3 Exploring Dashboard Gallery

3 To subscribe to a dashboard, drag a shared dashboard and drop it after an existing dashboard title, as shown in Figure 2-4.

The placement indicator shows possible locations for the new dashboard.

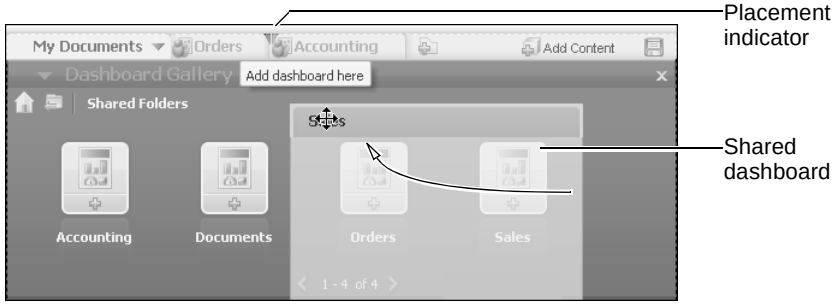


Figure 2-4 Placing a new dashboard

The new dashboard appear in the selected location, as shown in Figure 2-5.

Figure 2-5 Adding a shared dashboard

Creating a dashboard

Users organize gadgets using dashboards. Users create a dashboard, then add one or more gadgets to each dashboard. Creating a dashboard adds it to the user's personal dashboard. Users can also share the dashboard.

How to create a blank dashboard

1 Log in to Information Console.

2 Select New tab as shown in Figure 2-6.

Figure 2-6 Creating a new, blank dashboard

A new, blank dashboard appears with options to add gadget to the dashboard, as shown in Figure 2-7.

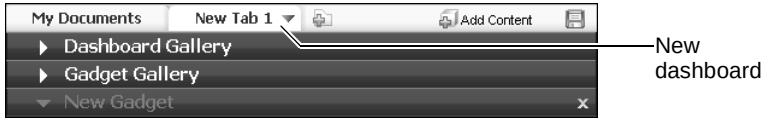


Figure 2-7 Adding content to a new dashboard

Adding gadgets to a dashboard

Users add gadgets from the Gadget Gallery or New Gadget to a dashboard. Drag a gadget from either Gadget Gallery or New Gadget and drop it in the dashboard pane to add the gadget to the dashboard. Users can also double-click a gadget icon to add it to the first free space available in the dashboard.

How to add a new gadget to a dashboard

Use gadgets in the gadget gallery to add shared gadgets or gadgets you have saved in your home folder. Use gadgets in new gadget to create a new gadget. To add a new gadget to a dashboard, complete the following steps:

1. Log in to Information Console and navigate to the existing dashboard where you want to add gadgets.

2. Display the gadget gallery and new gadget choices by selecting Add content, as shown in Figure 2-8.

Figure 2-8 Adding content to a dashboard

New gadget choices appears.

3. Double-click a gadget category folder in New Gadget, as shown in Figure 2-9.

Figure 2-9 Selecting a gadget category

In this example, double-click the Extras folder.

4. Drag a new gadget from the available gadgets, and drop it on the dashboard. This example uses the HTML gadget.

   If the active dashboard uses a column layout, an empty box shows possible locations for the new gadget, as shown in Figure 2-10.

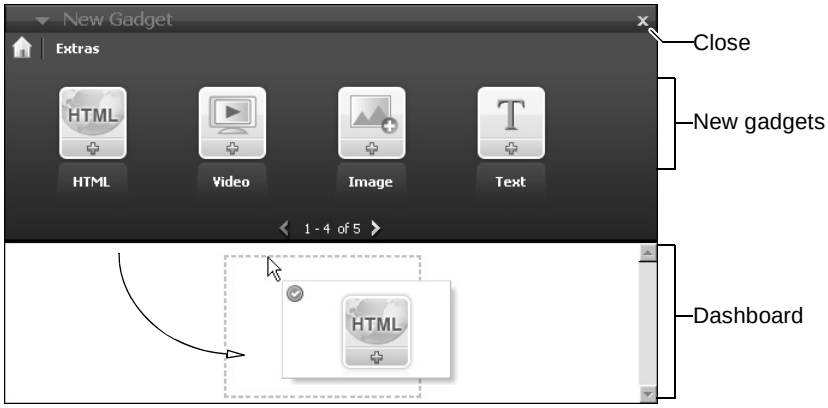


Figure 2-10 Adding an Extras gadget

5 The configuration wizard for a gadget type opens to customize the content of a gadget. Each gadget has its own configuration requirements. In this example, type http://www.actuate.com for the URL of the HTML gadget, as shown in Figure 2-11.

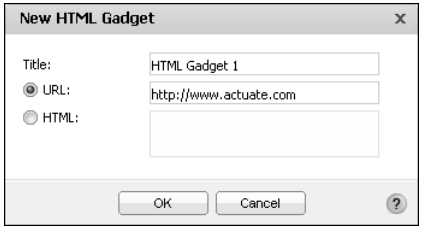


Figure 2-11 Adding a URL to an HTML gadget

6 Choose OK when finished with the gadget configuration. The gadget appears in the selected dashboard location and displays the content of the URL. Choosing cancel deletes the gadget.

After adding the gadget to the dashboard, optionally resize it or change its location on the dashboard. If the dashboard uses a column layout, the user can change the gadget height, the column to place the gadget, and the gadget order in a column. If the dashboard uses a freeform layout, the user can change the gadget height, width and placement on the dashboard.

Formatting a dashboard

Dashboard layout defines how the gadgets appear on a dashboard. Each gadget uses either a column or freeform layout. Gadgets that use column layouts do not overlap and appear either above or below another gadget in the same column. Gadgets in freeform layout can be anywhere on the dashboard. If a freeform

gadget overlaps another gadget, the user can move the gadget to the front or back of the other gadgets.

Figure 2-12 shows gadgets in a three column layout with two floating gadgets. Gadget five and gadget six are floating in this example. The freeform layout sets all gadgets to floating.

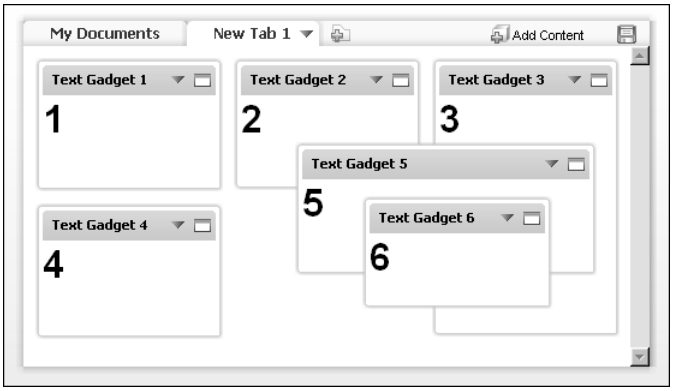


Figure 2-12 Gadgets in a three-column layout with floating gadgets

You cannot modify the layout of gadgets on a subscribed dashboard. Copy the subscribed dashboard to enable changing the layout of the copied dashboard.

Choosing a dashboard layout

You can change the layout on dashboards they you create or copy. Choose a layout with one-, two-, or three-columns, where gadgets appear within each column, and column width can be adjusted. You can move and resize all gadgets anywhere on the dashboard by setting the layout to free form. Free form layout supports overlapping gadgets.

Dashboard layout is set for all new dashboards as an option in a user's Information Console account. When a dashboard layout changes, existing gadgets are repositioned to fit the new dashboard layout.

Using the free form layout settings of Option—My dashboard, users choose to display a grid, define the grid spacing and decide if gadgets will snap to the grid. These settings are only used when the dashboard layout is set to free form.

Dashboard columns are a percentage of the user's web browser size. If the web browser changes size, the dashboard columns are resized. Gadgets in a resized column also resize to match the new width of the column.

For example, a single column dashboard expands to fill the width of the web browser, and the gadgets within the column are resized accordingly. Floating gadgets, such as gadgets in a freeform layout, do not change their width or location on the dashboard when the browser size changes.

Users can change the column width when the dashboard uses a two- or three-column layouts.

Figure 2-13 shows default dashboard settings in Option—My dashboard.

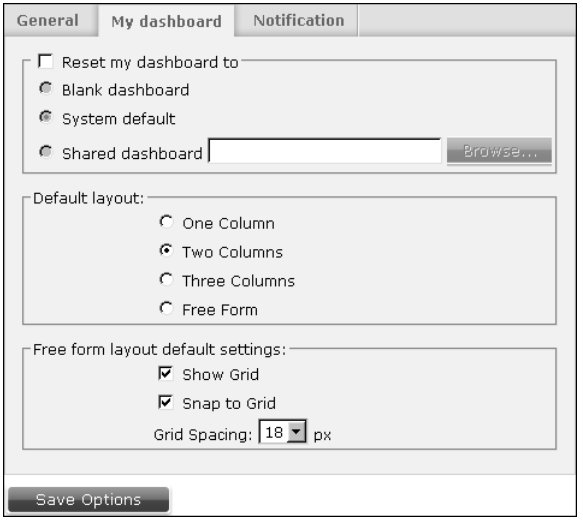


Figure 2-13 Selecting a default dashboard layout and free form grid

How to change a dashboard layout

1. Select the dashboard menu. The dashboard menu appears.
2. From the dashboard menu, choose Layout ➛ Two columns, as shown in Figure 2-14. The dashboard layout changes to a two column layout.

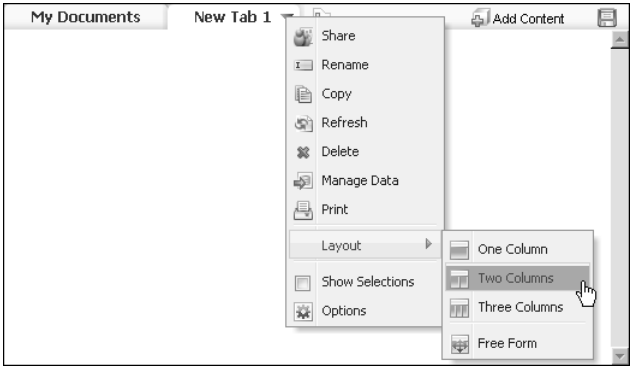


Figure 2-14 Configuring gadget layout in columns and freeform

Existing gadgets fit to the new dashboard layout. New gadgets added to the dashboard are placed within the columns of the new layout.

How to resize a column in a dashboard

This example begins with a dashboard that uses a two-column layout.

1 Hover the mouse pointer over the vertical space between two gadgets, as shown in Figure 2-15. The column bar appears.

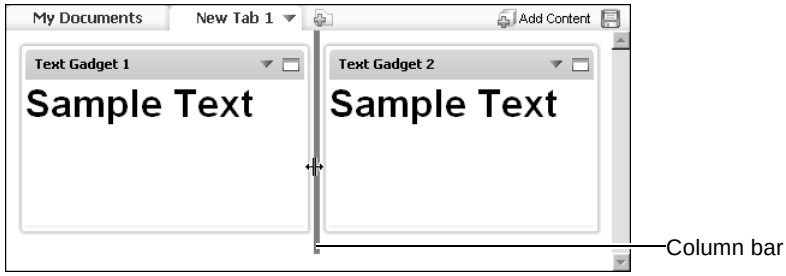


Figure 2-15 Resizing a column in a dashboard

2 Drag the bar to the left, to a new location, as shown in Figure 2-16.

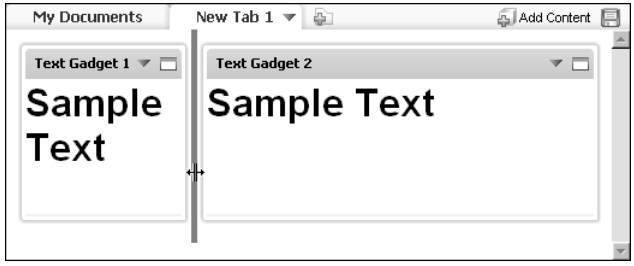


Figure 2-16 Choosing a new column width in a dashboard

Existing gadgets are resized to fit within the new column widths.

Managing gadget placement

New gadgets use the dashboard layout when added. You can move existing gadgets on the dashboard, within the columns or set the gadget to float when the dashboard uses the column layout,. You can place floating gadgets anywhere on the dashboard while other gadgets remain in the column layout. You can return a floating gadget to the column layout of the dashboard by selecting dock from the gadget menu.

If the dashboard uses a column layout, you can move the gadgets above or below other gadget in the same column. Gadgets in a column layout do not overlap and have an adjustable height.

If the dashboard uses a freeform layout, all gadgets are floating. Floating gadgets have an adjustable height and width. When the free form grid is displayed, gadgets can be snapped to the grid for exact placement, as shown in Figure 2-17.

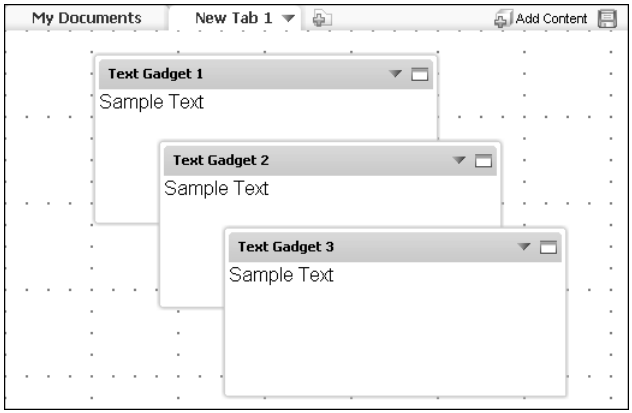


Figure 2-17 Placing gadgets in a free form grid

Users can resize these gadgets and place them anywhere on the dashboard. Floating gadgets can overlap each other. You can move overlapping gadgets to the front or back from the gadget menu, as shown in Figure 2-18.

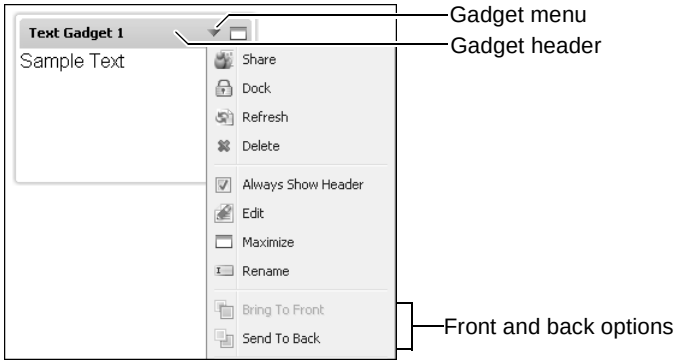


Figure 2-18 Displaying the gadget menu

Right-click anywhere on the gadget header to display the gadget menu.

How to change the size of a gadget

1 Hover the mouse pointer over the border of a gadget. A solid line appears, highlighting the borders that can be modified, as shown in Figure 2-19.

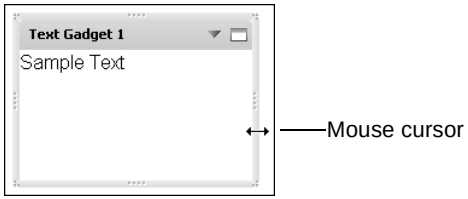


Figure 2-19 Selecting a gadget border to change

2 Drag the border to a new position to resize the gadget, as shown in Figure 2-20. The gadget resizes to the new border.

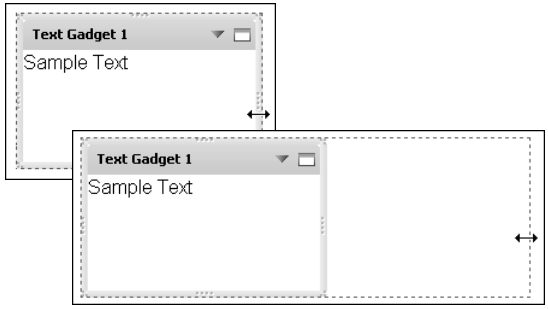


Figure 2-20 Changing the size of a gadget

Personalizing a dashboard

You can personalize dashboards you create or copy with the following options:

- Auto Refresh, to refresh the dashboard at a selected interval.
- Footer, to include HTML text at the bottom of the dashboard page.
- Header, to include HTML text at the top of the dashboard page.
- Name, to customize the name of the dashboard.

Dashboard options are available in the dashboard menu for each dashboard, as shown in Figure 2-21.

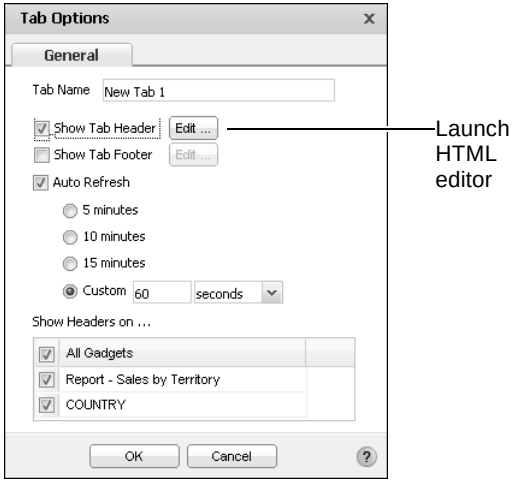


Figure 2-21 Changing dashboard options

These options persist with the dashboard when the dashboard is shared.

The Tab Name is the name of the dashboard. You can specify header and footer content on each dashboard. Both the header and footer content are edited using the HTML editor in Tab Options.

Dashboard headers appear below the dashboard name and above dashboard gadgets. The footer appears at the bottom of the dashboard. Use a text gadget for additional placement choices, such as placement in a column or placement anywhere on the dashboard when the gadget is floating.

Figure 2-22 shows the HTML editor for the dashboard header and footer.

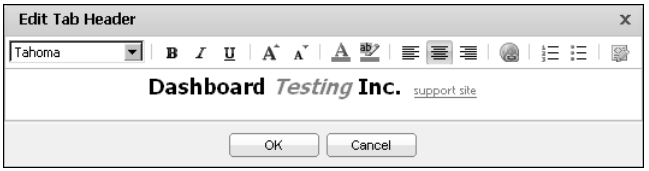


Figure 2-22 Editing the dashboard header using the HTML editor

Activating Auto Refresh sets the dashboard to refresh at the selected interval, when the dashboard is selected. Data and reports update at the selected interval. Set refresh settings to a speed that your BIRT iServer supports. Each dashboard refresh requests an update for all content on the dashboard. Check with your BIRT iServer administrator for the supported refresh frequency.

You can show or hide headers on all gadgets on the dashboard. You can also show or hide these for each gadget independently. Dragging the dashboard title to another location changes the dashboard order. When dashboard files include two or more dashboards, the horizontal dashboard order is saved in the file.

Planning dashboard design

Planning dashboard usage assures that users can receive and use the expected data. After deciding the content to be displayed and necessary gadgets to assist in data selection, it is important to consider user permissions and web browser limitations. Optimization techniques are available to enhance the user experience.

You can open and edit dashboard files without subscribing to them. This enables you to build a dashboard and save it in a private folder until you are ready to share it. Use the Information Console file explorer to open a dashboard file for editing.

Planning for permissions and options

The same permissions that apply to files in Information Console apply to dashboard files. Users of shared dashboards require file permissions to access the

shared dashboard file and the data object file it displays. Each file has access permissions that the dashboard owner or the Information Console administrator sets.

The following gadgets have additional permission requirements:

- Report and reportlet gadgets
  User must have appropriate permission to access the BIRT document or design file used in the gadget. If the user needs to interact with BIRT documents, the BIRT Interactive Viewer for iServer option is required.
- Extras gadgets
  User must have external network access and permission to display the external content. Actuate software does not manage these permissions. This includes HTML, Video, Image, Text, and Import Gadgets.
- Data selection and data visualization gadgets
  User requires permission to view the displayed data objects.

Verify with the BIRT iServer administrator that users of the new dashboard are assigned the correct security role and BIRT iServer options. A user's security role and installed BIRT iServer options define what functionality and browser-based tools are available to users. The BIRT iServer administrator manages security roles and BIRT iServer options.

For example, although a BIRT iServer has the BIRT 360 option for dashboards enabled, users require the correct security role and options activated for their account before they can create dashboards.

For more information about permissions, see "Managing permissions" in Chapter 5, "Sharing dashboards and gadgets."

Considering the web browser

BIRT dashboards rely on the user's web browser to present information. Using supported web browsers assures a consistent display of dashboards and gadgets. Although external resources can display in a dashboard, the user's web browser manages security settings and installed browser plug-ins such as Adobe Flash Player.

Dashboard developers must verify with their local network administrator that any needed security requirements and add-ons are available on user web browsers. For example, install Adobe Flash Player to access any web content that uses Adobe Flash, such as chart or Flash gadgets.

The following web browsers are supported for use with Information Console:

- Google Chrome 11.x
- Microsoft Internet Explorer 7.x, 8.x, and 9.x

- Mozilla Firefox 4.x and 5.x
- Safari 4

Web browsers support different screen sizes and enable users to change the size of the web browser. When planning gadget layout and design, it is important to consider the screen size of all expected users. Web browsers can override several layout features for a web page such as font size, background color, or a cascading style sheet.

Some browsers support internet protocols differently. While Mozilla Firefox and Safari support many HTML5 features and SVG graphic files, Internet Explorer does not currently support them. This difference is an important consideration when displaying content from external websites or embedding HTML code in gadgets.

Web links in a gadget window open the linked page within the gadget window but can also open in a new web browser window. Web sites and web browsers can override this configuration. Some external content may not support display from within a gadget. For example, trying to embed the URL http://www.google.com into an HTML gadget opens the Google web page in place of the dashboard.

Information Console has time-out values to close a user's session after a certain time of inactivity. When a time out occurs in Information Console, the user's session closes but the web browser with its cached dashboard may continue to display the last information received.

Planning for first use

When a user first logs in to Information Console that has the BIRT 360 option installed, the user does not have a personal dashboard file. Users see an initial dashboard based on a template stored with the Information Console configuration files. This template can also be set by a user in the Information Console Options page. The template dashboard is loaded as a shared dashboard.

For example, the default dashboard template is the My Documents dashboard, which a user sees after logging into Information Console. The user can change the default dashboard page using the Information Console Options page.

For more information about changing the default dashboard template with Information Console, see *Information Console Developer Guide*.

For more information about using the Information Console Options page, see *Using Information Console*.

Optimizing dashboard use

The following considerations assist in optimizing a dashboard:

- Use data object store files instead of data object design files to avoid long queries when on-demand data is not required. Object store files are cached at the BIRT iServer, enabling multiple users to quickly access data.
- Display BIRT report document files in place of BIRT report design files when possible. This avoids the time necessary for data population and rendering of a report design file.
- Activate dashboard auto refresh when the user is expected to monitor changing data.
- When using data selection gadgets, consider using data objects with optimized indexes for quick population of the gadget.
- Consider using data selection gadgets or summarized data in place of large reports.
- Consider BIRT design features available in BIRT Designer Professional for advanced chart interactivity and layout control. For example, adding a bookmark to a grid element in a BIRT design file enables the customized layout of multiple BIRT elements. Multiple BIRT visualizations can be put into the grid. A reportlet gadget can then embed the bookmarked grid element for display on a dashboard.

Chapter

3

Building operational dashboards

This chapter contains the following topics:

- About operational dashboards
- About report gadgets
- Displaying report parameters
- About extras gadgets

About operational dashboards

Operational dashboards are a type of dashboards that display entire BIRT files, selected parts of BIRT files, and external content as gadgets on a web page. Each gadget displays its contents in a column or freeform layout on the dashboard, as shown in Figure 3-1.

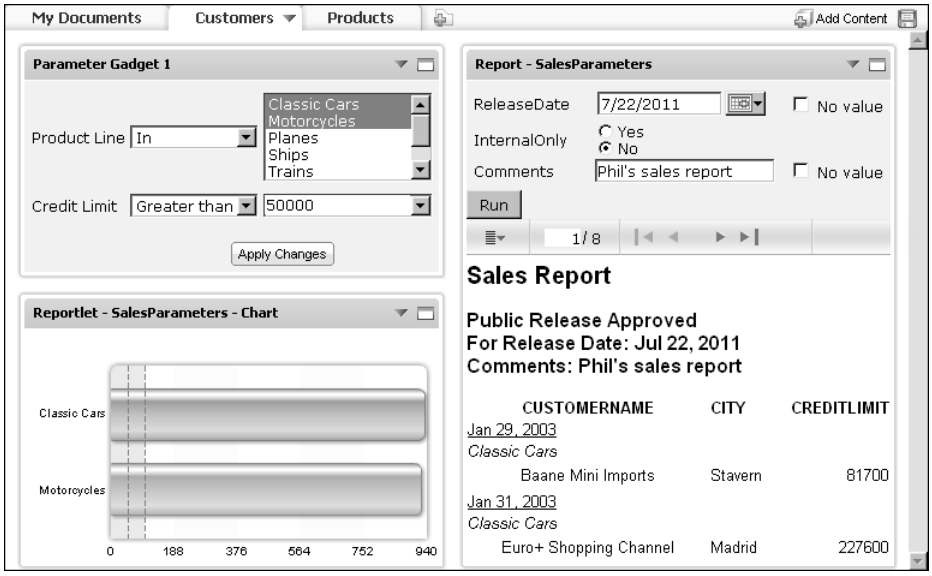


Figure 3-1 Displaying an operational dashboard

Report gadgets display entire BIRT document and design files. Reportlet gadgets display only a single bookmarked component of BIRT document and design files. For example, a BIRT document that contains a table and chart can display the entire document in a report gadget, or only the chart in a reportlet gadget.

Parameter gadgets display parameter settings contained in BIRT document and design files. Users specify parameter values in parameter gadgets to update a linked gadget with new data. For example, two report gadgets contain a parameter to select a country. Instead of displaying the parameter in both report gadgets, you can list the country names in a parameter gadget and link the report gadgets to the list. Changing the parameter gadget's value updates the linked report gadgets on the dashboard.

Report and reportlet gadgets require the Actuate BIRT option. These gadgets also support interactive viewing when the Actuate BIRT Interactive Viewer Option is installed on the Actuate BIRT iServer.

Extras gadgets display external web content, such as images, web pages or web applications, and custom gadgets on the dashboard.

About report gadgets

Report gadgets display content and data from existing BIRT document or design files. Multiple report gadgets can display on a dashboard at the same time. Report gadgets support using BIRT Interactive Viewer by maximizing the gadget.

By displaying BIRT files or bookmarked components of a BIRT file, users can display several existing flash gadgets and objects from BIRT Designer Professional and BIRT Studio in dashboard gadgets. Users can share these gadgets for others to use. Report and reportlet gadgets support all components of a BIRT file such as cross tabs, multiple hyperlinks, chart image formats, and switch view.

For example, a BIRT developer uses BIRT Designer Professional to create a document with four bookmarked elements: a radar chart, a Flash map, a table, and a cross tab. Four reportlet gadgets can each contain a different bookmarked component of the BIRT document. The developer can share these gadgets for other users to view or include in personal dashboards.

Table 3-1 shows the report gadgets available to use in a dashboard.

Table 3-1 Report gadget types

Icon	Type	Purpose
	Parameter	Parameter gadgets display parameters of a selected BIRT document and design file. Other gadgets can use these parameters. This gadget supports dynamic parameters that enable users to select a condition operator and a value.
	Report	Report gadgets display entire BIRT document and design files in a gadget. The document retains the file access permissions of the original BIRT document.
	Reportlet	Reportlet gadgets display bookmarked elements from BIRT document and design files, such as a cross tab, table, or chart, in a gadget. The document part retains the file access permissions of the original BIRT document.

Users can export the report gadget content as raw data or in formats like Adobe PDF, IBM AFP, Microsoft Word and Excel. An optional toolbar enables users to navigate pages and export report data or content.

Report gadgets support multiple drill-through of charts when the BIRT developer enables this functionality. Figure 3-2 shows a report gadget.

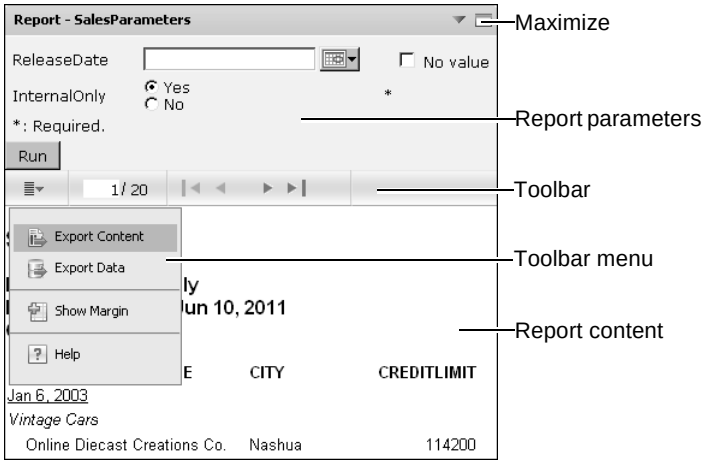


Figure 3-2 Exporting content from a minimized report gadget

Users can interactively change the appearance, content and layout of BIRT document when the user maximizes the gadget. Figure 3-3 shows a report gadget.

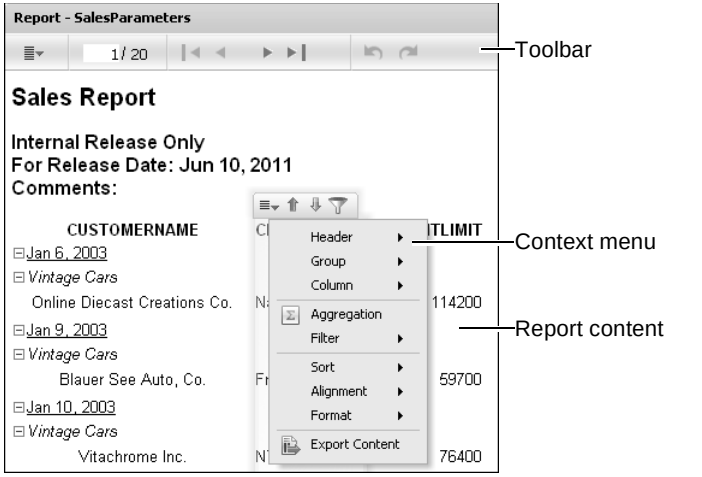


Figure 3-3 Opening the context menu of a maximized report gadget

Setting general gadget options

All report gadgets have general options to display the gadget on the dashboard. The following general gadget options are available after a report gadget is created:

- Auto Refresh
- Dimensions

- Enable scroll bar
- Show border
- Show header
- Show toolbar

These options appear when editing a gadget, as shown in Figure 3-4.

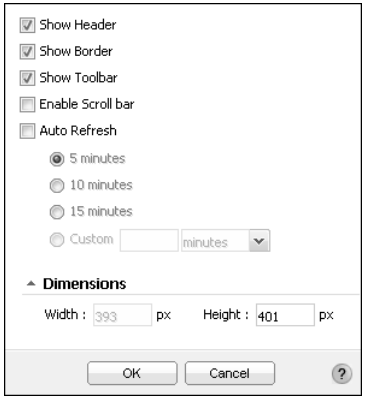


Figure 3-4 Configuring general options for report gadgets

Showing the header or border makes those parts of the gadget visible. Enabling the scroll bar displays a scroll bar when the gadget content extends beyond the size of the gadget.

Showing the toolbar is available for report and reportlet gadgets. The toolbar displays a toolbar with Export Content, Export Data, Show Margin and page control options.

Figure 3-5 shows the toolbar that can be added to report and reportlet gadgets.

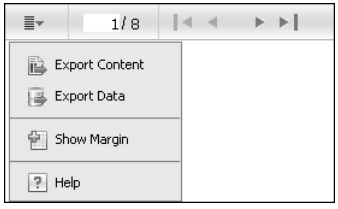


Figure 3-5 Displaying a toolbar for report and reportlet gadgets

Auto refresh sets a gadget to refresh at a set frequency. This causes the gadget and its content to be reloaded at the set interval. Dashboard developers can set the exact size of the gadget using Dimensions. You can set the width only when the gadget is floating or in a dashboard using the free form layout.

Using a parameter gadget

Parameter gadgets display BIRT file parameter choices on the dashboard for a user to select. Other report or reportlet gadgets on the same dashboard can use these parameters when the BIRT file they display require parameters. A BIRT developer can add parameters to a BIRT file.

Parameter gadgets present all or selected parameter choices that the BIRT document or design file includes, as shown in Figure 3-6. When the BIRT file displayed in the report or reportlet gadget requires static parameters, these parameters can be linked to a data visualization gadget instead of a parameter gadget. Static parameters request a value from a user. Dynamic parameters request a value and a condition.

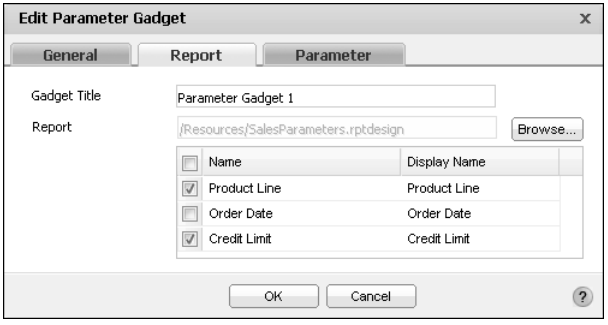


Figure 3-6 Selecting a BIRT file and choosing parameters to display

When editing this gadget, you can assign default values to selected parameters. Dynamic parameters, if available in the BIRT file, can also be assigned default conditions in addition to the value, as shown in Figure 3-7.

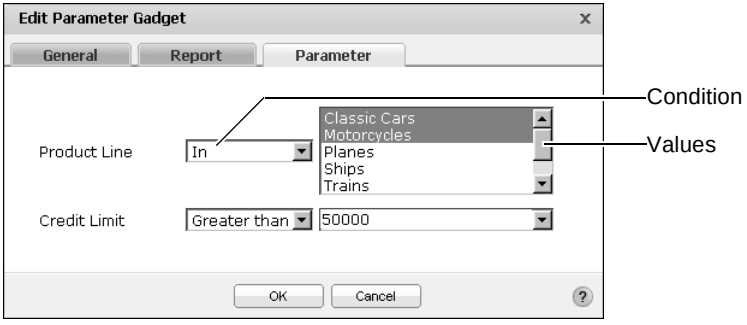


Figure 3-7 Selecting default values in a parameter gadget

Dynamic parameters enable additional flexibility for a user to select and explore data using a variety of condition operators and values. Default condition operators and values appear in the gadget. A user can change both the operator and value on the dashboard.

The BIRT report developer adds one or more conditions to display in a dynamic filter parameter. For more information about parameters, see "Displaying report parameters," later in this chapter.

Dashboard developers can customize the display of parameter gadgets using Edit Parameter Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a parameter gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a parameter gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display Report gadgets by selecting Report.
3. Drag the parameter gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Select a BIRT report document or report design file to receive parameters from.
6. Select which parameters to display.
7. Select default values for any parameters in New Parameter Gadget—Parameter.
8. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Parameter Gadget—General:

- Gadget dimensions
- Display the header, border, and scroll bar
- Refresh rate

Using a report gadget

A report gadget displays an entire BIRT report document file or BIRT report design file on a dashboard. The embedded document retains the file access permissions of the original BIRT document. Users can share report gadgets for others to use.

When you add this gadget to the dashboard or edit it, the report settings shown in Figure 3-8 appear. Users can browse the Encyclopedia volume to find a BIRT document or design file or type the path to a known file. The selected file displays in the gadget. If the Interactive Viewer option is installed, the user can interact with the BIRT document by maximizing the gadget.

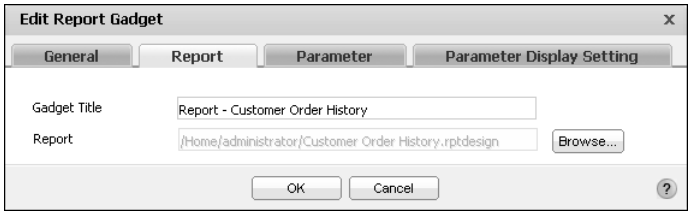


Figure 3-8 Selecting a report for a report gadget

BIRT files can contain parameters to request user interaction. Parameters can be set within the gadget configuration, displayed in the gadget for the user to select values, or linked to a data selection or parameter gadget on the same dashboard. For more information about using parameters in gadgets, see "Displaying report parameters," later in this chapter.

Dashboard developers can customize how the gadget displays on the dashboard using Edit Report Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a report gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a report gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display report gadgets by choosing Report.
3. Drag the report gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Select a BIRT report document or report design file to display.
6. Select default values for any parameters in New Report Gadget—Parameter.
7. In New Report Gadget—Parameter Display Settings, select one of the following display settings for each parameter in the report:
   - Do not display the parameter and use the defaults set in the gadget
   - Display parameter as part of the gadget
   - Display parameter as a new selector
   - Link to this selector and pick an existing data selection or parameter gadget
8. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Report Gadget—General:

- Gadget dimensions
- Display the header, border, and scroll bar
- Display a toolbar
- Refresh rate

Using a reportlet gadget

Reportlet gadgets are similar to report gadgets, except the dashboard developer selects an existing bookmark from within a BIRT document or design file.

Figure 3-9 shows the additional option of selecting a bookmark when adding or editing a reportlet gadget.

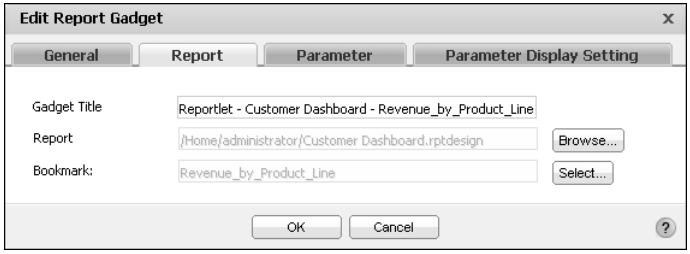


Figure 3-9 Selecting a bookmark from a BIRT document or design file

When editing this gadget, the user selects a BIRT document or design file containing bookmarked components. Selecting a bookmarked component in the BIRT file displays this component in the reportlet gadget. When selecting a bookmark, the user can choose from a list of bookmarks within the BIRT design file, as shown in Figure 3-10.

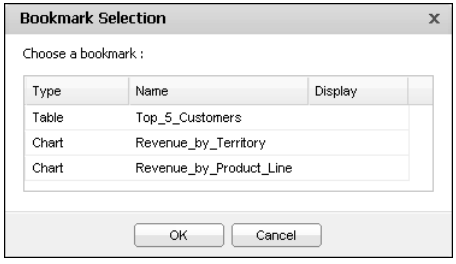


Figure 3-10 Selecting an available bookmark

A BIRT developer can group multiple BIRT components into a grid component and assign the grid component a single bookmark. The bookmarked grid component then appears inside a reportlet gadget. BIRT files can contain parameters to request user interaction.

For more information about using parameters in gadgets, see “Displaying report parameters,” later in this chapter.

Dashboard developers can customize how the gadget displays on the dashboard using Edit Report Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a reportlet gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a reportlet gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display report gadgets by choosing Report.
3. Drag the reportlet gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Select a BIRT report document or report design file to display.
6. Select a bookmark to display.
7. Select default values for any parameters in New Report Gadget—Parameter.
8. In New Report Gadget—Parameter Display Settings, select one of the following display settings for each parameter in the report:
   - Do not display the parameter
   - Display parameter as part of the gadget
   - Display parameter as a new selector
   - Link to this selector and pick an existing data selection or parameter gadget
9. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Report Gadget—General:

- Gadget dimensions
- Display the header, border, and scroll bar
- Display a toolbar
- Refresh rate

Displaying report parameters

Parameters enable users to input values into the BIRT document or design file for filtering, formatting or processing data. Parameters can be required to run a file job or they can be optional. For example, a BIRT design file that displays order

history for each customer can require a parameter for a customer name. The user selects a customer name and runs the file job to create the document file. Only data about the selected customer is in the new document. Other uses of parameters is to request a report in a specific language or to add comments into the final report.

Each parameter in a report or reportlet gadget can appear in the following ways:

- Not displayed
  The parameter is not displayed on the dashboard. A default value is selected when creating or editing the gadget.
- Displayed inside the gadget
  The parameter is displayed as part of the report or reportlet gadget. A user selects values for the parameter, then runs the report.
- Displayed as a new selector
  A new data selection gadget is created that contains the selected static parameter. Other report and reportlet gadgets can use this gadget.
- Linked to an existing gadget
  The report or reportlet gadget uses an existing parameter or data visualization gadget to receive the parameter value.

Dynamic filter parameters can only appear in parameter gadgets or as part of the report gadget. These are parameters that enable the user to select a condition and a value. Static parameters only enable the user to select values.

If a parameter is required, you must select a default value, as shown in Figure 3-11. Displaying a parameter enables the dashboard user to change the parameter value and update the gadget content.

Figure 3-11 Configuring parameter settings for a report gadget

Displaying parameters inside the gadget

When a parameter displays in a gadget, the parameter is visible in the dashboard and appears under the gadget's header. After a dashboard user selects or types the parameter values, the user runs the report gadget to update the displayed BIRT file.

Figure 3-12 shows the options for displaying a parameter.

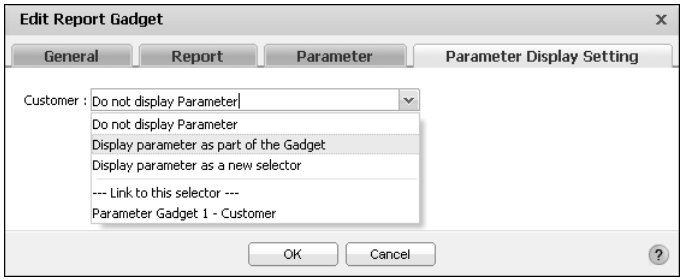


Figure 3-12 Configuring parameter display settings for a report gadget

Displaying parameters in a new selector

Choosing to display a parameter as a new selector for a gadget, launches the Data Selector Gadget Wizard. This wizard builds a data selection gadget using the parameter choices in the BIRT file as a data source.

Other gadgets on the same dashboard can link to the new data selection gadget, to receive user selected values. When users change the selected data in the data selection gadget, linked report gadgets update to display the new information.

For example, a chart and a report gadget can link to the same data selection gadget. Changing the value in the data selection gadget updates the data displayed in the linked chart and the report gadgets.

How to create a new selector for a parameter

1. Add a report gadget to a dashboard, and select a BIRT file that contains parameters.
2. In Edit Report Gadget—Parameter Display Settings, select Display parameter as a new selector, as shown in Figure 3-13. Data Selector Gadget Wizard appears.

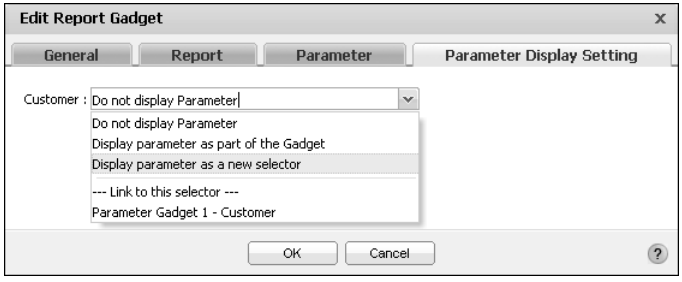


Figure 3-13 Configuring parameter display settings for a report gadget

3. In Data Selector Gadget Wizard—Type, select Combo Box, as shown in Figure 3-14.

Figure 3-14 Selecting a list gadget

4 Choose OK. New Report Gadget—Parameter Display Setting appears.

5 Choose OK. The data selection gadget and report gadget appear, displaying the default value for the parameter, as shown in Figure 3-15. Other gadgets can now link to the list gadget.

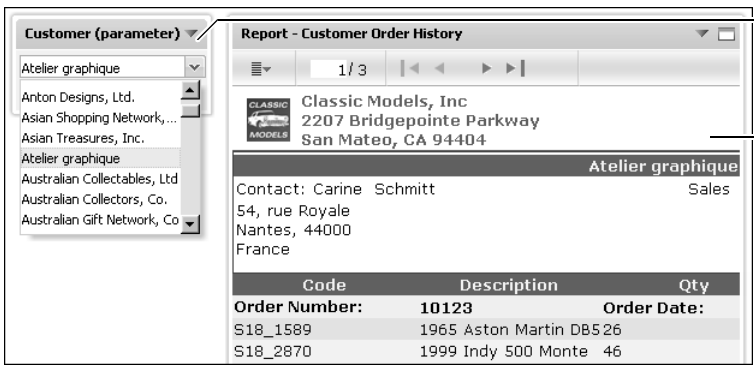


Figure 3-15 Displaying a list gadget and report gadget

Linking to a parameter gadget

Report and reportlet gadgets can link to existing parameter gadgets using the Parameter display settings of the gadget, as shown in Figure 3-16.

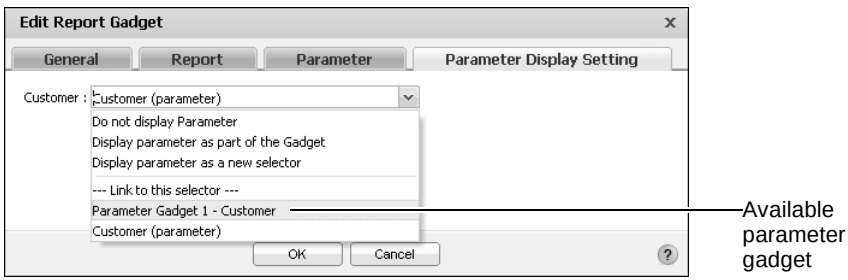


Figure 3-16 Linking to a parameter gadget

Linking to a data selection gadget

If existing data selection gadgets are already on the dashboard, the report gadget can link to those gadgets. Changes made to the data selection gadget update data in the linked report gadget. For example, consider a report gadget that has a parameter requiring a customer name. A data selection gadget already exists on the dashboard and lists customer names. You can set up the new report gadget to link to the existing data selection gadget.

For more information about linking gadgets, see "About linking to gadgets" in Chapter 6, "Linking and scripting gadgets."

Using dynamic filter parameters

If a BIRT document or design file includes dynamic filter parameters, those parameters must be hidden, displayed as part of the gadget, or linked to an existing parameter gadget. Parameter gadgets can display dynamic filters.

About extras gadgets

Extras gadgets display external files or embedded HTML, CSS, and JavaScript code. Table 3-2 shows the extras gadgets available to use in a dashboard.

Table 3-2 Extras gadget types

Icon	Type	Purpose
	HTML	HTML gadgets contain external web site URL or embedded HTML, CSS, or JavaScript code. The gadget displays this external content or web site.
	Image	Image gadgets contain external image URL. The image appears on the dashboard page through an Adobe Flash based image viewer. The following image types are supported: .jpg, .png, .gif.
	Import Gadget	Import gadgets display external gadget XML files. This gadget contains the external URL to a gadget file. The import gadget supports Google gadgets following the Google gadget XML specification.
	Text	Text gadgets contain HTML-formatted text. When editing text in the gadget, an HTML text editor appears for visual or HTML source editing.
	Video	Video gadgets contain external video URL from an external media server. This gadget supports embedded HTML or JavaScript code. The gadget displays this external content.

For more information about displaying external content on a dashboard, see "Managing external resources" in Chapter 7, "Managing dashboard resources."

Setting general gadget options

All extras gadgets have general options to display the gadget on the dashboard. The following general gadget options are available after an extras gadget is created:

- Auto Refresh
- Dimensions
- Enable scroll bar
- Show border
- Show header

Auto refresh sets a gadget to refresh at a set frequency. This causes the gadget and its content to be reloaded at the set interval. Dashboard developers can set the exact size of the gadget using Dimensions. You can set the width only when the gadget is floating or in a dashboard using the free form layout.

Showing the header or border makes those parts of the gadget visible. Enabling the scroll bar displays a scroll bar when the gadget content extends beyond the size of the gadget. These options appear when editing a gadget, as shown in Figure 3-17.

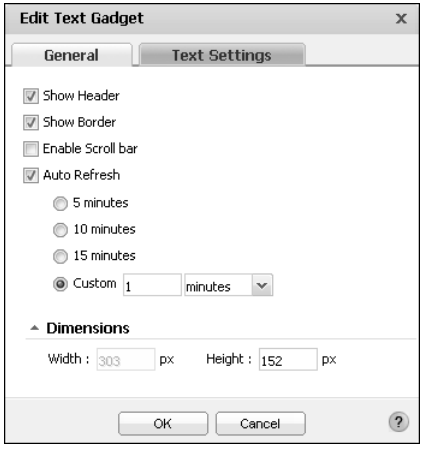


Figure 3-17 Configuring general options for extras gadgets

Using an HTML gadget

An HTML gadget contains a URL address of web content or embedded HTML, CSS and JavaScript code, such as JSAPI to access files on a BIRT iServer. HTML

gadgets support URL addresses, such as http://www.actuate.com or https://www.actuate.com. The content of the external web site displays in the HTML gadget. If the displayed web page is bigger than the gadget, the user can maximize the gadget to see more of the web page or enable scroll bars in the gadget.

You can embed HTML, CSS and JavaScript code directly to the HTML gadget instead of using a URL address. JavaScript code should not use "parent" or "top" to access HTML components. Scripts can access and change the BIRT report viewer context.

Some web services require complex URLs. If the URL includes many special characters, consider adding it to the HTML section using JavaScript for URL redirection. For more information about displaying URLs in an HTML gadget, see "Displaying a URL" in Chapter 7, "Managing dashboard resources."

The Edit HTML Gadget—HTML settings appear when adding this gadget to a dashboard or editing it, as shown in Figure 3-18.

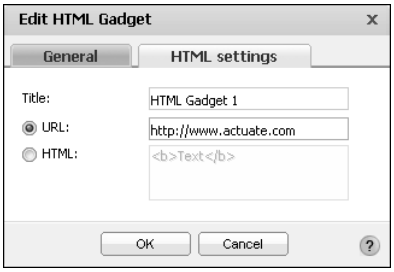


Figure 3-18 Adding a URL to an HTML gadget$

Dashboard developers can customize how the gadget appears on the dashboard using the Edit HTML Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create an HTML gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create an HTML gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display extra gadgets by choosing Extras.
3. Drag the HTML gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Select one of the following sources of HTML data:
   - URL and type a URL address to display in the gadget
   - HTML code and type HTML code to display in the gadget

6 Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit HTML Gadget—General:

- Gadget dimensions
- Display the header, border and scroll bar
- Refresh rate

Using an image gadget

Image gadgets contain general gadget options and a URL address of an image file. The image file can be on the Encyclopedia volume or on an external server. The Edit Image Gadget—Image Settings appear when adding this gadget to a dashboard or editing it, as shown in Figure 3-19.

Figure 3-19 Adding a URL to an image gadget

The image location can be on a connected network like the internet. This location starts with http:// or https:// in the URL address to the image, such as http://www.actuate.com/logo.jpg, where logo.jpg is the name of the image file.

If the image is larger than the gadget, the user can maximize the gadget or enable scroll bars to see more of the image.

The image gadget supports the following image formats:

- GIF
- JPG
- PNG

Dashboard developers can customize how the gadget appears on the dashboard using the Edit Image Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create an image gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create an image gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display extra gadgets by choosing Extras.
3. Drag the image gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Type the image location as a URL.
6. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Image Gadget—General:

- Gadget dimensions
- Display the header, border, and scroll bar
- Refresh rate

Using an import gadget

Import gadgets contain a URI location of a Google gadget file. The Google gadget must reside on a web server. When adding this gadget to a dashboard or editing it, Edit Import Gadget—Import Gadget Settings appears, as shown in Figure 3-20.

Figure 3-20 Adding a URI to a Google gadget

Third-party gadgets, such as a custom Google gadget, are loaded from a connected network. URI locations begin with http:// or https://. The server running Information Console loads the gadget to convert it into HTML for display on the dashboard. For more information about creating Google gadgets, see "About Google gadgets" in Chapter 8, "Building custom gadgets."

Dashboard developers can customize how the gadget appears on the dashboard using the Edit Import Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create an import gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create an import gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display extra gadgets by choosing Extras.
3. Drag the import gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Type the Google gadget location as a URL.
6. Choose OK to create the new gadget.
7. Link the gadget to a data selection gadget when the Google gadget can process user selections. Choose Link from the gadget menu after the gadget has been placed on the dashboard.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Import Gadget—General:

- Gadget dimensions
- Display the header, border and scroll bar
- Refresh rate

Using a text gadget

Text gadgets contain text in HTML format. The Edit Text Gadget—Text Settings appear when adding this gadget to a dashboard or editing it, as shown in Figure 3-21. An HTML text editor appears, providing text formatting options.

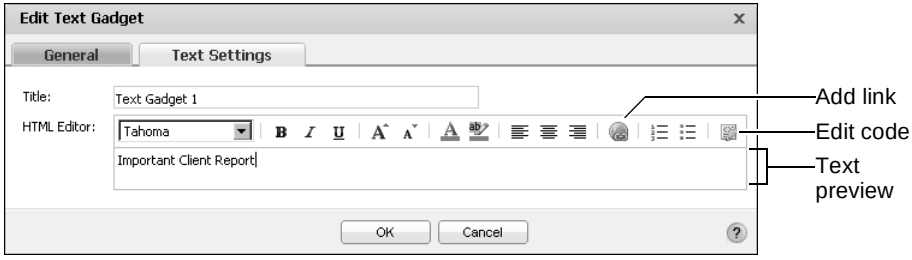


Figure 3-21 Adding HTML text to a text gadget

You can type text directly in the HTML editor which formats the text. Along with text formatting options, the HTML editor supports adding HTML links to text and editing the HTML source code of the text.

The text gadget displays text. If you need to add JavaScript, custom HTML code or CSS code, use an HTML gadget.

Dashboard developers can customize how the gadget appears on the dashboard using the Edit Text Gadget—General options.

For more information about general options, see “Setting general gadget options,” earlier in this chapter.

How to create a text gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a text gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display extra gadgets by choosing Extras.
3. Drag the text gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Type and format text to display in the text gadget.
6. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Text Gadget—General:

- Gadget dimensions
- Display the header, border, and scroll bar
- Refresh rate

Using a video gadget

Video gadgets contain a URL address of a video file or HTML code to embed video content. The Edit Video Gadget—Video Settings appear when adding this gadget to a dashboard or editing it, as shown in Figure 3-22.

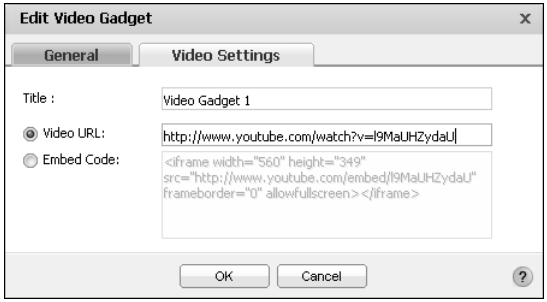


Figure 3-22 Adding a URL to a video gadget

The Video gadget supports URL addresses, such as http://www.youtube.com or https://www.youtube.com. The content of the external web site displays in the Video gadget.

You can also add HTML code and JavaScript code directly to the Video gadget. Some video web sites support an embedded video player with user customizations by offering HTML code to embed into other websites. The video gadget can use this HTML code to display the video content.

Dashboard developers can customize how the gadget appears on the dashboard using the Edit Video Gadget—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a video gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a video gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Display extra gadgets by choosing Extras.
3. Drag the video gadget and drop it on the dashboard.
4. Type a name for the gadget.
5. Select one of the following sources of video data:
   - Video URL and type a URL address to display in the gadget
   - Embed Code and type HTML code to display in the gadget
6. Choose OK to create the new gadget.

Specify desired gadget display options by choosing Edit from the gadget menu after the gadget has been placed on the dashboard. You can change the following settings in Edit Video Gadget—General:

- Gadget dimensions
- Display the header, border and scroll bar
- Refresh rate

Chapter

4

Building analytic dashboards

This chapter contains the following topics:

- About analytic dashboards
- Using data objects in gadgets
- About data visualization gadgets
- Customizing data visualization gadgets
- About data selection gadgets

About analytic dashboards

Analytic dashboards display data from one or more data object files in visualization gadgets and selection gadgets. Data visualization gadgets use charts, tables, cross tabs, and flash gadgets to help users analyze and explore data.

Data selection gadgets help users to select data to display in data visualization gadgets. For example, a data selection gadget presents a list gadget displaying cities where customers live. A chart gadget links to this list. When a user selects one or more cities, the chart is updated to display only data for the selected cities.

Gadgets can link together to share information. Figure 4-1 shows an example of an analytic dashboard.

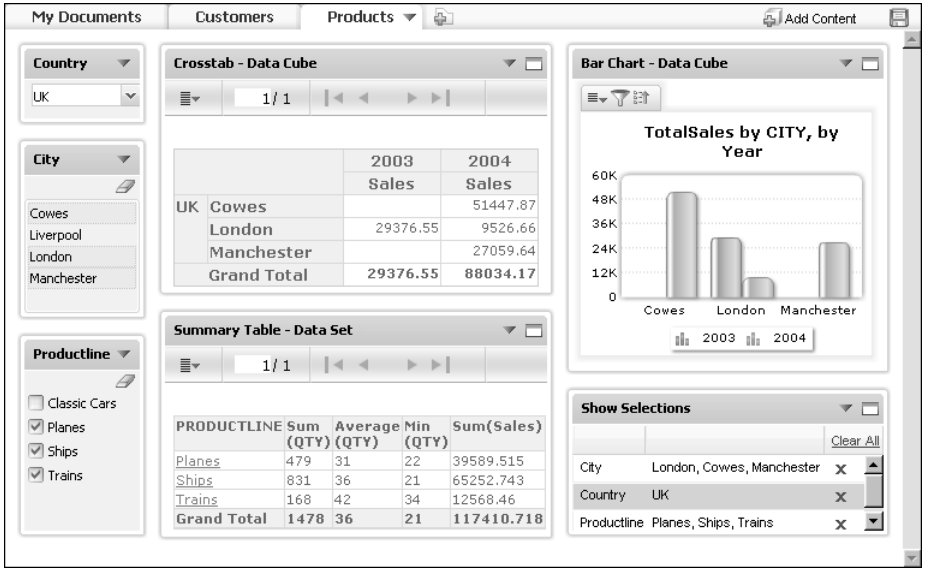


Figure 4-1 Displaying an analytic dashboard

Multiple gadgets can link together to offer:

- Cascading selections, such as country, state, and city.
- Different views of data from the same data source.
- Displays of related data from multiple data sources.

BIRT report developers create data object files using BIRT Designer Professional. These files must reside in the Encyclopedia volume before analytic dashboards can use them as data sources.

Using data objects in gadgets

Data object files contain one or more data sets or data cubes. Data objects are either a design file or a store file. Data object design files contain only the information to query and add structure to external data sources. These files can cache the queried data as a data object store file.

For example, a data object design file that is only be a few kilobytes in size is saved as a data object store file. The size of the new file is a few megabytes in size because the results from data query are stored inside the data object store file.

Data objects can filter data using parameters, if the BIRT developer included them. Filtered data objects limit the data that appears in all gadgets that use them.

Dashboard developers can also filter the data displayed in each gadget using the data settings of the gadget. For example, two chart gadgets using the same data object are on a dashboard. One gadget has a filter condition to display data from 2010 and the other gadget has a filter to display data from 2009. Additionally, data visualization gadgets support interactive filtering by the user.

The order of filtering is as follows:

1. Data object parameters
   These parameters limit data displayed in all gadgets on the user's dashboards.
2. Gadget data-source filtering
   These filters are applied to each gadget. Users can change these filters if they have permissions to edit the gadget.
3. Data selection gadgets
   These gadgets filter any gadget that links to them.
4. Interactive filtering
   These filters use visible data fields in a data visualization gadget. Interactive filtering are applied to data that matches all of the previous filtering conditions.

If data contain hyperlinks, these hyperlinks can appear in the data visualization gadgets. For example, order numbers in a data object can have hyperlinks to view the invoice for an entire order.

About data object designs

A BIRT data object design file contains all the information to connect to an external data source, retrieve data from that data source, and structure the data in a way that supports business analysis. Data objects organize data in tables, called data sets, or in multiple dimensions called data cubes. Parameters can be added by the BIRT report developer to request values for filtering or to use with a script

inside the data object design file. Figure 4-2 shows a data object design file opened in BIRT Designer Professional.

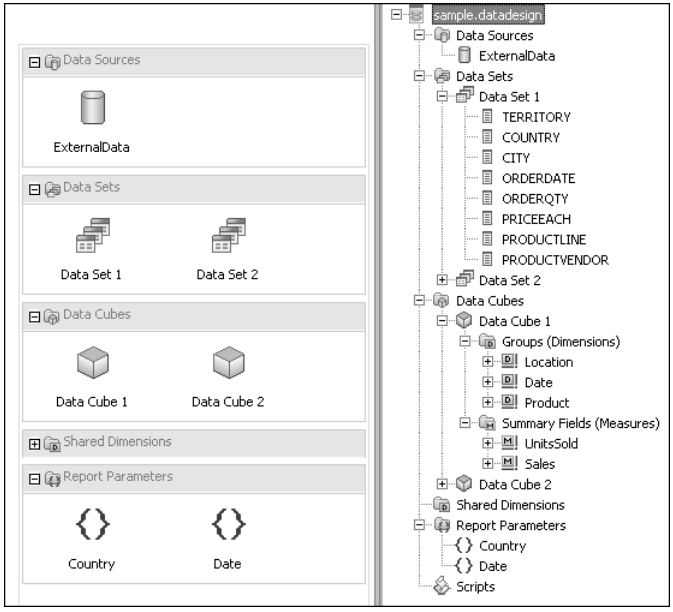


Figure 4-2 Using BIRT Designer Professional to view a data object design file

BIRT data object design files do not store data. When a gadget requests data from a data object design file, one or more queries are sent to the external data source to retrieve data.

Data selection gadgets, such as a list and data visualization gadgets, such as a chart, use BIRT data objects as the source of the data that they display on the dashboard. These files are stored in the Encyclopedia volume's resource folder. Data object design files use the file-name extension .datadesign.

About data object stores

When a dashboard uses a data object design, each time the dashboard is refreshed the data object connects to the underlying data source and retrieves data from it. This operation is typically resource-intensive and time consuming. For a more efficient data access alternative, cache the data in a data object store, and use this file as a data source for dashboard gadgets.

Data objects stores, similar to data marts, are repositories of data gathered from corporate data sources to address specific business queries. These files support versioning, for example, a data object store called orders.data can exist as a different version for each quarter of a year. This ensures that multiple dashboards use the same data. Dashboard developers can select a specific version or to

always use the latest version in a gadget. Data object store files have the file-name extension .data.

Selecting data object files

Analytic dashboards display data from BIRT data objects. Data visualization and data selection gadgets require a data object file. Each gadget displays data from one data set or data cube in the selected data object.

After a data object is used in a user's dashboards, it appears as an available data object, as shown in Figure 4-3.

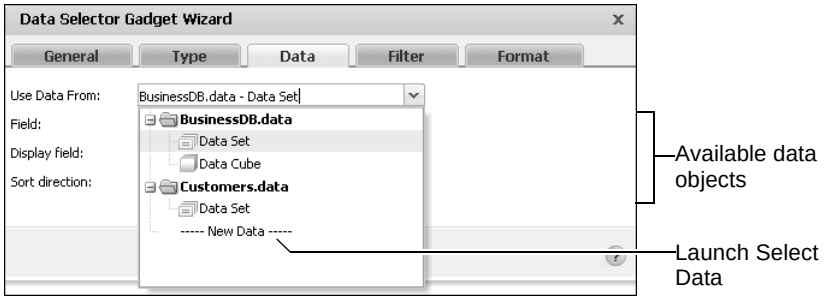


Figure 4-3 Choosing an available data object

A data set contains rows of data, organized in tables, that are not aggregated. Each table has columns of data and each column has a name. For example, a table of order data that has column names of order number, order date, order value, client name, sales person has one or more rows containing values for each column. When data is not aggregated, data is displayed for each row in the data set. When there are many rows of data, it can be difficult to analyze or group the data. For example, duplicates can appear from multiple orders on the same date or sold by the same sales person.

Gadgets such as tables and charts can aggregate the data from a data set. BIRT developers can assign analysis types to data columns in a data set. Analysis types identify associated values and measures that a user can use when aggregating the data.

A data cube contains data that is already aggregated into dimensions, attributes, and measures of data and is optimized for data analysis. A data cube is a multidimensional data structure optimized for data analysis. For example, a data cube can contain the calculated sum and average of all product sales, grouped by location, date of sale and product type. Because this data is precalculated, it is faster to access than if the calculations were made on-demand, especially for large amounts of data.

To add additional data objects, choosing New data launches Manage Data to browse and select from all available data objects. Figure 4-4 shows an example of browsing available data objects.

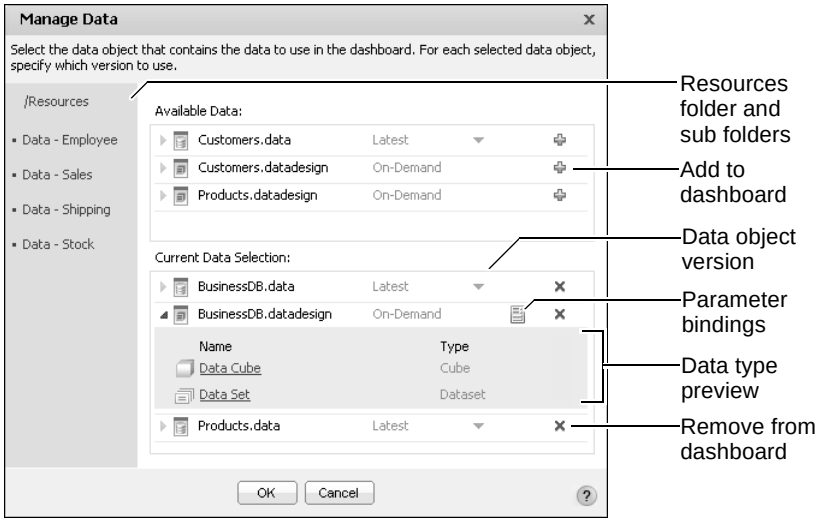


Figure 4-4 Viewing available BIRT data store and BIRT data design files

When previewing data sources to add to a gadget, you can browse the structure of data sets and data cubes. Select Data also appears when you select Manage Data from the dashboard menu.

Figure 4-5 shows an example of browsing a data set in a data object file.

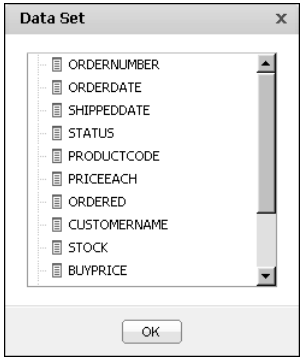


Figure 4-5 Browsing a data set

Data sets can contain one or more data fields that display as columns in gadgets.

When the BIRT report developer creates a data cube, they create measures and dimensions, from data columns. Measures are typically numerical values such as quantity sold, that are aggregated with a summary function such as sum, min or max. Dimension are groups of similar values, typically organized in a hierarchy. These levels are used when users drill into the dimension group to view the current data with increased detail or in a summary.

For example, a dimension group called location contains territory, country, state, and city values. A user viewing this data in a chart by country drills up from country to view the same data summarized by territory.

Figure 4-6 shows an example of browsing a data cube inside a data object file.

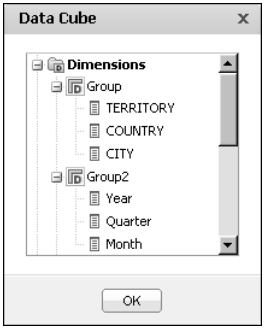


Figure 4-6 Browsing a data cube

Data cubes contain the following data categories that can display in gadgets:

- Levels: data columns associated with dimension groups. For example, levels named territory, country, and city can be part of a dimension named location.
- Dimensions: groups of levels, such as location or time periods. For example, a dimension named order date can contain dates in levels such as year, quarter, and month.
- Measures: aggregate values, such as units sold or sale price.

BIRT report developers add these categories when they design the data object.

The selected data structure loads into a gadget for the user to assign to parts of the gadget. For example, after loading a customer data set to a table gadget, the different fields in the data set, such as customer name and email address, appear in the gadget's data settings.

Setting parameters for data objects

Dashboard developers use parameters to input values to a data object for filtering, formatting or processing data. When parameters exist in data objects, they appear on Select Data as parameter bindings. Launch Select Data by choosing Manage Data from the dashboard menu or adding a new data object to a dashboard.

Parameters can appear in the following ways:

- One or more values that the user selects.
- One or more fields where the user types values.

- Cascading selections that present the user with choices based on other selections.
- One or more conditional operators and corresponding values that the user selects.

Parameters in a data object affect data in all gadgets on the user's dashboards. For example, specifying two cities in a data object's parameter causes gadgets using that data object to only show data from the two selected cities. Each gadget can later apply additional filters.

BIRT report developers add parameters to data objects using BIRT Designer Professional and decide if the parameter value filters data or is used in a script in the data object.

How to set parameters on a data object

This example requires a data object design file that contains parameters.

1 From the dashboard menu, choose Manage Data, as shown in Figure 4-7. Manage Data appears.

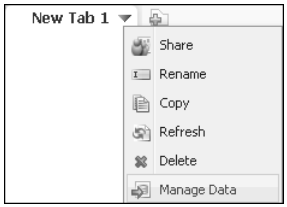


Figure 4-7 Selecting Manage Data

2 In Manage Data, choose Parameter Bindings in Current Data Selection, as shown in Figure 4-8.

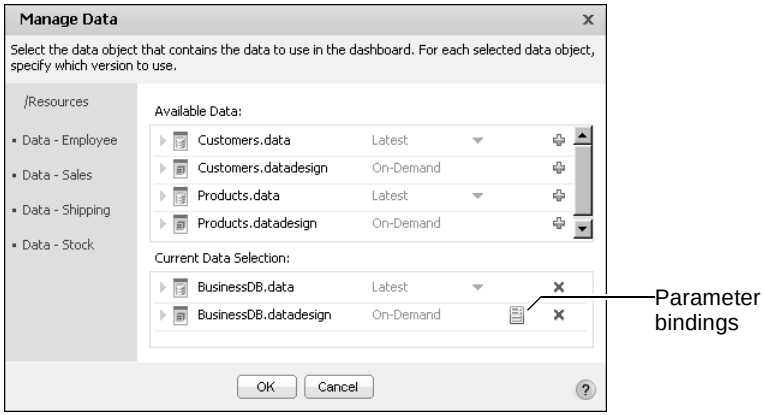


Figure 4-8 Selecting Parameter bindings

3 Set default values, this example uses dynamic parameters, as shown in Figure 4-9.

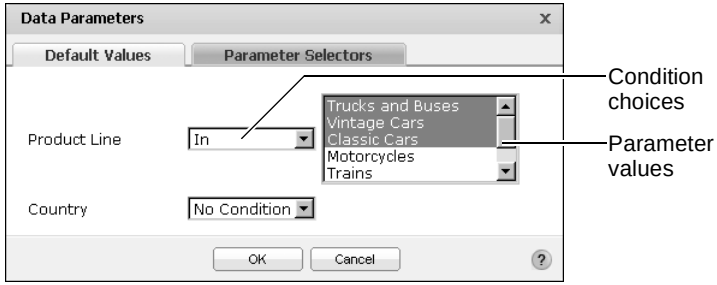


Figure 4-9 Selecting default parameter values for Product Line

4 Choose OK. Manage Data appears.

5 In Manage Data, choose OK again to return to the dashboard.

Filtering a gadget data source

Filtering limits the data that appears in the selected gadget. Each gadget can filter the data it receives from a data object, independently of other gadgets. Filter conditions can use any data in the selected data set or data cube. Multiple filter conditions can combine to form filters that are more complex than a single filter.

Filter operators depend on the data in the selected field. A string field offers the following filter conditions:

- In
- Equal To
- Is Null

A number field offers the following additional filter condition operators:

- Between
- Greater than
- Greater than or equal to
- Less than
- Less than or equal to

Business users and developers can edit filter conditions in the gadget data settings if they have permission to edit the dashboard in which the gadget is located. Users can interactively add filter conditions to data appearing inside data visualization gadgets, but these additional filters only use data already received by the gadget. Data available for interactive filtering is data that already matches

any parameters on the data object, that already matches the data source filtering of the gadget, and that is being displayed in the gadget.

For example, a gadget uses a data object that displays product orders. The data object contains a field naming the country where the product was sold. The gadget does not display the country field. The dashboard developer can filter the gadget's data source to show orders from selected countries. In the example, users cannot use interactive filtering to select the country because the country does not appear in the gadget. Interactive filtering of the gadget by users can only filter the country field if that field appears in the gadget.

How to filter a data source in a gadget

The example in this section uses a list gadget.

1 From the gadget menu, choose Edit, as shown in Figure 4-10. Data Selector Gadget Wizard appears.

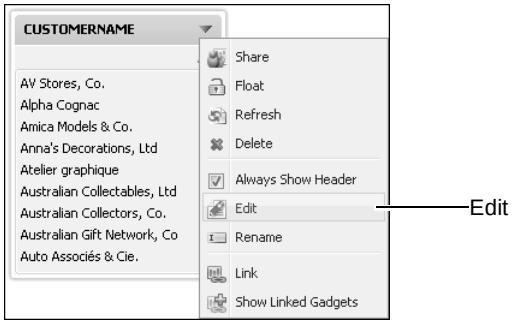


Figure 4-10 Selecting Edit to create a filter

2 In Data Selector Gadget Wizard—Data, choose Filter, as shown in Figure 4-11. Data Selector Gadget Wizard—Filter appears.

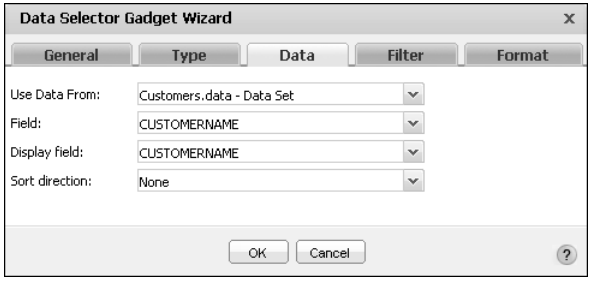


Figure 4-11 Adding a filter to a gadget data source

3 Figure 4-12 shows Filter. In filter, select the following items:

- In Filter By, select a data field to filter from, such as status.
- In Condition, select a filter condition operator, such as equal to.

- Choose Select Value to see a list of existing values for the selected field. Select one of the values, such as cancelled, as shown in this example.

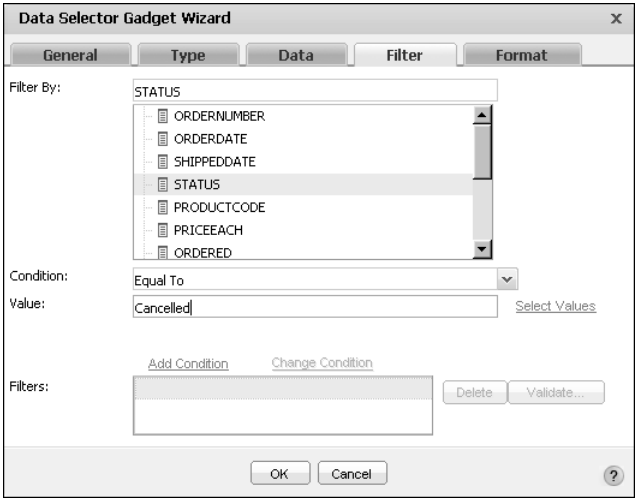


Figure 4-12 Creating a filter condition

4 Add the new filter condition by choosing Add Condition.

5 In Data Selector Gadget Wizard—Filter, choose OK. The dashboard appears and the gadget updates to show data that matches the filter condition, as shown in Figure 4-13.

Figure 4-13 Displaying filtered data in a list

About data visualization gadgets

You can use various Actuate gadgets to build interactive and visually rich displays from data objects files. Users can perform the following actions using data visualization gadgets:

- Cascading data choices and filtering with data selection gadgets
- Drilling down through data categories or series

- Exporting visual content and data
- Interactive filtering of gadget data
- Maximized viewing of selected gadget
- Printing visual content

Some gadgets offer special user interaction. For example, doughnut and pie charts also support data slicing and chart rotation. Users can also launch BIRT Data Analyzer on selected cross tabs.

Table 4-1 describes data visualization gadgets available for use in a dashboard.

Table 4-1 Data visualization gadget types

Icon	Type	Purpose
	Charts	Chart gadgets display data from a selected data object file in an Adobe Flash-based chart. Users can filter, group, and aggregate data. Available chart types are Bar, Column, Doughnut, Line, and Pie.
	Cross tab	Cross-tab gadgets display aggregated data in rows and columns. Users can analyze and manipulate this data by opening the cross tab in BIRT Data Analyzer. Users can load the cross tab into BIRT Data Analyzer by double-clicking the gadget header.
	Flash Gadgets	Flash gadgets display data from a data object file as an Adobe Flash-based image. Users can filter, group, and aggregate data. Available Flash gadget types are Bullet, Cylinder, Linear Gauge, Meter, Spark Line, and Thermometer.
	Flex Table	Flex Table gadgets display data set values from a data object in a row and column layout. Various aggregation options are available to summarize data.
	Table	Table gadgets display data set values from a data object in a row and column layout. Various aggregation options are available to summarize data.

You can link these gadgets to data selection gadgets like a list to enable users to filter displayed data. Users can share an entire dashboards using these gadgets or share only the gadget file for other users to add in their own dashboards.

Setting general gadget options

All data visualization gadgets have general options to display the gadget on the dashboard. The following general gadget options are available after a data visualization gadget is created:

- Auto Refresh
- Dimensions
- Enable scroll bar
- Show border
- Show header
- Show toolbar

Auto refresh sets a gadget to refresh at a set frequency. This causes the gadget and its content to be reloaded at the set interval. Dashboard developers can set the exact size of the gadget using Dimensions. You can set the width only when the gadget is floating or in a dashboard using the free form layout.

These options appear when editing a gadget, as shown in Figure 4-14.

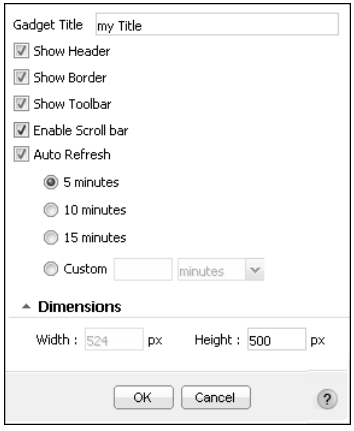


Figure 4-14 Configuring general options for data visualization gadgets

Showing the header or border makes those parts of the gadget visible. Enabling the scroll bar displays a scroll bar when the gadget content extends beyond the size of the gadget.

Showing the toolbar is available for cross-tab and table gadgets. The toolbar displays a toolbar with Export Content, Export Data, Show Margin and page control options. Figure 4-15 shows the toolbar added to a gadget.

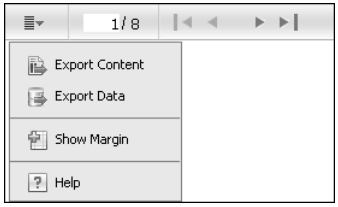


Figure 4-15 Displaying a toolbar for cross-tab and table gadgets

Using the color picker

The dashboard developer can customize displayed colors in many parts of data visualization gadgets, such as backgrounds, borders, fonts, and grids.

Color pickers support the following ways to select a color:

- Selecting Auto to use a default color
- Selecting from a preset group of basic colors
- Typing an RGB color or hexadecimal value using Custom Colors
- Using the spectrum bar and gradient box to select a color using Custom Colors

When using the spectrum bar and gradient box, the color is displayed in the color preview box. The RGB and hexadecimal value are shown, as in Figure 4-16.

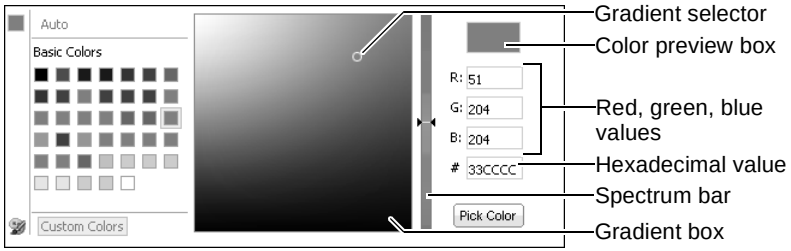


Figure 4-16 Selecting a color from a color picker

How to select a color using the color picker

1 Launch the color picker from a gadget's formatting options, as shown in Figure 4-17.

Figure 4-17 Customizing the color of a selected element

2 Select a color using the following steps

- Select a color in Basic Colors, as shown in Figure 4-18.

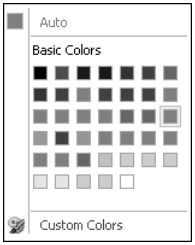


Figure 4-18 Selecting a basic color

- Choose Custom Colors. The gradient square and spectrum appears.

- Select a gradient in the gradient box, as shown in Figure 4-19. Change the spectrum bar to specify a color group.

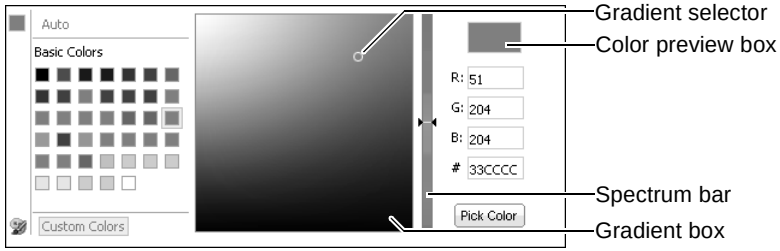


Figure 4-19 Selecting a custom color

- Use the selected color by choosing Pick Color. The RGB value of the selected color appears, as shown in Figure 4-20.

Figure 4-20 Using the new color

About data groups, drill down and drill up

Dashboard developers make data more readable and dynamic by displaying it in groups. Data sets grouped by category enable aggregation of values in chart gadgets. For example, a chart groups order data by country and displays the sales value of the orders with the aggregate expression sum. The resulting chart shows each country name once with a sum of all sales for each country. If categories are not grouped, each row in the data set creates a value on the chart, increasing the chart complexity and rendering time.

Chart gadgets can group legend values to display sub groups in data sets. For example, dashboard developer creates a chart displaying the total sales for each territory. The developer then groups legend values in the chart by product line. The resulting chart displays the sum of sales in each territory, grouped by product line, as shown in Figure 4-21.

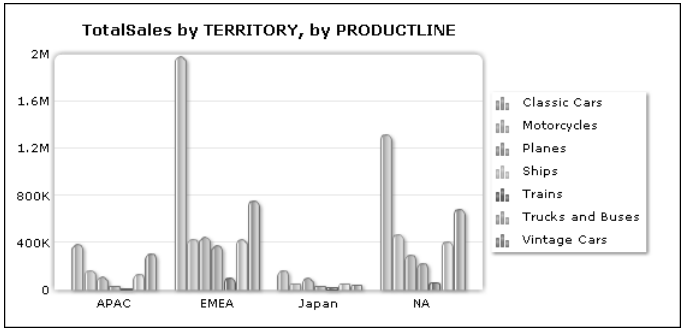


Figure 4-21 Displaying a data set, grouped by category and legend items

Chart and crosstab gadgets support drill down and drill up when displaying data cubes. This enables dashboard users to view detail or summary information from a data cube. Users choose a level of the category dimension to view in the chart. These categories are defined in the dimension group of the data cube. For example, a user viewing a chart of sales data by country can drill down and view sales data by city, office, or employee.

Figure 4-22 shows a user drilling into a territory to view details about the countries inside the territory.

Figure 4-22 Drilling into a data cube using a chart gadget

The user then drills into a year to see details about the quarters of the selected year, as shown in Figure 4-23.

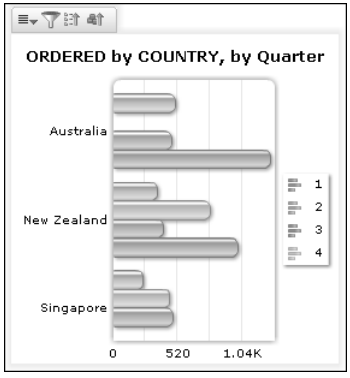


Figure 4-23 Drilling into a year to see details

Dashboard developers can enable drill down in a second dimension by grouping the chart legend values with the second dimension. For example, the previous chart displaying locations in the data cube can also group legend values by a time dimension such as year. The resulting chart enables users to drill down to different time periods in the time dimension, such as quarters, months, and

weeks. This enables the user to change the time period and location to view data without editing the configuration of the chart gadget.

Users can continue to drill into the data cube, apply filters or export the chart or data. Figure 4-24 shows the context menu of the chart gadget and the choices a user has to continue analyzing data displayed in the chart.

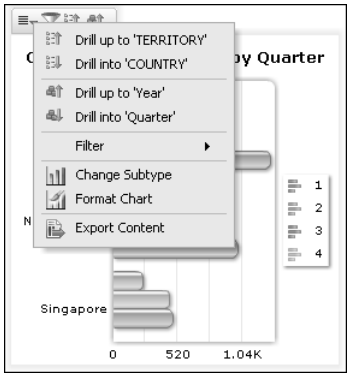


Figure 4-24 Selecting additional drill down and drill up options

Using a chart gadget

A chart is a graphical representation of data. Charts are particularly useful for summarizing numeric data and showing the relationship between sets of values, called series. For example, a chart can show sales by region, average temperatures by month, or the price of a stock over three months. Because a chart presents a picture, it reveals trends that are not as apparent in a table.

When adding or editing a chart gadget, you can change the chart type displayed in the gadget, as shown in Figure 4-25.

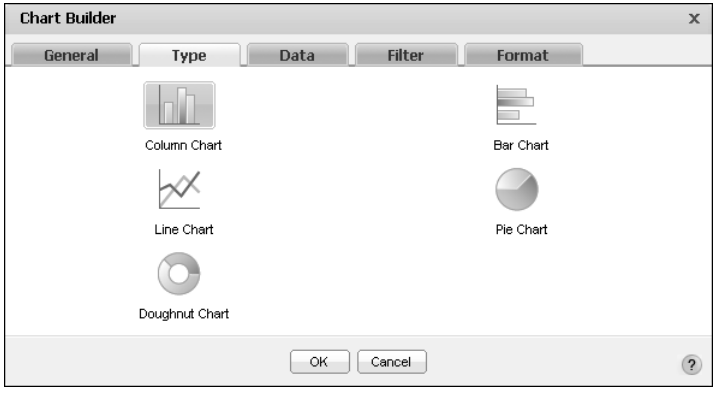


Figure 4-25 Changing a chart type

Chart gadgets display data from a BIRT data object or data object design file in Adobe Flash based charts. Dashboard developers can limit the data displayed using filters, aggregate data sets, enable drill through for data cubes, and group data by values or dimensions. Users can filter displayed data and export content and data using the context menu.

Dashboard developers can customize chart gadget options using the Chart Builder—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a chart gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a chart gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Visualization.
3. Drag a chart gadget and drop it on the dashboard.
4. To specify the data presented in the chart gadget, complete the following steps:
    1. Select a data source
    2. Select fields from the data source to display in the chart
    3. Specify data aggregations and groups as desired
5. Limit displayed data with filter conditions, if desired, in Chart Builder—Filter.
6. Format the chart, if desired, in Chart Builder—Format.
7. Specify desired gadget display options in Chart Builder—General:
    - Display the header, border, and scroll bar
    - Gadget title
    - Refresh rate
8. Choose OK to create the new gadget.

Enable interactive filtering by linking the chart to a data selection gadget. After the chart is placed on the dashboard, it links to data selection gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to chart gadgets

Adding a chart gadget to a dashboard or editing it, displays Chart Builder—Data, where the developer selects data to display in the chart. Chart gadgets can display data from any data set or cube in a single data object file. The dashboard developer assigns the data to the different parts of the chart. Each chart type

presents data differently. If hyperlinks exist in the data object file, they can appear in the chart by selecting Chart Builder—Data—Use default hyperlink.

Chart gadgets that display data cubes enables users to drill-down into category and series data. For example, a chart showing stock by year and country supports drill-down to look at the time category in greater detail such as quarters or months. After finding the right time view, the user can then drill-down to a more detailed location view like city.

Dashboard developers can also limit the data that appears in the gadget by using Chart Builder—Filter to create filter conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

Tooltips can appear in a chart gadget and display the following information:

- Category data
- Data from a dimension, attribute, or measure of a cube
- Default
- Value data
- Value series name

Pie and doughnut chart gadgets can slice and group data categories, like names of countries or product types, as shown in Figure 4-26. Values define the size of each slice relative to the other slices.

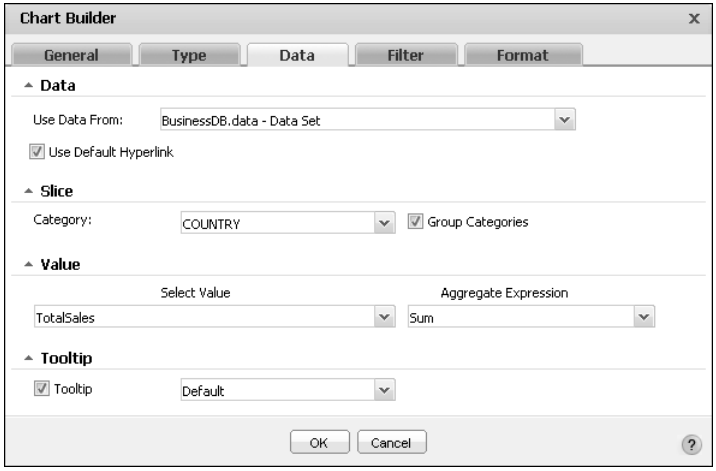


Figure 4-26 Selecting data to display as a pie or doughnut chart

When the category data is a date, an additional option for selecting the time interval appears. Bar, column, and line chart gadgets can display and group data categories, like names of countries or product types, as shown in Figure 4-27.

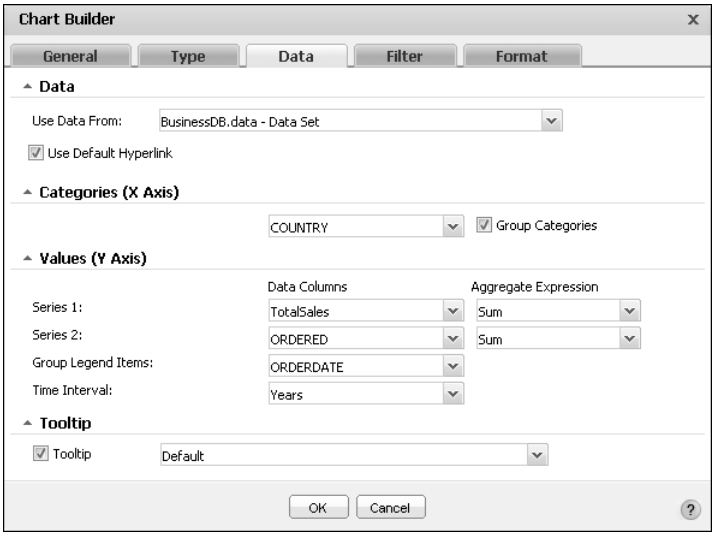


Figure 4-27 Selecting data to display as a bar, column, or line chart

Dashboard developers can use aggregate expressions to summarize data set values. Table 4-2 shows the aggregate expressions available in chart gadgets

Table 4-2 Aggregate expressions for chart gadgets

Function	Description
Average	Returns the average of the values.
Count	Returns the number of values, including duplicate values.
Distinct Count	Returns the number of values, excluding duplicate values.
First	Returns the first value among the values.
Last	Returns the last value among the values.
Max	Returns the largest value among the values.
Min	Returns the smallest value among the values.
Sum	Returns the sum of the values.

Chart gadgets can group category data received from a data set. Data from a cube is already aggregated and grouped. Chart gadgets support drill-down into of categories and series data from a cube. Drill-down by series requires Group Legend Items be set to a dimension in the cube.

For example, a user viewing a chart of sales data can drill-down from territory to country when location is set as a category. When the Group legend items is set to year, the user can drill-down to view sales in the quarters of a specific year while

still viewing the data for the selected location. Figure 4-28 shows an example of this type of drill-down analysis.

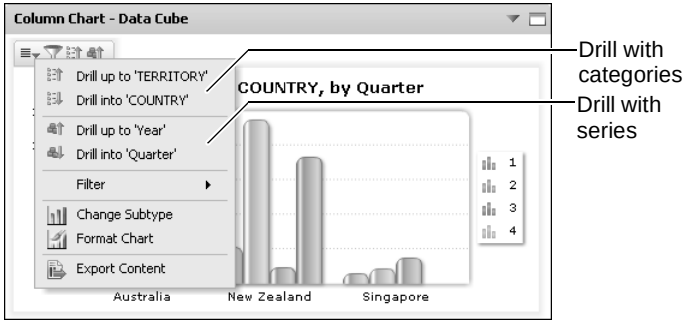


Figure 4-28 Drill choices in a data cube-based chart

Formatting a bar chart

You can format a bar chart gadget to modify its appearance on a dashboard. Figure 4-29 shows the elements that you can modify.

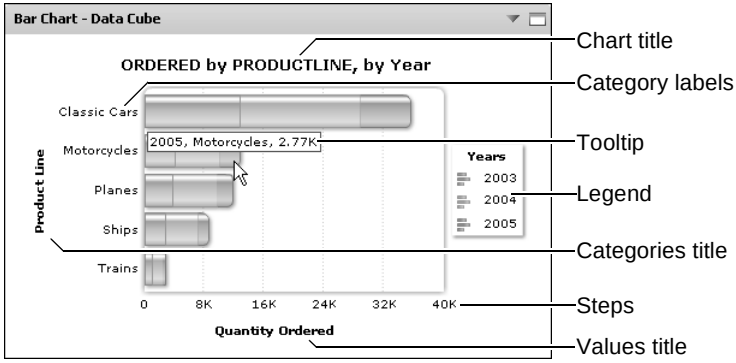


Figure 4-29 Displaying a stacked bar chart gadget

Choose edit from the gadget menu or create a new gadget to open Chart Builder. In Chart Builder, select Chart Builder—Format to see formatting options. The following formatting options are available for a bar chart:

- Change the title and appearance of the chart using the Chart options. If Auto is selected for the chart's title, the chart title changes as a user drills down to view more detailed data or drills up to view summary data. For example, a chart title of TotalSales by Country, changes to TotalSales by City when a user drills down to display cities of a selected country. Remove the Auto selection to prevent the title from changing.

  Figure 4-30 shows these options.

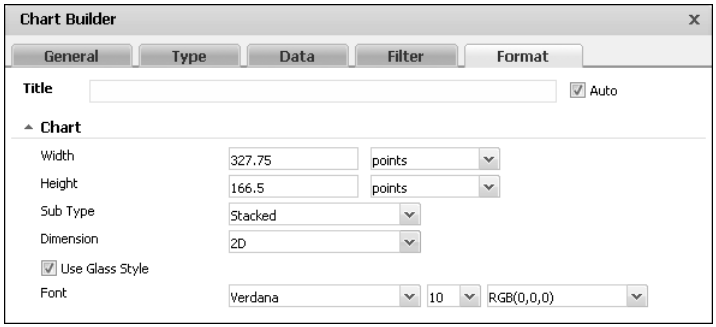


Figure 4-30 Formatting a bar chart

You can change the width and height of a bar chart. The chart appears three-dimensional when 2D with depth is selected in Dimension. You can customize the font attributes used in the chart, such as font, size, and color. If you are displaying multiple values, the chart subtype can be set to display these values side-by-side, stacked or percent stacked. Selecting the glass style displays the chart bars with a glass-like fill.

The dashboard developer can selected a color for the font used in the bar chart gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

- Change the chart legend using the Legend options, as shown in Figure 4-31.

Figure 4-31 Formatting a bar chart legend

The legend helps users identify multiple values displayed on the chart. When a user clicks on a legend value, the corresponding value on the chart is highlighted. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.

- Customize the presentation of the chart's axis values using the Categories and Values options.

  You can display titles and labels for both categories and values. The x-axis can display labels at an angle, staggered, and at intervals. For example, an interval of 2 displays every other label on the x-axis. To only show data between two values, you can set a minimum and maximum value for the Y-axis.

  When Auto step is enabled, the y-axis appears with horizontal lines and value markers. When Auto step is disabled, you can select a fixed number of vertical lines and value markers.

  Figure 4-32 shows these options.

Figure 4-32 Customizing axis values of a bar chart

Formatting a column chart

You can format a column chart gadget to modify its appearance on a dashboard. Figure 4-33 shows the elements that you can modify.

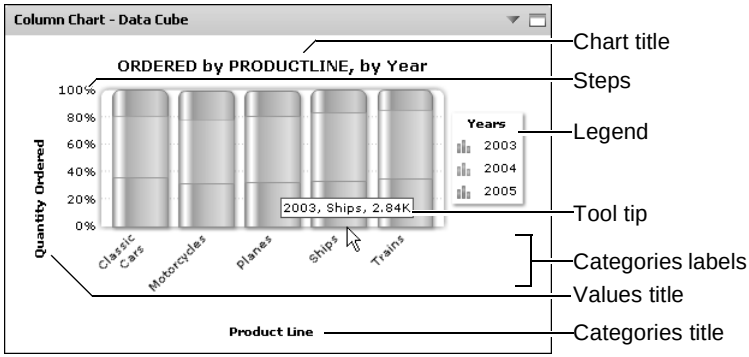


Figure 4-33 Displaying a percent stacked column chart

Choose edit from the gadget menu or create a new gadget to open Chart Builder. In Chart Builder, select Chart Builder—Format to see formatting options. The following formatting options are available for a column chart:

- Change the title and appearance of the chart using the Chart options

  If Auto is selected for the chart's title, the chart title changes as a user drills down to view more detailed data or drills up to view summary data. For example, a chart title of TotalSales by Country, changes to TotalSales by City when a user drills down to display cities of a selected country. Remove the Auto selection to prevent the title from changing.

  You can change the width and height of a column chart. The chart appears three-dimensional when 2D with depth is selected in Dimension. You can customize the font attributes used in the chart, such as font, size, and color. If

you are displaying multiple values, the chart subtype can be set to display these values side-by-side, stacked or percent stacked. Selecting the glass style displays the chart bars with a glass-like fill.

The dashboard developer can selected a color for the font used in the bar chart gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Figure 4-34 shows these options.

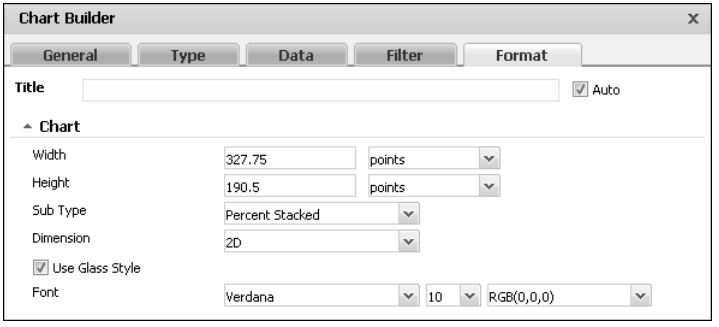


Figure 4-34 Formatting a column chart

- Change the chart legend using the Legend options, as shown in Figure 4-35.

Figure 4-35 Formatting a column chart legend

The legend helps users identify multiple values displayed on the chart. When a user clicks on a legend value, the corresponding value on the chart is highlighted. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.

- Customize the presentation of the chart's axis values using the Categories and Values options.

  You can display titles and labels for both categories and values. The x-axis can display labels at an angle, staggered, and at intervals. For example, an interval of 2 displays every other label on the x-axis. To only show data between two values, you can set a minimum and maximum value for the Y-axis.

  When Auto step is enabled, the y-axis appears with horizontal lines and value markers. When Auto step is disabled, you can select a fixed number of vertical lines and value markers.

  Figure 4-36 shows these options.

Figure 4-36 Customizing axis values of a column chart

Formatting a doughnut chart

You can format a doughnut chart gadget to modify its appearance on a dashboard. Figure 4-37 shows the elements that you can modify.

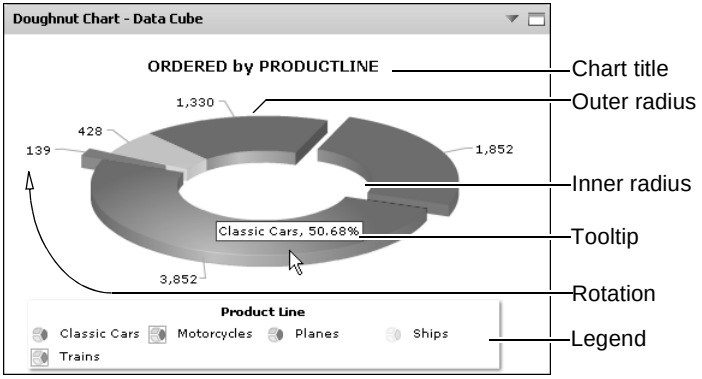


Figure 4-37 Displaying a doughnut chart

Choose edit from the gadget menu or create a new gadget to open Chart Builder. In Chart Builder, select Format to see formatting options. The following formatting options are available for a doughnut chart:

- Change the title and appearance of the chart using the Chart options.

  If Auto is selected for the chart's title, the chart title changes as a user drills down to view more detailed data or drills up to view summary data. For example, a chart title of TotalSales by Country, changes to TotalSales by City when a user drills down from countries to cities. Remove the Auto selection to prevent the title from changing.

  You can change the width, height, and radius size of a doughnut chart. The chart appears three-dimensional when 2D with depth is selected in Dimension. You can customize the font attributes used in the chart, such as

font, size, and color. To bring attention to specific parts of the chart you can change the starting rotation of the chart. Figure 4-38 shows these options.

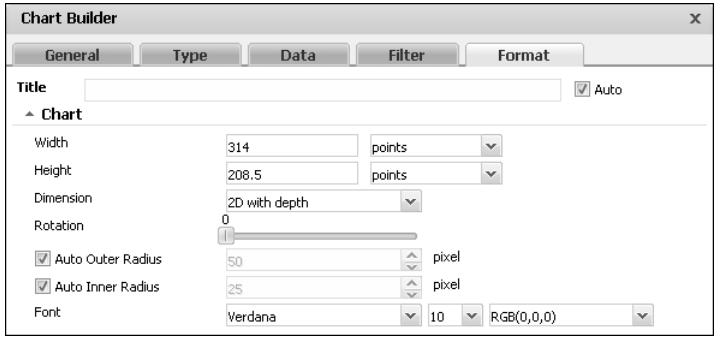


Figure 4-38 Formatting a doughnut chart

You can select a font color used in the doughnut chart. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

- Change the chart legend using the Legend options, as shown in Figure 4-39.

Figure 4-39 Formatting a doughnut chart legend

The legend helps users identify multiple values displayed on the chart. When a user clicks on a legend value, the corresponding value on the chart is hidden. Display a legend on the chart by selecting Show Legend and a position.

Formatting a line chart

You can format a line chart gadget to modify its appearance on a dashboard. Figure 4-40 shows the elements that you can modify.

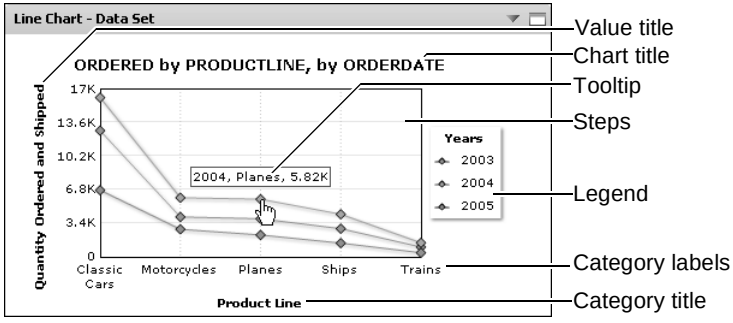


Figure 4-40 Displaying a line chart

Choose edit from the gadget menu or create a new gadget to open Chart Builder. In Chart Builder, select Chart Builder—Format to see formatting options. The following formatting options are available for a line chart:

- Change the title and appearance of the chart using the Chart options, as shown in Figure 4-41.

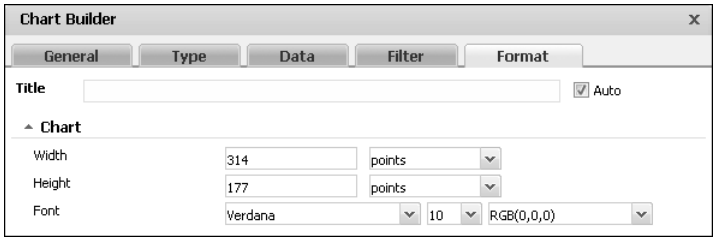


Figure 4-41 Formatting a line chart

If Auto is selected for the chart's title, the chart title changes as a user drills down to view more detailed data or drills up to view summary data. For example, a chart title of TotalSales by Country, changes to TotalSales by City when a user drills down to display cities of a selected country. Remove the Auto selection to prevent the title from changing.

You can change the width and height of a line chart. You can customize the font attributes used in the chart, such as font, size, and color.

The dashboard developer can selected a color for the font used in the line chart gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

- Customize the presentation of the chart's axis values using the Categories and Values options, as shown in Figure 4-42.

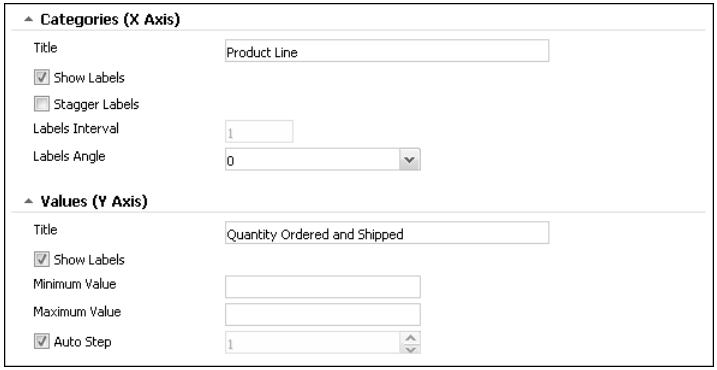


Figure 4-42 Customizing axis values of a line chart

You can display titles and labels for both categories and values. The x-axis can display labels at an angle, staggered, and at intervals. For example, an interval

of 2 displays every other label on the x-axis. To only show data between two values, you can set a minimum and maximum value for the Y-axis.

When Auto step is enabled, the y-axis appears with horizontal lines and value markers. When Auto step is disabled, you can select a fixed number of vertical lines and value markers.

- Change the chart legend using the Legend options, as shown in Figure 4-43.

Figure 4-43 Formatting a line chart legend

The legend helps users identify multiple values displayed on the chart. When a user clicks on a legend value, the corresponding value on the chart is highlighted. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.

Formatting a pie chart

You can format a pie chart gadget to modify its appearance on a dashboard. Figure 4-44 shows the elements that you can modify.

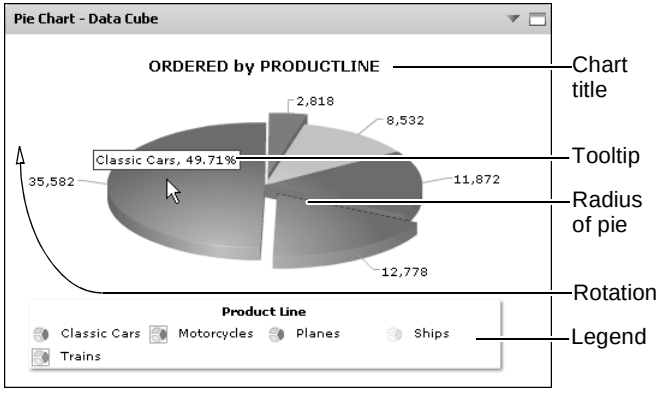


Figure 4-44 Displaying a pie chart in 3D

Choose edit from the gadget menu or create a new gadget to open Chart Builder. In Chart Builder, select Chart Builder—Format to see formatting options.

The following formatting options are available for a pie chart:

- Change the title and appearance of the chart using the Chart options. If Auto is selected for the chart's title, the chart title changes as a user drills down to view more detailed data or drills up to view summary data. For example, a chart title of TotalSales by Country, changes to TotalSales by City when a user

drills down to display detail values of a selected country. Remove the Auto selection to prevent the title from changing.

You can change the width, height, and radius size of a pie chart. The chart appears three-dimensional when 2D with depth is selected in Dimension. You can customize the font attributes used in the chart, such as font, size, and color. To bring attention to specific parts of the chart you can change the starting rotation of the chart.

Figure 4-45 shows these options.

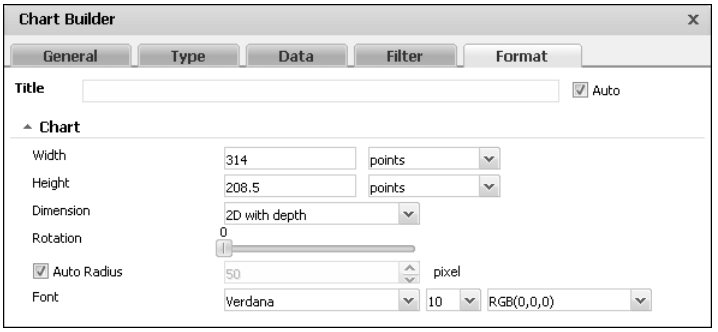


Figure 4-45 Formatting a pie chart

The dashboard developer can selected a color for the font used in the pie chart gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

- Change the chart legend using the Legend options, as shown in Figure 4-46.

Figure 4-46 Formatting a pie chart legend

The legend helps users identify multiple values displayed on the chart. When a user clicks on a legend value, the corresponding value on the chart is highlighted. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.

Using a cross-tab gadget

A cross tab displays data cubes in a row–and–column matrix that has a spreadsheet-like appearance. The cross tab is ideal for summarizing data in a compact and concise format, and displays summary, or aggregate values such as sums, counts, or averages. The cross tab groups these values by one set of data listed down the left side of the matrix and another set of data listed across the top of the matrix.

Crosstab gadgets display data cubes and can open in BIRT Data Analyzer for additional user analysis and to add a chart view to the cross tab. Users can format displayed values, export content, and export data using the context menu.

Dashboard developers can customize cross-tab gadget options using the Crosstab Builder—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a cross-tab gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a cross-tab gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Visualization.
3. Drag the crosstab gadget and drop it on the dashboard.
4. To specify the data presented in the Flash gadget, complete the following steps:
    1. Select a data source
    2. Select dimension, attribute, and measure fields to display in the cross tab
5. Limit displayed data with filter conditions, if desired, in Crosstab Builder—Filter.
6. Format the cross tab, if desired, in Crosstab Builder—Format.
7. Specify desired gadget display options in Chart Builder—General:
    - Display the header, border and scroll bar
    - Display a toolbar
    - Gadget title
    - Refresh rate
8. Choose OK to create the new gadget.

Enable interactive filtering by linking the cross tab to a data selection gadget. After the cross tab is placed on the dashboard, it links to data selection gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to a cross-tab gadget

Cross-tab gadgets display data from data cubes in BIRT data objects. Crosstab Builder—Data appears when the user adds this gadget to a dashboard or edits it, as shown in Figure 4-47. Users select a data cube from data objects already used on the dashboard. If the data object is not shown, the user adds a new data object to the dashboard, then selects a data cube.

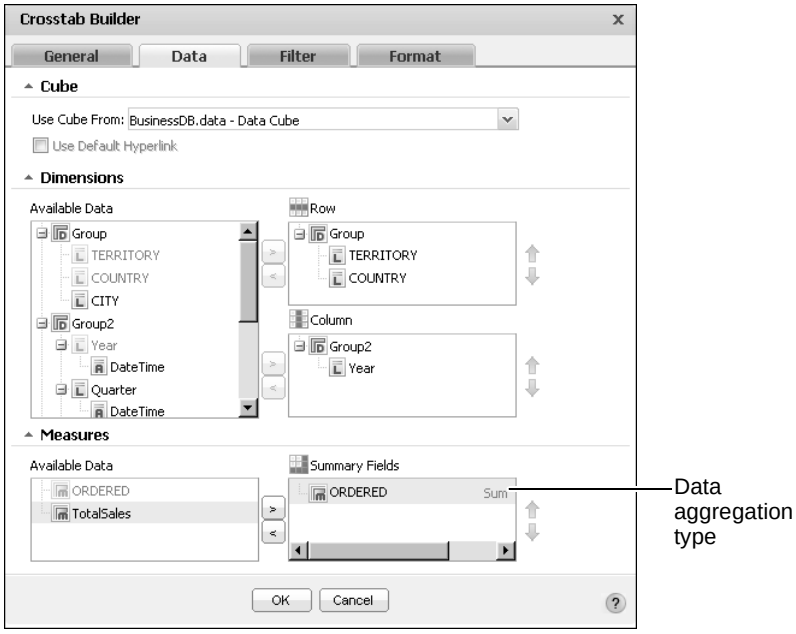


Figure 4-47 Selecting data to display as a cross tab

Select Use default hyperlink to display hyperlinks contained in data object. BIRT report developers can add hyperlinks to a data object using BIRT Designer Professional.

The dashboard developer assigns data to parts of the cross tab. Dimensions and attribute levels are assigned to rows or columns of the cross tab. Measures are assigned to summary fields. To select multiple values, press Ctrl as you select each value.

Dashboard developers can also limit the data that appears in the gadget by using Crosstab Builder—Filter to create filter conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

Formatting a cross tab gadget

You can format a cross-tab gadget to modify its appearance on a dashboard. Cross tab formatting supports the display of grand totals and subtotals for all rows and columns that contain two or more dimensions. Minimize loading time of large tables by enabling page breaks at the selected column and row intervals.

Choose edit from the gadget menu or create a new gadget to open Crosstab Builder. In Crosstab Builder, select Crosstab Builder—Format to see formatting options. Figure 4-48 shows the formatting options available for a cross-tab gadget.

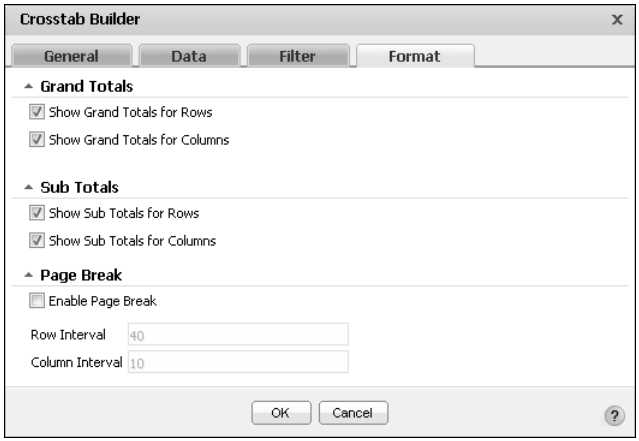
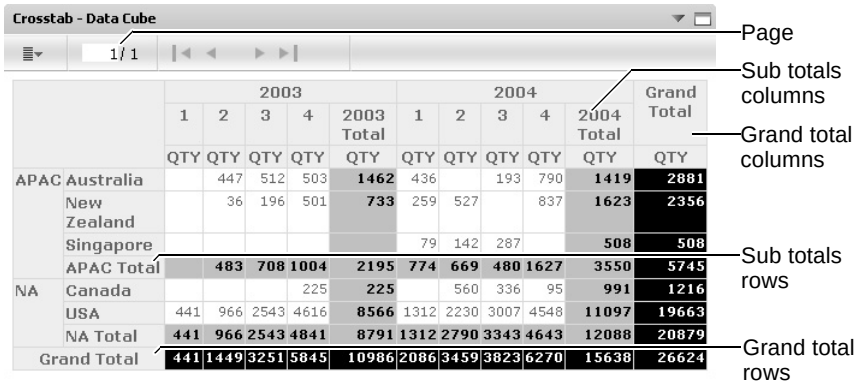


Figure 4-48 Formatting a cross tab

Figure 4-49 shows the elements of a cross tab that you can modify.



		2003					2004					Grand Total
		1	2	3	4	2003 Total	1	2	3	4	2004 Total	
		QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY
APAC	Australia		447	512	503	**1462**	436		193	790	**1419**	**2881**
	New Zealand		36	196	501	**733**	259	527		837	**1623**	**2356**
	Singapore						79	142	287		**508**	**508**
	APAC Total		**483**	**708**	**1004**	**2195**	**774**	**669**	**480**	**1627**	**3550**	**5745**
NA	Canada				225	**225**		560	336	95	**991**	**1216**
	USA	441	966	2543	4616	**8566**	1312	2230	3007	4548	**11097**	**19663**
	NA Total	**441**	**966**	**2543**	**4841**	**8791**	**1312**	**2790**	**3343**	**4643**	**12088**	**20879**
Grand Total		**441**	**1449**	**3251**	**5845**	**10986**	**2086**	**3459**	**3823**	**6270**	**15638**	**26624**

Figure 4-49 Displaying a crosstab gadget

Maximizing a cross-tab gadgets launches the browser-based tool BIRT Data Analyzer to analyze and edit the cross tab.

Using a Flash gadget

Flash gadgets display data as an animated Adobe Flash-based image. The difference between a chart gadget and a flash gadget is that a flash gadget typically displays a single value whereas a chart plots multiple values for comparison. Users can filter displayed data and export content using the context menu.

Dashboard developers can customize flash gadget options using the Gadget Builder—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

When adding or editing a flash gadget, you can change the Flash type displayed in the gadget, as shown in Figure 4-50.

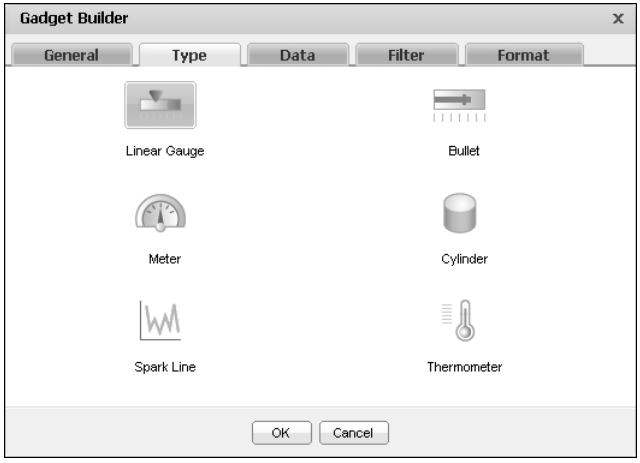


Figure 4-50 Selecting a flash gadget type

How to create a Flash gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a Flash gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Visualization.
3. Drag a Flash gadget and drop it on the dashboard.
4. To specify the data presented in the Flash gadget, complete the following steps:
   1. Select a data source
   2. Select fields from the data source to display in the Flash gadget
5. Limit displayed data with filter conditions, if desired, in Gadget Builder—Filter.
6. Format the Flash gadget, if desired, in Gadget Builder—Format.
7. Specify desired gadget display options in Gadget Builder—General:
   - Display the header, border, and scroll bar
   - Gadget title
   - Refresh rate
8. Choose OK to create the new gadget.

Enable interactive filtering by linking the Flash gadget to a data selection gadget. After the Flash gadget is placed on the dashboard, it links to data selection gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to Flash gadgets

Editing or adding an Adobe Flash gadget to a dashboard displays Gadget Builder—Data, where the developer selects data to display. A flash gadget can display any data set or data cube from a data object file.

Dashboard developers can also limit the data that appears in the gadget by using Gadget Builder—Filter to create filter conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

If hyperlinks exist in the data object file, they can appear in the gadget by selecting Gadget Builder—Data—Use default hyperlink.

The developer assigns data to the different parts of the gadget. Each Flash gadget type has a different way of presenting data.

Linear and meter Flash gadgets support multiple values and data aggregation, as shown in Figure 4-51.

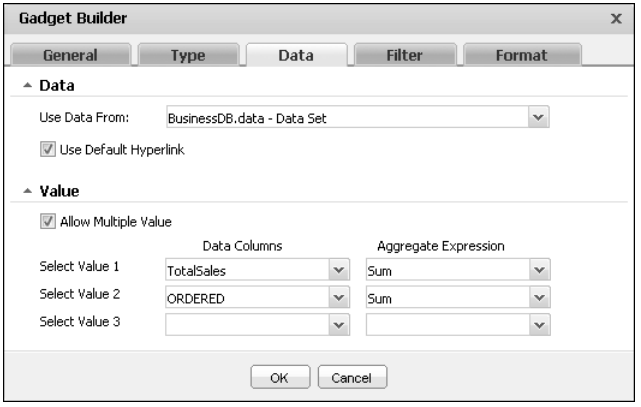


Figure 4-51 Selecting data to display as a meter or linear gauge

Dashboard developers can use aggregate expressions to summarize data set values in the gadget. Table 4-3 shows the aggregate expressions available in flash gadgets

Table 4-3 Aggregate expressions for Flash gadgets

Function	Description
Average	Returns the average of the values.

(continues)

Table 4-3 Aggregate expressions for Flash gadgets (continued)

Function	Description
Count	Returns the number of values, including duplicate values.
Distinct Count	Returns the number of values, excluding duplicate values.
First	Returns the first value among the values.
Last	Returns the last value among the values.
Max	Returns the largest value among the values.
Min	Returns the smallest value among the values.
Sum	Returns the sum of the values.

Bullet, cylinder, and thermometer Flash gadgets support a single value and data aggregation, as shown in Figure 4-52.

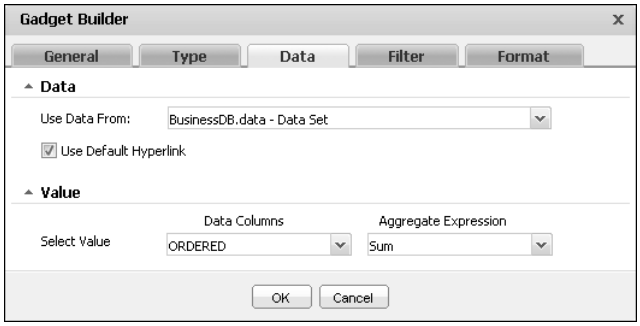


Figure 4-52 Selecting data to display as a bullet, cylinder, or thermometer

Spark line flash gadgets support a single value and selecting a second value for grouping the data from a data cube, as shown in Figure 4-53.

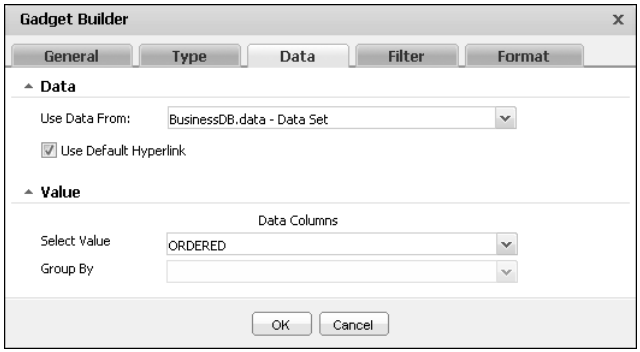


Figure 4-53 Selecting data to display as a spark line

Grouping data enables you to see the aggregated measure value for a specific dimension. For example, grouping the values by the dimension of month displays the aggregated values for each month, and shows the opening, closing, high and low values for the entire spark line.

Formatting a bullet gadget

You can format a bullet gadget to modify its appearance on a dashboard. Figure 4-54 shows the formatting elements that you can modify.

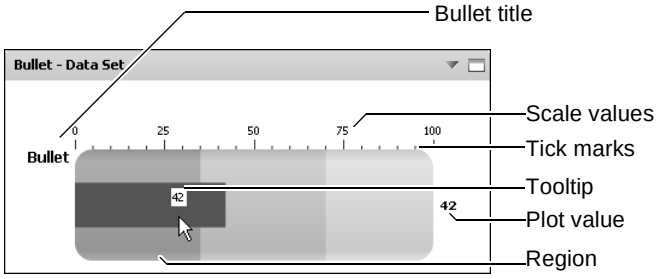


Figure 4-54 Displaying a horizontal bullet gadget

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options. The following formatting options are available for a bullet gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-55.

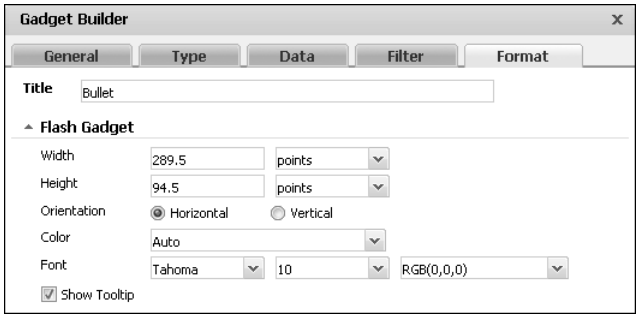


Figure 4-55 Formatting flash gadget options

The dashboard developer can change the orientation and dimensions of the flash gadget. You can customize the color of the displayed value and the font attributes used in the gadget, such as font, size and color.

- Change the appearance of data values using the Plot and Scale options.

  Dashboard developers can display plot and scale values on the gadget. Set a limit on the displayed value by setting a minimum and maximum value to the Scale. For example, if the gadget is showing scale values up to 2000 but the

actual value is less than 1000, you can set the maximum value of the scale to be 1200.

Figure 4-56 shows these options.

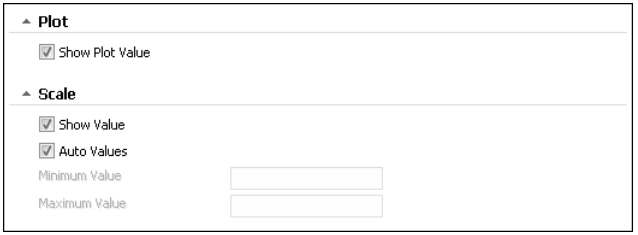


Figure 4-56 Formatting flash gadget data values

- Change the appearance of the gadget using the Region and Tick Marks options, as shown in Figure 4-57.

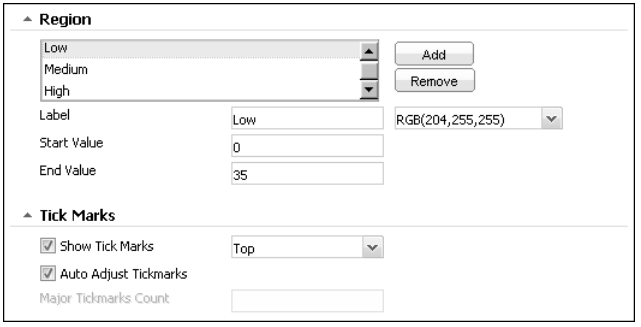


Figure 4-57 Formatting the region and tick marks

You can add colored regions to appear on the gadget by adding a region and assigning a start value, end value, and a color for the region.

Enabling Auto adjust tick marks displays a calculated number of ticks. Disable Auto adjust tick marks to display a fixed number of ticks.

The dashboard developer can select colors for the gadget, the font used, and the regions in the bullet gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Formatting a cylinder gadget

You can format a cylinder gadget to modify its appearance on a dashboard.

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options.

Figure 4-58 shows the elements you can modify.

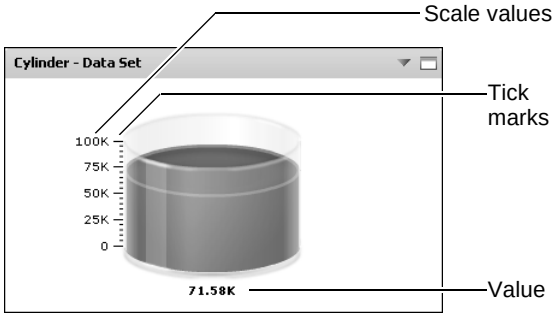


Figure 4-58 Displaying a cylinder gadget

The following formatting options are available for a cylinder gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-59.

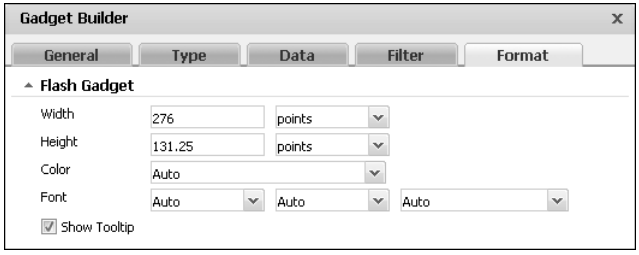


Figure 4-59 Formatting flash gadget options

The dashboard developer can change the dimensions of the flash gadget. You can customize the color of the displayed value and the font attributes used in the gadget, such as font, size and color.

- Change the appearance of data values using the Value and Scale options, as shown in Figure 4-60.

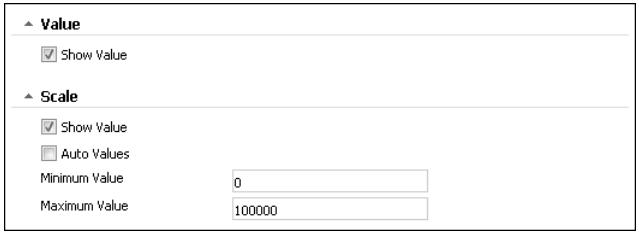


Figure 4-60 Formatting flash gadget data values

Dashboard developers can display plot and scale values on the gadget. Set a limit on the displayed value by setting a minimum and maximum value to the Scale. For example, if the gadget is showing scale values up to 2000 but the

actual value is less than 1000, you can set the maximum value of the scale to be 1200.

- Change the appearance of the gadget using the Tick Marks options, as shown in Figure 4-61.

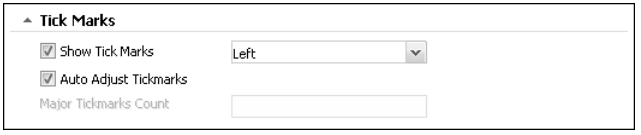


Figure 4-61 Formatting the tick marks

Enabling Auto adjust tick marks displays a calculated number of ticks. Disable Auto adjust tick marks to display a fixed number of ticks.

You can select the colors and font used in the cylinder. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Formatting a linear gauge gadget

You can format a linear gauge gadget to modify its appearance on a dashboard. Figure 4-62 shows the elements you can modify.

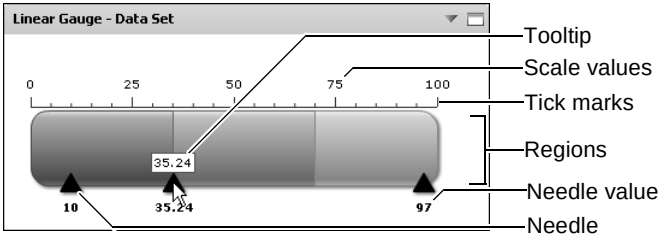


Figure 4-62 Displaying a linear gauge gadget

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options. The following formatting options are available for a linear gauge gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-63.

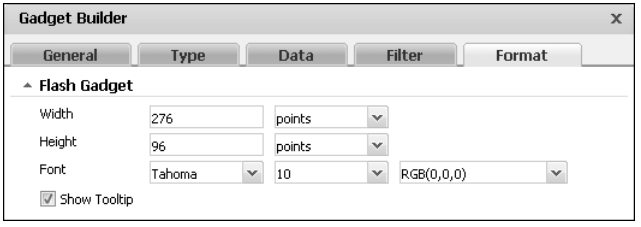


Figure 4-63 Formatting flash gadget options

The dashboard developer can change the dimensions of the flash gadget. You can customize the font attributes used in the gadget, such as font, size and color.

- Change the appearance of data values using the Needle and Scale options, as shown in Figure 4-64.

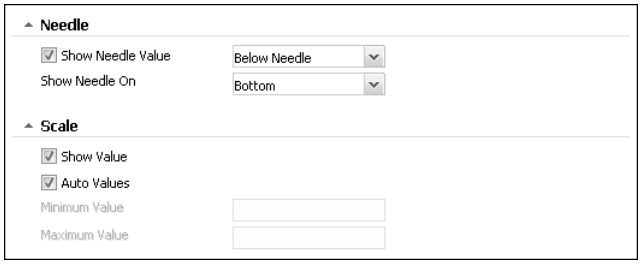


Figure 4-64 Formatting flash gadget data values

You can display the needles and needle values at the top or the bottom of the gadget.

Dashboard developers can display scale values on the gadget. Set a limit on the displayed value by setting a minimum and maximum value to the Scale. For example, if the gadget is showing scale values up to 2000 but the actual value is less than 1000, you can set the maximum value of the scale to be 1200.

- Change the appearance of the gadget using the Region and Tick Marks options, as shown in Figure 4-65.

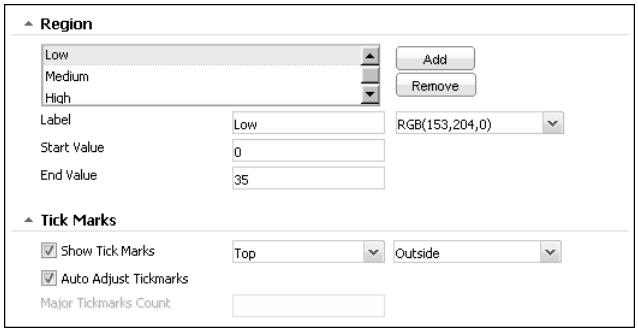


Figure 4-65 Formatting the region and tick marks

You can add colored regions to appear on the gadget by adding a region and assigning a start value, end value, and a color for the region.

Enabling Auto adjust tick marks displays a calculated number of ticks. Disable Auto adjust tick marks to display a fixed number of ticks.

You can select the colors and font used in the linear gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Formatting a meter gadget

You can format a meter gadget to modify its appearance on a dashboard. Figure 4-66 shows the formatting elements you can modify.

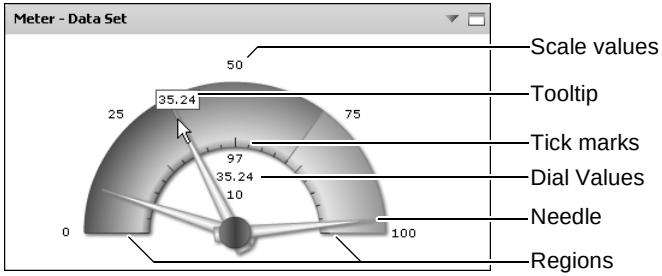


Figure 4-66 Displaying a meter gadget

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options. The following formatting options are available for a meter gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-67.

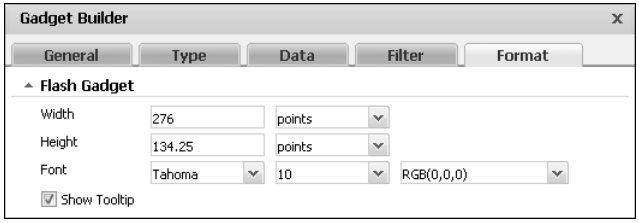


Figure 4-67 Formatting flash gadget options

The dashboard developer can change the dimensions of the flash gadget and customize the gadget font attributes, such as font, size and color.

- Change the appearance of data values using the Dial and Scale options, as shown in Figure 4-68.

Figure 4-68 Formatting flash gadget data values

Selecting Show dial value displays the needle values. You can display dial values above or below the meter.

Dashboard developers can display scale values on the gadget. Set a limit on the displayed value by setting a minimum and maximum value to the Scale. For example, if the gadget is showing scale values up to 2000 but the actual value is less than 1000, you can set the maximum value of the scale to be 1200.

- Change the appearance of the gadget using the Region and Tick Marks options, as shown in Figure 4-69.

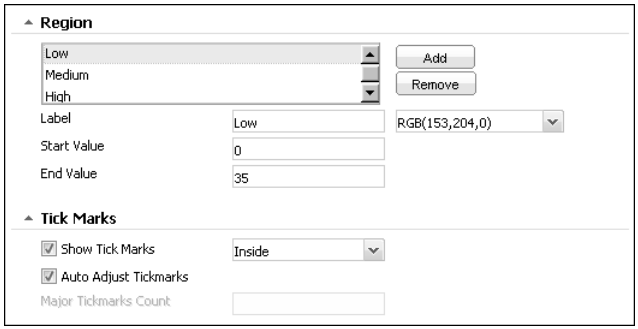


Figure 4-69 Formatting the region and tick marks

You can add colored regions to appear on the gadget by adding a region and assigning a start value, end value, and a color for the region.

Enabling Auto adjust tick marks displays a calculated number of ticks. Disable Auto adjust tick marks to display a fixed number of ticks.

The dashboard developer can select colors for the font used and the regions in the meter gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Formatting a spark line gadget

You can format a spark line gadget to modify its appearance on a dashboard. Figure 4-70 shows the formatting elements you can modify.

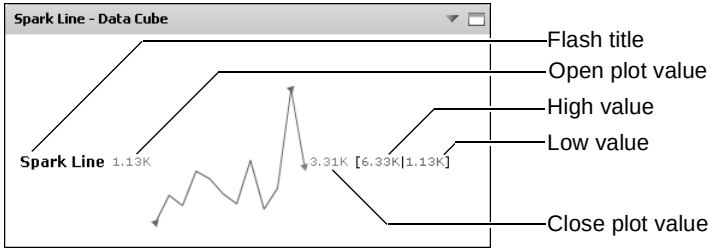


Figure 4-70 Displaying a spark line gadget

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options. The following formatting options are available for a spark line gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-71.

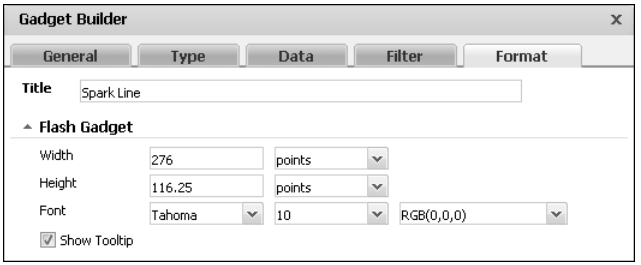


Figure 4-71 Formatting flash gadget options

The dashboard developer can change the dimensions of the flash gadget. You can customize the font attributes used in the gadget, such as font, size and color.

- Change the appearance of data values using the Plot and Value options, as shown in Figure 4-72.

Figure 4-72 Formatting flash gadget data values

Dashboard developers can display the open, close, high, and low plot values on the gadget. Set a limit on the displayed value by setting a minimum and maximum value in Value. For example, if the gadget is showing values up to 2000 but the actual value is less than 1000, you can set the maximum value to be 1200.

The dashboard developer can select a color for the font used in the spark line gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Formatting a thermometer gadget

You can format a thermometer gadget to modify its appearance on a dashboard. Figure 4-73 shows the formatting elements you can modify.

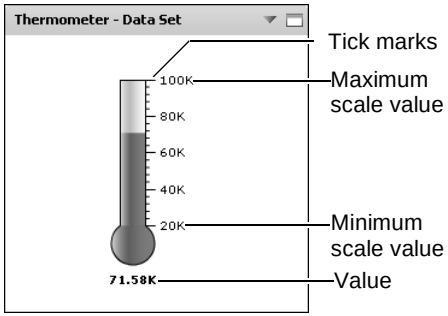


Figure 4-73 Displaying a thermometer gadget

Choose edit from the gadget menu or create a new gadget to open Gadget Builder. In Gadget Builder, select Gadget Builder—Format to see formatting options. The following formatting options are available for a thermometer gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-74.

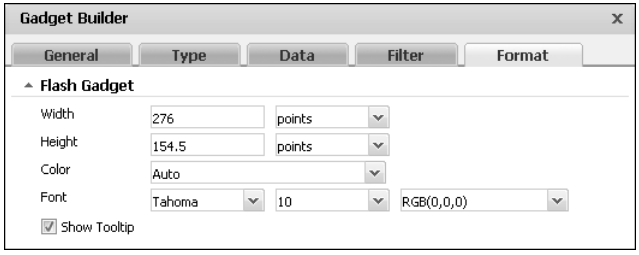


Figure 4-74 Formatting flash gadget options

The dashboard developer can change the dimensions of the flash gadget. You can customize the color of the displayed value and the font attributes used in the gadget, such as font, size and color.

- Change the appearance of data values using the Value and Scale options, as shown in Figure 4-75.

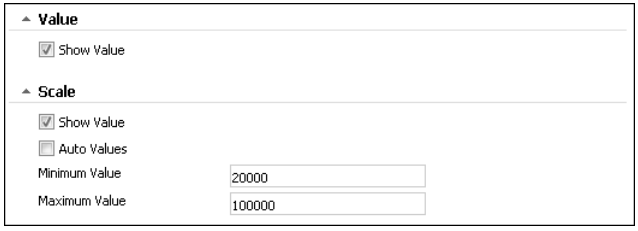


Figure 4-75 Formatting flash gadget data values

Dashboard developers can display value and scale values on the gadget. Set a limit on the displayed value by setting the Scale minimum and maximum value. For example, if the gadget is showing scale values up to 2000 but the actual value is less than 1000, you can set the maximum value of the scale to be 1200.

- Change the appearance of the gadget using the Tick Marks options, as shown in Figure 4-76.

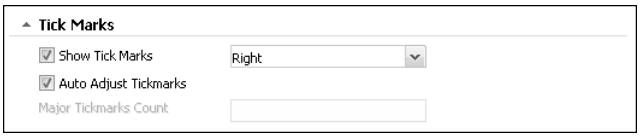


Figure 4-76 Formatting the region and tick marks

Enabling Auto adjust tick marks displays a calculated number of ticks. Disable Auto adjust tick marks to display a fixed number of ticks.

The dashboard developers can select colors for the gadget and the font used in the thermometer gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Using a Flex table gadget

Flex table gadgets display data sets in a row–and–column matrix and switch between a detailed table of all values in the data set or a summary table of aggregated values in the data set. Aggregate values of a Flex Table can expand to view the data making up the aggregate value. Users can filter displayed data and export data using the context menu.

Dashboard developers can customize Flex table gadget options using the Flex Builder—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a Flex table gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a Flex table gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Visualization.
3. Drag the Adobe Flex Table gadget and drop it on the dashboard.
4. To specify the data presented in the Flex table gadget, complete the following steps:
    1. Select a data source.
    2. Select any fields to display when using tabular format.

3 Select dimension, attribute, and measure fields to display when using summary format.

5 Limit displayed data with filter conditions, if desired, in Flex Builder—Filter.

6 Format the Flex table gadget, if desired, in Flex Builder—Format.

7 Specify desired gadget display options in Flex Builder—General:

- Display the header, border, and scroll bar
- Gadget title
- Refresh rate

8 Choose OK to create the new gadget.

Enable interactive filtering by linking the Flex table to a data selection gadget. After the Flex table is placed on the dashboard, it links to data selection gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to a flex table gadget

Adding this gadget to a dashboard or editing it, displays Flex Builder—Data, as shown in Figure 4-77.

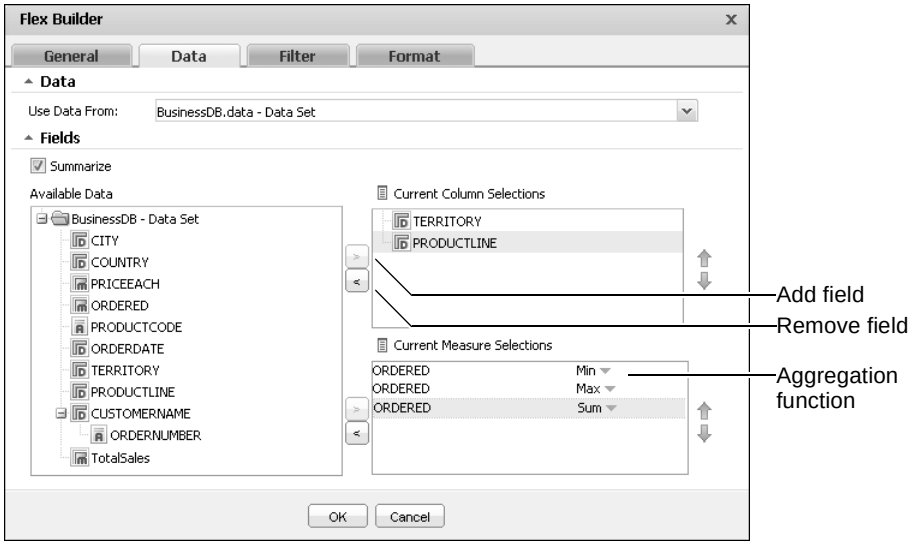


Figure 4-77 Assigning data to display in a Flex table gadget

Dashboard developers select a data set from data objects already on the dashboard or add a new data object from available data objects on the BIRT iServer. Filtering data sets occurs before the data appears in the gadget.

The dashboard developer assigns data to different parts of the Flex table. To select multiple values, press Ctrl as you select each value.

Flex table columns support the use of all data fields unless Summarize is selected. When Summarize is selected, the Flex table aggregates measures in the table. When fields are summarized, Current Column Selections only supports dimensions and attributes. Choose Summarize in Flex Builder—Data to enable a summary table.

Displaying a summary table requires both measures and dimensions from the data object. The table displays aggregations of the data set when summarize is selected.

Summary Flex tables can summarize measure values using the aggregation functions shown in Table 4-4:

Table 4-4 Aggregate functions for a Flex table

Function	Description
Average	Returns the average of the values.
Count	Returns the number of values, including duplicate values.
Max	Returns the largest value among the values.
Min	Returns the smallest value among the values.
Sum	Returns the sum of the values.

Dashboard developers can also limit the data that appears in the gadget by using Flex Builder—Filter to create filter conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

Formatting a Flex table gadget

You can format a Flex table gadget to modify its appearance on a dashboard. Figure 4-78 displays the elements of a Flex table gadget that you can modify.

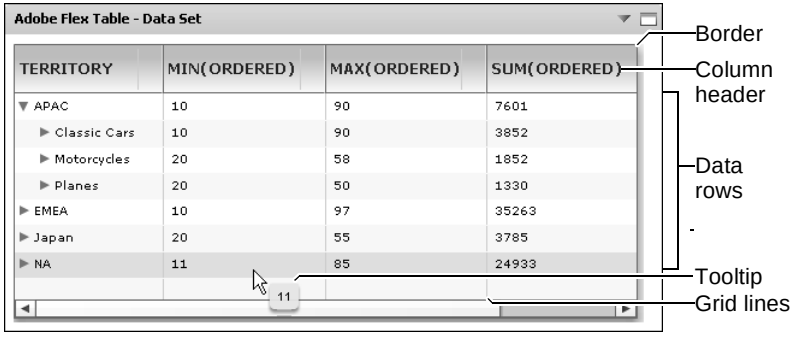


Figure 4-78 Displaying a Flex table gadget

Choose edit from the gadget menu or create a new gadget to open Flex Builder. In Flex Builder, select Flex Builder—Format to see formatting options. The following formatting options are available for a Flex table gadget:

- Customize the appearance of the table header using the Column Header options, as shown in Figure 4-79.

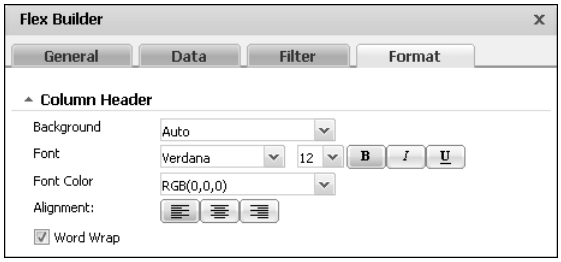


Figure 4-79 Formatting headers of a Flex table

You can customize the font attributes used in the header, such as alignment, color, font, and size. You can selected a color for the font and background.

- Customize the appearance of the table rows using the Data Row options, as shown in Figure 4-80.

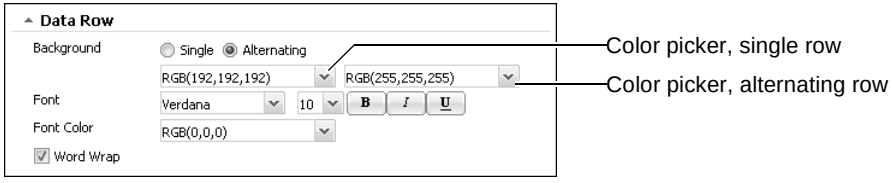


Figure 4-80 Formatting the data row

The dashboard developer can set a color for every other row by selecting an alternating background color in Data Row. You can customize the font attributes used in the rows, such as color, font, and size.

- Customize the border and grid displayed in the table using the General Properties options, as shown in Figure 4-81.

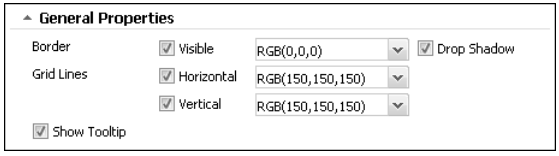


Figure 4-81 Formatting the table border and grid

If you display a border and grid lines you can select a color to for them. You can select colors for the Column Header, the Data Row, and the General Properties of the Flex table gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Using a table gadget

A table displays data sets in a row-and-column format. Summarizing table data presents aggregate data information in a report, providing users with a concise view of the data. For example, a table can display order dates, order numbers and the total value of every order or group values by month to show the monthly sum of orders.

Table gadgets display data from a BIRT data object or data object design file. Dashboard developers can limit the data displayed using filters. If the displayed data includes hyperlinks on the values those links are visible to gadget users.

For example, a BIRT data object listing order numbers and customer names, has hyperlinks on the order number that takes a user to the actual order. When displayed in a table, all values in the order numbers column have hyperlinks that a user can select. Selecting the order number hyperlink opens the order in the user's browser.

Table values support formatting, conditional formatting, grouping, sorting, aggregation and computed column creation when the context menu is used in the table.

Dashboard developers can customize table gadget options using the Table Builder—General options. For more information about general options, see "Setting general gadget options," earlier in this chapter.

How to create a table gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a table gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Visualization.
3. Drag the table gadget and drop it on the dashboard.
4. To specify the data presented in the table gadget, complete the following steps:
    1. Select a data source
    2. Select any fields to display when using tabular format
    3. Select dimension, attribute, and measure fields to display when using summary format
5. Limit displayed data with filter conditions, if desired, in Table Builder—Filter.
6. Format the table gadget, if desired, in Table Builder—Format.
7. Specify desired gadget display options in Table Builder—General:
    - Display the header and border

- Display a scroll bar
- Display a toolbar
- Gadget title
- Refresh rate

8 Choose OK to create the new gadget.

Enable interactive filtering by linking the table to a data selection gadget. After the table is placed on the dashboard, it links to data selection gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to a table gadget

Adding this gadget to a dashboard or editing it, displays Table Builder—Data, as shown in Figure 4-82. Developers select a data set from data objects already on the dashboard or add a new data object from available data objects on the BIRT iServer.

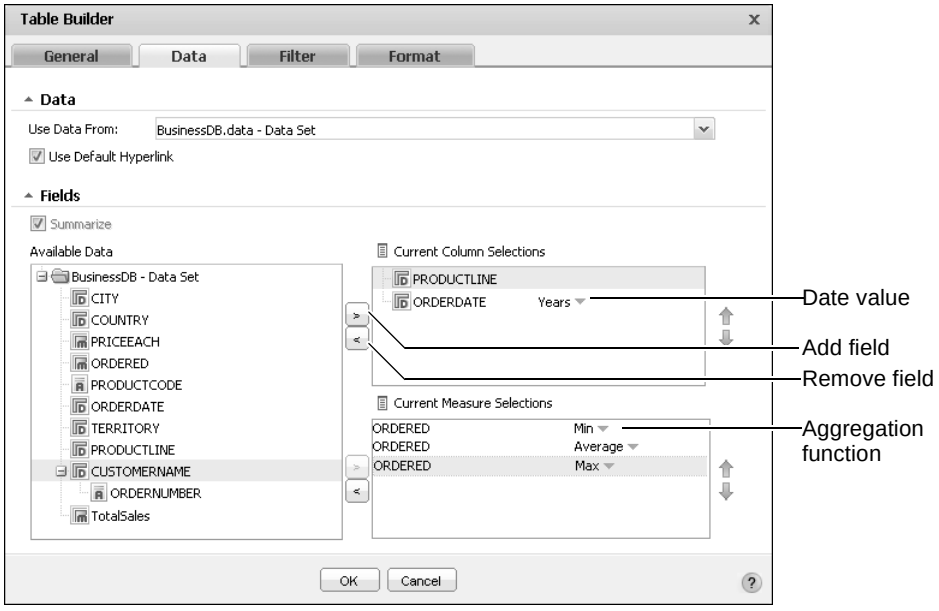


Figure 4-82 Selecting data to summarize in a table gadget

If hyperlinks exist in the data object, they appear in the table when Use default hyperlink is selected. For example, a BIRT developer can add hyperlinks to invoice numbers that open a report on customer invoices. Users can select the invoice number to activate the corresponding hyperlink.

The developer assigns data to different parts of the table. To select multiple values, press Ctrl as you select each value.

Table columns support the use of all data fields unless the table is a summary table. A summary table supports aggregating measures in the table. When fields are summarized, columns only use dimensions and attributes. Choose Table Builder—Data—Fields—Summarize to enable summary tables.

Displaying a summary table requires both measures and dimensions from the data object. The table displays aggregations of the data set when summarize is selected. Summary tables can aggregate dates values using the following intervals, as shown in Figure 4-82:

- Years
- Quarters
- Months
- Weeks
- Days
- Hours
- Minutes
- Seconds

Summary tables can summarize measure values using the aggregation functions shown in Table 4-5:

Table 4-5 Aggregate functions

Function	Description
Average	Returns the average of the values.
Count	Returns the number of values, including duplicate values.
Count distinct	Returns the number of values, excluding duplicate values.
First	Returns the first value among the values.
Last	Returns the last value among the values.
Max	Returns the largest value among the values.
Median	Returns the median, or middle value among the values.
Min	Returns the smallest value among the values.
Mode	Returns the mode, or the value that occurs most frequently among the values.
Standard Deviation	Returns the standard deviation of a set of values. Standard deviation is a statistic that shows how widely values disperse from the mean value. If a set of values contains 50, 75, 80, 90, and 95, standard deviation returns 17.536.

(continues)

Table 4-5 Aggregate functions (continued)

Function	Description
Sum	Returns the sum of the values.
Variance	Returns the variance of a set of values. Variance is a statistical measure expressing the size of the differences between the values. The variance increases as the differences between the numbers increase. If a set of values contains 50, 75, 80, 90, and 95, Variance returns 307.5. If a set of values contains 5, 2, 5, 7, and 10, variance returns 8.7.

Figure 4-83 shows a summary table that aggregates data from a data set to show sub totals and grand totals.

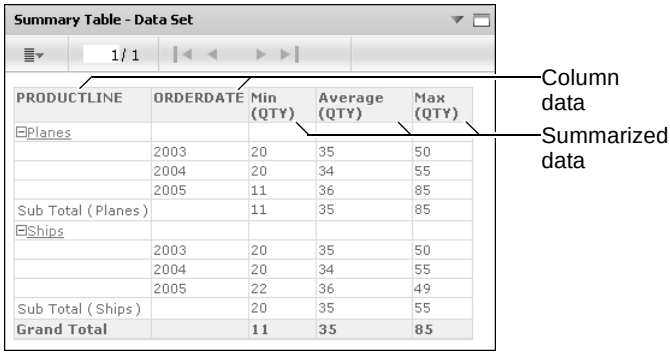


Figure 4-83 Summarizing data using a table gadget

Dashboard developers can also limit the data that appears in the gadget by using Table Builder—Filter to create filter conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

Formatting a table gadget

You can format a table gadget to modify its appearance on a dashboard. Figure 4-84 displays the elements of a table gadget that you can modify.

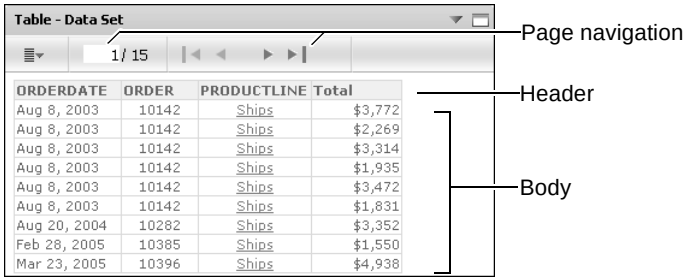


Figure 4-84 Displaying a table gadget

Choose edit from the gadget menu or create a new gadget to open Table Builder. In Table Builder, select Table Builder—Format to see formatting options. The following formatting options are available for a table gadget:

- Customize the appearance of the table header using the Header options, as shown in Figure 4-85.

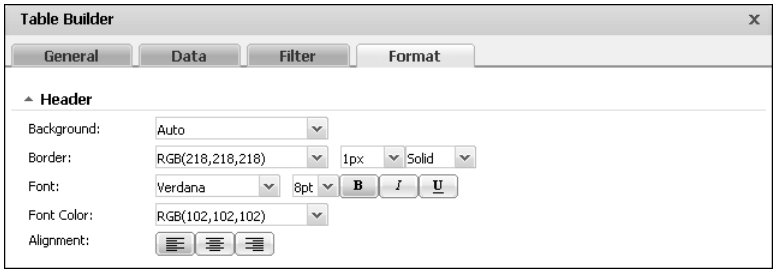


Figure 4-85 Formatting headers of a table gadget

You can customize the background, border, and font attributes used in the table header, such as alignment, color, font, and size.

- Customize the appearance of the table rows using the Body and Page Break options, as shown in Figure 4-86.

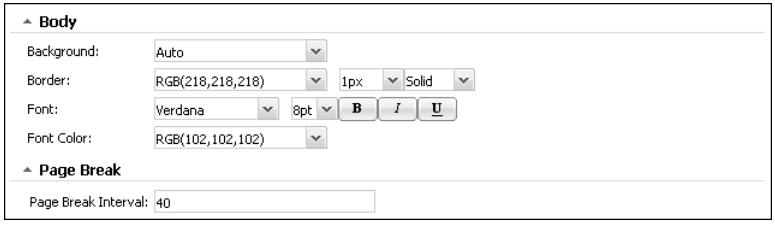


Figure 4-86 Formatting the body rows of a table gadget

You can customize the background, border, and font attributes used in the table rows, such as alignment, color, font, and size. The dashboard developer can also define page breaks in large amounts of data using Page Break Interval and selecting how many rows can be in each page.

The dashboard developer can select colors for the Column Header, the Data Row, and the General Properties of the Flex table gadget. For more information about selecting colors, see "Using the color picker," earlier in this chapter.

Customizing data visualization gadgets

In addition to formatting each data visualization gadget, dashboard developers can customize font and table attributes for all data visualization gadgets by modifying Themes Report Items library. The theme library is edited using

Actuate BIRT Designer Professional or Actuate BIRT Studio, and is located in the Resources folder in an Encyclopedia volume, for example:

```
/Resources/ThemesReportItems.rptlibrary
```

The ThemesReportItems library contains cascading stylesheet values that can be modified to change the display of all data visualization gadgets. All the default-<report item name> themes defined in the library are used as the default theme for the data visualizations:

- default-table
- default-crosstab
- default-flashchart
- default-flashgadget
- default-chart

If a cross-tab gadgets is assigned a theme in BIRT Data Analyzer, that theme is used in place of the default-crosstab theme. For more information about using themes with crosstabs, see *Using BIRT Data Analyzer*.

For more information about managing style sheets for Information Console, see *Information Console Developer Guide*. Also see *BIRT: A Field Guide* and *Integrating and Extending BIRT*, both published by Addison-Wesley.

About data selection gadgets

Data selection gadgets helps users select data to display in gadgets. Users can filter data being displayed on a dashboard by using data selection gadgets. These gadgets present the user with values taken from BIRT data objects. Other gadgets, such as data visualization and report gadgets, enable users to filter their content by linking to the data selection gadgets. Dashboard developers can filter, format, and sort values that display in the data selection gadgets.

Table 4-6 describes the data selection gadgets available to use in a dashboard.

Table 4-6 Data selection gadget types

Icon	Type	Purpose
	Calendar	Calendar gadgets display data from a data object as a calendar where a user can select day, month, or year. Users can select a single value.
	Check Box	Check box gadgets display data from a data object with a check box next to each value. Users can select multiple check boxes.

(continues)

Table 4-6 Data selection gadget types (continued)

Icon	Type	Purpose
	Combo Box	Combo box gadgets display data from a data object in a drop down box. This gadget supports manual typing and autosuggestion of values.
	Data Version	Data Version gadgets display available versions of BIRT data stores for a user to choose. Changing a data store version updates all gadgets using the data store.
	List	List gadgets display values from a data object in rows. This gadget supports multivalue selections and searching of list items. Press the Shift key while selecting multiple, separate values; press the Control key while selecting a range of values.
	Radio Button	Radio button gadgets display data from a data object with a radio button next to each value. Users can select a single value to include.
	Slider	Slider gadgets display data from a data object as a sliding bar with tick marks next to known values. This gadget supports multivalue selections.

Figure 4-87 shows the different data selection gadgets.

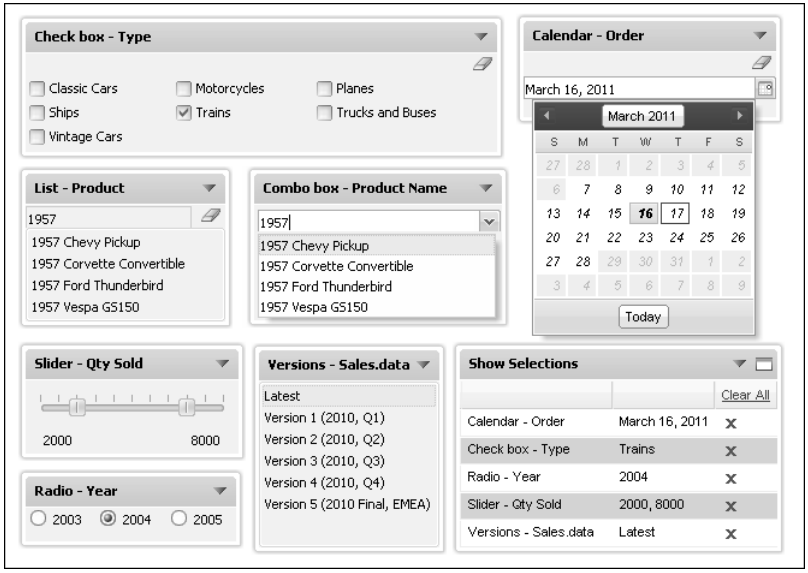


Figure 4-87 Displaying data selection gadgets

The calendar and slider can optionally be used without binding to a BIRT data object. Dashboard developers can set fixed values in these gadgets.

Gadgets that link to a data selection gadget filter data according to the configuration of the data selection gadget. The available filter operators used by data selection gadgets are shown in Table 4-7.

Table 4-7 Operators used by data selection gadgets

Operator	Calendar	Check box	Combo Box	List	Radio	Slider
Any of		✓		✓		
Between						✓
Equal to	✓		✓	✓	✓	✓
Greater than	✓					✓
Greater than or equal to	✓					✓
Less than	✓					✓
Less than or equal to	✓					✓

Dashboard developers can select which operator to use in calendar and slider gadgets.

Multiple data selection gadgets can be linked to each other to enable users to select detailed information. For example, a list gadget showing customer names and a list gadget showing order numbers can be linked together. When a user selects a customer name, the customer's order numbers appear in the list gadget showing order numbers. Dashboard developers link a report gadget to the list gadget showing order numbers, causing the report gadget to show data about the selected order.

For more information about linking gadgets, see "About linking to gadgets" in Chapter 6, "Linking and scripting gadgets."

Using a data selection gadget

Each data selection gadget has the following configuration options that are available by choosing Edit in the gadget menu:

- Data options for assigning data to display in the gadget
- Filter options to limit the displayed data in the gadget
- Format options for each type of gadget
- General options to set how the gadget appears on the dashboard
- Type option to change the type of an existing gadget

Figure 4-88 shows Data Selector Gadget Wizard—General.

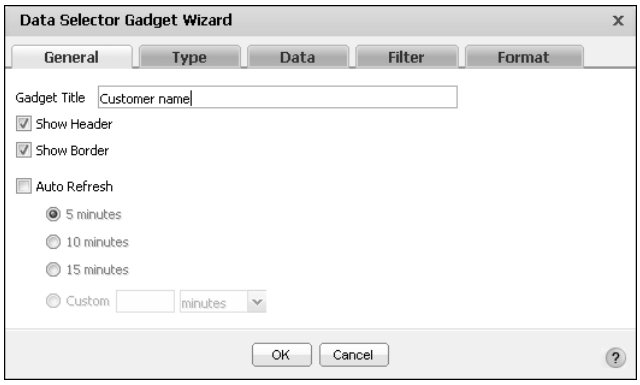


Figure 4-88 Choosing general options for a data selection gadget

Showing the header or border makes those parts of the gadget visible. Auto refresh sets a gadget to refresh at a set frequency.

When adding or editing a data selection gadget, you can change the selection type displayed in the gadget in Data Selector Gadget Wizard—Type, as shown in Figure 4-89.

Figure 4-89 Choosing a data selection gadget type

How to create a data selection gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a data selection gadget, complete these steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Selection.
3. Drag a data selection gadget and drop it on the dashboard.
4. Complete the following steps to specify the data presented in the gadget:

1. Select a data source
2. Select a field to publish when a user selects a displayed value
3. Select a field to display in the gadget
4. Select a sort direction

5. Limit displayed data with filter conditions in Data Selector Gadget Wizard—Filter.
6. Format the data selection gadget in Data Selector Gadget Wizard—Format.
7. Specify gadget display options in Data Selector Gadget Wizard—General:
   - Display the header and border
   - Gadget title
   - Refresh rate
8. Choose OK to create the new gadget.

Enable interactive filtering by linking other gadgets to the data selection gadget. After the data selection is placed on the dashboard, it links to gadgets that use the same data source. You can remove these links or add new ones.

Assigning data to a data selection gadget

A data selection gadget displays values from a data object's data cube or data set. You can select a data set or data cube from data objects already used on your dashboards, or add a new data object. For more information about selecting data objects, see "Selecting data object files," earlier in this chapter.

Adding a data selection gadget to a dashboard or editing it displays Data Selector Gadget Wizard—Data, as shown in Figure 4-90.

Figure 4-90 Assigning a field to a data selection gadget

The display field can be different from the field in the data selection gadget when using data from a data set. For example, a list of customer names displays in a list gadget, but when a user selects one of the names, the data published by the list

gadget is something different, such as the phone number or customer number of the selected customer. You can also sort data displayed in data selection gadgets.

Calendar and slider gadgets have additional data source options:

- No binding displays fixed values instead of values from a BIRT data object.
- Operator enables the dashboard developers to decide how the gadget filters data when another gadget links to it on the dashboard.

Figure 4-91 shows the additional data options for a calendar and slide gadget.

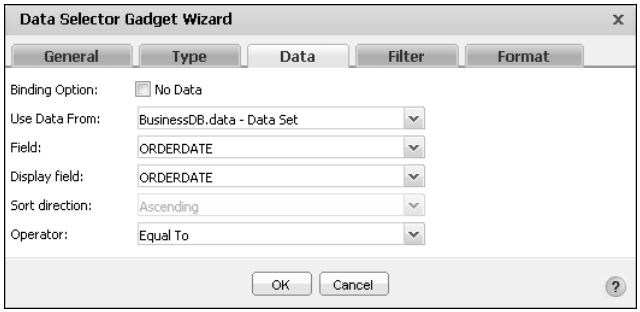


Figure 4-91 Assigning data to a calendar or slider gadget

Filtering conditions limit the displayed data to data matching one or more conditions. For more information about filtering, see "Filtering a gadget data source," earlier in this chapter.

Formatting data selection gadgets

Each gadget type has different formatting options to assist user choices using the gadget. These options are available in Data Selector Gadget Wizard—Format.

Additionally, the following data types can be formatted for custom display by choosing Format As in Data Selector Gadget Wizard—Format:

- Date column format, shown in Figure 4-92. Supports different date formats, custom formatting and unformatted value options.

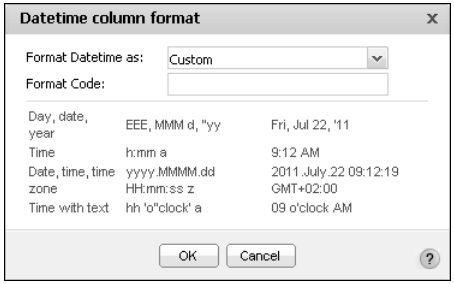


Figure 4-92 Selecting a date format

- String column format, shown in Figure 4-93. Supporting uppercase, lowercase, custom formatting and unformatted options.

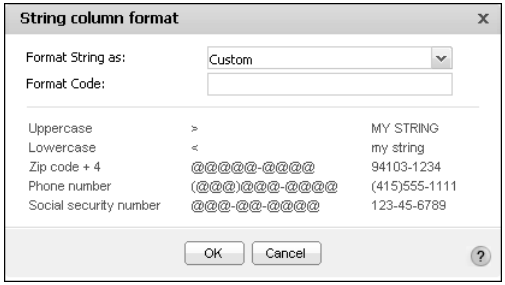


Figure 4-93 Selecting a string format

- Number column format, shown in Figure 4-94. Supporting general number, currency, fixed, percent, scientific, custom formatting and unformatted options.

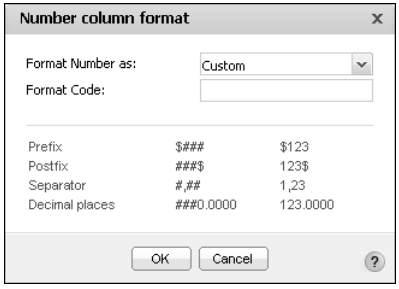


Figure 4-94 Selecting a number format

Formatting a calendar gadget

You can format a calendar gadget to modify its appearance on a dashboard. Figure 4-95 shows the elements you can modify.

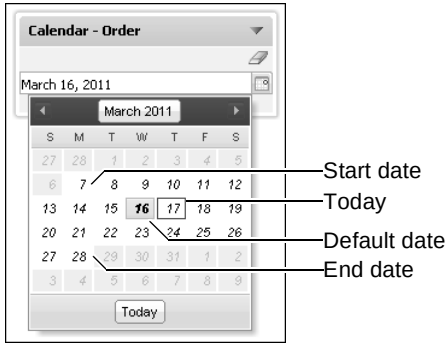


Figure 4-95 Displaying a calendar gadget

Calendar gadgets support a default value, start date, and end date, as shown in Figure 4-96. The user can change the date to another value but the new value must be between the start and end dates.

Figure 4-96 Formatting a calendar gadget

When a data object is assigned to the calendar gadget, the start and end dates are taken from the date values in the data object. The dashboard developers can set a custom start date and end date when the binding option in Data Selector Gadget Wizard—Data is set to no binding.

Using Format as, the dashboard developer can format the look and locale of the date value. For more information about date format options, see "Formatting data selection gadgets," earlier in this chapter.

Dashboard developers can customize calendar gadget options using the Data Selector Gadget Wizard—General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

Formatting a check box gadget

You can format a check box gadget to modify its appearance on a dashboard. Figure 4-97 shows the elements of a check box you can modify.

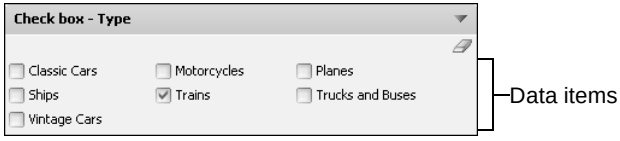


Figure 4-97 Displaying a check box gadget

Check box gadgets support a horizontal or vertical orientation, as shown in Figure 4-98. The developer can set a fixed or automatic number of items per row or column. The List Limit sets the number of data values that can appear in this gadget.

Dashboard developers can customize check box gadget options using the Data Selector Gadget Wizard—General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

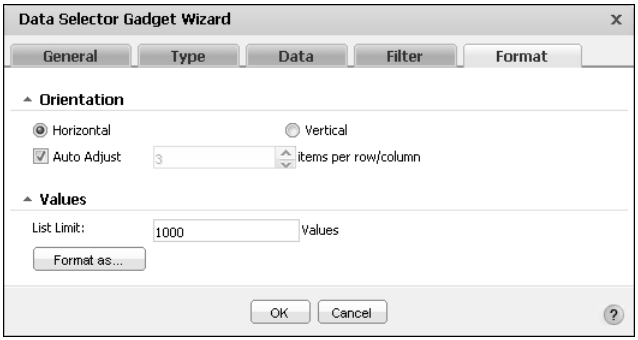


Figure 4-98 Formatting a check box gadget

Formatting a combo box gadget

You can format a combo box gadget to modify its appearance on a dashboard. Figure 4-99 displays the elements that you can modify.

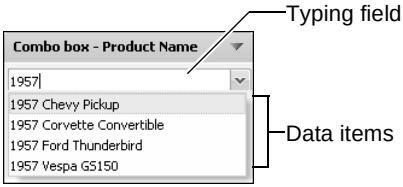


Figure 4-99 Displaying a combo box gadget

Combo box gadgets can display a default value and a list limit. Select Allow Typing to support typing into the combo box to quickly find a known value. Enable Auto suggest to present users with matching data as the user types a value.Figure 4-100 shows the combo box formatting options.

Figure 4-100 Formatting a combo box gadget

You can customize the gadget display options using the General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

Formatting a list gadget

You can format a list gadget to modify its appearance on a dashboard. Figure 4-101 displays the elements you can modify.

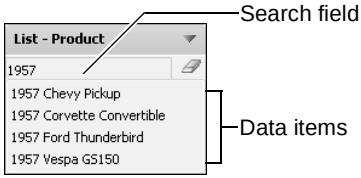


Figure 4-101 Displaying a list gadget

List gadgets can display a default value, a list limit, multivalue selections and a search box, as shown in Figure 4-102.

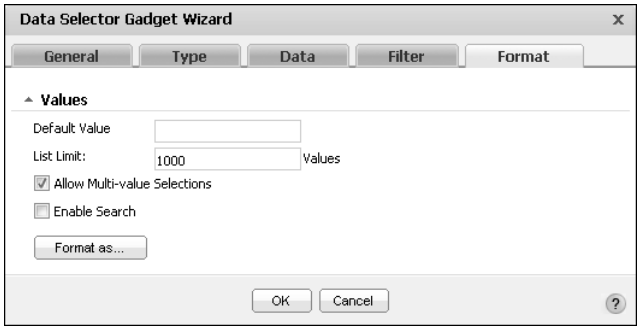


Figure 4-102 Formatting a list gadget

Dashboard developers can customize list gadget options using the Data Selector Gadget Wizard—General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

Formatting a radio button gadget

You can format a radio button gadget to modify its appearance on a dashboard. Figure 4-103 shows the elements you can modify.

Figure 4-103 Displaying a radio button gadget

The developer can set a fixed or automatic number of items per row or column. The List Limit sets the number of data values that can appear in this gadget.

Radio button gadgets support a horizontal or vertical orientation, as shown in Figure 4-104.

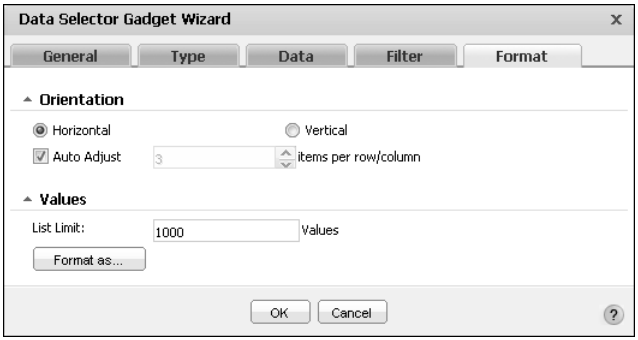


Figure 4-104 Formatting a radio button gadget

Dashboard developers can customize radio button gadget options using the Data Selector Gadget Wizard—General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

Formatting a slider gadget

You can format a slider gadget to modify its appearance on a dashboard. Figure 4-105 shows the elements you can modify.

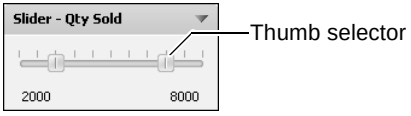


Figure 4-105 Displaying a slider gadget

Slider gadgets support a horizontal or vertical orientation, as shown in Figure 4-106.

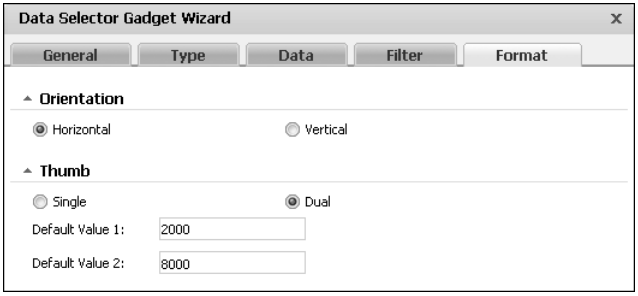


Figure 4-106 Formatting a slider gadget orientation

The range of values appearing on the slider is automatically adjusted based on the data displayed or you can set a minimum and maximum value.

When Auto adjust tick marks is enabled, the tick marks appear on the slider. The developer can set the number of tick marks by Disabling Auto adjust tick marks interval.

Figure 4-107 shows these options.

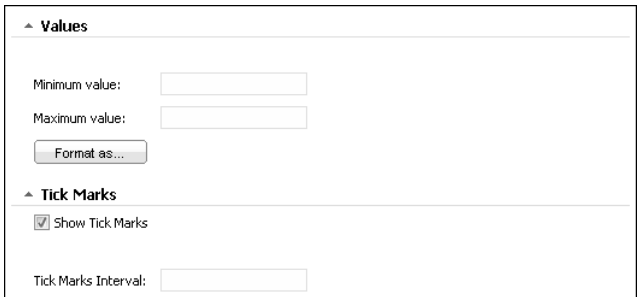


Figure 4-107 Formatting a slider gadget values

One or two thumb selectors can display for user interaction. Using two thumb selectors enables the user to select a minimum and maximum value. Using one thumb selector makes additional data operators available. The developer can set default values for the thumb selectors to start from. For example, you can display a data cube's week dimension in a slider gadget for users to select a period of time between two selected weeks, as shown in Figure 4-108.

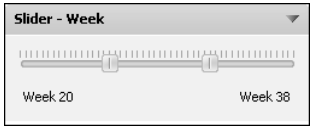


Figure 4-108 Using a slider and custom format to select between two weeks

When a data object is assigned to the slider gadget, the minimum and maximum values are taken from the values in the data object. The dashboard developer can set a custom minimum and maximum value when the binding option in Data Selector Gadget Wizard—Data is set to no binding.

Dashboard developers can customize slider gadget options using the Data Selector Gadget Wizard—General options. For more information about general options, see "Using a data selection gadget," earlier in this chapter.

Using a data version gadget

Data version gadgets display available versions of BIRT data store files for a user to choose. The actual values inside the data store file are not displayed. Data visualization gadgets must be using the same BIRT data object as the data version gadget. When the user selects a data object store file in the data version gadget,

How to create a data version gadget

This procedure requires a dashboard you can edit. Create a new dashboard if one does not already exist. To create a data version gadget, complete the following steps:

1. Display available gadgets by selecting Add Content and choosing New Gadget.
2. Choose Data Selection.
3. Drag a data version gadget and drop it on the dashboard.
4. To specify the data presented in the data version gadget, complete the following steps:
    1. Select a data object store file to manage
    2. Select the default version of the data object store file to use
5. Pick how to display choices to the user by selecting a type of data selector in in Data Selector Gadget Wizard—Type.
6. Specify gadget display options in Data Selector Gadget Wizard—General:
    - Display the header and border
    - Gadget title
    - Refresh rate
7. Choose OK to create the new gadget.

Selecting a data object

The data version gadgets displays the version number and, if available, the version name of the each version of the selected BIRT data store file. For example, if the dashboard developer wants to display the Sales.data file in a data version gadget, all versions of the Sales.data file are displayed in the data version gadget.

Choosing a selector type

You can display data version gadgets in a combo box, list, or radio types. Use the Data Selector Gadget Wizard—Type options to change how the data version gadget is displayed, as shown in Figure 4-109.

Figure 4-109 Displaying types of selectors used to display user choices

Figure 4-110 shows a data version gadget displaying a list of available version numbers and version names of a data store file.

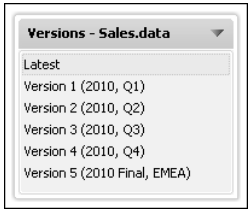


Figure 4-110 Displaying available versions of a data store file as a list

Figure 4-111 shows a data version using radio buttons to display all versions of a data object store file.

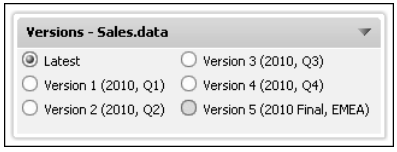


Figure 4-111 Displaying available versions of a data store file with radio buttons

Figure 4-112 shows a data version using a combo box to display all versions of a data object store file.

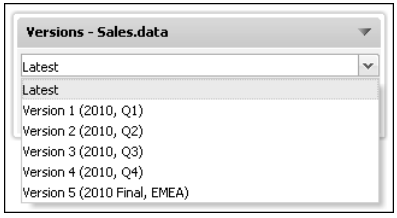


Figure 4-112 Displaying available versions of a data store file in a combo box

Formatting a data version gadget

When the data version gadget uses radio buttons to display choices to the user, the dashboard developer can use Data Selector Gadget Wizard—Format to format the content of the gadget.

The dashboard developer can choose to the number of choices per row and if the gadget displays choices in a horizontal or a vertical display.

Figure 4-113 shows Data Selector Gadget Wizard—Format options.

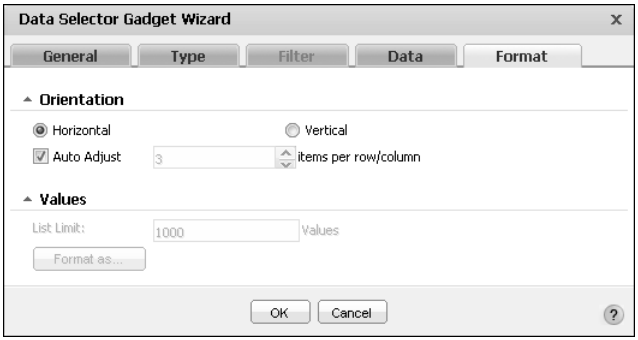


Figure 4-113 Formatting a data version gadget using radio buttons

Chapter

5

Sharing dashboards and gadgets

This chapter contains the following topics:

- About sharing dashboards and gadgets
- Sharing dashboards
- Sharing gadgets
- Managing permissions

About sharing dashboards and gadgets

Users can share and assign file access permissions to dashboard and gadget files. When users subscribe to a dashboard file always see the latest version of that file. Users that want to edit a shared dashboard must copy the dashboard to enable editing.

For example, a company's dashboard developer shares a dashboard named "Shipments" with information about product shipping. If the company changes the primary shipping provider and adds some secondary shipment companies, the developer updates the Shipments dashboard and all users of the shared Shipments dashboard receive the changed dashboard when they log in to Information Console.

Shared gadgets enables users to build their own dashboards with pre-built gadgets. Continuing the previous example, the dashboard developer can build a gadget displaying daily outgoing shipments. When this gadget is shared, other users can add it to their personal dashboard.

Users can save dashboard and gadget files to the shared dashboard folder or to other directories on the Encyclopedia volume. When users save dashboard and gadget files to the shared dashboard folder, those files are available for users from the Dashboard Gallery and Gadget Gallery. Saving dashboard and gadget files to other locations requires users to open the file directly from the Information Console file manager.

Sharing dashboards

Users can save one or more dashboards as a dashboard file for subscription by other users. Shared dashboards can open as a file for viewing and interaction, or display in external web pages using Actuate JSAPI. Shared dashboard files use Actuate file permissions and users can save them to a private or shared folder. Dashboards in the shared dashboard folder are available in the Dashboard Gallery when users build new dashboards.

Users subscribing to a dashboard file receive the latest version the next time they refresh their browser or log in to Information Console. Copied dashboards do not receive updates but the data that they display can change if the data object it uses is designed.

You can also save dashboards to a private folder. Saving dashboards to a private folder is useful for saving versions of a dashboard in progress or to temporarily remove a dashboard from your personal dashboard file. When the dashboard is in a private folder, you can open the dashboard with the Information Console file browser or add the dashboard back to your personal dashboard by subscribing to

it. Dashboards in private folders are available for subscription by using the dashboard gallery to browse the folder named My Folders.

How to share a dashboard

Shared dashboards that reside in Shared Folders are available for user subscription in the Dashboard Gallery.

1 In the dashboard menu, choose Share, as shown in Figure 5-1.

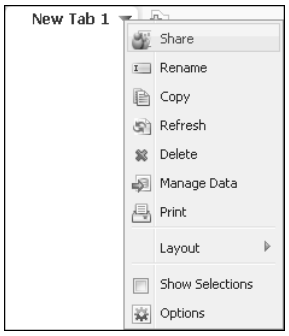


Figure 5-1 Sharing a dashboard

2 In Share Tab—General, select the sharing details for the dashboard file, as shown in Figure 5-2:

- Select which dashboards to include in the shared dashboard file. Select Share Multiple Tabs to choose additional dashboards to include in the dashboard file.
- Type a name for the shared dashboard file.
- Type a description for the shared dashboard file.

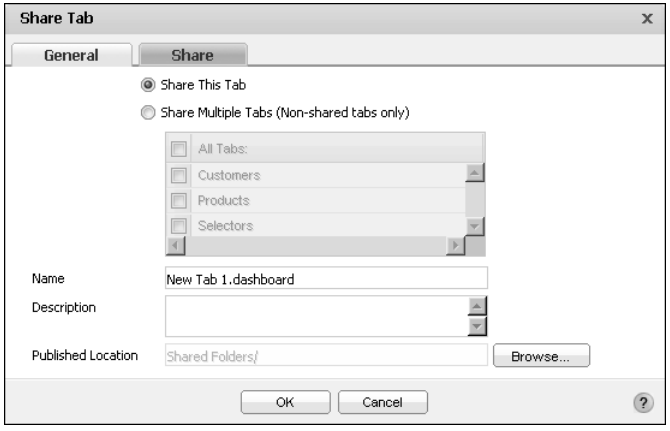


Figure 5-2 Selecting one or more dashboards to share

1 If necessary, choose Browse to identify a custom folder to save the file, as shown in Figure 5-3. Select Folder appears.

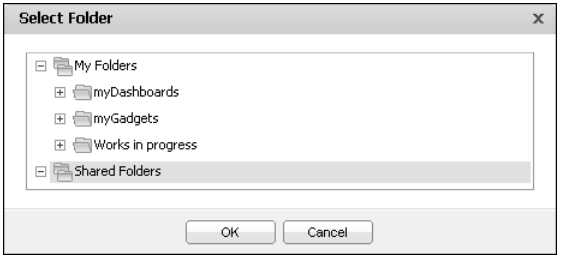


Figure 5-3 Selecting a destination folder to share a file

2 In Select Folder, choose a location to share the dashboard. Dashboards saved to Shared Folders are available to all users and dashboards saved to My Folders are saved to a folder in your home directory.

3 Choose OK. Share Tab appears. Published Location displays the new destination for the saved dashboard.

3 In Share Tab—Share To, assign permissions to selected roles and users, choose Share to.

- Add roles and users that can access the file, as shown in Figure 5-7. Choose OK when finished.

4 Choose OK to close Share Tab.

If multiple tabs are shared in a dashboard file, the current order of the tabs is also saved.

Sharing gadgets

Saving a gadget to a gadget file enables other users to include the gadget in their dashboards. Shared gadgets can open as a file for viewing and interaction or display in external web pages using Actuate JSAPI.

For example, a dashboard developer can build a gadget displaying daily outgoing shipments. When this gadget is shared, other users can add it to their own user dashboard.

Users browse the gadget gallery to find gadgets to add to their dashboard. The gadget gallery appears when a user selects Add Content from the dashboard. Shared gadget files support Actuate file permissions and are located in the dashboard shared folder.

You can also save gadgets to a private folder. Saving gadgets to a private folder is useful for saving versions of a gadget in progress or to temporarily remove a

gadget from your dashboards. When the gadget is in a private folder, you can open the gadget file with the Information Console file browser or add the gadget back to a dashboard by using the gadget gallery to browse the folder named My Folders.

How to share a gadget

Shared gadgets that are saved to a folder in Shared Folders are available for user subscription in the gadget gallery. The following steps show how to share a gadget:

1 In the gadget menu, choose Share, as shown in Figure 5-4.

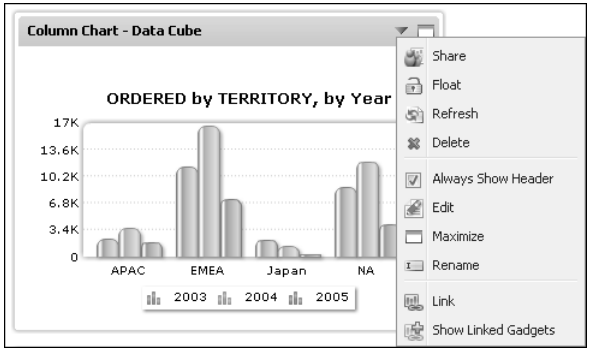


Figure 5-4 Sharing a gadget

2 In Share Gadget—General, select the sharing information for the gadget, as shown in Figure 5-5:

- Type a name for the shared gadget file.
- Type a description for the shared gadget file.

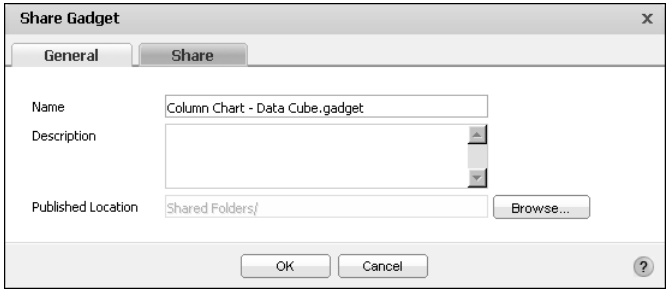


Figure 5-5 Setting identification to the shared gadget

1. If necessary, choose Browse to identify a custom folder to save the gadget file.
2. In Select Folder, choose a new location to share the gadget, as shown in Figure 5-6.

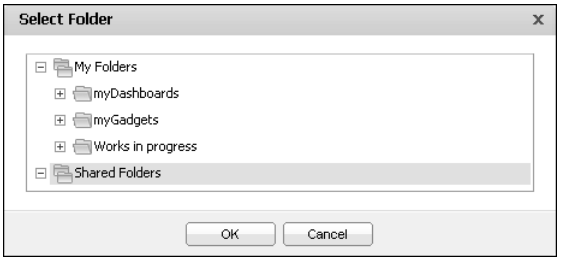


Figure 5-6 Selecting a destination folder to share a file

3 Choose OK. Share Gadget appears.

3 In Share Gadget—Share To, assign permissions to selected roles and users, choose Share to.

Add roles and users that can access the file, as shown in Figure 5-7. Choose OK when finished.

4 Choose OK to close Share Gadget.

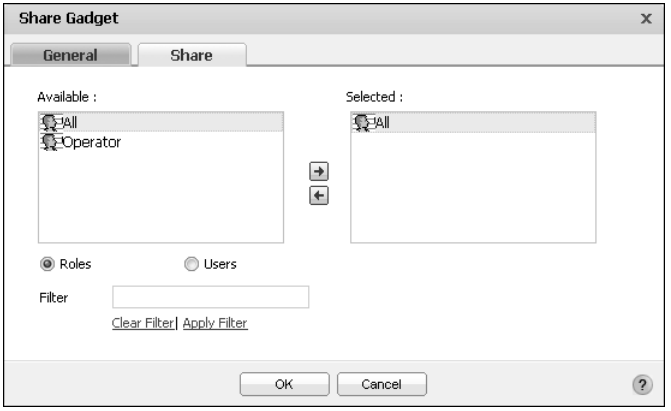


Figure 5-7 Giving all roles access to a shared gadget file

Managing permissions

A user's file access permissions combined with a user's security role determines what actions a user can perform on a dashboard or gadget file. Functionality such as viewing BIRT document files requires appropriate BIRT iServer options, such as the Actuate BIRT option.

Contact your BIRT iServer administrator for information on currently installed options.

Default dashboard feature IDs and Information Console functionality levels correspond with default security roles in BIRT iServer, as shown in Table 5-1.

Table 5-1 Dashboard feature names, functionality levels and security roles

Dashboard feature ID	Functionality level	BIRT iServer Security role
Consumer	Basic	All
Business User	Intermediate	Active Portal Intermediate
Developer	Advanced	Active Portal Advanced
Developer	Administrator	Active Portal Administrator

New users created on the BIRT iServer receive the Active Portal Advanced security role. The BIRT iServer Administrator can change the default functionality levels and security roles. For more information about functionality levels and security roles, see *Managing an Encyclopedia Volume*.

Additionally, user actions correspond to user security roles on BIRT iServer and offer different user functions actions, as shown in Table 5-2.

Table 5-2 Default dashboard user actions and functionality level

Actions	Basic	Intermediate	Advanced	Administrator
Viewing dashboard files and embedded gadgets	✓	✓	✓	✓
Building, modifying, and sharing dashboards		✓	✓	✓
Creating gadget types: report and extras		✓	✓	✓
Creating gadget types: data selection and data visualization			✓	✓
Sharing gadget files			✓	✓

For example, giving a user write access to a dashboard file also requires that the user have a security role that allows modifying dashboards. Different security roles exist in customized Information Console installations. The Encyclopedia volume administrator manages security roles.

Dashboard users require appropriate permissions to view and edit any data that is embedded in a dashboard gadget. This embedded data includes BIRT document files or external web content displayed in dashboard gadgets. For example, a user who wants to analyze a cross tab in a BIRT document file. The BIRT file is displayed in a report gadget. The user needs the following file access permissions:

- Permission to view the dashboard file
- Permission to view the original BIRT document file

The user also needs to be using BIRT iServer with the following iServer option:

- The Actuate BIRT for iServer option for viewing the BIRT document.
- The Actuate BIRT 360 for iServer option for using dashboards.

Users who subscribe to a dashboard use their own permissions in BIRT iServer to access data or run reports. For example, an administrative user creating a shared dashboard does not give users of that shared dashboard administrative access to data or files on BIRT iServer. Users of the shared dashboard can view gadgets on the dashboard using their own permissions.

Shared dashboards receive Visible and Read rights for the selected users and roles. Users can assign additional file permissions using Information Console.

Chapter

6

Linking and scripting gadgets

This chapter contains the following topics:

- About linking to gadgets
- Building links
- Scripting linked gadgets

About linking to gadgets

Gadgets link to each other so that information from one gadget can change the information displayed in another gadget. One gadget publishes information, and one or more other gadgets subscribe to it using the linking menu. Gadgets, like data selection gadgets, publish their data when a user changes a value on the gadget, such as selecting one or more items from a list.

This process supports the following data scenarios:

- Filtering visual displays based on parameter selection by a user.
- Cascading choices, where selections in one data selection gadget populates choices displayed in another data selection gadget.
- Interlinking data sources, where changes in a data selection gadget can affect gadgets using data from different data objects.
- Data selection triggered scripts, where subscribed events execute global JavaScript code.

For example, a chart gadget and a report gadget link to a data selection gadget that lists countries. When a user selects a country in the data selection gadget, the chart and the report gadget update with data related to the selected country.

Figure 6-1 shows linking gadgets receiving filtered data based on user selection. The filtered data is then displayed to the user.

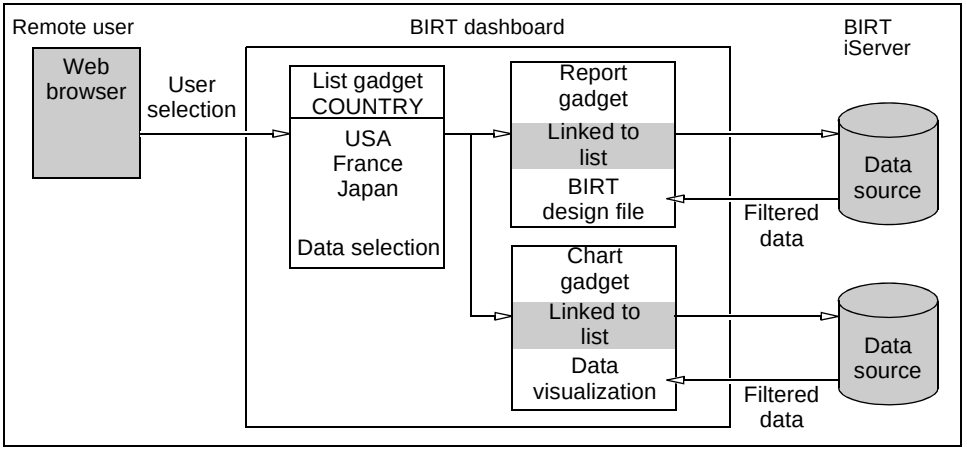


Figure 6-1 Gadgets linking to list gadget

Each linked gadget can use different BIRT data objects as data sources. Using different data objects requires that the value published by the data selection gadget matches a data field in the linked gadgets.

Data selection and other gadgets that use the same data objects automatically link together, when added to the same dashboard. Automatic linking requires that gadgets use the same data objects. Developers can manually add or change links in the gadget menu, configure filters on specific fields, or configure gadget events to monitor.

Building links

Gadgets can link to data selection gadgets, either automatically or by user configuration. Automatic linking helps users build dashboards quickly. Developers assign manual links to interact with different data objects, to add scripts to gadget event communication, and to disable selected links on a dashboard.

The following gadgets can filter data by linking to data selection gadgets:

- Data visualization gadgets
- Other data selection gadgets
- Report gadgets

Developers can choose to link gadgets to any data selection gadget. For example, when a list gadget showing city choices is linked to a list gadget showing country choice, only cities in the selected country are displayed.

Other gadgets such as import gadgets or HTML gadgets can also link to data selection gadgets, such as a list gadget. The dashboard developer must add JavaScript to these gadgets to receive and process values and events that they receive.

For example, an HTML gadget can link to a list gadget. The dashboard developer adds JavaScript to the link of the HTML gadget that is executed when the user selects a value in the list gadget.

Understanding automatic linking

Gadgets on a dashboard that link to the same data object are linked when a user adds a new gadget to the dashboard. If an existing gadget's data source changes to one matching other gadgets on the dashboard, it also links to those gadgets.

For example, a business user creates a new dashboard and adds a bar chart gadget that shows customer cities and credit limits. The user then adds a list gadget that displays countries to the dashboard. After selecting the same data object as the chart, the user adds the gadget to the dashboard.

The chart gadget automatically links to the new list gadget. When a user selects a country in the list gadget, the chart shows data for the cities in the selected country.

The user can add additional gadgets displaying different values from the same data object. These gadgets link automatically to the chart and the other gadgets, as shown in Figure 6-2.

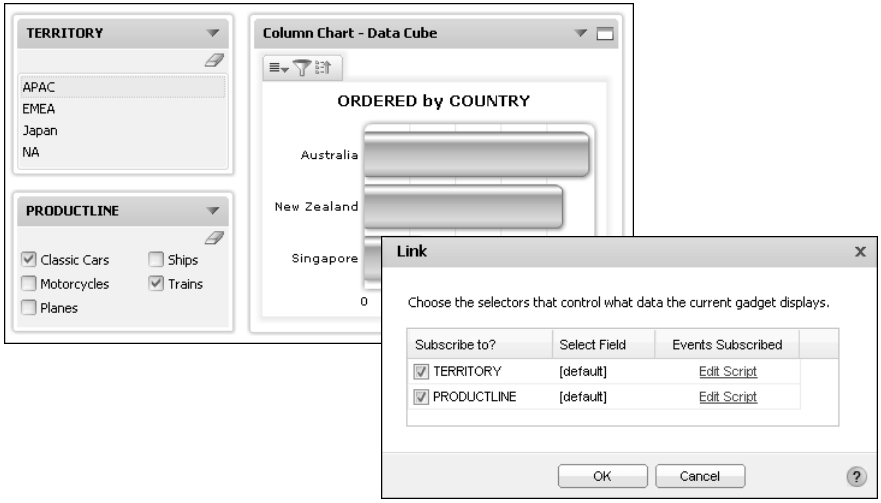


Figure 6-2 Linking a chart to data selection gadgets

Users of this dashboard can select one or more countries to show in the chart gadget and optionally, select one or more cities to include or remove from the chart display.

Developers can change or remove the automatic links. Users can use Show Selections from the dashboard menu to see or clear all data selections on the dashboard.

Linking to a selected field

When you link to a data selection gadget that uses the same data object, the same data field name is used by default.

If the data selection gadget uses a different data object than, the developer must match the published data field from the data selection gadget to a data field in the data visualization gadget.

For example, a list gadget shows country names from a data object file containing customer addresses. A chart gadget shows sales results from a different data object file containing data about customer orders. When the chart gadget links to the list gadget, the developer matches the different field names. This enables the list gadget to filter the country data displayed in the chart gadget.

Figure 6-3 shows two different data fields that are matched.

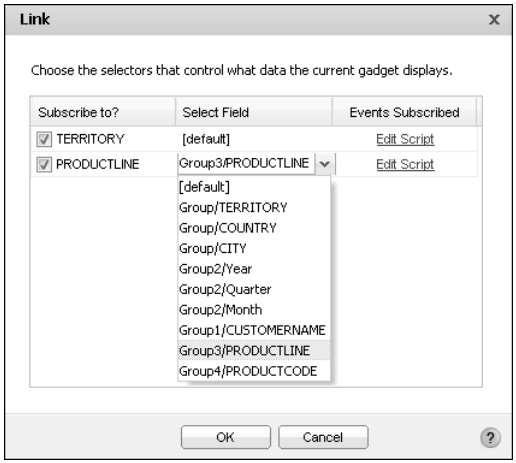


Figure 6-3 Selecting a field to receive a data selection link

Using two-way gadget links

Two or more data selection gadgets can link to each other. For example a list gadget showing customer names and a list gadget showing order numbers can link to each other. When the user selects a customer name, the customer's order numbers appears in the other gadget. When a customer selects an order number, the customer for that order number appears in the other gadget.

If more than two gadgets are linking to each other, the Show Selection gadget from the dashboard menu can clear all data selections on the dashboard at the same time.

Limiting link updates

When a gadget is linked to multiple data selection gadgets, each choice updates the gadget. This situation can occur due to automatic linking of gadgets using the same BIRT data object.

For example, consider a chart gadget links to the following two data selection gadgets; a list gadget displaying countries and a list gadget displaying states. If the user selects a city, then the country list updates to show the country containing the city and the chart gadget updates to displays data about the city. If the user selects a country, then the city list updates to show cities in the country and the chart gadget displays data about the country.

If the dashboard developer wants to update the chart only when the user selects a city, the automatic links must be removed and replaced by two links:

- The chart gadget links to the gadget showing cities.
- The list gadget showing cities links to the list gadget showing countries.

Figure 6-4 shows cascading user selections displaying values to the user. When the user selects a country, only the list gadget displaying cities is updated. When the user selects a city, the chart gadget is updated.

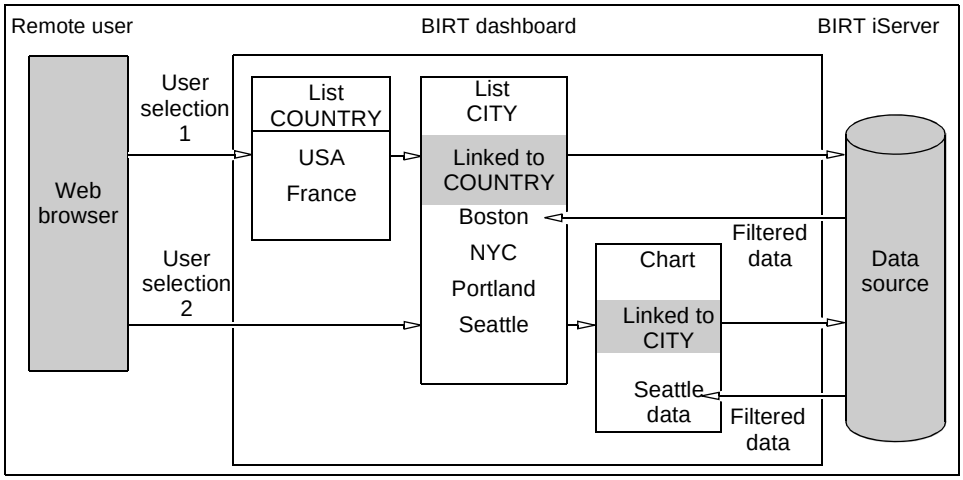


Figure 6-4 Cascading user selections

Scripting linked gadgets

Data selection gadgets send an onChange event to all gadgets that link to it. When a user changes a value in a data selection gadget, an onChange event triggers linked gadgets on the dashboard to update their contents with the new selection. You can customize this onChange() event for each linked gadget.

JavaScript is used with linking gadgets to process and change values from data selection gadgets, interact with global variables on the dashboard, and change default report parameters. Figure 6-5 shows where a you can add custom JavaScript to a linked field.

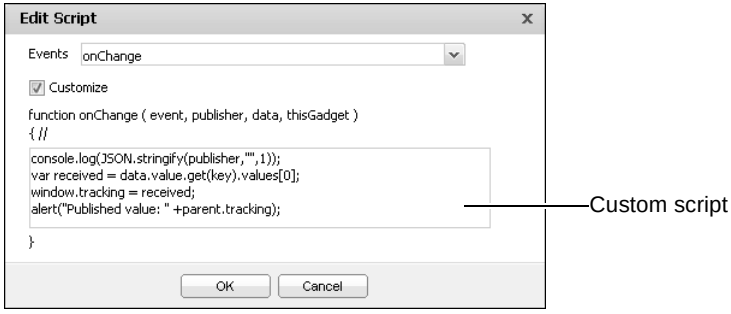


Figure 6-5 Adding JavaScript to a link's onChange event

Each value published by a data selection gadget can have its own script. Adding script to a subscribed gadget event enables you to interact with and test the value of the user selection that occurs on the linked gadget. The script intercepts the user selected value before it is used with report, reportlet, and import gadgets.

For example, you can validate or change user selections, display custom dialogs, or send values to a JavaScript function. Scripts interact with the following data:

- event
  The event name, for example:

  ```
  (new String("ON_SELECTOR_GADGET_CHANGED"))
  ```

- publisher
  The name of the gadget that published information, such as a list gadget which publishes the value selected by a user. For example:

  ```
  ({_gadgetName:"Gadget_697c997e-ec2b-4b37-aa47-0837f0b73cda",
  _gadgetTitle:"TERRITORY", _gadgetType:"selector",
  _tabName:"d6906276-4f4c-4183-bab4-d097bc1173ec", _tabTitle:"New
  Tab 2"})
  ```

- data
  The data object that includes the entire message published by the data selection gadget. The following example of the data object message sent by a list gadget named TERRITORY with APAC and EMEA selected:

  ```
  ({value:{_entry:{'Gadget_697c997e-ec2b-4b37-aa47-
  0837f0b73cda':{name:"TERRITORY",
  publisherRealName:"Gadget_697c997e-ec2b-4b37-aa47-
  0837f0b73cda", values:["APAC", "EMEA"],
  namevalues:[{value:"APAC", display:"APAC"},
  {value:"EMEA",display:"EMEA"}], semantic:"SEMANTIC_parameter",
  applyTo:"Customer"}}, _size:1},
  event:"ON_SELECTOR_GADGET_CHANGED"})
  ```

- thisGadget
  This object refers to the report or reportlet gadget receiving the published message. Developers can use this data to verify values in parameters and set conditions for updating a linking gadget. The following example shows the value of thisGadget for a BIRT report design file with a customer name parameter that has a default value:

  ```
  ({_gadgetName:"Gadget_0b91ff0f-c92a-46b4-97b0-b65884451325",
  _gadgetTitle:"Report - Customer Order History",
  _gadgetType:"viewer", _tabName:"d6906276-4f4c-4183-bab4-
  d097bc1173ec", _tabTitle:"New Tab 2",
  _currentReportParameters:[#1={_:{initialize:(function () {}),
  _FACADE_INSTANCE:#1#, _name:"Customer", _value:"Australian
  Collectors, Co.", _valueIsNull:false, _isRequired:true}}]})
  ```

Using the onChange script

Using the onChange function enables the dashboard developer to access published gadget messages sent by data selection gadgets. This enables the developer to access user selections on a dashboard and use JavaScript to process those selections, such as viewing selected values in a debug console or displaying values in JavaScript alerts.

For example, you can debug a user selection from a list gadget using a a web browser's JavaScript console. The following JavaScript code displays the publisher of a linked gadget event in a JavaScript console that supports the JSON method, such as Internet Explorer 8:

```
console.log(JSON.stringify(publisher,"",1));
```

The following JavaScript code displays the publisher object of a linked gadget event to a JavaScript console that supports the toSource method, such as Firefox 4:

```
console.log(publisher.toSource());
```

This code writes the data exchanged between gadgets to the JavaScript console of the web browser used by the developer. JavaScript gives different results depending on the web browser it is used in. For example the toSource() method works in Firefox but not in the Internet Explorer or Safari web browser.

You can extract specific parts of the message, for example:

```
alert(publisher._gadgetTitle);
```

This example creates a JavaScript alert displaying the name of the gadget that published the message.

Reading linked values

Dashboard developers can read values that a gadget receives. Scripts can process the value and execute additional JavaScript code. For example, to see what value is arriving at a gadget, add the following script to the link:

```
alert("Published value: " + data.value.get(key).values[0]);
```

This script takes the first value published by a linked gadget and displays it in a JavaScript alert.

JavaScript can change user selected values, such as changing the selection value of France to FR. This enables developers to select parts of a user selection, such as, extracting a tracking number or part of a phone number, and apply additional changes to the selection.

Scripts can read and change report parameter values of report gadgets and values going to import gadgets. Scripts can also write user selection values to a global variable on the dashboard page.

For example, a script on an HTML gadget can write the value of a user selection to a global variable using the following code:

```
var received = data.value.get(key).values[0];
window.tracking = received;
```

The HTML gadget can retrieve the global variable with the following HTML code:

```
<script type="text/javascript">
var message = parent.tracking;
alert(message);
</script>
```

The HTML gadget must be refreshed to load the global variable. You can refresh a gadget by selecting Refresh from the gadget menu.

Reading and writing parameter values

You can use scripts to read and write current parameter values for report and reportlet gadgets. The thisGadget object uses the getCurrentReportParameters() function to view and change report parameters.

Scripts support the following actions:

- Set conditions for the using a data selection value
- Change the value of the linked data selection
- Change the parameter value of the report or reportlet gadget

For example, a dashboard developer makes a report gadget to display country information in a BIRT design file. The developer expects users to select a country from a linked list gadget. The BIRT design file has parameters for Country, State and City but the developer only wants to show country information. Listing 6-1 shows a script to remove current parameter values for the State and City, as shown in the following sample script.

Listing 6-1 Example script for reading and writing report parameters

```
var params = thisGadget.getCurrentReportParameters();
for ( var i = 0; i < params.length; i++ )
   {
   var param = params[i];
   if ((param.getName() == 'State') || (param.getName() ==
   'City'))
      {
      param.setValue('');
      param.setValueIsNull(true);
      data.runReport = false;
      }
   }
```

Chapter

7

Managing dashboard resources

This chapter contains the following topics:

- About external resources
- Managing BIRT data objects
- Managing external resources
- Managing dashboard resources

About external resources

Actuate gadgets can display external resources such as images, videos, remote websites, and external gadget files on the dashboard. BIRT iServer does not manage these external resources. The external resources reload each time a user views a dashboard containing these gadgets.

The user or computer administrator must install any browser plug-ins necessary to view external content, such as the Adobe Flash Player.

Network firewalls, bandwidth limitations, domain-name resolution, internet connectivity, and the power of the remote server that stores the external resources affect the delivery and quality of external resources that appear in a gadget.

Some external content requires licensing or other approval to reuse. These sites often have published terms of use. If there is any question about the reuse of an external resource, contact the owner.

Managing BIRT data objects

Data visualization and data selection gadgets display data from BIRT data objects. Data objects are stored as files in the Resource folder of the Encyclopedia volume and supports Actuate file permissions. Developers create data object files with BIRT Designer Professional.

Data object designs query data on demand and are saved as files with the file-name extension .datadesign. These files give users the most current information because the queries are made on demand. This also means that users viewing recently updated data can view different data.

Data object stores cache data from a previous query as a file with the file-name extension .data. This file enables users to access the information faster than waiting for a query to data sources. If BIRT iServer has adequate memory to load the object store files, one or more these files can reside in memory, resulting in an improved dashboard result time.

Data object store files, in addition to providing improved response for data queries, ensures that all users of the data object store receive the same data. Dashboard developers can choose a specific version or the latest version of a data object store file to display in a gadget. Users view the latest version of the data object store file when the most recent version is selected. For example, if a data object design file is scheduled to create a data object store file every week, using the latest version setting enables the gadget to display data from the newest weekly version, without further configuration.

Users and gadget builders can filter data in data visualization gadgets in the following ways:

- Setting parameters of a data object using Manage data from the dashboard menu
- Using the gadget menu's data source filtering
- Using to data selection gadgets
- Using the context menu's filter settings

Each of the previous filtering solutions requires specific privileges. For example, a user with all necessary privileges, such as an administrator, can filter data using any of the previous solutions. A user with privileges to only view a dashboard can use data selection gadgets or the context menu to apply filtering on the dashboard's gadgets.

Setting parameters of a data object filters values for all gadgets using that data object. The BIRT developer who creates the data object must enable parameters.

BIRT files displayed in report or reportlet gadgets do not use the dashboard to manage their data sources. BIRT Designer Professional and BIRT Studio manage the data sources used by BIRT files.

Managing external resources

External gadget resources require the external web service or file to be available on user demand. Neither Information Console or BIRT iServer cache these resources.

Displaying a URL

You can display a web site or web application on the dashboard using an HTML gadget. For example, using a URL such as http://www.actuate.com loads the Actuate web site into the HTML gadget.

Some web sites and web applications support receiving additional parameters in the URL. If the additional parameters in the URL require special encoding you can encode the URL or consider using JavaScript redirection with the same URL in the HTML gadget.

To use an unencoded URL in an HTML gadget, replace the unencoded characters as shown in Table 7-1.

Table 7-1 Encoding URL characters for an HTML gadget

Character	Replacement text
Backslash (\)	Slash (/) or the URL encoding of %5C
Space ( )	The URL encoding %20
Ampersand (&)	The HTML character entity &

For example, the following URL does not work in an HTML gadget:

```
http://localhost:8900/iportal/iv?__report=\Home\US
   sales.rptdocument&__page=3
```

The following rewritten URL works in an HTML gadget:

```
http://localhost:8900/iportal/
   iv?__report=%5CHome%5CUS%20sales.rptdocument&amp;__page=3
```

Similarly, to use a URL inside a JavaScript redirection, replace any backslashes with a slash or the URL encoding of %5C. The following code shows JavaScript redirection used to display a URL:

```
<script type="text/javascript">
   <!--
   window.location = "URL"
   //-->
</script>
```

Place this code in the HTML section of the HTML gadget, replacing URL with the URL that retrieves the Actuate document. For example, the URL to a BIRT report document file is:

```
http://localhost:8900/iportal/iv?__report=\Home\US
   Sales.rptdocument&__report=3
```

The following JavaScript redirection script loads the BIRT report document into an HTML gadget:

```
<script type="text/javascript">
   <!--
   window.location = "http://localhost:8900/iportal/iv?__report=/
   Home/US sales.rptdocument&__page=3"
   //-->
</script>
```

Some web sites do not permit embedding their content in another web site or attempt to control the browser display to present their content. For example, JavaScript code using "parent" or "top" to access HTML components can overwrite parts of the Information Console interface.

When displaying an external site in an HTML gadget, hyperlinks in embedded web sites can redirect the user to other locations or websites. How this link resolves depends on the HTML code of the remote site. If the link attempts to load a new page in the place of the existing page, it is possible for the user of an HTML gadget to browse different websites on the internet.

Displaying Adobe Flash content

Adobe Flash content often appears above other content such as a gadget menu, when displayed in a web browser. If a dashboard developer has access to the

source code of the HTML or Google gadget that displays the Adobe Flash content, the developer can add the wmode parameter to enable other content to appear above the Adobe Flash content. The wmode parameter must be in the object tag that displays the Adobe Flash content and have a value of opaque or transparent. Opaque is less processor intensive on the user's web browser than transparent.

The following code shows an example of setting the wmode parameter to opaque for embedded Adobe flash content.

```
<object type="application/x-shockwave-flash" width="100%"
   height="100%" id="flash" data="/iportal/testing/test.swf">
   <param name="movie" value="/iportal/testing/test.swf" />
   <param name="quality" value="best" />
   <param name="wmode" value="opaque" />
   <param name="bgcolor" value="ffffff" />
</object>
```

If the you do not have access to the source code where the Adobe Flash content appears, contact the web site administrator where the content appears and ask them to set the wmode parameter to transparent in the object tag displaying the Adobe Flash content.

Displaying embedded HTML

Embedded HTML can include HTML, CSS, and JavaScript code that is not supported by the user's browser and computer. For example, not all web browsers support HTML5 or CSS3. A Linux computer cannot load ActiveX components, and a Windows computer requires a Java runtime to use Java Web Start.

Web applications that require special network ports or protocols, such as a video chat application, requires those ports be available on the local computer that accesses Information Console.

Displaying images

Images stored on a web server can appear in an image gadget or HTML gadget. The image gadget uses Adobe Flash to display images on the dashboard. If users do not have the Adobe Flash Player installed, consider embedding the image content in an HTML gadget.

Displaying third-party gadgets

Third-party gadgets are XML files that are displayed in import gadgets and are retrieved from:

- A web server on the internet

- An internal network web server

These gadgets must be valid XML files and follow the Google gadget specification for gadget design. Information Console must be able to retrieve the gadget file to render it as HTML. If Information Console does not have access to the internet, the gadget file can be moved to a web server on an internal network.

For more information about writing Google gadgets for BIRT iServer, see Chapter 8, "Building custom gadgets."

Displaying videos

Videos on a web server can appear in a video gadget on a dashboard. The BIRT iServer does not manage the bandwidth and memory required for this video.

Testing external resources

It is important to test external resources and custom JavaScript code that you use on dashboards before deployment. During testing, if a new gadget causes any rendering issues, the developer can try some of the following solutions:

- Disable any required web browser plug-ins.
- Press ESC to stop gadget rendering on the dashboard.
- Refresh the web browser.
- Reset the user's personal dashboard.
- Use the computer's network firewall to block access temporarily to the external site where the content is stored.
- Remove the user's personal dashboard file, which contains the user's dashboard information. This deletes all the user's dashboards currently displayed on their personal dashboard.

If the content uses a lot of memory, such as embedded video players, lots of development can increase the memory used by the web browser. Consider restarting the web browser or monitoring the memory used by the web browser.

If there are any rendering issues for a shared dashboard or gadget, the developer that created the file can try one of the following solutions:

- Change the user permissions on the file.
- Delete, move, or rename the shared file.
- Save a new version of the file with changed or disabled content.

For example, a developer is reviewing a dashboard gadget that retrieves information from an external web site. If the external web site is not available the developer can replace the dashboard or gadget with a text gadget that explains why the functionality is currently unavailable.

A user's personal dashboard file contains all the user's dashboard information. This file is located in the user's home directory. If the user does not have a home directory, the personal dashboard file is stored in the root of the Encyclopedia volume. Deleting this file removes all shared and personal dashboards in the user's account.

Managing dashboard resources

Many Information Console resources are available in the Encyclopedia Volume's Resource directory. Dashboards use resources from other locations, such as the following:

- Personal dashboard file
- Shared dashboards
- Dashboard style sheets

Understanding the personal dashboard

Dashboards and links to subscribed dashboards reside in a user's personal dashboard file. This file is in the user's home directory or in the root of the Encyclopedia volume if the user does not have a home directory. The personal dashboard file name is __xxxxx_dashboard.dashboard, where xxxxx is the name of the user. Deleting this file erases the dashboard configuration for that user.

This file is created when a user creates a new dashboard or subscribes to an existing one.

Understanding shared dashboards

Users cannot edit shared dashboards. These dashboards are loaded each time the user refreshes the web browser, refreshes the shared dashboard, or logs in to Information Console. If the shared dashboard file changed since the last time it was loaded, the newest version loads.

Understanding dashboard style sheets

Many parts of the Actuate dashboard environment and browser-based tools use style sheets located in the Encyclopedia volume or in the installation of Information Console.

The Information Console uses different skins to customize the appearance of the web interface. Gadgets such as data visualization gadgets use CSS style sheets in the ThemesReportItems.rptlibrary, located in the Resource folder of the Encyclopedia volume.

HTML, video, and third-party gadgets can load their own CSS style sheets in their embedded content.

Report and reportlet gadgets use style sheets and themes that are defined in the embedded BIRT document or design file.

Crosstab gadgets use the themes embedded in the cross tab by the browser-based BIRT Data Analyzer tool.

For more information about managing style sheets for Information Console, see *Information Console Developer Guide*. Also see *BIRT: A Field Guide* and *Integrating and Extending BIRT*, both published by Addison-Wesley.

Chapter

8

Building custom gadgets

This chapter contains the following topics:

- About gadget specifications
- About Actuate gadgets
- About Google gadgets
- Creating Google gadgets
- Linking Google gadgets
- Using a gadget building tool

About gadget specifications

Dashboards support Actuate and Google gadget specifications. These specifications define the XML structure of the gadget files. Gadget developers can make custom gadgets using the Google gadget specification to display the customized content on the dashboard.

Actuate gadgets are included with Information Console and stored in the Encyclopedia volume. The data visualization, data selection, report and extras gadget categories are Actuate gadgets.

Google gadgets are XML files that contain CSS, HTML, and JavaScript code. Gadget developers can create custom Google gadgets or use public ones to access the services of those gadgets from the dashboard. Google gadgets give the dashboard developer complete control of how data appears within a gadget, can request external content for display on the dashboard, and can link to Actuate gadgets.

For example, a Google gadget can receive shipment tracking number code, send the code to the shipping company's web service, receive the data on the current status of the shipment, and format that data for display on the dashboard. When a user selects an order number the current status on the order shipment appears on the dashboard, in the import gadget.

About Actuate gadgets

Users build Actuate gadgets with browser-based gadget wizards available in Information Console. These wizards are launched when a user adds a gadget to a dashboard or edits an existing gadget. Actuate gadgets can link to each other and to data object files. These gadgets are in the Encyclopedia volume and support the file access permissions of Information Console.

Saving Actuate gadgets to the shared folder makes these gadgets available to other users to access from the Dashboard Gallery and the Gadget Gallery.

Actuate gadgets are rendered using Actuate JSAPI and are displayed on a dashboard or opened separately as a file.

About Google gadgets

Google gadgets are text files with the .xml file-name extension. The Google gadget appears on the dashboard when it is loaded into an import gadget, from the extras category of Actuate gadgets. The Google gadget files reside on a web server accessible to Information Console. If Information Console does not have

access to the internet, the external gadgets can reside on a web server on a secured network.

Google gadget files are stored on an external server. Actuate uses Apache Shindig to convert Google gadget files to HTML code. Google gadgets render inside iframe tags on the dashboard.

The following URI locations are examples of Google gadgets that can load into an import gadget to appear on a dashboard:

- http://www.google.com/ig/modules/ajaxsearch.xml
- http://www.google.com/ig/modules/calculator.xml
- http://www.google.com/ig/modules/calendar-for-your-site.xml
- http://www.google.com/ig/modules/driving_directions.xml

For more information about using the import gadget to display Google gadgets, see "Using an import gadget" in Chapter 3, "Building operational dashboards."

User written Google gadgets must adhere to the Google gadget specifications. These gadgets render on the dashboard inside iframe tags, and can link to Actuate gadgets to receive data.

Creating Google gadgets

Users can create Google gadgets that display on a dashboard. These gadgets are XML text files and must follow the Google gadget specification. After the file is placed on a web server, a dashboard developer can use the file's URI in an import gadget to make it appear on the dashboard.

A Google gadget file typically includes the following components:

- Module tag
  This tag includes all gadget contents except the XML file declaration that begins the file.
- ModulePrefs tag
  This tag contains gadget characteristics and required features.
- Content tag
  This tag contains CSS, HTML, and JavaScript code used in the gadget.
- CDATA section
  This section avoids XML parsing and the escape of special characters in HTML and JavaScript code.

Listing 8-1 shows an example Google gadget that displays HTML content.

Listing 8-1 Example Google gadget displaying HTML code

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="gadget example" height="300">
   </ModulePrefs>
   <Content type="html">
   <![CDATA[
      <script language="javascript" type="text/javascript">
         <!-- JavaScript code -->
      </script>
      <!-- HTML code -->
      <div id="my_div" style="background-color:green;height:100%">
      <b>My sample gadget</b></div>
   ]]>
   </Content>
</Module>
```

CSS, HTML, and JavaScript content that normally goes inside BODY tags of an HTML file, can be included in a Google gadget. Google gadgets generate their own HTML, HEAD, and BODY tags so it is not necessary for a gadget developer to use these tags in the gadget. Users can load external files such as JavaScript libraries and images in the gadget by using the URI of the external file.

Using gadget features

Google gadgets use features to describe special API that enables the gadget to function. The code for these APIs are stored on the server displaying the Google gadget, in this case on Information Console. The gadget developer uses less code because the requested feature is loaded by Information Console. For example, instead of adding JavaScript code to parse data, the parse function can be loaded as a feature.

The Google gadget must contain a <require> element with the feature name, as shown in the following code:

```
<Require feature="pubsub" />
```

This code requests the pubsub gadget feature enables communication from an Actuate gadget to a Google gadget.

When the feature is available, the gadget loads the API associated with the feature from Information Console. If the requested feature is not available, an error message appears. Externally hosted Google gadgets can require special features not available in Information Console.

If a missing feature uses JavaScript, the feature can be included in a customized Google gadget by a software developer integrating the missing JavaScript code into the gadget code.

The following Google gadget features are supported along with the Google gadget Core JavaScript API:

- Flash
- Minimessage
- Pubsub
- Tabs

For more information about building Google gadgets with these features, see the Google gadget API reference at the following URL:

`http://code.google.com/apis/gadgets/docs/reference/`

Using the flash feature

Gadget developers embed Flash movies in Google gadgets using the flash feature. The following code shows the flash feature being used in a Google gadget.

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="Flash demo" height="300">
      <Require feature="flash" />
   </ModulePrefs>
   <Content type="html">
   <![CDATA[
      <div id="flashcontainer"></div>
      <script type="text/javascript">
         var url = "http://www.mywebsite.com/swfs/main.swf";
         gadgets.flash.embedFlash(url, "flashcontainer", {
            swf_version: 6,
            id: "flashid"
            })
      </script>
  ]]>
   </Content>
</Module>
```

Optionally, gadget developers can use the object tag to embed the Adobe Flash content in HTML code. For more information about using Adobe Flash, see "Displaying Adobe Flash content" in Chapter 7, "Managing dashboard resources."

Using the minimessage feature

Gadget developers can display a temporary message to users using the minimessage feature. Figure 8-6 shows the minimessage feature in a gadget.

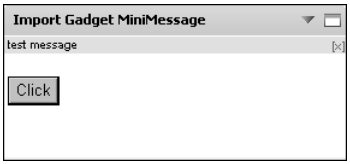


Figure 8-6 Using the minimessage feature

The following code shows the minimessage feature being used in a Google gadget:

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="minimessage demo">
      <Require feature="minimessage" />
   </ModulePrefs>
<Content type="html">
   <![CDATA[
      <form>
      <input type="button" value="Click" onClick="Changer()">
      </form>
      <script language="javascript" type="text/javascript">
         var msg = new gadgets.MiniMessage(__MODULE_ID__);
         function Changer(){
            msg.createDismissibleMessage("test message");
         }
      </script>
   ]]>
</Content>
</Module>
```

Using the pubsub feature

The pubsub feature of a Google gadget is also called the publish and subscribe gadget framework. This framework enabled gadgets to send and receive messages from one Google gadget to another. Gadget designers link Google gadgets to Actuate gadgets using the pubsub feature.

Google gadgets can also use the pubsub feature to communicate with other Google gadgets. For more information about linking gadgets, see "Linking Google gadgets" later in this chapter.

Using the tabs feature

Gadget developers can add a tabbed interface to their gadget using the tabs feature. Figure 8-7 shows the tabs feature in a gadget.

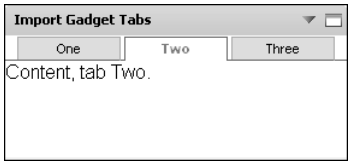


Figure 8-7 Using the tabs feature

The following code shows the tabs feature being used in a Google gadget:

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="tabs demo">
      <Require feature="tabs" />
   </ModulePrefs>
   <Content type="html">
   <![CDATA[
   <script language="javascript" type="text/javascript">
   var tabs = new gadgets.TabSet(__MODULE_ID__, "Two");
   function init() {
      tabs.addTab("One", {
         contentContainer: document.getElementById("id_1")});
      tabs.addTab("Two", {
         contentContainer: document.getElementById("id_2")});
      tabs.addTab("Three", {
         contentContainer: document.getElementById("id_3")});
   }
   gadgets.util.registerOnLoadHandler(init);
   </script>
   <div id="id_1" style="display:none">Content, tab One.</div>
   <div id="id_2" style="display:none">Content, tab Two.</div>
   <div id="id_3" style="display:none">Content, tab Three.</div>
   ]]>
   </Content>
</Module>
```

Using an external location

Google gadgets are stored in the following locations:

- Google server
- Web server

The location of the XML file must be given as a URI path, for example:

`http://www.google.com/ig/modules/ajaxsearch.xml`

Because the gadget file renders using the Information Console, the location must be accessible from the server running Information Console. For example, an

import gadget using the URI http://localhost/mygadget.xml loads the gadget from a web server on Information Console.

Google also offers a gadget hosting service for developers. If you have direct access to the server that Information Console is using, you can store Google gadgets in the server.

For example, add a directory named myGadgets to the default Windows location of Information Console:

```
C:\Program Files\Actuate11\iServer\servletcontainer\iportal\
```

Add an import gadget using that directory, as shown in the following URL:

```
http://localhost:8900/iportal/myGadgets/sampleGoogle.xml
```

Figure 8-8 shows the gadget named sampleGoogle.xml loaded from directory in the Information Console server.

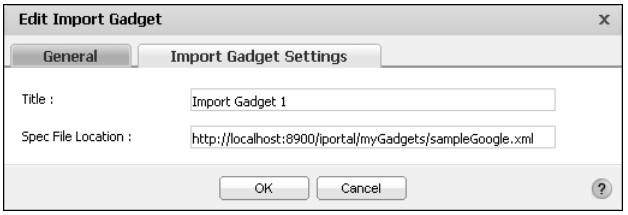


Figure 8-8 Adding a local Google gadget to the dashboard

Linking Google gadgets

Dashboard developers can link an import gadget to another Actuate gadget to receive user selections. Import gadgets passes the values it receives from the link to the Google gadget that it displays. The Google gadget must listen for and process the received values.

Dashboard developers can add scripts to process the linked values before the value is passed to the Google gadget. For more information about scripting, see "Scripting linked gadgets" in Chapter 6, "Linking and scripting gadgets."

Linking an import gadget

Import gadgets can link to Actuate gadgets to receive user data selections.

The import gadget must link to another gadget on the dashboard before the channel name can be used in the Google gadget. For more information about linking gadgets, see "About linking to gadgets" in Chapter 6, "Linking and scripting gadgets."

The Google gadget displayed in the import gadget can then process the user selections when the following conditions are met:

- An import gadget displays the Google gadget XML file on the dashboard
- The Google gadget XML file requests the publish subscribe framework API using the following code:

```
<Require feature="pubsub" />
```

- The gadgets.pubsub.subscribe(channelName, callback) method is used in the Google gadget to receive the linked message and send it to a callback function, as shown in the following code:

```
gadgets.pubsub.subscribe("ON_SELECTOR_GADGET_CHANGED",
   callbackFunction);
```

- A callback function exists in the Google gadget XML file that processes the received message. For example, a callback function can parse the incoming message and create a value, such as a customer's address. The callback function then sends the value to an external web service such as Google maps, and updates the gadget with the response from the external web service.

Listing 8-2 shows an example Google gadget that displays changes from linked data selection gadgets. After saving the Google gadget code as an XML file and placing it on a web server, load the file into an import gadget. Use the link options from the import gadget menu to link the new import gadget to a data selection gadget on the dashboard. Each time the linked data selection gadget is changed, the selected value displays in the Google gadget.

Listing 8-2 Example Google gadget with linking enabled

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="linking example" height="500">
      <Require feature="pubsub" />
   </ModulePrefs>
   <Content type="html">
   <![CDATA[
      <script language="javascript" type="text/javascript">
         function onEventChange(sender, message) {
            document.getElementById('changeme').innerHTML=message;
         }
         gadgets.pubsub.subscribe("ON_SELECTOR_GADGET_CHANGED",
         onEventChange);
      </script>
      <div id="changeme">DEFAULT TEXT</div> <br />
      <div>The above text changes according to the current
      selection of the gadgets it is linked to.</div>
```

(continues)

```
   ]]>
   </Content>
</Module>
```

For more information about Google gadgets, see the Google gadget specification at the following URL:

```
http://code.google.com/apis/gadgets/
```

Using multiple linked import gadgets

Dashboard developers can use multiple Google gadgets on the same dashboard. Each Google gadget must be listening on unique channel names unless the gadget developer wants them to receive the same user selections. When an import gadget links to a data selection gadget, the message sent by the data selection gadget is a global message. This global message is sent across the dashboard on the ON_SELECTOR_GADGET_CHANGED channel. This means that when a user selects a value from a a data selection gadget, all linking import gadgets that listen on the ON_SELECTOR_GADGET_CHANGED channel receives the same message.

For example, a dashboard developer adds an import gadget to show a map of customer addresses and another import gadget to show shipping status on orders. When a user selects the order number from a linked list gadget, both import gadgets receives the value and try to process it. The import gadget that shows shipping can process the value. The import gadget showing a map expects an address and is unable to retrieve a valid map from an order number.

The issue is resolved when both import gadgets listen on different channels for user selections. Once each gadget is assigned a unique channel event name, messages can go to the correct import gadget. If the previous example used unique channel names, changes to the customer list gadget only affects the import gadget showing a map. Changes to the list gadget showing order numbers, only affects the import gadget showing shipping status.

Using a unique channel name

The gadget developer can create a unique channel name in the Google gadget and configure the import gadget to use the new channel name when linking to the data selection gadget.

To use a unique channel name in a Google gadget, change the channel name when calling the gadgets.pubsub.subscribe() method. The following code shows the channel name changed to Unique_channel_name:

```
gadgets.pubsub.subscribe("Unique_channel_name", onEventChange);
```

Only data arriving on the Unique channel name triggers the onEventChange function.

Changing a channel name

Once the Google gadget is listening for a unique channel name, the channel name must be changed in the dashboard. Add a script to the link settings of the import gadget to match the channel name used in the embedded Google gadget. The following code shows an example of this script that changes the channel event name to Unique_channel_name.

```
data.event =  'Unique_channel_name';
```

This script overrides the default event name used by the gadget. The unique channel name must match the name that the embedded Google gadget is listening for.

Figure 8-9 shows JavaScript in a link event for an import gadget.

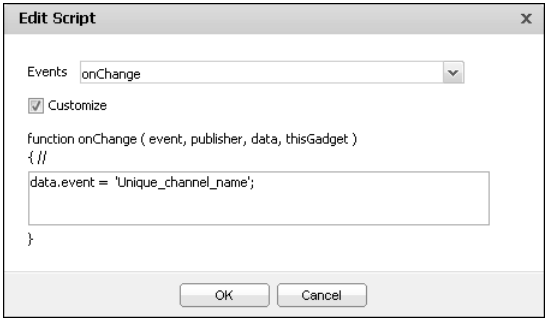


Figure 8-9 Changing the channel event name

All import gadgets listening for the new channel name Unique_channel_name receives the messages from their list gadget.

For more information about adding script to a linking gadget, see "Scripting linked gadgets" in Chapter 6, "Linking and scripting gadgets."

Linking two Google gadgets together

Gadget developers can build Google gadgets that communicate from one to another using Google's publish subscribe framework API. One gadget can publish a message and another gadget can subscribe to it. For example, one Google gadget can offer choices to users and another Google gadget can process and display the selections to the user.

Google gadgets that communicate together on the dashboard must each be loaded into an import gadget and communicate on the same channel name.

The dashboard developer does not link the two import gadgets together because the Google gadget contains all the necessary code to publish and to receive the messages.

Listing 8-3 shows an example Google gadget that publishes the current date to a custom channel when a user selects the HTML button.

Listing 8-3 Example of a publishing Google gadget

```
<?xml version="1.0" encoding="UTF-8" ?>
<Module>
   <ModulePrefs title="Sample PubSub Publisher">
   <Require feature="pubsub"/>
   </ModulePrefs>
   <Content type="html">
   <![CDATA[
   Published date: <div id="output">...</div><br>
   <script language="javascript" type="text/javascript">
   function myEvent() {
      var message=new Date();
      gadgets.pubsub.publish("MY_CHANNEL_NAME", message);
      document.getElementById('output').innerHTML = message;
   }
   </script>
   <div>
   <input type="button" value="Publish date and time"
   onclick="myEvent()"/>
   </div>
   ]]>
   </Content>
</Module>
```

Create a second import gadget using the code from Listing 8-2. Change the channel that the new Google gadget subscribes to so that it matches the channel name of the publishing Google gadget. In the previous example, the channel name was MY_CHANNEL_NAME. Change the subscribe method to use this channel name, as shown in the following code:

```
gadgets.pubsub.subscribe("MY_CHANNEL_NAME", onEventChange);
```

Add both Google gadgets to the same dashboard using import gadgets. When the user selects the HTML button, the subscribing Google gadget receives the published message.

Figure 8-10 shows the two gadgets communicating.

Figure 8-10 Communicating between Google gadgets

The dashboard developer does not need to link the two import gadgets together because the Google gadget contains all the necessary code to communicate publish and to receive the message.

Linking public Google gadgets

Google gadgets that the dashboard developer does not own and can not modify, can receive user selections if the gadget uses the pubsub feature. The dashboard developer adds a script to the import gadget that displays the Google gadget. This script changes the link channel name to match the channel name of the Google gadget.

For example, the dashboard developer looks at the XML code of the Google gadget and sees the following code:

```
gadgets.pubsub.subscribe("MY_PERSONAL_GOOGLE_GADGET",
   onEventChange);
```

The channel name used by this Google gadget is MY_PERSONAL_GOOGLE_GADGET.

The dashboard developer then links to a data selection gadget, such as a list gadget, and adds a script to the link settings to match the channel name used in the Google gadget. The following code shows an example of this script, changing the name of the event to MY_PERSONAL_GOOGLE_GADGET.

```
data.event = "MY_PERSONAL_GOOGLE_GADGET";
```

When the user makes a selection from the list gadget, the import gadget changes the channel name and passes the message to the Google gadget.

For more information about adding script to a linking gadget, see "Scripting linked gadgets" in Chapter 6, "Linking and scripting gadgets."

Using a gadget building tool

The BIRT 360 iServer option includes Actuate gadgets. When you add these gadgets to the dashboard or edit them, a gadget building wizard launches. Use the Gadget Builder to configure Actuate gadgets.

Google gadgets can be built with any of the following third-party tools:

- Text editor
  For example, Microsoft Notepad for Windows.
- XML text editor

  For example, XML Copy Editor, available at the following URL:

  `http://xml-copy-editor.sourceforge.net/`

- Google Gadget Editor
  This editor requires a Google account and is available at the following URL:

  `http://code.google.com/apis/gadgets/docs/tools.html#GGE`

The Google Gadget Editor supports hosting Google gadgets and previewing gadgets when loaded in iGoogle. If you already have an iGoogle home page, you can add this editor to your iGoogle page with the following URL:

`http://www.google.com/ig/directory?url=gge.xml`

Hosting enables gadget developers to immediately receive a URL to reach the gadget they are building.

Index

E

F

G

H

I

J

L

M

N

O

P

Q

R

S

T

U

V

W

X