

ActuateOne™

One Design
One Server
One User Experience

Building BIRT Dashboards

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A b o u t B u i l d i n g B I R T D a s h b o a r d s

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.

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 can download, explore, and monitor data displayed on their personal dashboard. Users can also open and edit dashboard files in Information Console or embed them in web sites using the Actuate JavaScript API (JSAPI).

A personal dashboard enables users to organize and subscribe to shared dashboards or to design new ones using the browser-based dashboard builders.

Figure 1-1 shows a BIRT dashboard in Information Console.

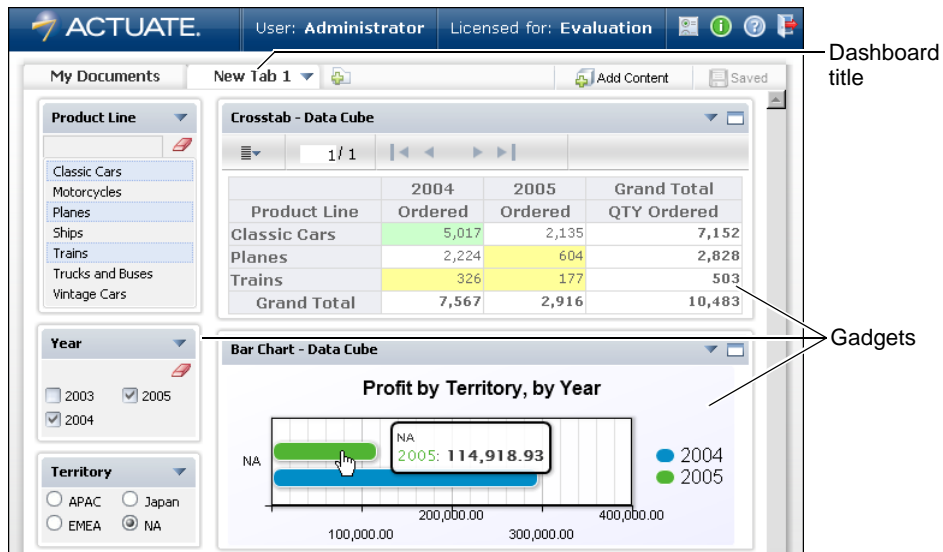


Figure 1-1 Displaying an example of dashboard layout

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

Users interact with dashboard data using the gadgets on the dashboard. Each gadget is a self-contained data viewer. For example, there are gadgets that display interactive BIRT reports, tables, cross tabs, and charts. Other gadgets display values for a user to select, such as a list or calendar gadget.

Gadgets such as HTML and image gadgets bring in data from external sources to display on the dashboard. Custom gadgets can use HTML code to display information and use JavaScript events to add custom user interactions.

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

Users log in to Information Console to start using BIRT dashboards. Users can then interact, export, or print data displayed in their personal dashboard or make new dashboards. The personal dashboard is associated with each user account and contains dashboards that the user subscribes to or has created.

Dashboards contain one or more gadgets that display data or enable user choices. 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 then select different perspectives of the chart data to view, such as viewing the chart data for selected years.

Each user's personal dashboard contains 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. Users can reset their personal dashboard to display the system default dashboard, a blank dashboard, or a selected dashboard file.

Opening a dashboard or gadget file

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. For example, authors can update a shared dashboard file directly from the shared folder without having to keep the dashboard in their personal dashboard.

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

Subscribing to a shared dashboard

Users and organizations share dashboards so that other users can subscribe to the same dashboard and view the same data. For example, shared dashboards can monitor business data and use refresh rates to keep the data current, they can display approved performance indicators, and enable interactivity for users to explore, analyze, and export the data.

A user adds a dashboard file to their personal dashboard by subscribing to the files from the dashboard gallery. When a user subscribes to a dashboard, that dashboard is displayed to the user each time they log in to Information Console.



Shared dashboards appear with the share icon on the dashboard title. Shared dashboards update to the latest version when a new version of the dashboard file is available.

Users can interact with gadgets on the shared dashboard but cannot change the layout or gadget configuration settings. For example, users can filter displayed data using data selection gadgets like lists. If a data version gadget exists on the dashboard users can select from different versions of a BIRT data object store to display on the dashboard.

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.

Building a custom 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 charts in multiple image formats, offers drill through hyperlinks, enables full-page output formats such as Adobe PDF, and supports custom business logic solutions. These features are available using report or Reportlet gadgets to display BIRT files in the dashboard.

Designing a dashboard

This chapter contains the following topics:

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

About dashboard organization

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

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

Users have limited editing options when subscribing to dashboards because updates to the latest version of a dashboard file replaces user changes. Once a user subscribes to a shared dashboard, the user can personalize it in the following ways:

- Change the display order of the dashboard in Information Console.
- Copy the shared dashboard to enable editing.
- Delete the dashboard.
- Display all selections on the dashboard.
- Rename the dashboard.

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 user'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

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 shared 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 shared dashboards are reset when the dashboard refreshes or updates.



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

If new versions of a shared dashboard exists, subscribers to this dashboard receive the latest version the next time they open or refresh the dashboard. Users can change shared dashboard files when they have write permissions to the file or by copying the shared 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 2-1.

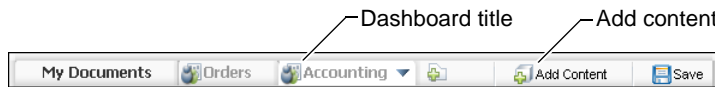


Figure 2-1 Subscribing to a shared dashboard

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

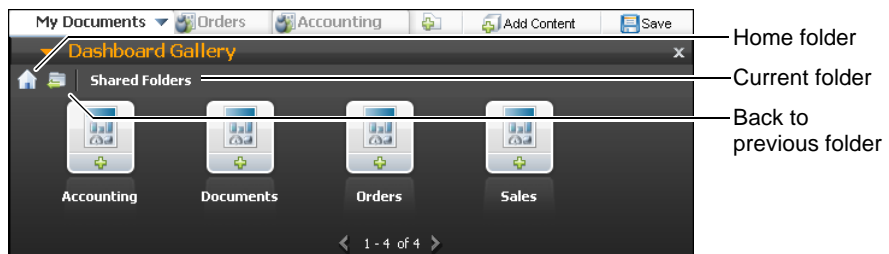


Figure 2-2 Exploring Dashboard Gallery

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



The placement indicator shows possible locations for the new dashboard.

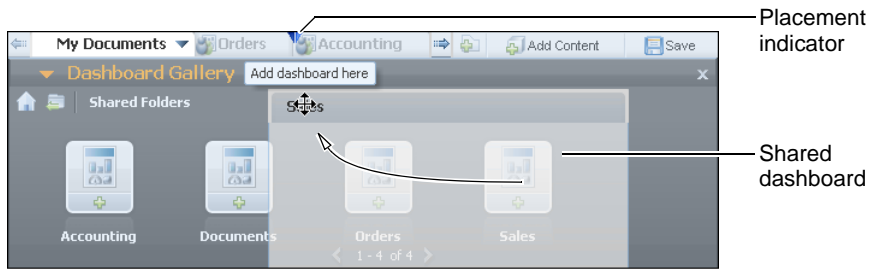


Figure 2-3 Placing a new dashboard

The new dashboard appear in the selected location, as shown in Figure 2-4.



Figure 2-4 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.

Users can also create a new dashboard by copying a shared dashboard. When users copy a shared dashboard, they create a new dashboard and can customize it. Copying a shared 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.

How to create a blank dashboard

- 1 Log in to Information Console.
- 2 Select New tab as shown in Figure 2-5.

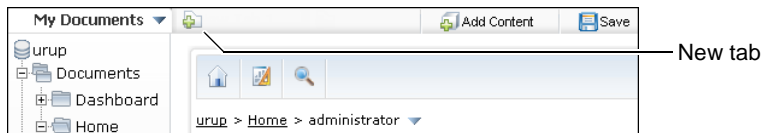


Figure 2-5 Creating a new, blank dashboard

A new, blank dashboard appears with options to add gadget to the dashboard, as shown in Figure 2-6.

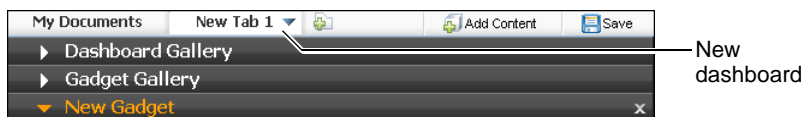


Figure 2-6 Adding content to a new dashboard

Adding gadgets to a dashboard

Users add gadgets from 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 2-7.

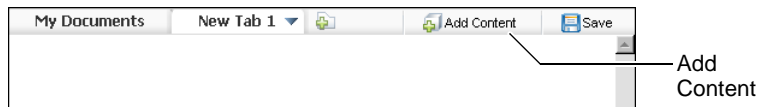


Figure 2-7 Adding content to a dashboard

New gadget choices appear.

- 3 Double-click a gadget category folder in New Gadget, as shown in Figure 2-8.

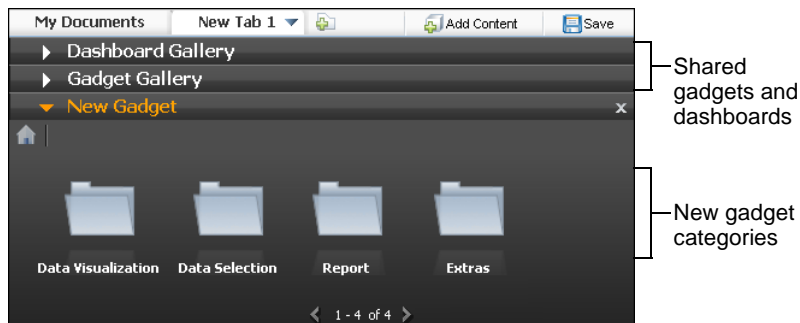


Figure 2-8 Selecting a gadget category

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 2-9.

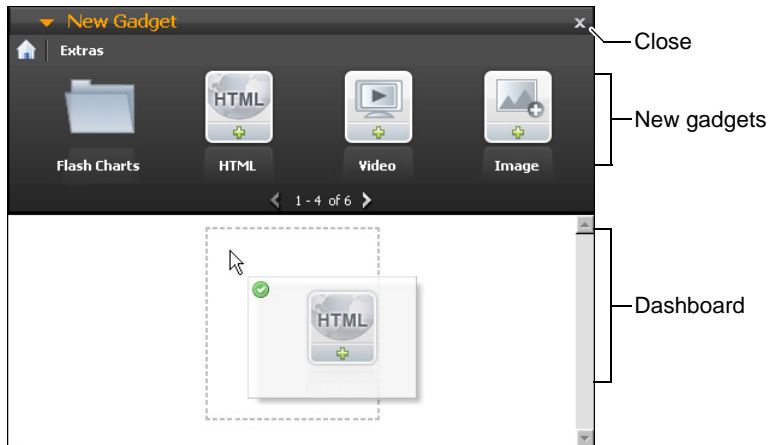


Figure 2-9 Adding an Extras gadget

- 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 2-10.

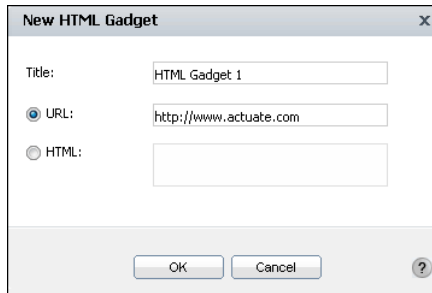


Figure 2-10 Adding a URL to an HTML gadget

- 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 free form layout, the user can change the gadget height, width, and placement on the dashboard.

Formatting a dashboard

Each dashboard supports gadget layout for free form or one, two, or three columns. Free form 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 defines how the gadgets appear on a dashboard. Each gadget uses either a column or free form layout. Gadgets that use column layouts do not overlap and appear either above or below another gadget in the same column. Gadgets in free form layout can be anywhere on the dashboard. If a free form gadget overlaps another gadget, the user can move the gadget to the front or back of the other gadgets.

Figure 2-11 shows gadgets in a three column layout with two floating gadgets. Gadget 5 and gadget 6 are floating in this example. The free form layout sets all gadgets to floating.

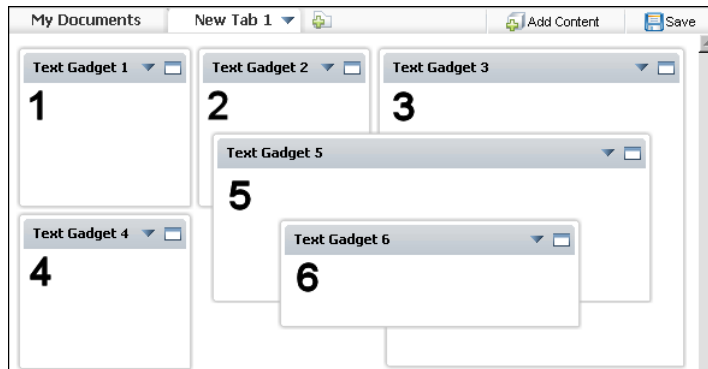


Figure 2-11 Gadgets in a three-column layout with floating gadgets

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

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

Choosing a dashboard layout

You can change the layout on dashboards that 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.

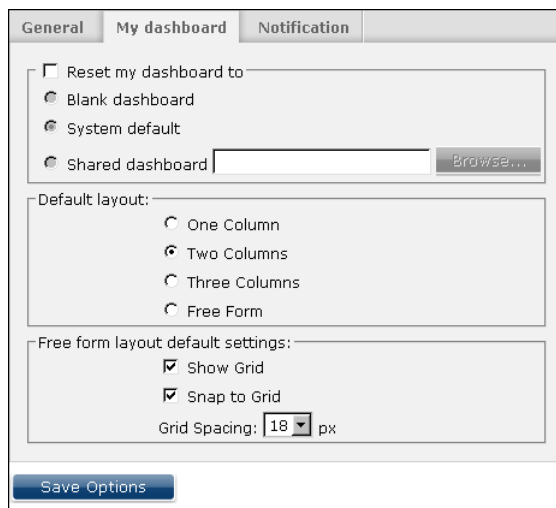
Using the free form layout settings of Option—My dashboard, users choose to display a grid, define the grid spacing and decide if gadgets will snap to the grid. These settings are only used when the dashboard layout is set to free form.

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 free form 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 layout.

Figure 2-12 shows default dashboard settings in Option—My dashboard.



The screenshot shows a settings window titled 'My dashboard' with three tabs: 'General', 'My dashboard', and 'Notification'. The 'My dashboard' tab is active. It contains the following options:

- ☐ Reset my dashboard to:
 - ☒ Blank dashboard
 - ☒ System default
 - ☒ Shared dashboard [text box]
- Default layout:
 - ☐ One Column
 - ☒ Two Columns
 - ☐ Three Columns
 - ☐ Free Form
- Free form layout default settings:
 - ☒ Show Grid
 - ☒ Snap to Grid
 - Grid Spacing: px

At the bottom is a .

Figure 2-12 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 2-13. The dashboard layout changes to a two-column layout.

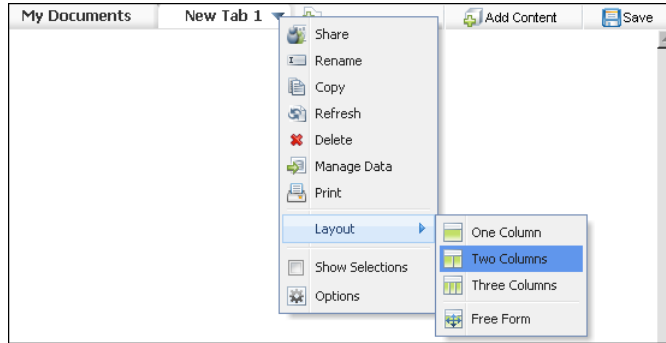


Figure 2-13 Configuring gadget layout in columns and free form

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 2-14. The column bar appears.

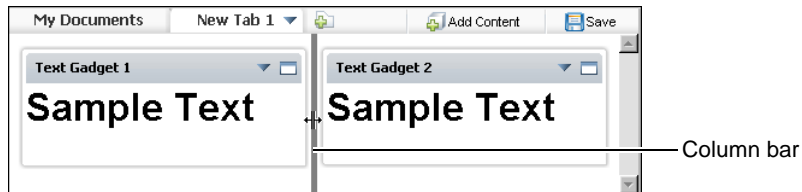


Figure 2-14 Resizing a column in a dashboard

- 2 Drag the bar to the left, to a new location, as shown in Figure 2-15.



Figure 2-15 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 gadgets in the same column. Gadgets in a column layout do not overlap and have an adjustable height. If the dashboard uses a free form 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 2-16.

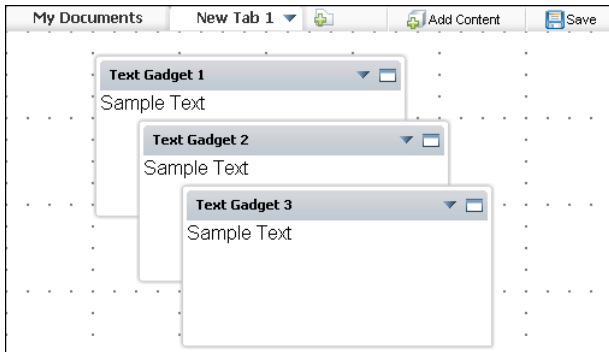


Figure 2-16 Placing gadgets in a free form grid

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 2-17.

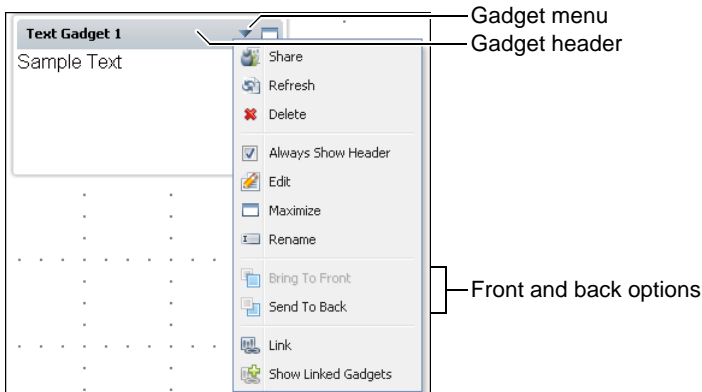


Figure 2-17 Displaying the gadget menu

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 2-18.

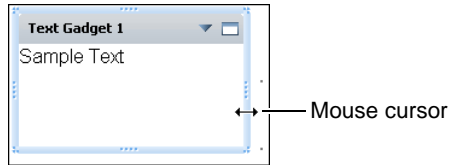


Figure 2-18 Selecting a gadget border to change

- 2 Drag the border to a new position to resize the gadget, as shown in Figure 2-19. The gadget resizes to the new border.

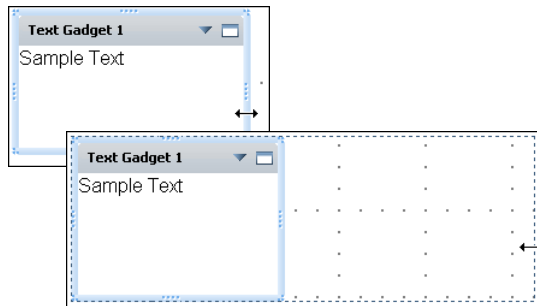


Figure 2-19 Changing the size of a gadget

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 2-20.

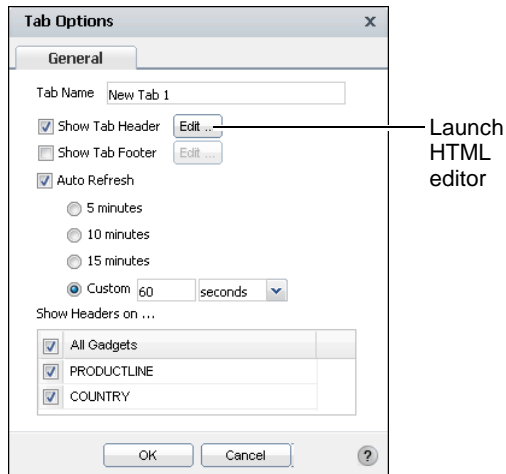


Figure 2-20 Changing dashboard options

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

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.

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.

Figure 2-21 shows the HTML editor for the dashboard header and footer.

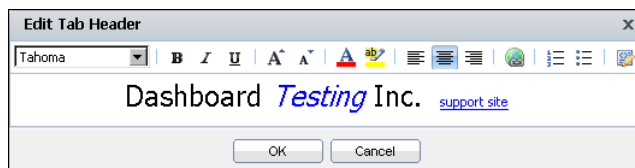


Figure 2-21 Editing the dashboard header using the HTML editor

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.

Changing a dashboard

Users can edit dashboards displayed on the users personal dashboard or dashboard files in the Encyclopedia volume. For example, a dashboard developer can create a template dashboard file to use when building new dashboards.

Editing a dashboard file

Using the Information Console file explorer, you can edit individual dashboard files and save the dashboard file to a new dashboard file.

Dashboards opened for editing from the Information Console file explorer have the following save options if you have permission to edit the dashboard:

- Save: save the current dashboard settings to the existing dashboard file.
- Save as: save the current dashboard to a new dashboard file.

Saving a dashboard file replaces the previous dashboard file with the new changes. If other users subscribe to the changed dashboard, they will receive the new dashboard the next time they log in to Information Console or refresh their personal dashboard.

Saving a dashboard as a new file will create a new dashboard file.

How to save a dashboard as a new dashboard file

Follow these instructions to save a new dashboard file from a dashboard opened from the Information Console file explorer.



- 1 In My Documents, open a dashboard file for editing. Figure 2-22 shows the Information Console file explorer.

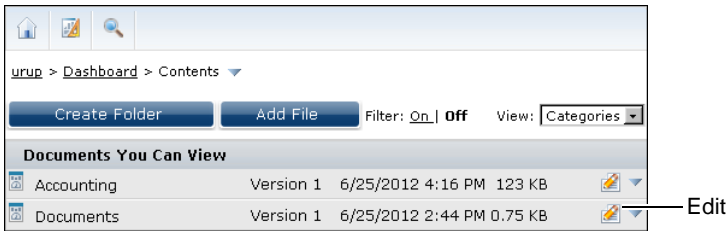


Figure 2-22 Editing a dashboard file



- 2 Select Save. Choose Save As, as shown in Figure 2-23.

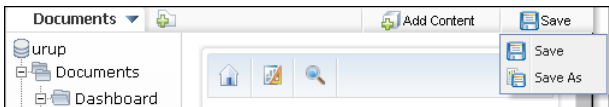


Figure 2-23 Selecting Save As

- 3 In Save As, select an output location and name for the new dashboard file, as shown in Figure 2-24.

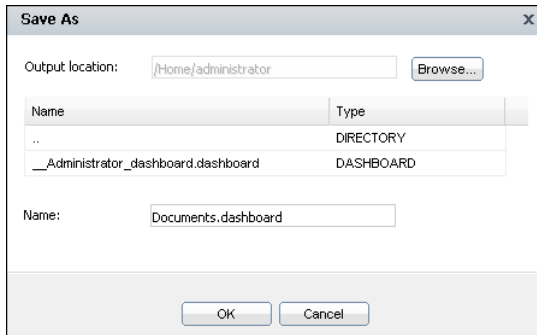


Figure 2-24 Selecting the output location and name for the dashboard

- 4 Choose OK to save the new dashboard file.

Saving dashboard changes

Changes to a user dashboard or to a dashboard file that you have permission to edit are saved automatically at a time interval configured by the iServer administrator. You can use the save status to verify that the current changes will be available the next time that you log in to Information Console. Figure 2-25 shows a dashboard save status.

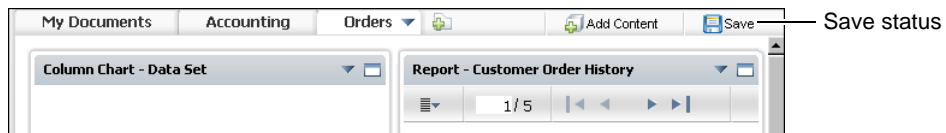


Figure 2-25 Verifying the save status of a dashboard

The save status displays the following information:

- **Save:** the dashboard has not yet been saved or a saved dashboard has been changed since the last time it was saved.
- **Saving:** your changes are being saved.
- **Saved:** previous changes have been saved and there are no other changes to the dashboard that you can save.

You can save changes to dashboards on your personal dashboard by clicking the save status when it displays Save. Shared dashboards continue to reset to the most recent version but user dashboards will save their most recent changes.

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 web browser manages security settings and 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 7.x, 12.x, 14 - 22.x
- Internet Explorer 7.x, 8.x, and 9.x
- Mozilla Firefox 4 - 15.x
- Safari 4, 5

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 web sites 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 in to 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 only when monitoring changing data.
- When using data selection gadgets, consider using data objects with optimized indexes for quick population of the gadget.
- Use 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 display 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.

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 free form layout on the dashboard, as shown in Figure 3-1.

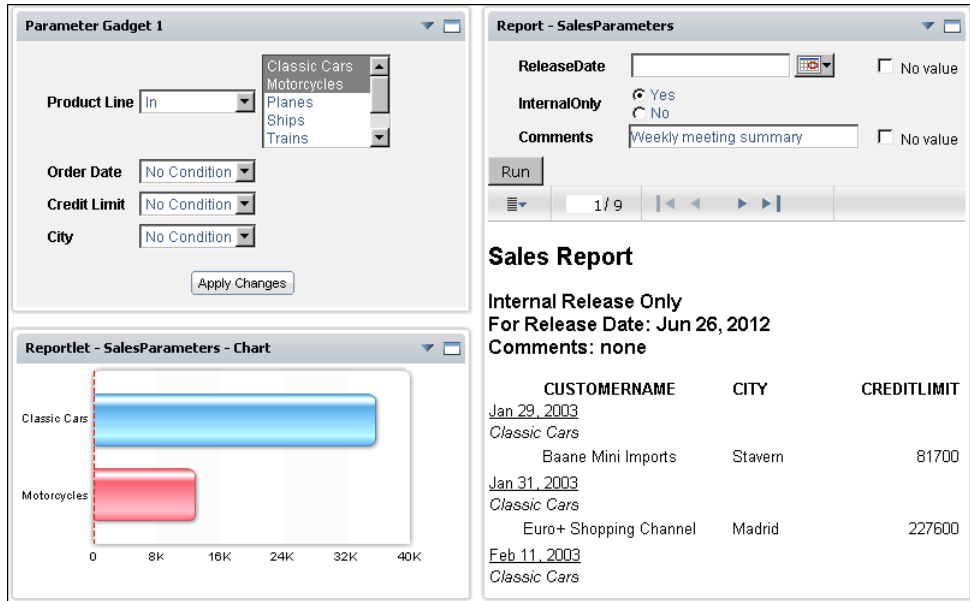


Figure 3-1 Displaying an operational dashboard

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 drill-through of charts when the BIRT developer enables this functionality. Figure 3-2 shows a report gadget with parameters.

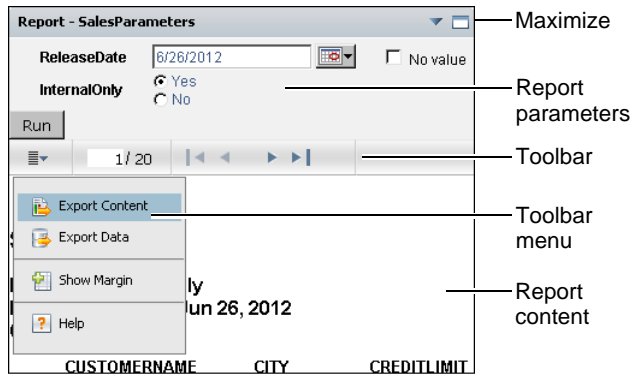


Figure 3-2 Exporting content from a minimized report gadget

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

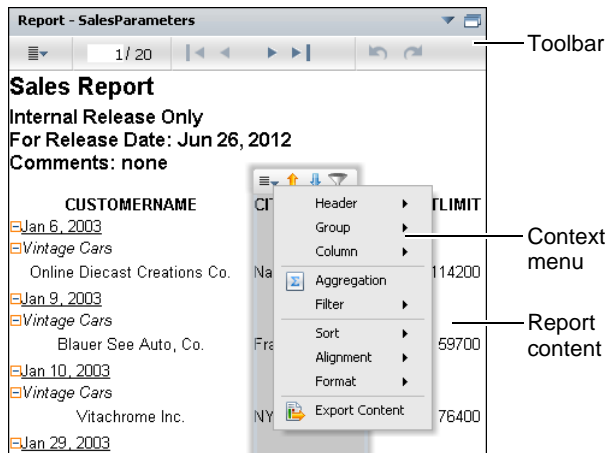


Figure 3-3 Opening the context menu of a maximized report gadget

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 is a dialog box titled "Configuring general options for report gadgets". It contains several options:

- ☒ Show Header
- ☒ Show Border
- ☒ Show Toolbar
- ☐ Enable Scroll bar
- ☐ Auto Refresh
 - ☒ 5 minutes
 - ☐ 10 minutes
 - ☐ 15 minutes
 - ☐ Custom minutes

 Below these options is a section titled "Dimensions" with a small upward arrow. It contains two input fields: "Width : 548 px" and "Height : 401 px". At the bottom are three buttons: "OK", "Cancel", and a help icon (question mark in a circle).

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. The toolbar enables page selection, export of content and data, and an option to hide or show a margin around the report.

Figure 3-5 is a screenshot of a toolbar titled "Report - Customer Dashboard". It features a list icon on the left, followed by page navigation controls showing "1 / 1" and arrows for previous, next, first, and last page. Below these are four buttons with icons:

- Export Content (document icon)
- Export Data (document icon)
- Show Margin (margin icon)
- Help (question mark icon)

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 parameter choices from a BIRT file on the dashboard. 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.

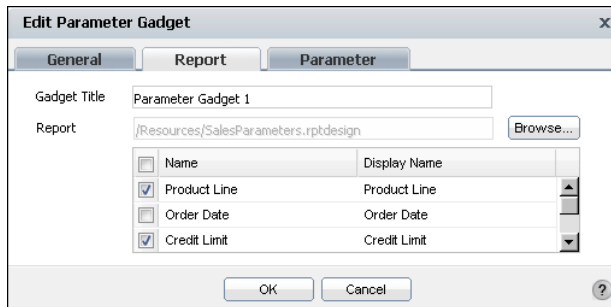


Figure 3-6 Selecting a BIRT file and choosing parameters to display

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.

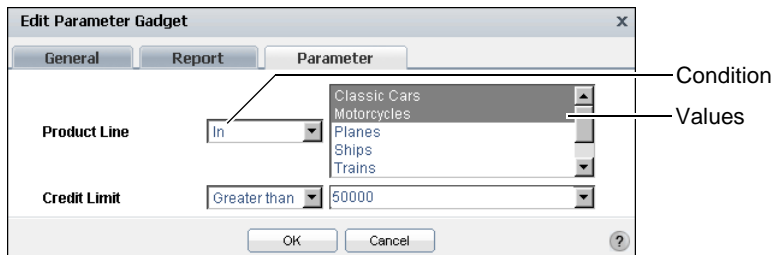


Figure 3-7 Selecting default values in a parameter gadget

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.

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.

When you add this gadget to the dashboard or edit it, the report settings similar to Figure 3-8 appear. You can edit the gadget title and select a report to display.

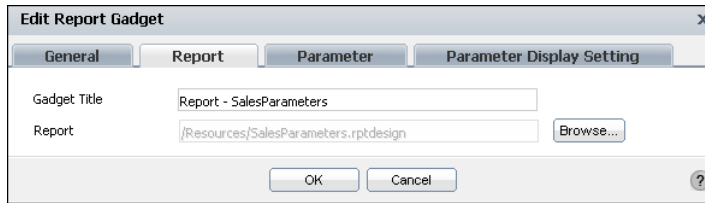


Figure 3-8 Selecting a report for a report gadget

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 Reportlet option of selecting a bookmark when adding or editing a Reportlet gadget.

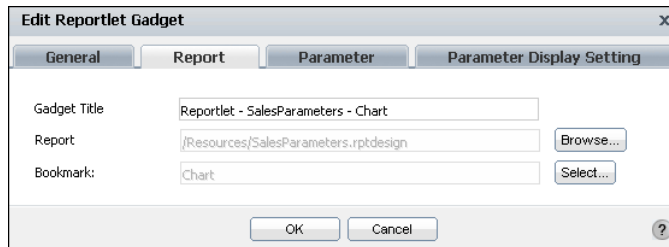


Figure 3-9 Selecting a bookmark from a BIRT document or design file

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.

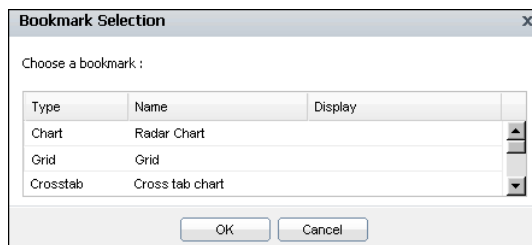


Figure 3-10 Selecting an available bookmark

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 value 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.

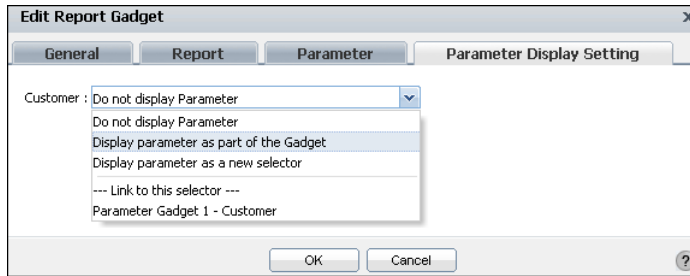


Figure 3-12 Configuring parameter display settings for a report gadget

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.

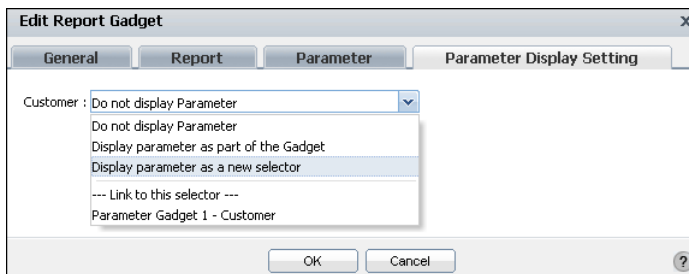


Figure 3-13 Configuring parameter display settings for a report gadget

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

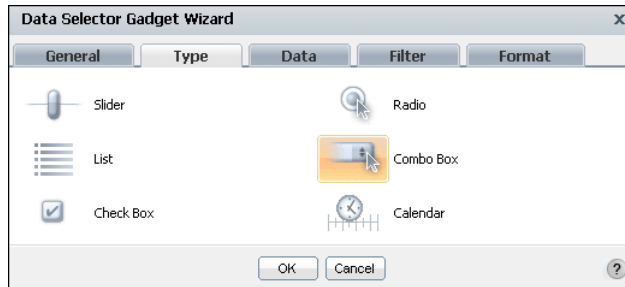


Figure 3-14 Selecting a list gadget

- 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.

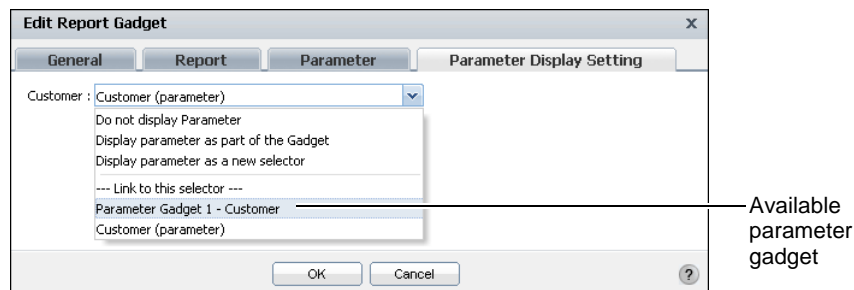


Figure 3-16 Linking to a parameter gadget

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 gadgets together” 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.

Flash charts are also available in the Extras category. These are Flash versions of the charts in the Data Visualization gadget category.

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.

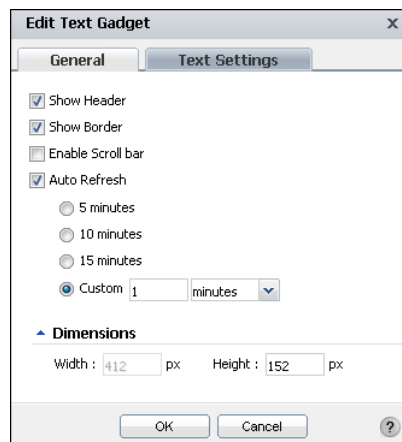


Figure 3-17 Configuring general options for extras gadgets

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.

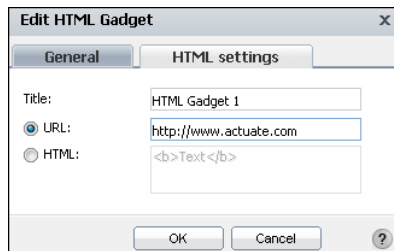


Figure 3-18 Adding a URL to an HTML gadget

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.

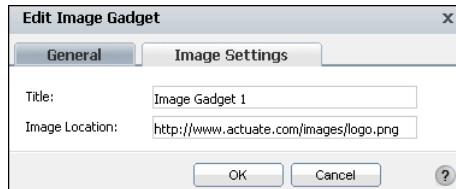


Figure 3-19 Adding a URL to an image gadget

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.

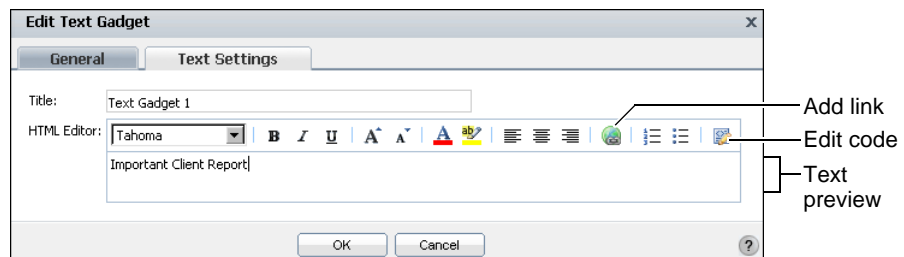


Figure 3-21 Adding HTML text to a text gadget

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.

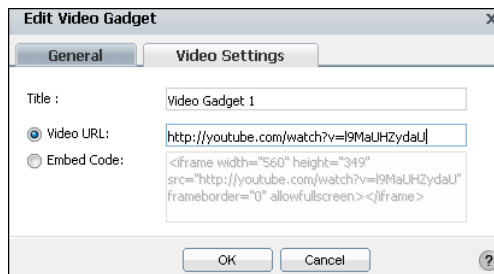


Figure 3-22 Adding a URL to a video gadget

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 web sites. 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

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.

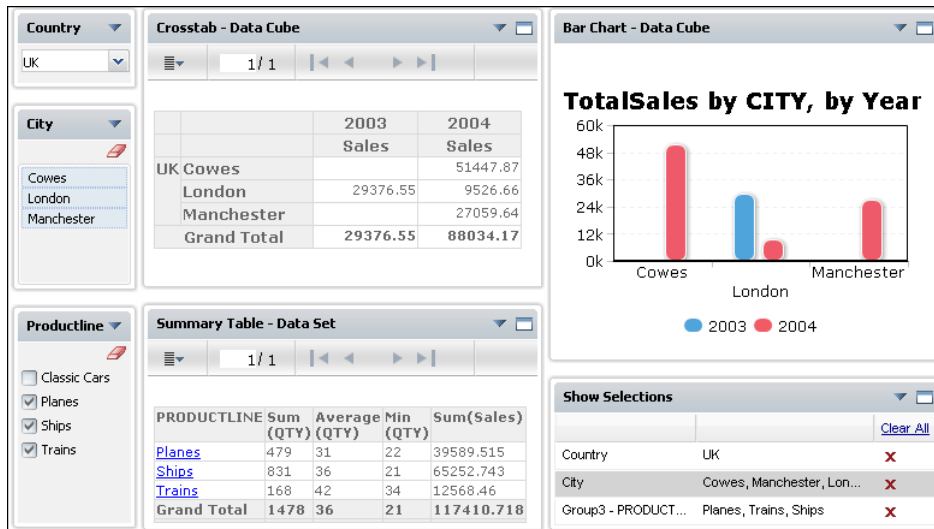


Figure 4-1 Displaying an analytic dashboard

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 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:

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

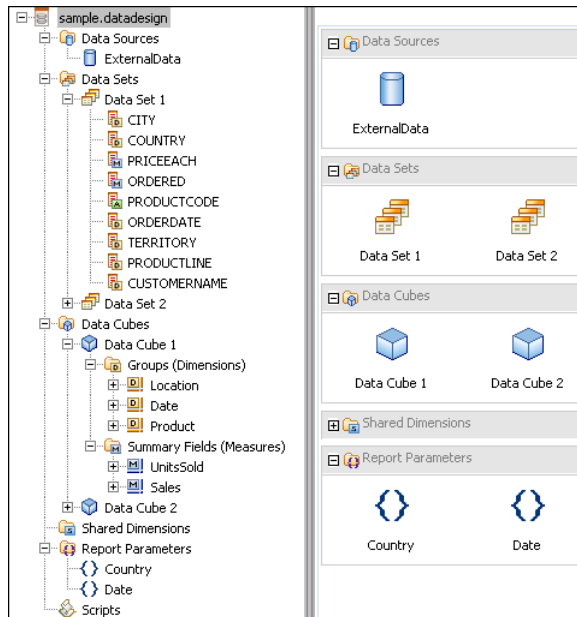


Figure 4-2 Using BIRT Designer Professional to view a data object design file

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 version storage, for example, a data object store called `orders.data` can exist as a different version for each quarter of a year or containing data from different countries. 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 a data object to display

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 dashboard, it appears as an available data object to all other gadgets, as shown in Figure 4-3.

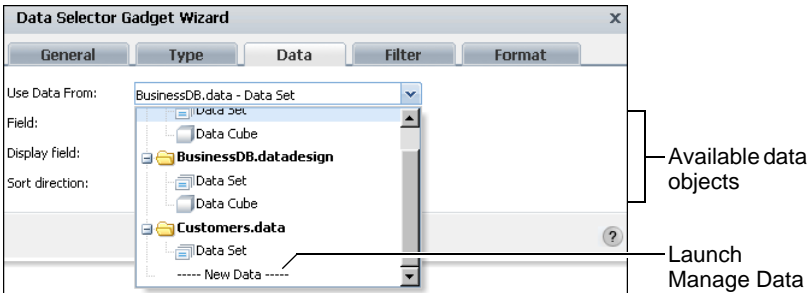


Figure 4-3 Choosing an available data object

To select from additional data objects, choose New Data in Use Data From. Manage Data appears and enables developers to browse, select and refresh available data objects. Figure 4-4 shows an example of selecting available data objects.

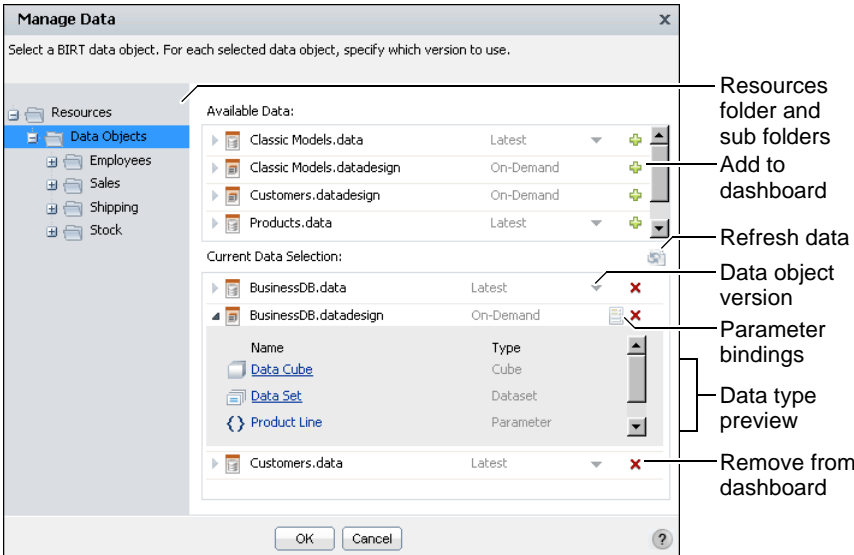


Figure 4-4 Viewing available BIRT data store and BIRT data design files

Using data sets and data cubes



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 salesperson.

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.

Previewing data objects

When previewing data sources to add to a gadget, you can browse the structure of data sets and data cubes. Manage 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.

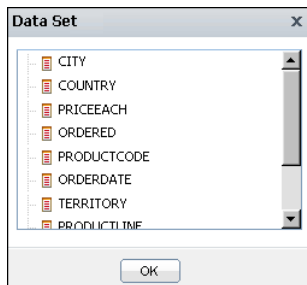


Figure 4-5 Browsing a data set

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.

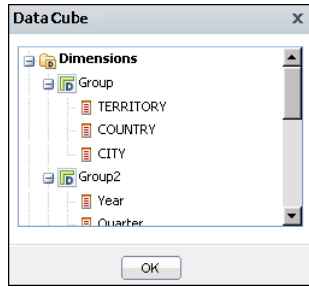





Figure 4-6 Browsing a data cube

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.

Refreshing a data object



Refresh a data object store when using the latest data version and the latest version contains a different data structure. For example, a report developer changes a data object design to include a new dimension for display on the dashboard. The dashboard developer has existing gadgets on the dashboard that use the data store and want to update them to include the new dimension. In Data Manager, the developer chooses Refresh. All gadgets using the latest version of the data store will refresh and enable the new dimension.

When refresh is not used, the existing gadgets use the latest version of the data but the new dimension is unavailable for use in the gadget.

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 Manage Data as parameter bindings. Launch Manage 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

Set parameters in a BIRT data object design file. 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.

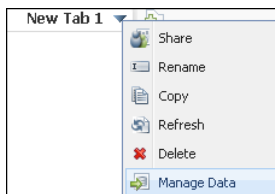


Figure 4-7 Selecting Manage Data



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

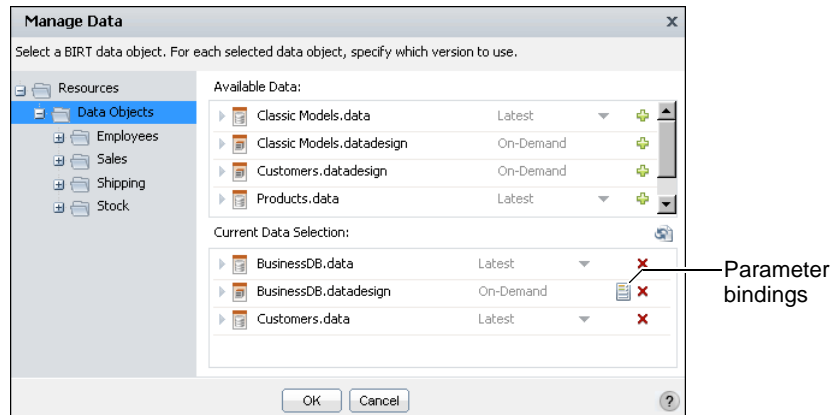


Figure 4-8 Selecting Parameter bindings

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

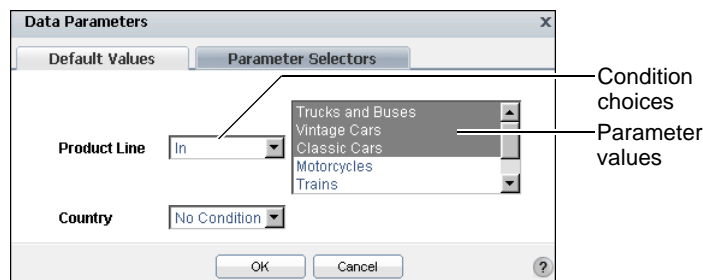


Figure 4-9 Selecting default parameter values for Product Line

- 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

This example uses a list gadget.

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

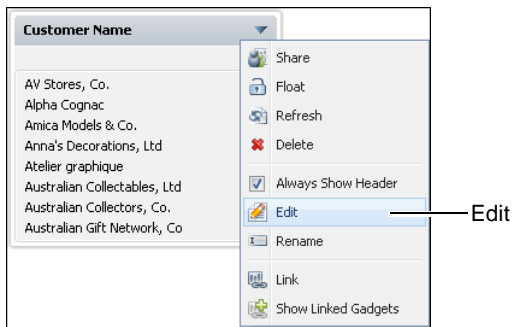


Figure 4-10 Selecting Edit to create a filter

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

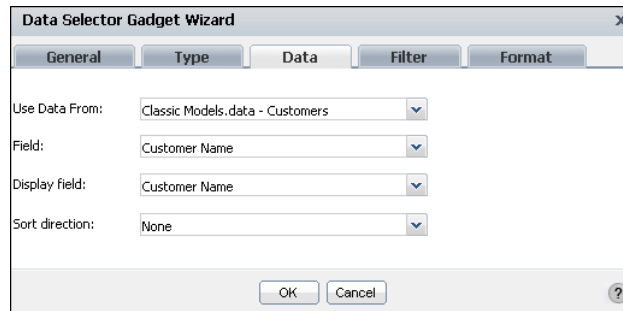


Figure 4-11 Adding a filter to a gadget data source

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

- In Filter By, select a data field to filter from, such as Customer Country.
- 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 Canada, as shown in this example.

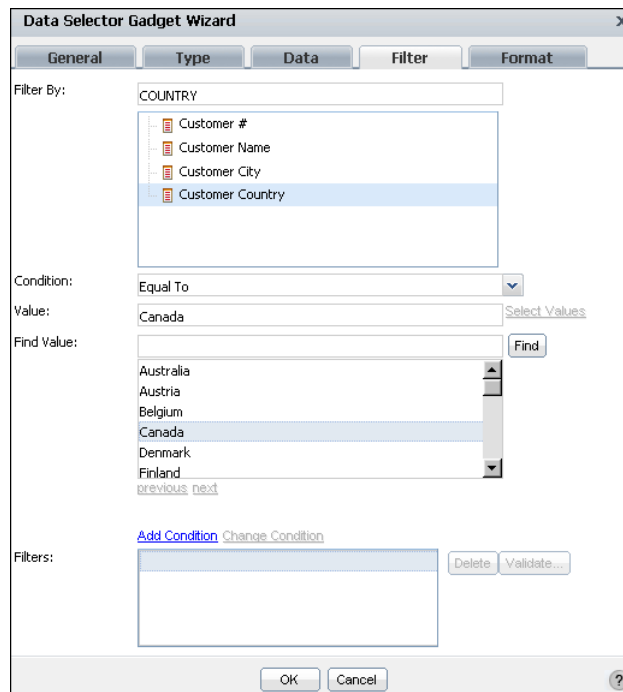


Figure 4-12 Creating a filter condition

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.

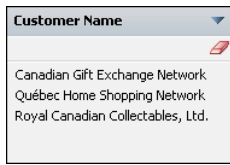


Figure 4-13 Displaying filtered data in a list

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. Charts support zooming into displayed data using the *x*-axis, *y*-axis or both. Users can launch BIRT Data Analyzer on selected cross tabs.

Chart gadgets also support custom JavaScript interactions when the JavaScript is part of the theme that they are using.

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 HTML5-based chart. Users can filter, group, and aggregate data. Available chart types are area, bar, column, doughnut, line, pie, and scatter.

Table 4-1 Data visualization gadget types

Icon	Type	Purpose
	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	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, sparkline, 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, such as a list, to enable users to filter displayed data. Users can share an entire dashboards using these gadgets or share only a selected gadget 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.

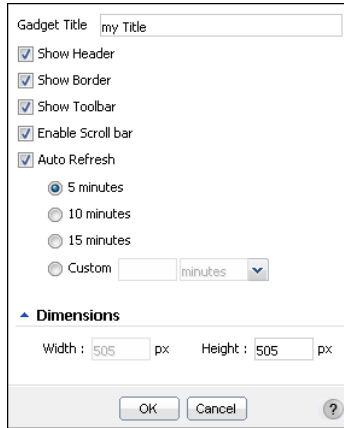


Figure 4-14 Configuring general options for data visualization gadgets

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 and page control options. Figure 4-15 shows the toolbar added to a gadget.

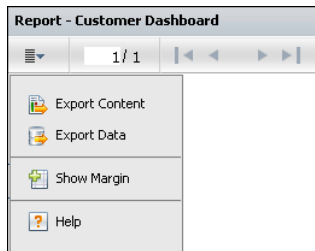


Figure 4-15 Displaying a toolbar for cross-tab and table gadgets

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.

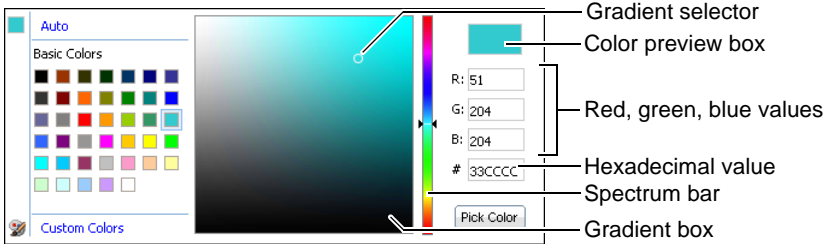


Figure 4-16 Selecting a color from a color picker

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.

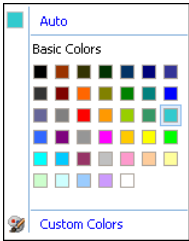


Figure 4-18 Selecting a basic color

- 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.

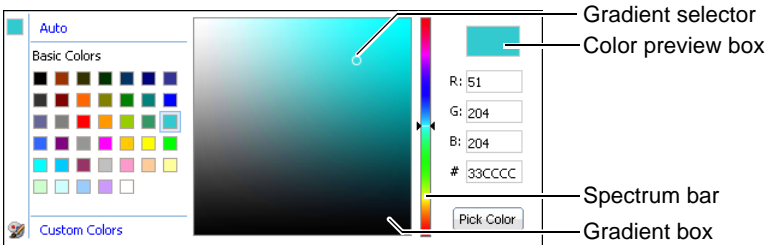


Figure 4-19 Selecting a custom color

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

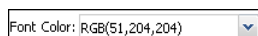


Figure 4-20 Using the new color

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. Ungrouped categories increase chart complexity and rendering time because each data set row creates a value on the chart.

Chart gadgets can group legend values to display subgroups in data sets. For example, a 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.

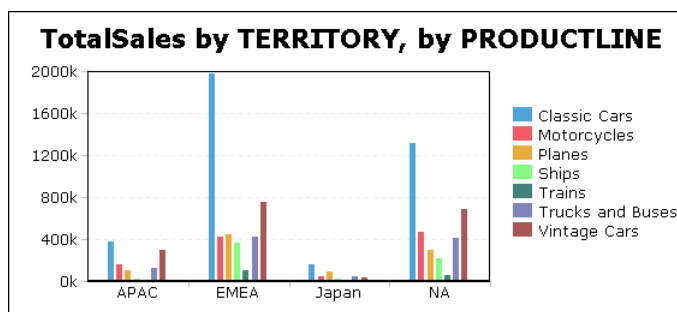


Figure 4-21 Displaying a data set, grouped by category and legend items

Chart and cross-tab 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.

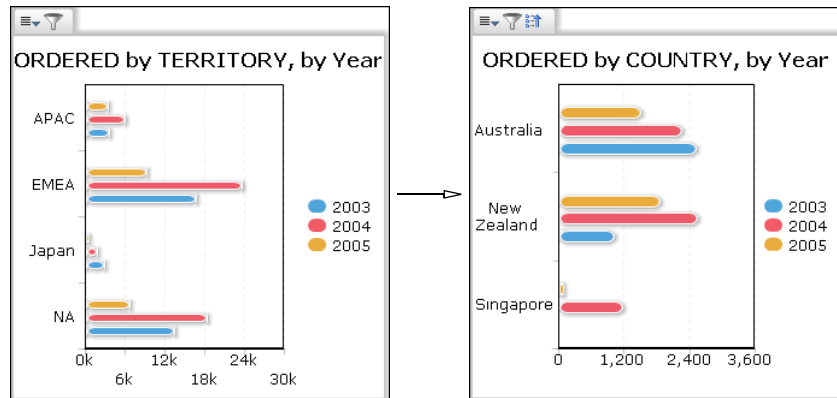


Figure 4-22 Drilling into a data cube using a chart gadget

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

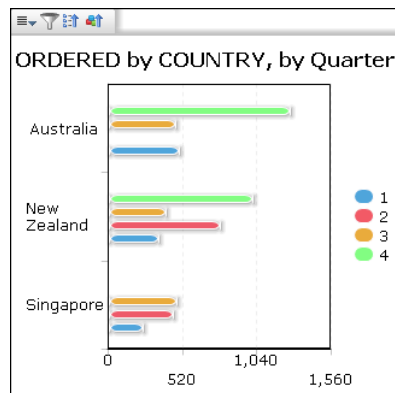


Figure 4-23 Drilling into a year to see details

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.

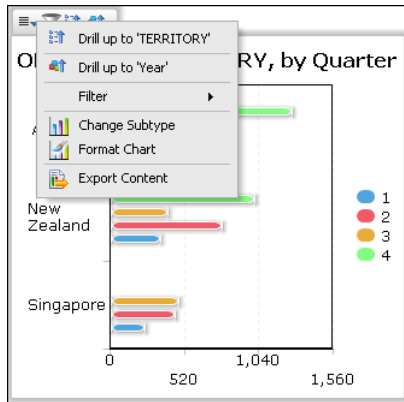


Figure 4-24 Selecting additional drill-down and drill-up options

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.

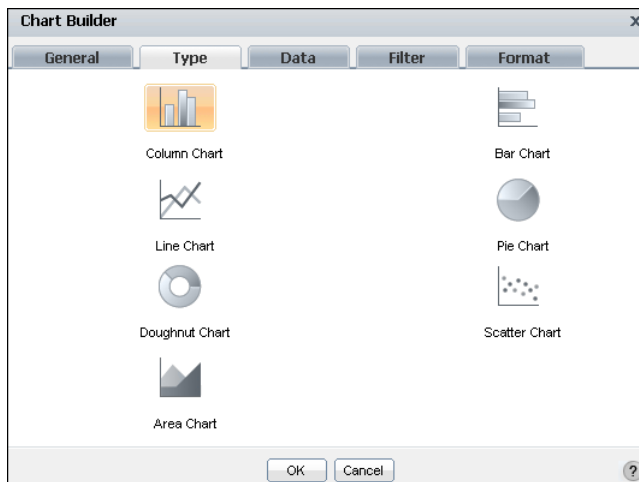


Figure 4-25 Changing a chart type

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 the Data Visualization folder. If the folder is not visible, choose Home first.
- 3 Drag a chart gadget type, such as a column chart and drop it on the dashboard.
- 4 Specify the desired gadget appearance in Chart Builder—General:
 - Display the header, border, and scroll bar
 - Gadget title
 - Refresh rate
- 5 To select the data to display in the chart, complete the following steps:
 - 1 In Chart Builder—Data—Use Data From, select a data source.
 - 2 Select fields from the data source to display in the chart.
 - 3 Specify data aggregations and groups as desired.
- 6 Limit displayed data with filter conditions, if desired, in Chart Builder—Filter.
- 7 Format the chart, if desired, using chart options in Chart Builder—Format:
 - Select a BIRT chart theme.
 - Set the chart size within the gadget.
 - Select a chart subtype, such as side-by-side, stacked, or percent stacked.
 - Enable zoom on the *x*-axis, *y*-axis or both for user data selection.
- 8 Choose OK to create the new gadget.

Enable interactive filtering, if desired, 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.

Displaying data in charts

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 enable 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
- Values from a column in a data set
- Value data
- Value series name

Area, bar, column, line and scatter chart gadgets can display and group data categories, like names of countries or product types, as shown in Figure 4-26.

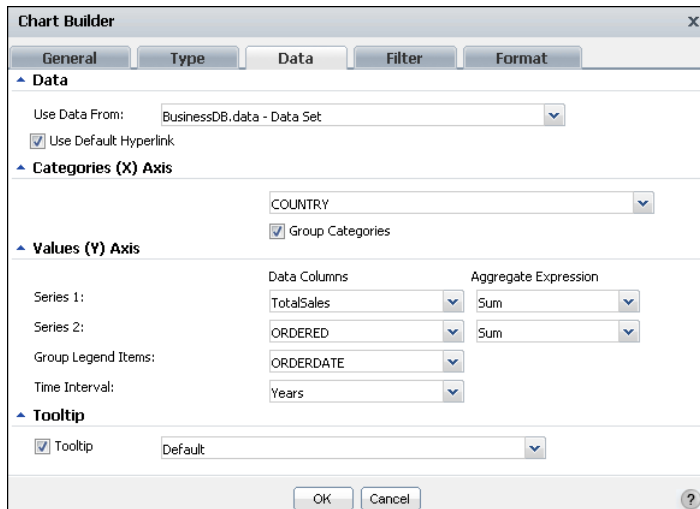


Figure 4-26 Selecting data to display as an area, bar, column, line, or scatter chart

When grouping category values or legend items that are dates, an additional option for selecting the time interval appears. For example, grouping category values by an order date enables the developer to select a time interval of years, quarters, months, weeks, and days. The chart displays data grouped to the selected time interval.

Pie and doughnut chart gadgets use slices to group and display categories of data, such as names of countries or product types, as shown in Figure 4-27. Values define the size of each slice relative to the other slices.

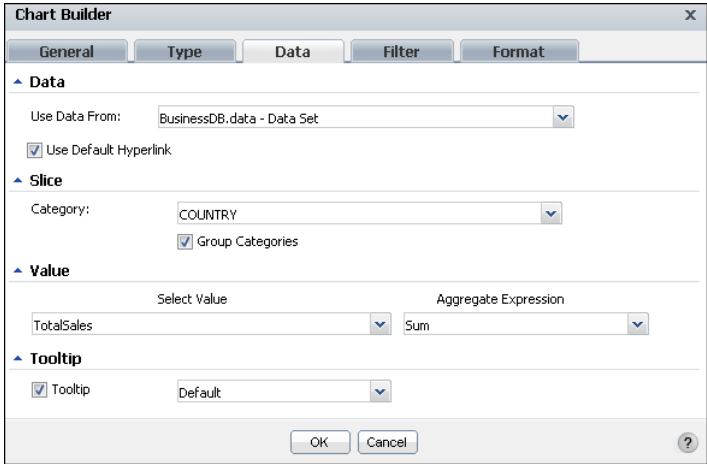


Figure 4-27 Selecting data to display as a pie or doughnut chart

Dashboard developers can use aggregate expressions to summarize data set values. Values from a data cube are already aggregated. 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 support drill-down and drill-up of categories and series values from a data 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.

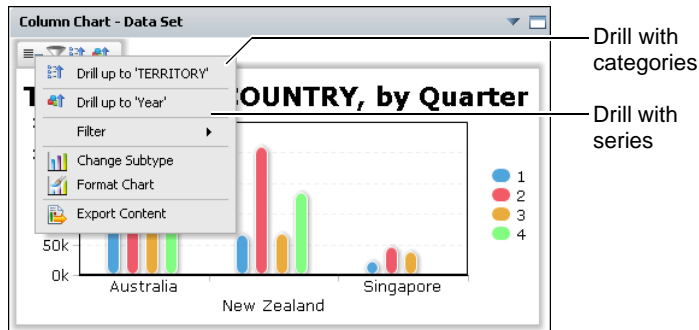


Figure 4-28 Drill choices in a data cube-based chart

Changing fonts in charts

Although chart themes offer reusable customizations such as font selection, you can customize the font attributes used in each chart gadget, such as font, size, and color. Use a chart's context menu to access font configuration.

To change a chart gadget's fonts, complete the following steps:

- 1 Click in the chart title to display the chart context menu.
- 2 Choose Format Chart from the chart's context menu, as shown in Figure 4-29.

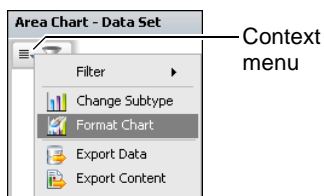


Figure 4-29 Selecting Format Chart from the context menu

- 3 Select Title Font or Label Font for the part of the chart you want to edit. Figure 4-30 shows the Format Chart options.
- 4 In Font, select your desired font attributes and choose OK. Figure 4-31 shows the Format Chart options.

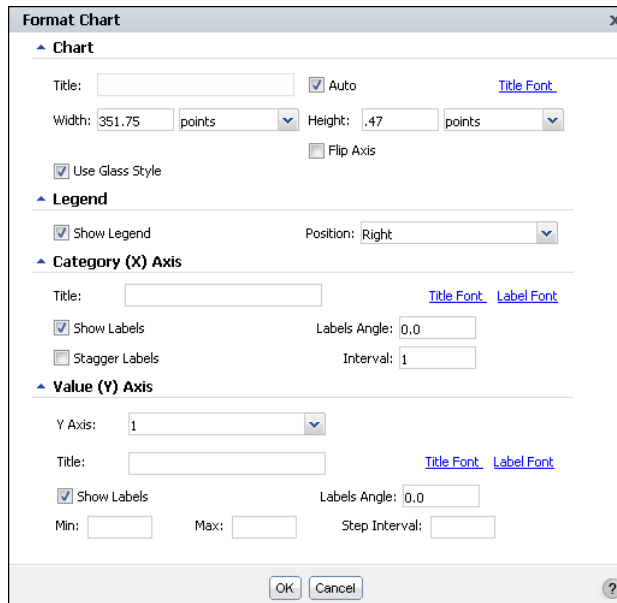


Figure 4-30 Selecting Title Font or Label Font

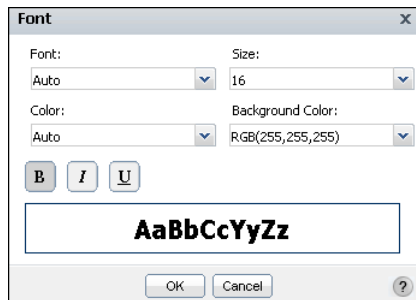


Figure 4-31 Selecting font attributes

- 5 Choose OK to close Format Chart. The chart gadget updates to display the new font attributes.

Using chart themes

Chart themes customize the appearance of the chart and can contain custom JavaScript for enhanced interactivity. Each theme changes the chart's colors, fonts and chart display. These themes are created in BIRT Designer Professional. Custom themes can be installed in BIRT iServer for use in BIRT dashboards.

Themes are selected using the Chart Builder—Format options as shown in Figure 4-32. Themes enable multiple charts to display consistent color and font use.

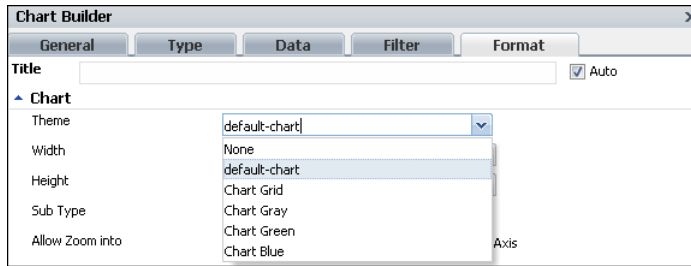


Figure 4-32 Selecting a chart theme

The following themes are available:

- None, as shown in Figure 4-33.

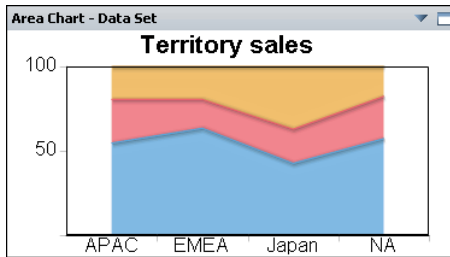


Figure 4-33 Selecting no theme

- default-chart, as shown in Figure 4-34.

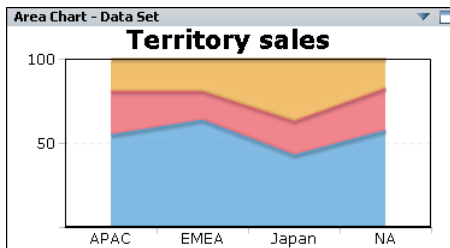


Figure 4-34 Selecting the default theme

- Chart Grid, as shown in Figure 4-35.

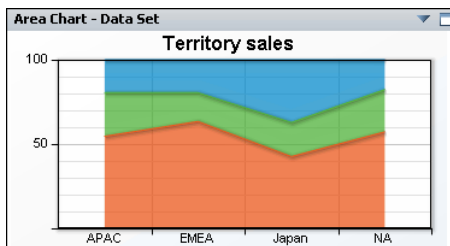


Figure 4-35 Selecting the Chart Grid theme

- Chart Gray, as shown in Figure 4-36.

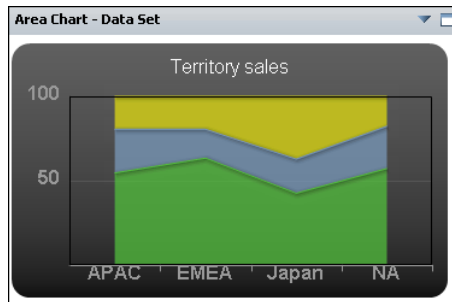


Figure 4-36 Selecting the Chart Gray theme

- Chart Green, as shown in Figure 4-37.

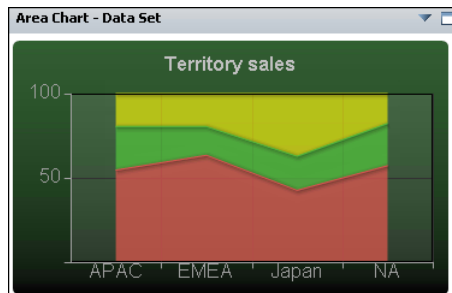


Figure 4-37 Selecting the Chart Green theme

- Chart Blue, as shown in Figure 4-38.

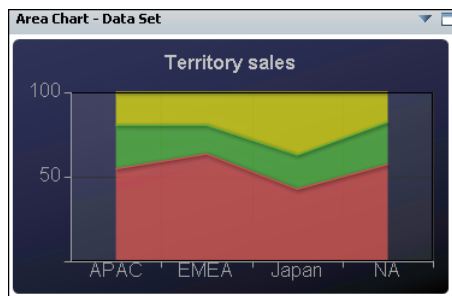


Figure 4-38 Selecting the Chart Blue theme

Formatting an area chart

An area chart displays data values as a set of points, connected by a line, with the area below the line filled. You typically use an area chart to present data that occurs over a continuous period of time. You can format an area chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-39 shows the elements that you can modify.

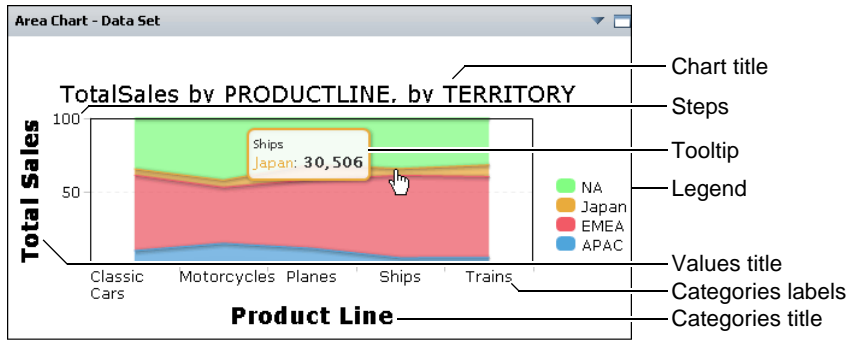


Figure 4-39 Displaying a percent stacked area chart

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 an area chart:

- Change the title of the 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.

Figure 4-40 shows these options.

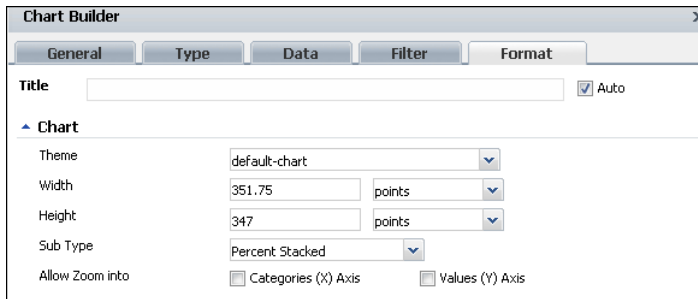


Figure 4-40 Formatting an area chart

- Use Chart options to change the chart display, such as width and height. Select a chart theme to change the appearance of the chart. For more information about themes, see "Using chart themes," earlier in this chapter.

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

Chart users can zoom in to the chart to view details of the selected data when allow zoom is enabled for categories or values.

- Change the chart legend using the Legend options, as shown in Figure 4-41.



Legend

☒ Show Legend

Position: Right

Figure 4-41 Formatting an area chart legend

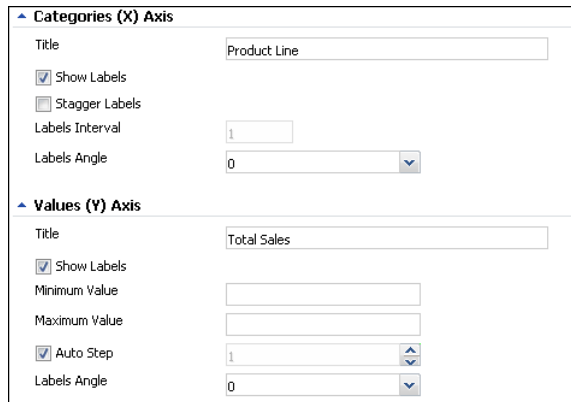
The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by 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 4-42 shows these options.



Categories (X) Axis

Title: Product Line

☒ Show Labels

☐ Stagger Labels

Labels Interval: 1

Labels Angle: 0

Values (Y) Axis

Title: Total Sales

☒ Show Labels

Minimum Value:

Maximum Value:

☒ Auto Step

Labels Angle: 0

Figure 4-42 Customizing axis values of an area chart

Formatting a bar chart

A bar chart displays data values as a set of horizontal bars and is useful for displaying data side-by-side for easy comparison. You can format a bar chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-43 shows the elements that you can modify.

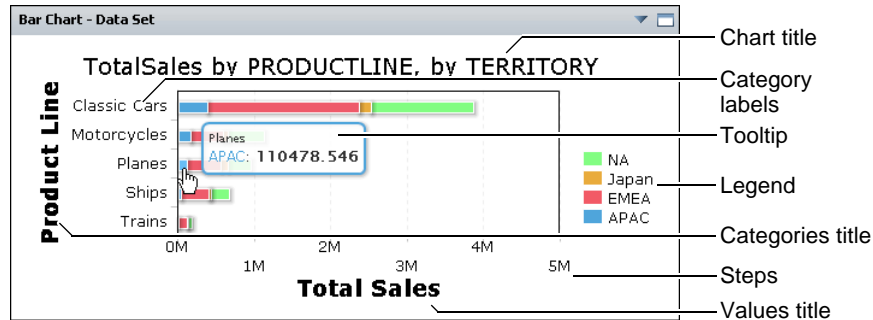


Figure 4-43 Displaying a stacked bar chart gadget

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

- Change the title of the 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.

Figure 4-44 shows these options.

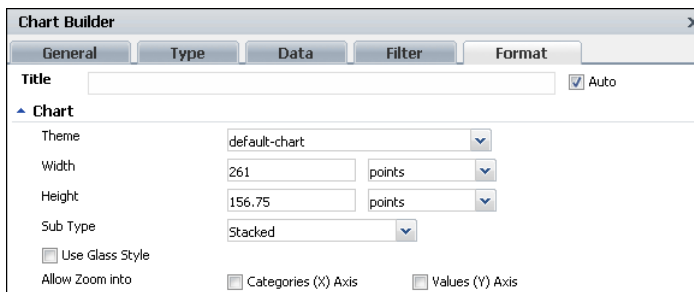


Figure 4-44 Formatting a bar chart

- Use Chart options to change the chart display, such as width and height. Select a chart theme to change the appearance of the chart. For more information about themes, see "Using chart themes," earlier in this chapter.

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.

Chart users can zoom in to the chart to view details of the selected data when allow zoom is enabled for categories or values.

Flash bar charts appear three-dimensional when 2D with depth is selected in Dimension. Flash charts are available in the Extras gadget category.

- Use Legend options to change the chart legend, as shown in Figure 4-45. The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.

A screenshot of a configuration panel titled "Legend". It contains a checkbox labeled "Show Legend" which is checked. Below it is a label "Position" followed by a dropdown menu currently set to "Right".

Figure 4-45 Formatting a bar chart legend

- 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 4-46 shows these options.

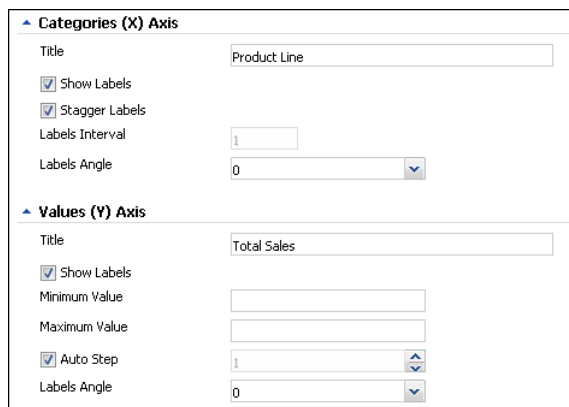
A screenshot showing two configuration panels. The top panel is titled "Categories (X) Axis" and includes fields for "Title" (set to "Product Line"), "Show Labels" (checked), "Stagger Labels" (checked), "Labels Interval" (set to 1), and "Labels Angle" (set to 0). The bottom panel is titled "Values (Y) Axis" and includes fields for "Title" (set to "Total Sales"), "Show Labels" (checked), "Minimum Value" (empty), "Maximum Value" (empty), "Auto Step" (checked), and "Labels Angle" (set to 0).

Figure 4-46 Customizing axis values of a bar chart

Formatting a column chart

A column chart displays data values as a set of vertical bars and is useful for displaying data side-by-side for easy comparison. You can format a column chart gadget to modify its appearance on a dashboard using Chart Builder. Figure 4-47 shows the elements that you can modify.

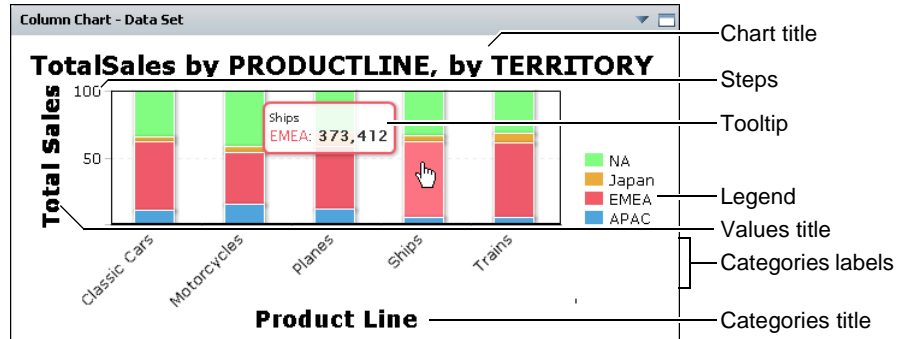


Figure 4-47 Displaying a percent stacked column chart

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

- Change the title of the 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. Deselect Auto to prevent the title from changing. Figure 4-48 shows these options.

Use Chart options to change the chart display, such as width and height. To change the appearance of the chart, select a chart theme. For more information about themes, see "Using chart themes," earlier in this chapter.

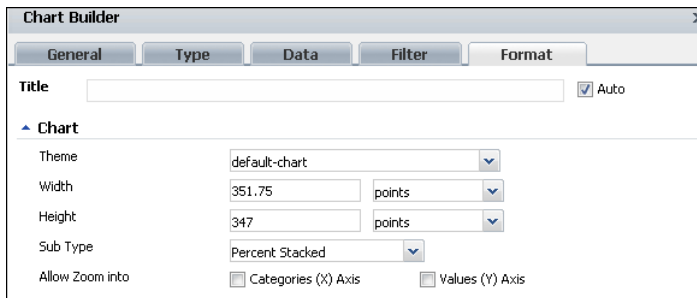


Figure 4-48 Formatting a column chart

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.

Chart users can zoom in to the chart to view details of the selected data when allow zoom is enabled for categories or values.

Flash column charts appear three-dimensional when 2D with depth is selected in Dimension. Flash charts are available in the Extras gadget category.

- Change the chart legend using the Legend options, as shown in Figure 4-49. The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.



Legend

☒ Show Legend

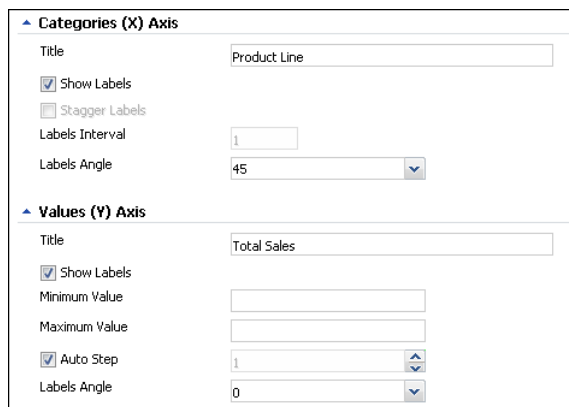
Position: Right

Figure 4-49 Formatting a column chart legend

- 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 4-50 shows these options.



Categories (X) Axis

Title: Product Line

☒ Show Labels

☐ Stagger Labels

Labels Interval: 1

Labels Angle: 45

Values (Y) Axis

Title: Total Sales

☒ Show Labels

Minimum Value:

Maximum Value:

☒ Auto Step

Labels Angle: 0

Figure 4-50 Customizing axis values of a column chart

Formatting a doughnut chart

A doughnut chart is a circular chart that is divided into sectors or slices. Each sector represents a value that is proportional to the sum of the values. You can format a doughnut chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-51 shows the elements that you can modify.

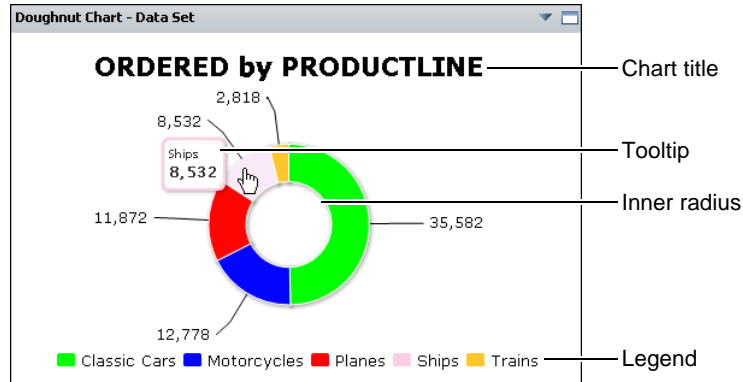


Figure 4-51 Displaying a doughnut chart

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 of the 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 from countries to cities. Remove the Auto selection to prevent the title from changing.

Figure 4-52 shows these options.

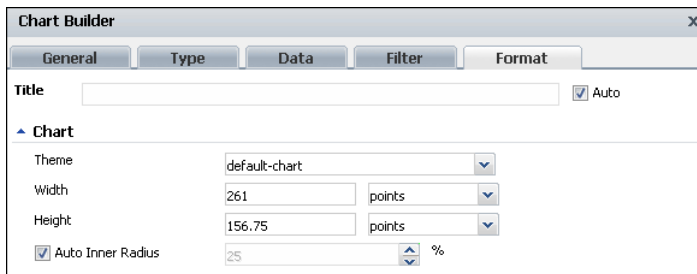


Figure 4-52 Formatting a doughnut chart

- Use Chart options to change the chart display, such as width and height. Select a chart theme to change the appearance of the chart. For more information about themes, see “Using chart themes,” earlier in this chapter.

Flash doughnut charts appear three-dimensional when 2D with depth is selected in Dimension. Inner radius, outer radius and rotation of the chart can also be set in the Flash doughnut chart. Flash charts are available in the Extras gadget category.
- Change the chart legend using the Legend options, as shown in Figure 4-53. The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by selecting Show Legend and a position.



Figure 4-53 Formatting a doughnut chart legend

Formatting a line chart

A line chart displays data values as a set of points that are connected by a line. You typically use line charts to present large amounts of data that occur over a continuous period of time. You can format a line chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-54 shows the elements that you can modify.

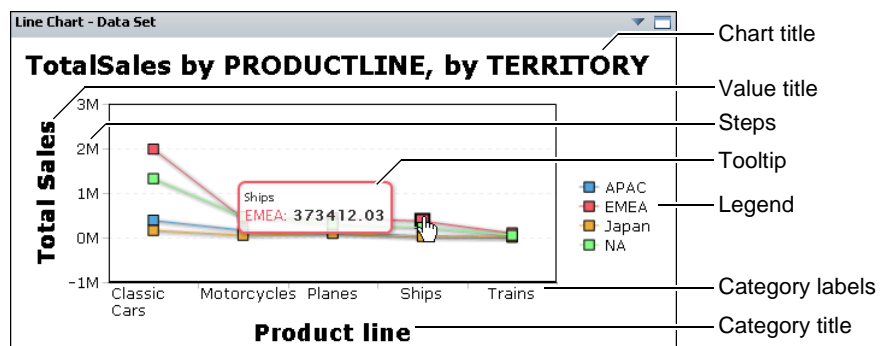


Figure 4-54 Displaying a line chart

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 line chart:

- Change the title of the 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.

Figure 4-55 shows these options.

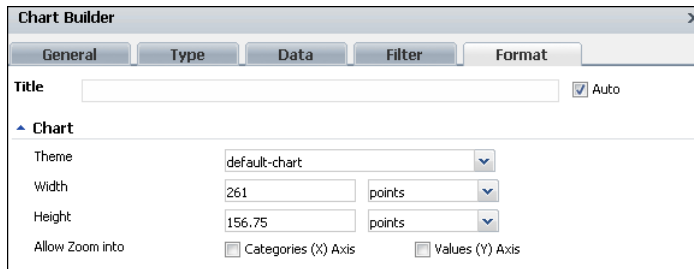


Figure 4-55 Formatting a line chart

- Use Chart options to change the chart display, such as width and height. Select a chart theme to change the appearance of the chart. For more information about themes, see “Using chart themes,” earlier in this chapter.

Chart users can zoom in to the chart to view details of the selected data when allow zoom is enabled for categories or values.

- Change the chart legend using the Legend options, as shown in Figure 4-56. The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.



Figure 4-56 Formatting a line chart legend

- Customize the presentation of the chart's axis values using the Categories and Values options, as shown in Figure 4-57. 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.

The screenshot shows the 'Categories (X) Axis' and 'Values (Y) Axis' configuration panels. The 'Categories (X) Axis' panel has a title 'Product line', 'Show Labels' checked, 'Stagger Labels' unchecked, 'Labels Interval' set to 1, and 'Labels Angle' set to 0. The 'Values (Y) Axis' panel has a title 'Total Sales', 'Show Labels' checked, 'Minimum Value' and 'Maximum Value' fields empty, 'Auto Step' checked, and 'Labels Angle' set to 0.

Figure 4-57 Customizing axis values of a line chart

Formatting a pie chart

A pie chart is a circular chart that is divided into sectors or slices. Each sector represents a value that is proportional to the sum of the values. You can format a pie chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-58 shows the elements that you can modify.

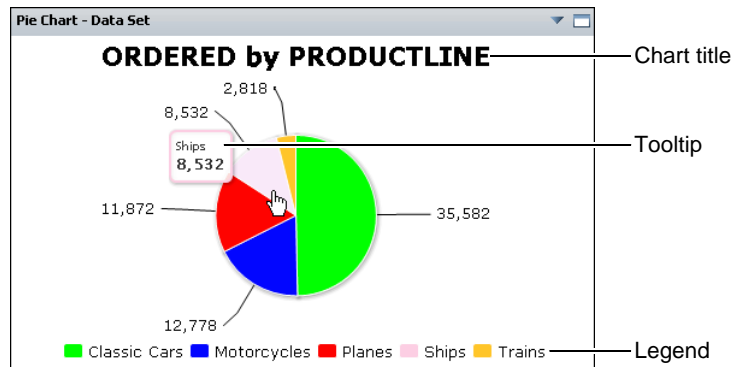


Figure 4-58 Displaying a pie chart

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 pie chart:

- Change the title of the 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 detail values of a selected country. Remove the Auto selection to prevent the title from changing.
- Use Chart options to change the chart display, such as width and height.
Select a chart theme to change the appearance of the chart. For more information about themes, see "Using chart themes," earlier in this chapter.

Flash pie charts appear three-dimensional when 2D with depth is selected in Dimension. Radius and rotation of the chart can also be set in the Flash pie chart. Flash charts are available in the Extras gadget category.

Figure 4-59 shows these options.

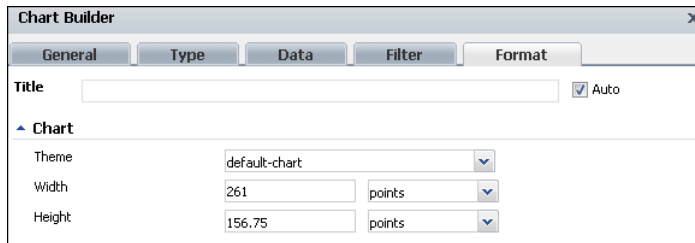


Figure 4-59 Formatting a pie chart

- Change the chart legend using the Legend options, as shown in Figure 4-60.
The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. Display a legend on the chart by selecting Show Legend and a position for the legend to appear, relative to the chart.



Figure 4-60 Formatting a pie chart legend

Formatting a scatter chart

A scatter chart presents data as x - y coordinates by combining two sets of numeric values into single data points. A scatter chart typically is used to display scientific and statistical data, because it shows if there is a relationship between two sets of measurements. You can format a scatter chart gadget to modify its appearance on a dashboard using Chart Builder.

Figure 4-61 shows the elements that you can modify.

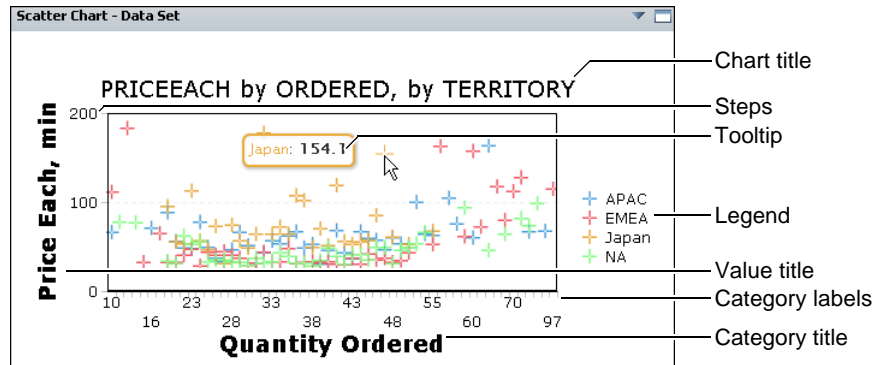


Figure 4-61 Displaying a scatter chart

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 line chart:

- Change the title of the 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.

Figure 4-62 shows these options.

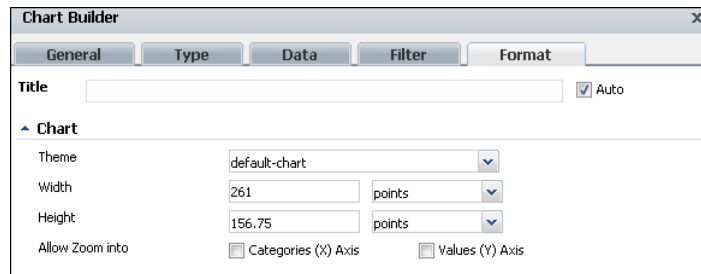


Figure 4-62 Formatting a scatter chart

- Use Chart options to change the chart display, such as width and height. Select a chart theme to change the appearance of the chart. For more information about themes, see "Using chart themes," earlier in this chapter.
Chart users can zoom in to the chart to view details of the selected data when Allow Zoom is enabled for categories or values.
- Change the chart legend using the Legend options, as shown in Figure 4-63.

Figure 4-63 Formatting a scatter chart legend

The legend identifies values displayed on the chart. Clicking on a legend value when the chart displays a data set highlights the corresponding value on the chart. Clicking on a legend value when the chart displays a data cube drills down to view details of the value. 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 4-64 shows these options.

Figure 4-64 Customizing axis values of a scatter 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.

Cross-tab 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 the Data Visualization folder. If the folder is not visible, choose Home first.

3 Drag the cross-tab gadget and drop it on the dashboard.

4 Specify desired gadget display options in Crosstab Builder—General:

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

5 To select the data to display in the cross-tab gadget, complete the following steps:

- 1 In Crosstab Builder—Data—Use Cube From, select a data source.
- 2 Select dimension, attribute, and measure fields to display in the cross tab.

6 Limit displayed data with filter conditions, if desired, in Crosstab Builder—Filter.

7 Format the cross tab, if desired, in Crosstab Builder—Format.

- Display grand totals.
- Display subtotals.
- Enable page breaks.

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.

Displaying data in 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. 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.

Select Use default hyperlink to display hyperlinks contained in data objects. 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 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.

Figure 4-65 shows the data options.

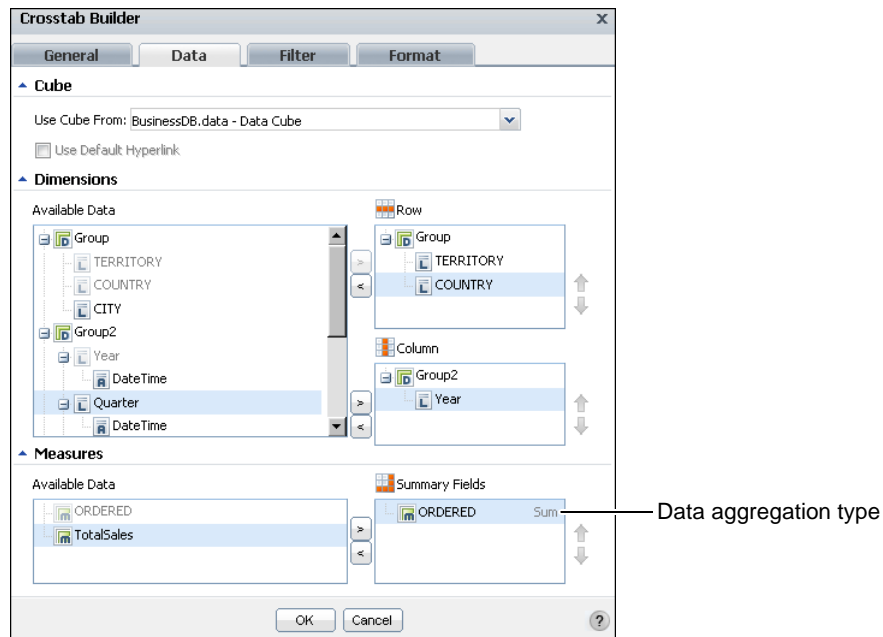


Figure 4-65 Selecting data to display as a cross tab

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.

Figure 4-66 shows the elements of a cross tab that you can modify.

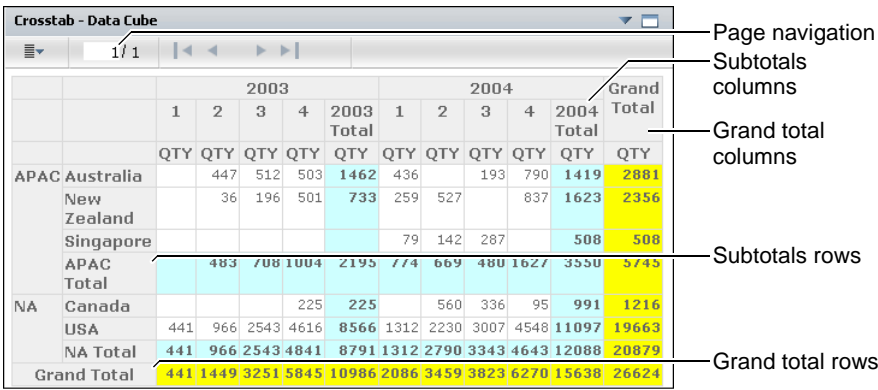


Figure 4-66 Displaying a cross-tab gadget

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 4-67 shows the formatting options available for a cross-tab gadget.

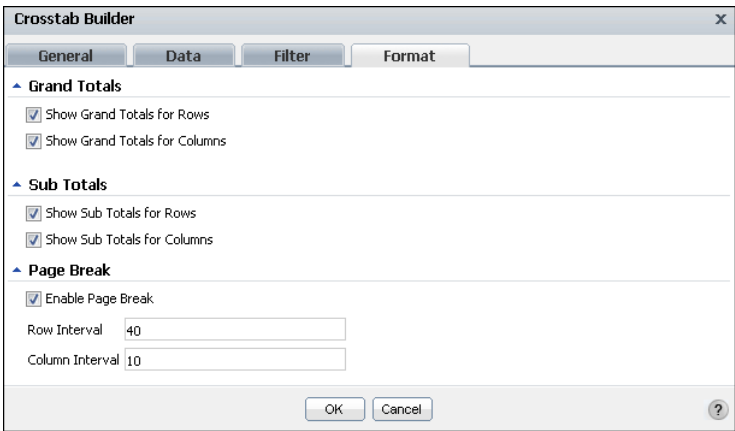


Figure 4-67 Formatting a cross tab

Maximizing a cross-tab gadgets launches the browser-based tool BIRT Data Analyzer to analyze, edit, and select a theme for 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. When adding or editing a Flash gadget, you can change the Flash type displayed in the gadget, as shown in Figure 4-68.

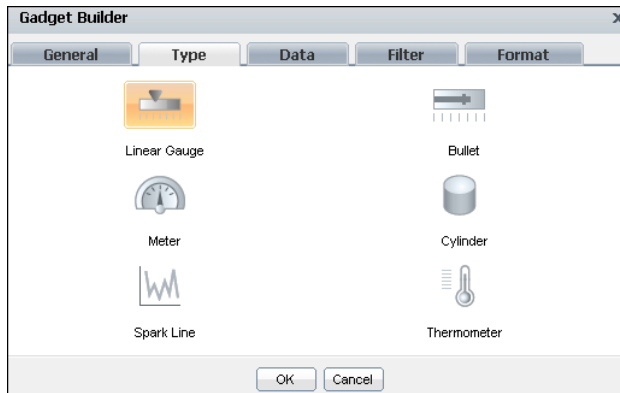


Figure 4-68 Selecting a Flash gadget type

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.

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 the Data Visualization folder. If the folder is not visible, choose Home first.



- 3 Choose the right arrow in the New Gadget pane until you see Linear Gauge. Drag a Flash gadget, such as linear gauge, and drop it on the dashboard.
- 4 Specify desired gadget display options in Gadget Builder—General:
 - Display the header, border, and scroll bar.
 - Gadget title.
 - Refresh rate.

- 5 To specify the data presented in the Flash gadget, complete the following steps:
 - 1 In Gadget Builder—Data—Use Data From, select a data source.
 - 2 Select fields from the data source to display in the Flash gadget.
- 6 Limit displayed data with filter conditions, if desired, in Gadget Builder—Filter.
- 7 Format the Flash gadget, if desired, in Gadget Builder—Format.
- 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.

Displaying data in 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 4-69.

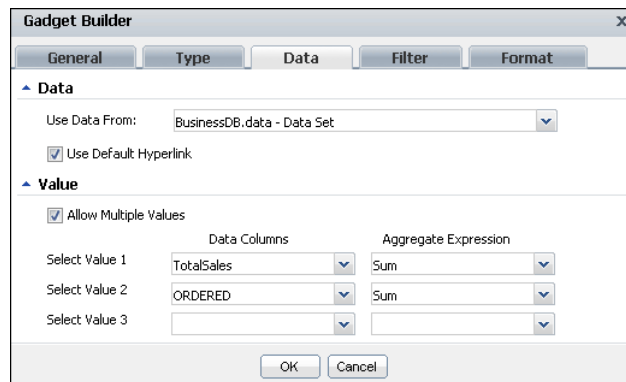


Figure 4-69 Selecting data to display as a meter or linear gauge

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
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 4-70.

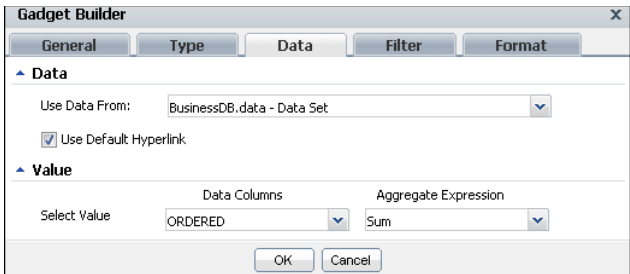


Figure 4-70 Selecting data to display as a bullet, cylinder, or thermometer

Sparkline Flash gadgets support a single value and selecting a second value for grouping the data from a data cube, as shown in Figure 4-71.

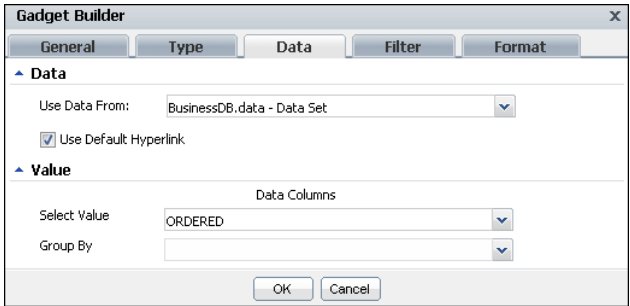


Figure 4-71 Selecting data to display as a sparkline

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 sparkline.

Formatting a bullet gadget

You can format a bullet gadget to modify its appearance on a dashboard. Figure 4-72 shows the formatting elements that you can modify.

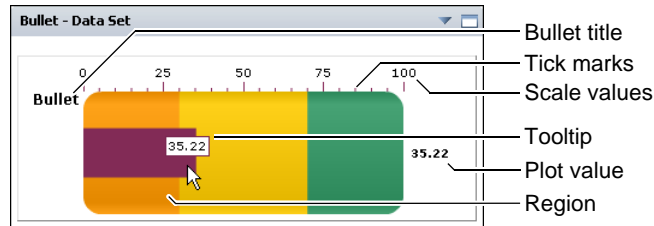


Figure 4-72 Displaying a horizontal bullet gadget

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 4-73.

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.

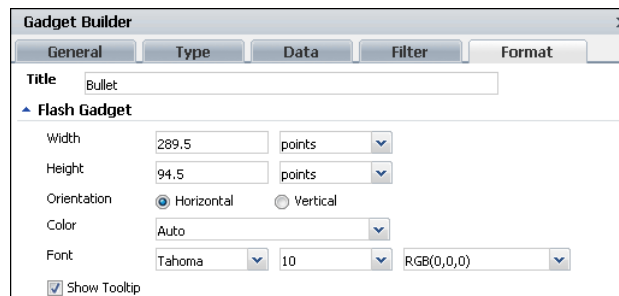


Figure 4-73 Formatting Flash gadget options

- 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 4-74 shows these options.

The screenshot shows two sections: 'Plot' and 'Scale'. Under 'Plot', there is a checked checkbox for 'Show Plot Value'. Under 'Scale', there are three checked checkboxes: 'Show Value', 'Auto Values', and 'Minimum Value'. To the right of 'Minimum Value' is an empty text input field. Below it, 'Maximum Value' is also followed by an empty text input field.

Figure 4-74 Formatting Flash gadget data values

- Change the appearance of the gadget using the Region and Tick Marks options, as shown in Figure 4-75.

The screenshot shows two sections: 'Region' and 'Tick Marks'. In the 'Region' section, there is a list box with 'Low', 'Medium', and 'High' options, with 'Low' selected. To the right are 'Add' and 'Remove' buttons. Below the list box, there are three fields: 'Label' with the value 'Low', 'Start Value' with the value '0', and 'End Value' with the value '35'. To the right of these fields is a color picker dropdown showing 'RGB(204,255,255)'. In the 'Tick Marks' section, there are two checked checkboxes: 'Show Tick Marks' and 'Auto Adjust Tickmarks'. To the right of 'Show Tick Marks' is a dropdown menu with 'Top' selected. Below 'Auto Adjust Tickmarks' is a field for 'Major Tickmarks Count' which is currently empty.

Figure 4-75 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 4-76 shows the elements you can modify.

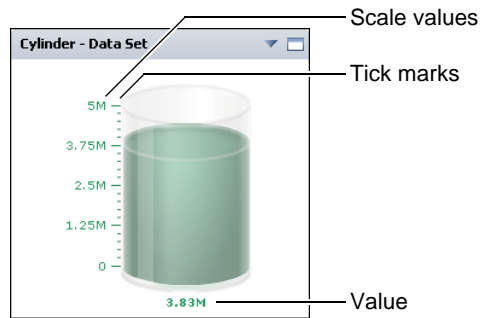


Figure 4-76 Displaying a cylinder gadget

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 4-77.

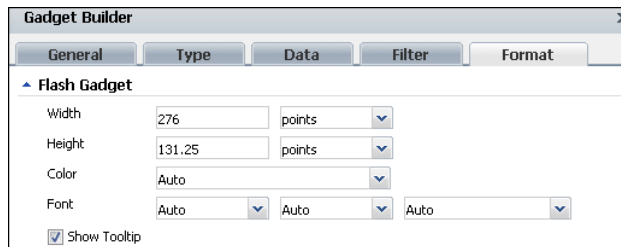


Figure 4-77 Formatting Flash gadget options

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 4-78.

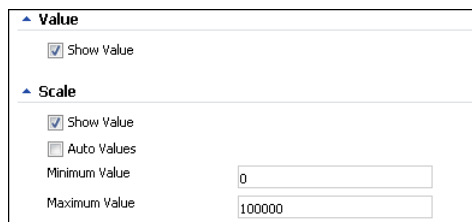


Figure 4-78 Formatting Flash gadget data values

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 4-79.

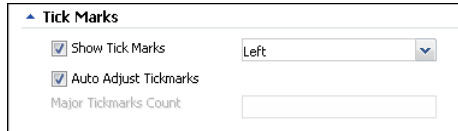


Figure 4-79 Formatting the tick marks

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 4-80 shows the elements you can modify.

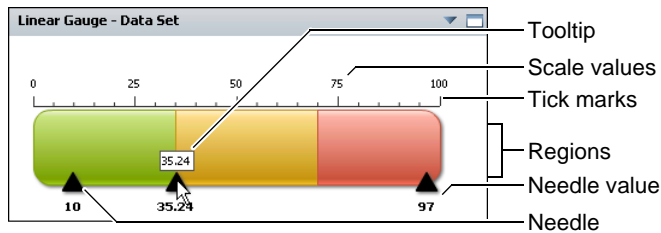


Figure 4-80 Displaying a linear gauge gadget

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 4-81.

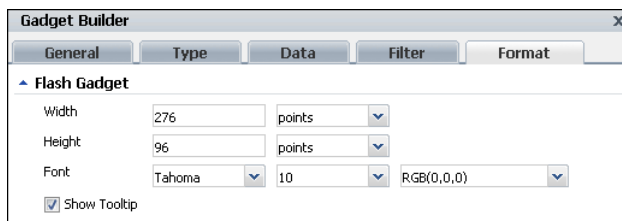


Figure 4-81 Formatting Flash gadget options

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 4-82.

The screenshot shows a configuration panel with two main sections: 'Needle' and 'Scale'.
 Under 'Needle':
 - 'Show Needle Value' is checked, with a dropdown menu set to 'Below Needle'.
 - 'Show Needle On' is set to 'Bottom' via a dropdown menu.
 Under 'Scale':
 - 'Show Value' is checked.
 - 'Auto Values' is checked.
 - 'Minimum Value' and 'Maximum Value' are represented by empty text input fields.

Figure 4-82 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 4-83.

The screenshot shows a configuration panel with two main sections: 'Region' and 'Tick Marks'.
 Under 'Region':
 - A list box contains 'Low', 'Medium', and 'High', with 'Low' selected.
 - 'Add' and 'Remove' buttons are to the right of the list box.
 - 'Label' is set to 'Low' in a text field.
 - 'Start Value' is set to '0' in a text field.
 - 'End Value' is set to '35' in a text field.
 - A color picker dropdown is set to 'RGB(153,204,0)'.
 Under 'Tick Marks':
 - 'Show Tick Marks' is checked, with a dropdown set to 'Top'.
 - 'Auto Adjust Tickmarks' is checked, with a dropdown set to 'Outside'.
 - 'Major Tickmarks Count' is represented by an empty text input field.

Figure 4-83 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 4-84 shows the formatting elements you can modify.

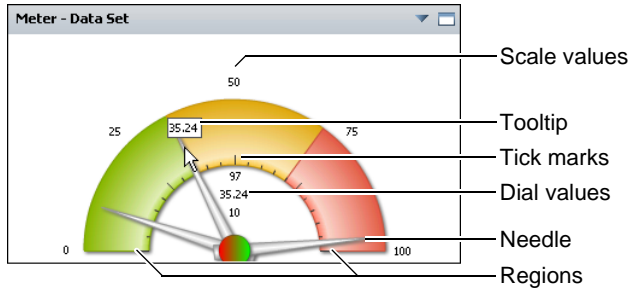


Figure 4-84 Displaying a meter gadget

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 4-85.

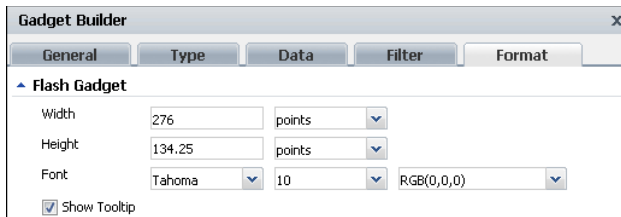


Figure 4-85 Formatting Flash gadget options

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 4-86.

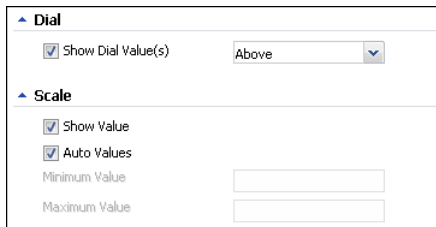


Figure 4-86 Formatting Flash gadget data values

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.

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. Figure 4-87 shows these options.

The screenshot shows a configuration panel for a gadget. It has two main sections: 'Region' and 'Tick Marks'. In the 'Region' section, there is a list with 'Low', 'Medium', and 'High' items. To the right of this list are 'Add' and 'Remove' buttons. Below the list, there are input fields for 'Label' (set to 'Low'), 'Start Value' (set to '0'), and 'End Value' (set to '35'). To the right of the 'Label' field is a color picker showing 'RGB(153,204,0)'. The 'Tick Marks' section has two checked checkboxes: 'Show Tick Marks' and 'Auto Adjust Tickmarks'. The 'Show Tick Marks' checkbox has a dropdown menu set to 'Inside'. Below these checkboxes is a label 'Major Tickmarks Count' followed by an empty input field.

Figure 4-87 Formatting the region and tick marks

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 sparkline gadget

You can format a sparkline gadget to modify its appearance on a dashboard. Figure 4-88 shows the formatting elements you can modify.

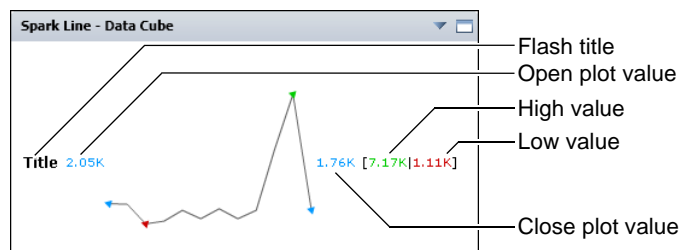


Figure 4-88 Displaying a sparkline gadget

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 sparkline gadget:

- Change the appearance of the gadget using the Flash Gadget options, as shown in Figure 4-89.

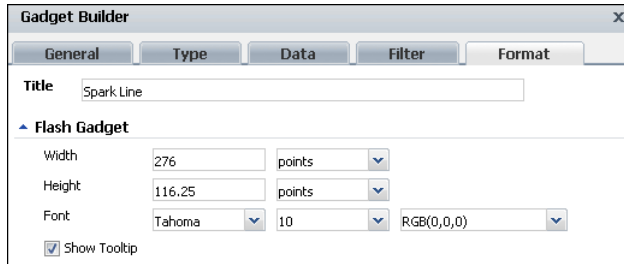


Figure 4-89 Formatting Flash gadget options

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 4-90.

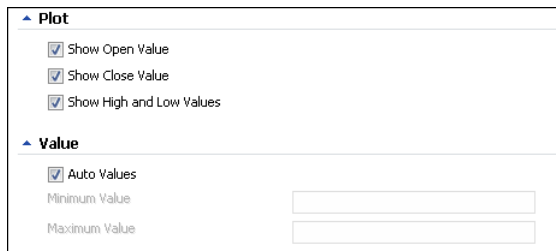


Figure 4-90 Formatting Flash gadget data values

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 sparkline 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 4-91 shows the formatting elements you can modify.

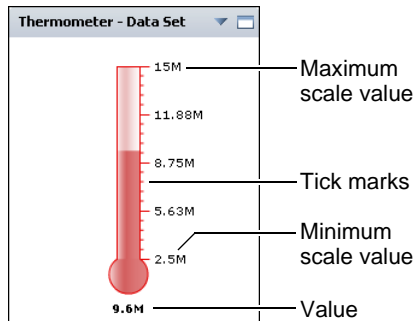


Figure 4-91 Displaying a thermometer gadget

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 4-92.

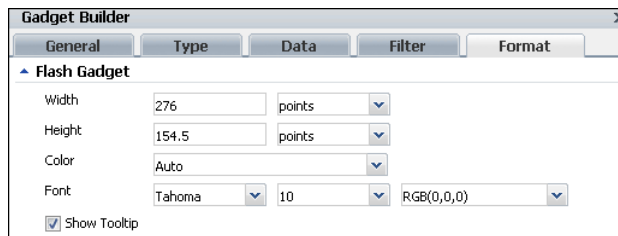


Figure 4-92 Formatting Flash gadget options

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 4-93.

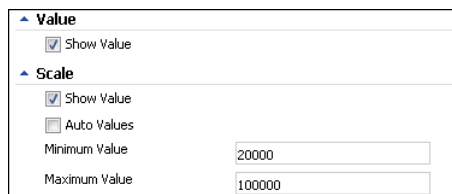


Figure 4-93 Formatting Flash gadget data values

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 4-94.



Figure 4-94 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 the Data Visualization folder. If the folder is not visible, choose Home first.



- 3 Choose the right arrow in the New Gadget pane until you see Adobe Flex Table. Drag the Adobe Flex table gadget and drop it on the dashboard.

- 4 Specify desired gadget display options in Flex Builder—General:

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

- 5 To select the data to display in the Flex table gadget, complete the following steps:
 - 1 In Flex Builder—Data—Use Data From, 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.
- 6 Limit displayed data with filter conditions, if desired, in Flex Builder—Filter.
- 7 Format the Flex table gadget, if desired, in Flex Builder—Format.
- 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.

Displaying data in a Flex table gadget

Adding this gadget to a dashboard or editing it, displays Flex Builder—Data, as shown in Figure 4-95.

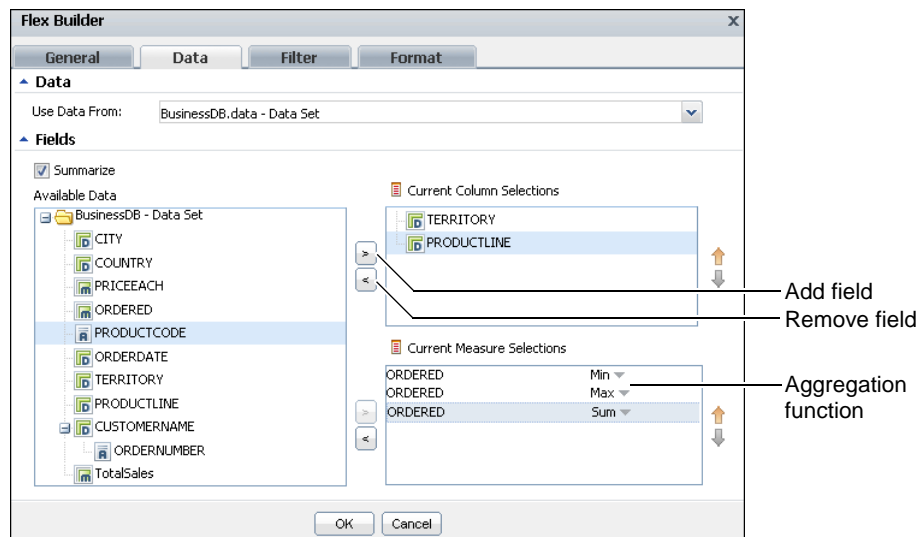


Figure 4-95 Assigning data to display in a Flex table gadget

A dashboard developer selects a data set from data objects on the dashboard, or adds a new data object from data objects available 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 4-96 displays the elements of a Flex table gadget that you can modify.

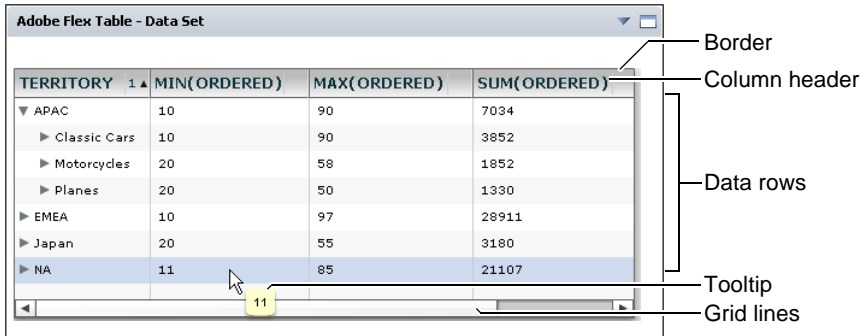


Figure 4-96 Displaying a Flex table gadget

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 and the font attributes used in the header, such as alignment, color, font, and size. You can select a color for the font and background, as shown in Figure 4-97.

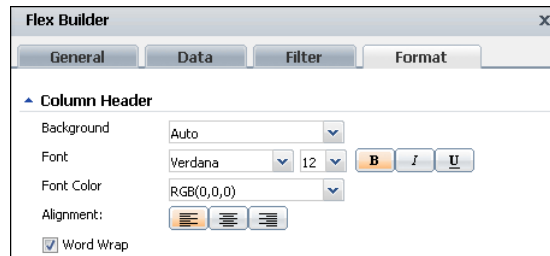


Figure 4-97 Formatting headers of a Flex table

- Customize the appearance of the table rows using the Data Row options, as shown in Figure 4-98.

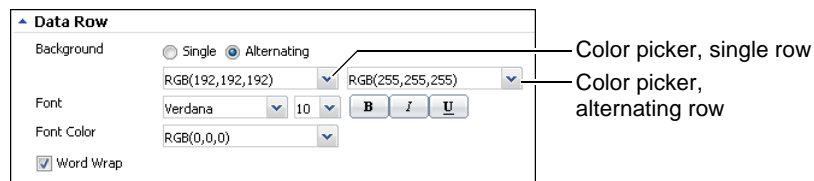


Figure 4-98 Formatting the data row

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 4-99.

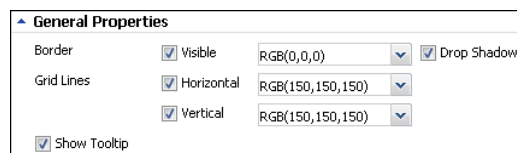


Figure 4-99 Formatting the table border and grid

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 the Data Visualization folder. If the folder is not visible, choose Home first.

- 3 Drag the table gadget and drop it on the dashboard.

- 4 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.

- 5 To select the data to display in the table gadget, complete the following steps:

- 1 In Table Builder—Data—Use Data From, 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.
- 6 Limit displayed data with filter conditions, if desired, in Table Builder—Filter.
- 7 Format the table gadget, if desired, in Table Builder—Format.
- 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.

Displaying data in a table gadget

Adding this gadget to a dashboard or editing it, displays Table Builder—Data, as shown in Figure 4-100. 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.

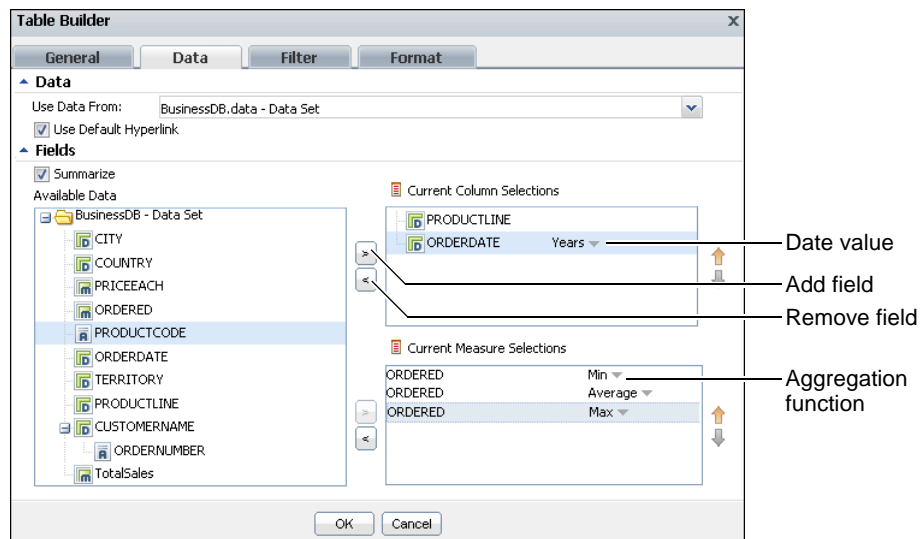


Figure 4-100 Selecting data to summarize in a table gadget

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 4-100:

- Years
- Quarters
- Months
- Weeks
- Days

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.
Sum	Returns the sum of the values.

Table 4-5 Aggregate functions

Function	Description
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 4-101 shows a summary table that aggregates data from a data set to show subtotals and grand totals.

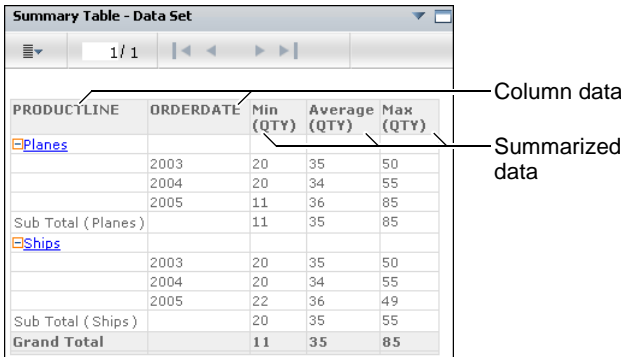


Figure 4-101 Summarizing data using a table gadget

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 4-102 displays the elements of a table gadget that you can modify.

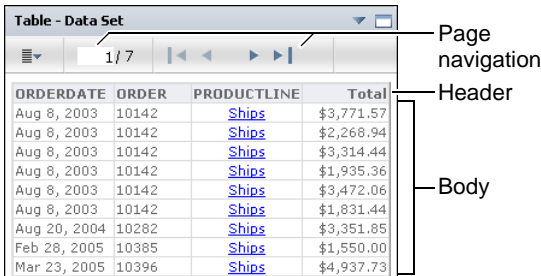


Figure 4-102 Displaying a table gadget

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 4-103.

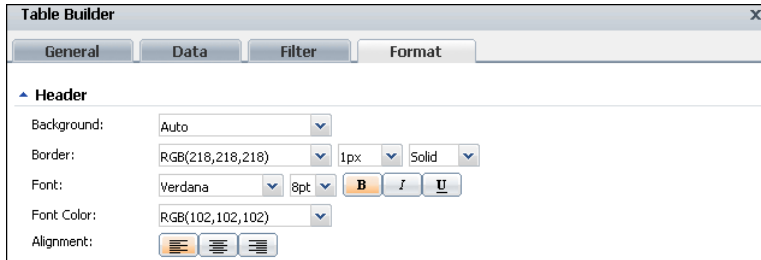


Figure 4-103 Formatting headers of a table gadget

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 4-104.

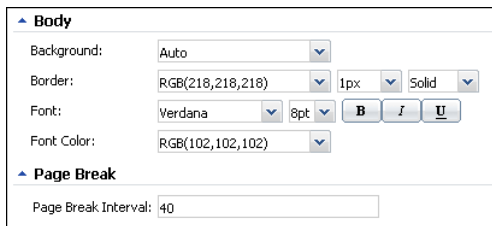


Figure 4-104 Formatting the body rows of a table gadget

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 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, table, and chart attributes for all data visualization gadgets by modifying the ThemesReportItems library.

The theme library is edited using Actuate BIRT Designer Professional. This library is located in the Resources folder in an Encyclopedia volume, at the following location:

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

The ThemesReportItems library contains themes to change the appearance and add custom JavaScript to chart gadgets. The following themes are available for chart gadgets:

- default-chart
- Chart Grid
- Chart Gray
- Chart Green
- Chart-Blue

The ThemesReportItems library also contains cascading style sheet 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
- olive-crosstab

If a cross-tab gadget 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 cross tabs, 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 enable users to filter data displayed in gadgets. These gadgets present the user with values taken from BIRT data objects. Other gadgets, such as data visualization and report gadgets, link to data selection gadgets to enable user choices to filter data. Dashboard developers can filter, format, and sort values that display in data selection gadgets.

A Show Selections gadget is available from the dashboard menu to display and clear selected values on the dashboard.

Figure 4-105 shows the different data selection gadgets.

Figure 4-105 Displaying 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 values.
	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.

Table 4-6 Data selection gadget types

Icon	Type	Purpose
	List	List gadgets display data object values in rows. Users can search and select multiple values. Press Ctrl while selecting a value range; press Shift while selecting multiple 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.
	Selector group	Selector group gadgets enable cascading user selections from a data object. Users select from multiple values and apply their final selection.
	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.

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 gadgets together” 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 gadget type

Figure 4-106 shows Data Selector Gadget Wizard—General. Showing the header or border makes those parts of the gadget visible. Auto refresh sets a gadget to refresh at a set frequency.



Figure 4-106 Choosing general options for a data selection gadget

When adding or editing data selection gadgets, you can change the selection type displayed in Data Selector Gadget Wizard—Type, as shown in Figure 4-107.

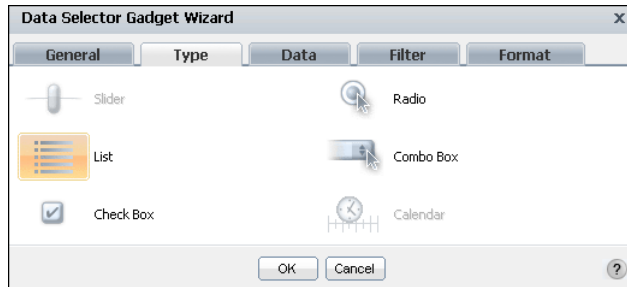


Figure 4-107 Choosing a data selection gadget type

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 add a data selection gadget, complete these steps:



- 1 Display available gadgets by selecting Add Content and choosing New Gadget.



- 2 Choose the Data Selection folder. If the folder is not visible, choose Home first.

- 3 Drag a data selection gadget, such as a list and drop it on the dashboard.

- 4 Specify gadget display options in Data Selector Gadget Wizard—General:

- Display the header and border.
- Gadget title.
- Refresh rate.

- 5 To select data to display in a data selection gadget, complete the following steps:

- 1 In Data Selector Gadget Wizard—Data—Use Data From, 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 Set a sort direction to none, ascending or descending.

- 6 Limit displayed data with filter conditions in Data Selector Gadget Wizard—Filter.

- 7 Format the data selection gadget in Data Selector Gadget Wizard—Format.

- 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.

Displaying data in 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 a data object to display,” 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 4-108.

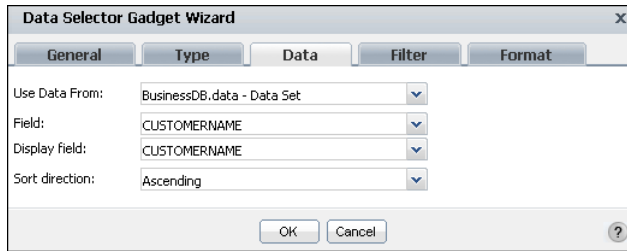


Figure 4-108 Assigning a field to a data selection gadget

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 include the Binding option. Use this option to display pre-selected values instead of values from a BIRT data object.

Figure 4-109 shows the additional data options for a calendar and slider gadget.

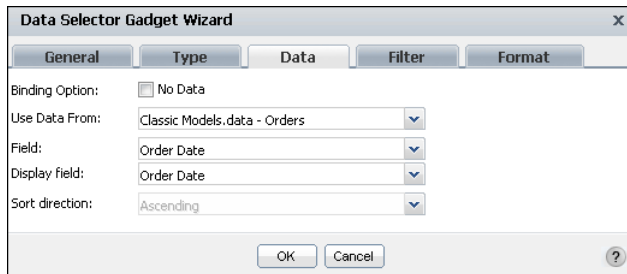


Figure 4-109 Assigning data to a calendar or slider gadget

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:

- Number column format, shown in Figure 4-110. Supporting general number, currency, fixed, percent, scientific, custom, and unformatted options.

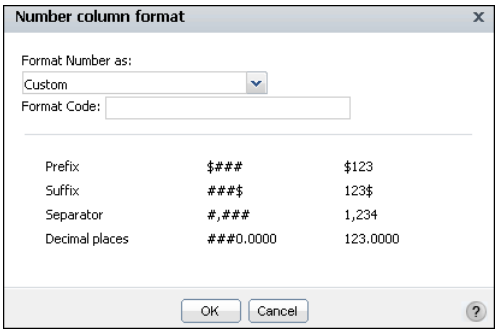


Figure 4-110 Selecting a number format

- Date column format, shown in Figure 4-111. Supports different date formats, custom formatting, and unformatted value options.

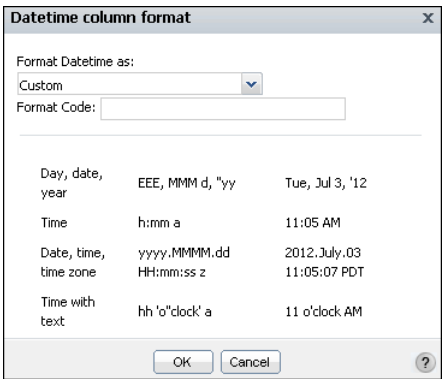


Figure 4-111 Selecting a date format

- String column format, shown in Figure 4-112. Supports uppercase, lowercase, custom formatting, and unformatted options.

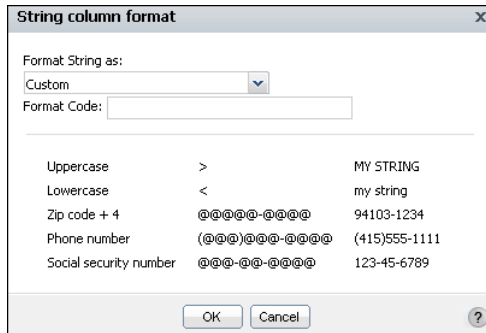


Figure 4-112 Selecting a string format

Formatting a calendar gadget

You can format a calendar gadget to modify its appearance on a dashboard. Calendar gadgets support a default value, start date, and end date, as shown in Figure 4-113.

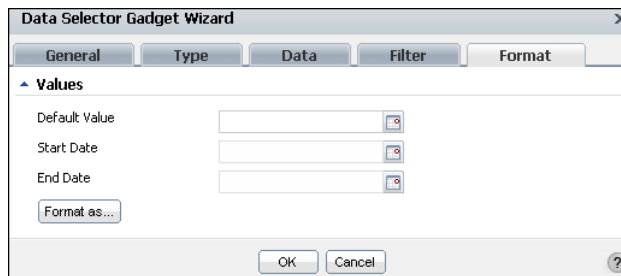


Figure 4-113 Formatting a calendar gadget

The user can change the date to another value but the new value must be between the start and end dates. Figure 4-114 shows the elements you can modify.

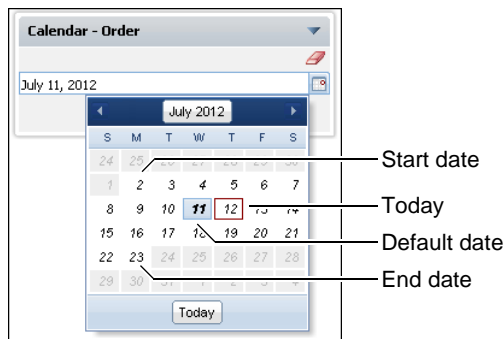


Figure 4-114 Displaying a calendar gadget

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 4-115 shows the elements of a check box you can modify.

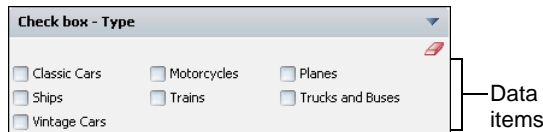


Figure 4-115 Displaying a check box gadget

Check box gadgets support a horizontal or vertical orientation, as shown in Figure 4-116. The developer can set a fixed or automatic number of items per row or column. 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.

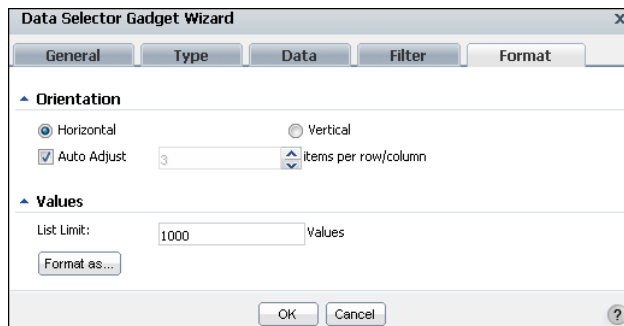


Figure 4-116 Formatting a check box gadget

Formatting a combo box gadget

You can format a combo box gadget to modify its appearance on a dashboard. Figure 4-117 displays the elements that you can modify.

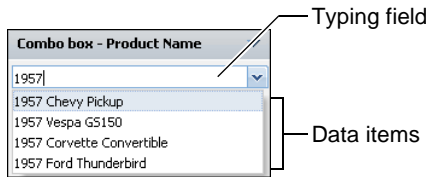


Figure 4-117 Displaying a combo box gadget

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 4-118 shows the combo box formatting options.

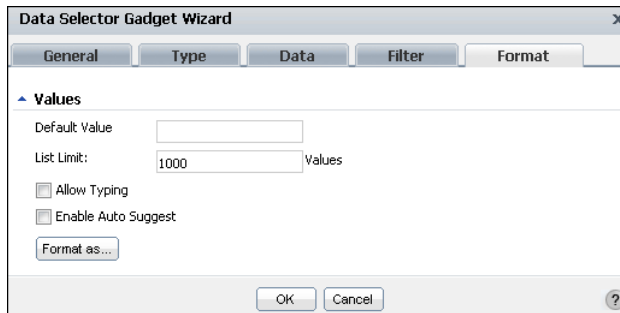


Figure 4-118 Formatting a combo box gadget

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 4-119 displays the elements you can modify.

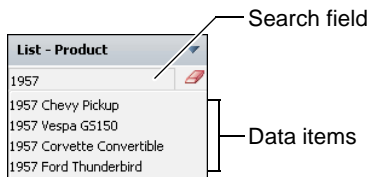


Figure 4-119 Displaying a list gadget

List gadgets can display a default value, a list limit, multivalue selections and a search box, as shown in Figure 4-120.

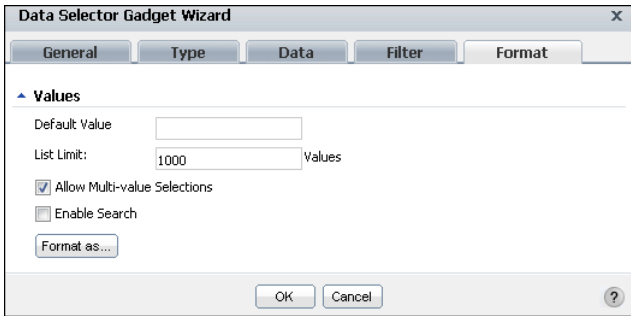


Figure 4-120 Formatting a list gadget

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 4-121 shows the elements you can modify.

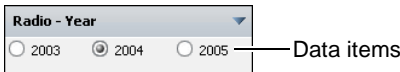


Figure 4-121 Displaying a radio button gadget

The developer can set a fixed or automatic number of items per row or column. 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 4-122.

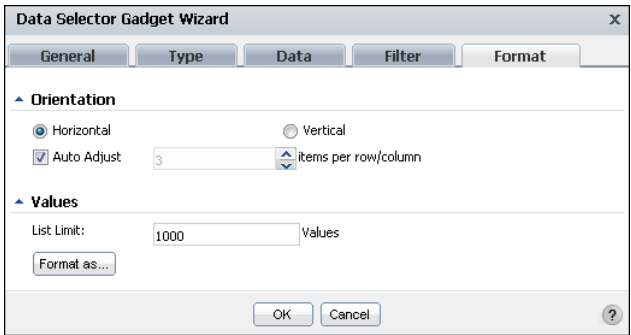


Figure 4-122 Formatting a radio button gadget

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 4-123 shows the elements you can modify.

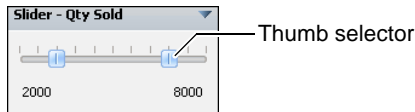


Figure 4-123 Displaying a slider gadget

Slider gadgets support a horizontal or vertical orientation, as shown in Figure 4-124.

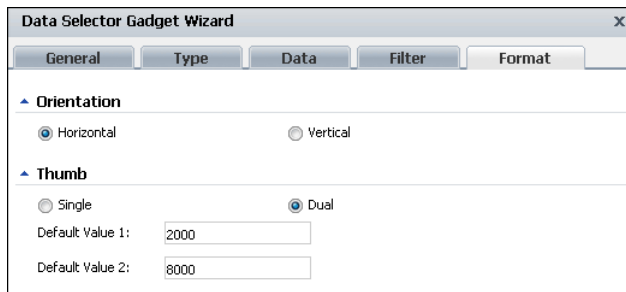


Figure 4-124 Formatting a slider gadget orientation

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 4-125 shows these options.

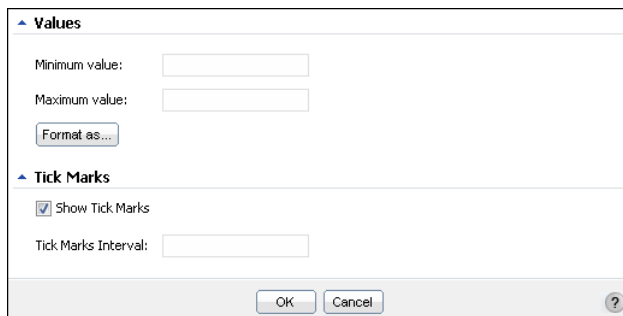


Figure 4-125 Formatting a slider gadget's values

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 4-126.

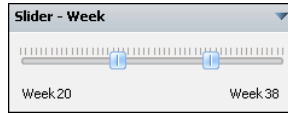


Figure 4-126 Using a slider and custom format to select between two weeks

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 object store files for a user to view. The developer adds a data version gadget to a dashboard and selects a data object store file. All available versions of that data store file are displayed in the data version gadget. The developer then displays data from the same data object store file in data visualization gadgets, such as a chart and a table, on the dashboard. When the user selects a version of the data store, those gadgets update to display data from the selected version.

Selecting a data object

The data version gadget 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 4-127.

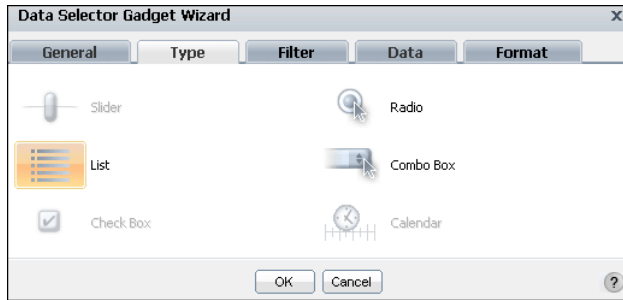


Figure 4-127 Displaying types of selectors used to display user choices

Figure 4-128 shows a data version gadget displaying a list of available version numbers and version names of a data store file.

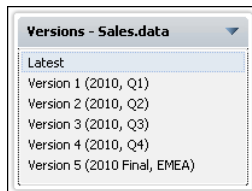


Figure 4-128 Displaying available versions of a data store file as a list

Figure 4-129 shows a data version using a combo box to display all versions of a data object store file.

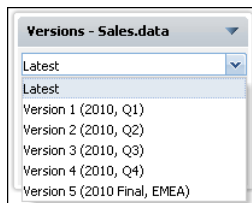


Figure 4-129 Displaying available versions of a data store file in a combo box

Figure 4-130 shows a data version using radio buttons to display all versions of a data object store file.

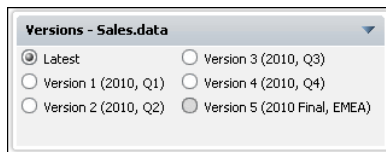


Figure 4-130 Displaying available versions of a data store file with radio buttons

Formatting a data version gadget

When a data version gadget uses radio buttons, the dashboard developer can format the content of the gadget. Figure 4-131 shows these format options.

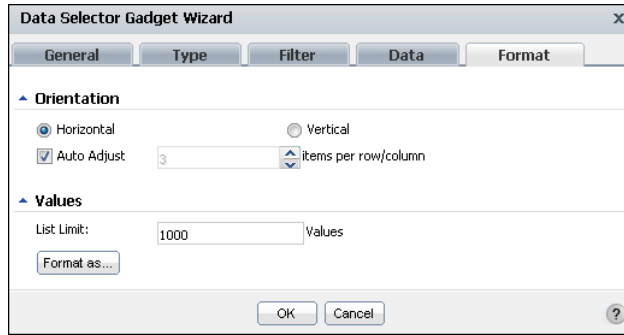


Figure 4-131 Formatting a data version gadget using radio buttons

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

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 the Data Selection folder. If the folder is not visible, choose Home first.
- 3 Drag a data version gadget and drop it on the dashboard.
- 4 Specify gadget display options in Data Selector Gadget Wizard—General:
 - Display the header and border.
 - Gadget title.
 - Refresh rate.
- 5 To display values in a data version gadget, complete the following steps:
 - 1 In Data Selector Gadget Wizard—Data—Use Data From, select a data object store file to manage.
 - 2 Select the default version of the data object store file to use.
- 6 Pick how to display choices to the user by selecting a type of data selector in Data Selector Gadget Wizard—Type.
- 7 Choose OK to create the new gadget.

Using a selector group gadget

Selector group gadgets display values in a cascade. Users pick from related values and apply them when all selections are finished. When the user chooses apply, linked gadgets on the dashboard update to display data related to the user selection. The dashboard developer chooses formatting for the values and features to enable, such as value search and multiple selection.

Selecting a data object

Selector group gadgets display multiple data fields and provide users with cascading choices. Use this option to display related values and enable users to finish all selections before updating linked gadgets. Figure 4-132 shows the additional data options for a selector group gadget.

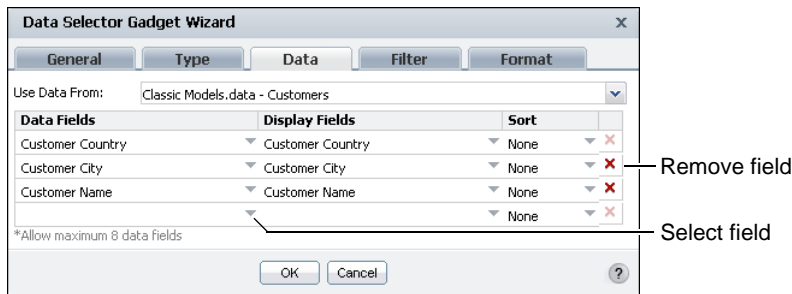


Figure 4-132 Assigning data to a selector group gadget

Select one or more data fields to display together. Each data field can be sorted and formatted differently. Each data field will filter the data fields below it. For example, if the first data field is country and the second is city, the gadget displays countries for a user to select. Each selected country displays city names from the selected countries.

Choosing a selector type

You can display selector group gadgets in a combo box or list. Use the Data Selector Gadget Wizard—Type options to change how the selector group gadget is displayed, as shown in Figure 4-133.

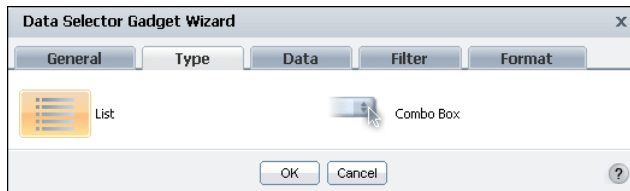


Figure 4-133 Displaying selectors types

Figure 4-134 shows a selector group gadget displaying lists of values from a BIRT data object. The list type supports searching values and multiple selection.

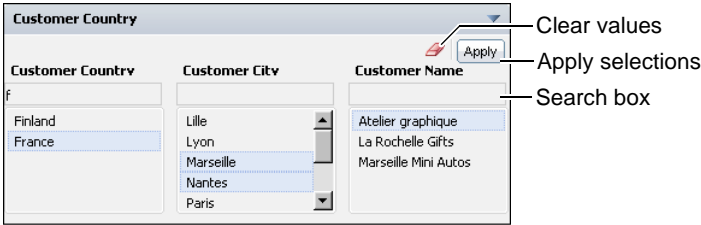


Figure 4-134 Displaying a selector group in horizontal lists

Figure 4-135 shows a selector group using vertical combo boxes to display values from a BIRT data object.

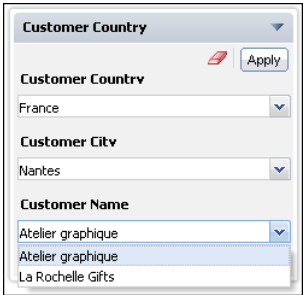


Figure 4-135 Displaying a selector group using combo boxes vertically

Formatting a selector group gadget

The dashboard developer can use Data Selector Gadget Wizard—Format to format the content of the gadget, as shown in Figure 4-136.

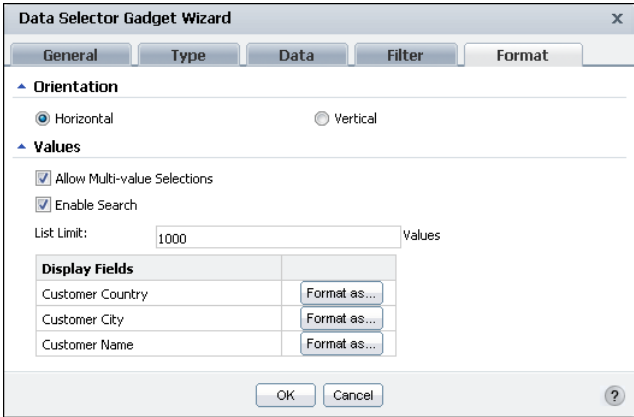


Figure 4-136 Formatting a selector group gadget using the list type

The dashboard developer can enable a horizontal or vertical display, multiple selections, and value search. The developer can also limit the quantity of values to display in the gadget and format each display field. For example, all country names could display in capital letters.

For more information about formatting options, see “Formatting data selection gadgets,” earlier in this chapter.

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 they always receive the latest version of that file. Users that want to edit a shared dashboard must either copy the dashboard or open the original dashboard file using Information Console.

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 or viewing 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 view or edit the dashboard with the Information Console file explorer 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.

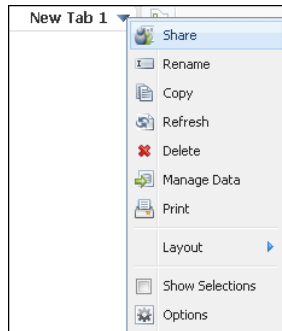


Figure 5-1 Sharing a dashboard

- 2 In Share Dashboard—General, type a name for the shared dashboard file, as shown in Figure 5-2.

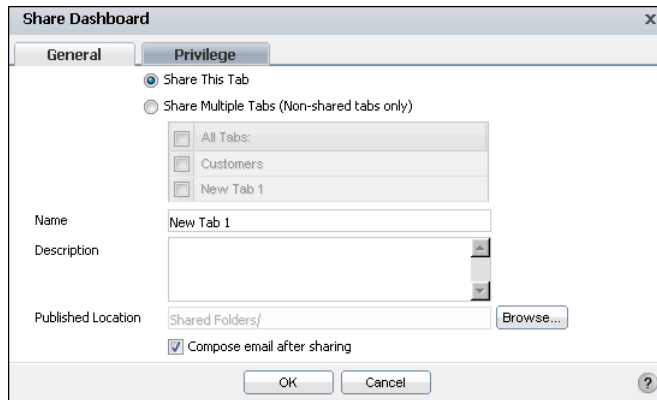


Figure 5-2 Selecting one or more dashboards to share

- 3 Complete the following optional steps:
 - Choose Share Multiple Tabs to include other dashboards in the shared dashboard file. Then select which other dashboards to include.
 - Type a description for the shared dashboard file.

- Select Compose email after sharing to create an email with the URL to the shared dashboard.
- Change the published location to save the dashboard file. Choose Browse to change the folder, as shown in Figure 5-3. Select Folder appears.
 - 1 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.
 - 2 Choose OK. Share Tab appears. Published Location displays the new destination for the saved dashboard.

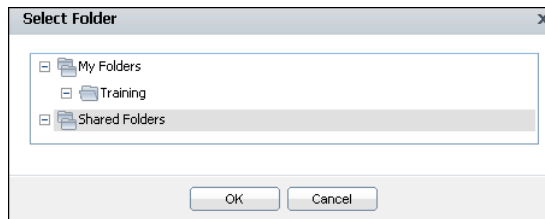


Figure 5-3 Selecting a destination folder to share a file

- 4 In Share Dashboard—Privilege, assign permissions to selected roles and users, choose Share to.



- 5 Add roles and users that can access the file, as shown in Figure 5-4. Choose OK when finished.

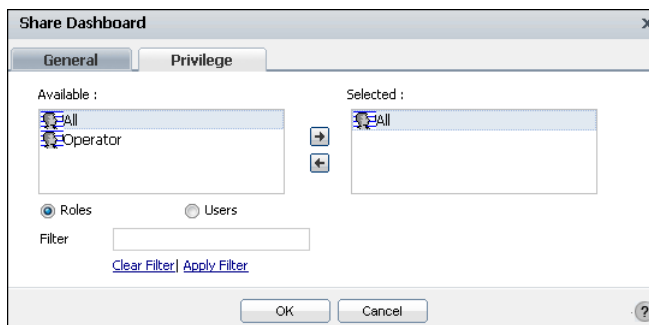


Figure 5-4 Sharing a dashboard

- 6 Choose OK to save the dashboard file and to close Share Dashboard.

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 explorer 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 5-5.

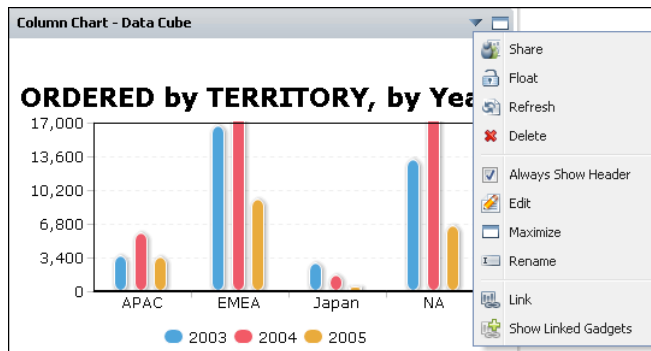


Figure 5-5 Sharing a gadget

- 2 In Share Gadget—General, type a name for the shared gadget file, as shown in Figure 5-6.

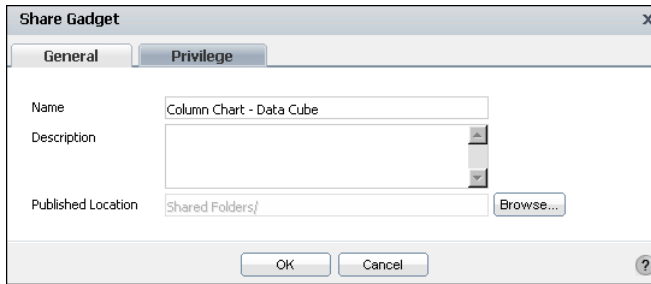


Figure 5-6 Selecting name and location for the shared gadget

3 Complete the following optional steps:

- Type a description for the shared gadget file.
- Change the published location to save the gadget file. Choose Browse to change the folder, as shown in Figure 5-7. Select Folder appears.
 - 1 In Select Folder, choose a new location to share the gadget.
 - 2 Choose OK. Share Gadget appears.

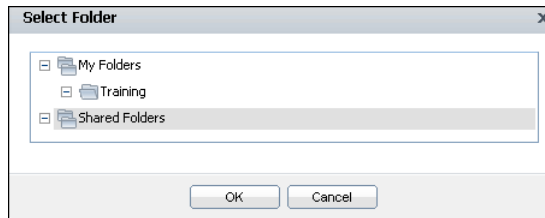


Figure 5-7 Selecting a destination folder to share the gadget file

4 In Share Gadget—Privilege, add roles and users that can access the file, as shown in Figure 5-8. Choose OK when finished. Choose OK when finished.

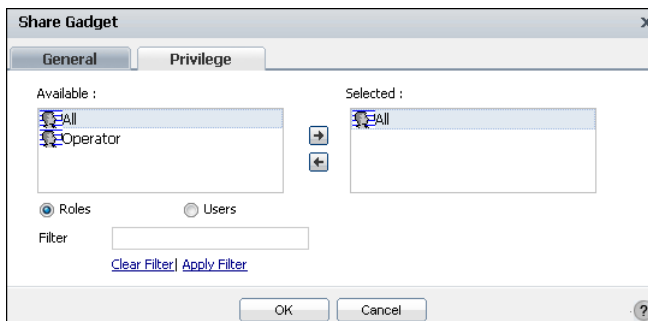


Figure 5-8 Giving all roles access to a shared gadget file

5 Choose OK to save the gadget and to close Share Gadget.

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.

Linking and scripting gadgets

This chapter contains the following topics:

- About linking gadgets together
- Building gadget links
- Scripting linked gadgets

About linking gadgets together

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 the publishing gadget, linking the two gadgets together. Gadgets, like data selection gadgets, publish their data when a user changes a value, such as selecting an item 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
- User selection-triggered scripts that execute global JavaScript code

For example, a chart gadget and a report gadget link to a list gadget that contains the names of countries. When a user selects a country in the list 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.

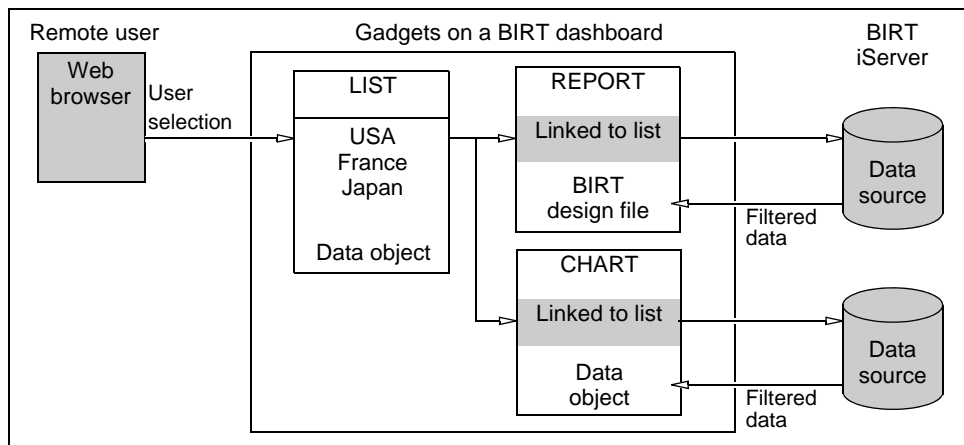


Figure 6-1 Gadgets linking to list gadget

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 object. Developers can manually add or change links in the gadget menu, configure filters on specific fields, or configure gadget events to monitor.

Building gadget links

Gadgets can link to data selection gadgets, such as a list gadget, 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, filter a long list of city names by linking a list gadget displaying city names to a list gadget displaying country names. 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 links to a list gadget displaying country names. The dashboard developer adds JavaScript to the HTML gadget that sends the selected country name to a remote map server. The remote map server sends back the selected map to display in the HTML 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 showing customer orders by country. The user then adds a list gadget displaying territory names from the same data object as the chart.

The chart gadget automatically links to the new list gadget. When a user selects a country in the list gadget, the chart shows countries in the selected territory.

The user can add additional gadgets displaying different values from the same data object. These gadgets link automatically to the chart and the other selection gadgets. Figure 6-2 shows how the addition of a gadget displaying product lines filters both a chart and territory list. The chart displays data from the selected territory and product lines. The territory list displays territories where the selected product lines have been ordered.

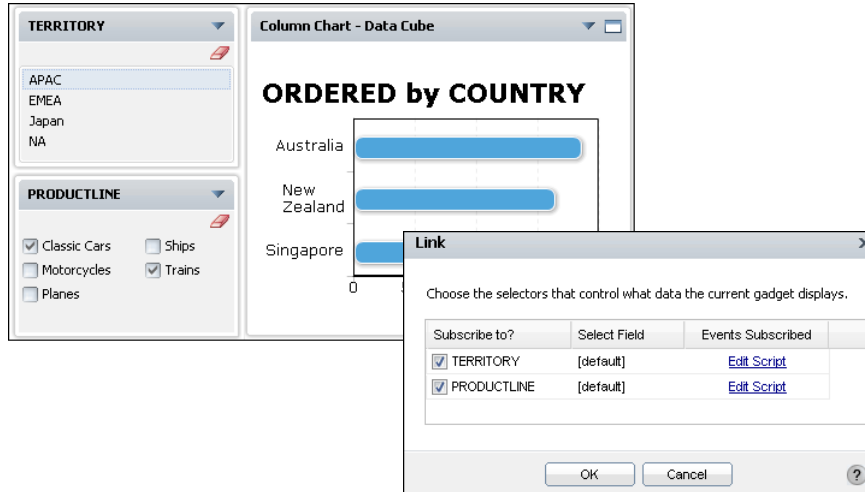


Figure 6-2 Linking a chart to data selection gadgets

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.

Selecting a field to receive link data

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, the developer must match the published data field from the data selection gadget to a data field in the subscribing gadget.

For example, a list gadget shows product line names from a data set. A chart gadget shows sales results from a data cube in a different data object. The developer matches the different field names when linking the chart gadget to the list. This enables the list gadget to filter product line data in the chart gadget.

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

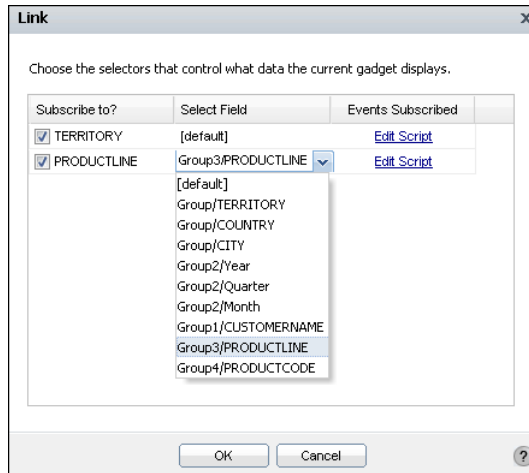


Figure 6-3 Selecting a field to receive a data selection link

Using multiple user selections

When multiple data selection gadgets link together, each gadget updates to display a subset of all user selections. Each user selection also updates linked visualization or report gadgets.

For example, consider a chart gadget linking to two data selection gadgets; a list gadget displaying country names and a list gadget displaying city names. 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 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.

The Show Selection gadget from the dashboard menu can clear all data selections on the dashboard at the same time.

Building one-way cascading selections

Two or more data selection gadgets can link to each other to show subsets of their displayed values. Gadgets link automatically when using the same data object on the same dashboard. Editing the gadget links enables you to limit which user selections can update other gadgets.

For example, a list gadget showing customer names and a list gadget showing order numbers link to each other. When the user selects either a customer name, or customer order number, the other gadget updates its displayed values. Removing the link from the customer name list to the order number list stops the customer name list from updating. The order number list remains linked to the customer name list. Changes to the customer name list continue to change the order number list.

Updating from a single selection

Use gadget links to control which user selections can update the displayed data. For example, you want to update the chart only when the user selects a city, the automatic links must be removed and replaced by two links:

- Link the chart gadget to the list showing cities.
- Link the list showing cities links to the list 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. Alternatively, the user can immediately select a city name.

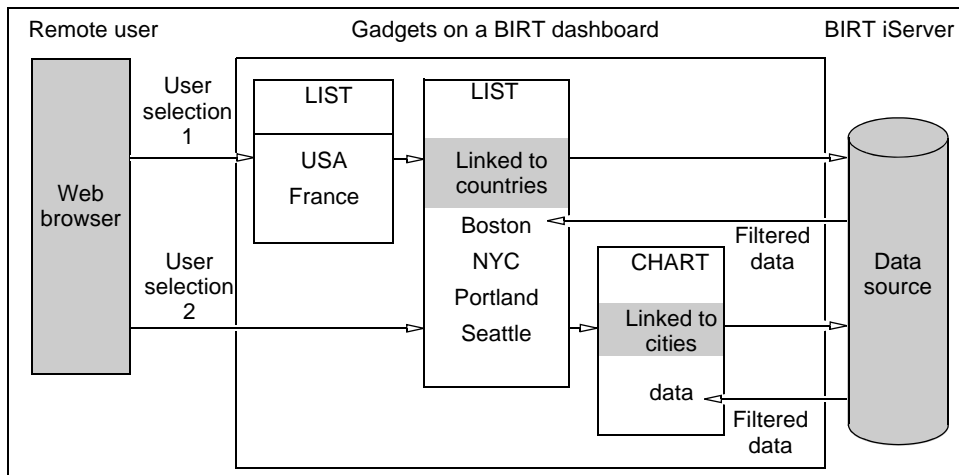


Figure 6-4 Cascading user selections

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` function is triggered in linked gadgets to update their contents with the new selection. You can customize this `onChange` function 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 you can add custom JavaScript to a linked field.

Each linked value can have its own customized `onChange` function. Adding script to a subscribed gadget event enables you to interact with and test the value

of any or all user selections. The `onChange` function intercepts the user selected value before it is used with report, Reportlet, and import gadgets.

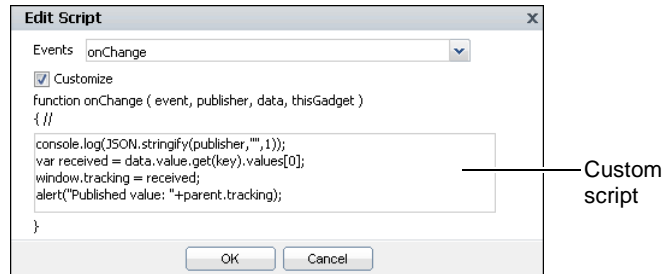


Figure 6-5 Adding JavaScript to a link's `onChange` event

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:

```
"ON_SELECTOR_GADGET_CHANGED"
```

- **data**

The data object that includes the entire message published by the data selection gadget. The following example of a data object message is sent by a list gadget named `PRODUCTLINE` with `Trains` and `Ships` selected:

```
{value:{
  _entry:{
    'Gadget_f10549d7-b2b0-43f2-9f0a-387e0e2c2560':{
      name:"PRODUCTLINE",
      publisherRealName:"Gadget_f10549d7-b2b0-43f2-9f0a-387e0e2c2560",
      values:["Trains", "Ships" ],
      namevalues:[
        {value:"Trains", display:"Trains"},
        {value:"Ships", display:"Ships"}
      ],
      semantic:"SEMANTIC_filter"}
    },
    _size:1
  },
  event:"ON_SELECTOR_GADGET_CHANGED"
}
```

- **publisher**

The name of the gadget that published information, such as a list gadget that publishes user selected values. For example:

```
{
  "_gadgetName": "Gadget_f10549d7-b2b0-43f2-9f0a-387e0e2c2560",
  "_gadgetTitle": "PRODUCTLINE",
  "_gadgetType": "selector",
  "_tabName": "823a17bc-c0a7-4d46-84d2-a4726ad624ce",
  "_tabTitle": "New Tab 1"
}
```

■ thisGadget

This object refers to the report or Reportlet gadget receiving the published message. You 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:

```
{
  _gadgetName:"Gadget_95497566-9ce3-4fc6-8bde-3159ca69c173",
  _gadgetTitle:"Report - Customer Order History",
  _gadgetType:"viewer",
  _tabName:"823a17bc-c0a7-4d46-84d2-a4726ad624ce",
  _tabTitle:"New Tab 1",
  _currentReportParameters:[
    {
      _:{initialize:(function (){} )},
      _FACADE_INSTANCE:{},
      _name:"Customer",
      _value:"Saveley & Henriot, Co.",
      _valueIsNull:false,
      _isRequired:true,
      _isMultiList:false,
      _dataType:"String"
    }
  ]
}
```

Using the onChange function

Use the onChange function to access gadget messages sent by data selection gadgets. This enables you to use JavaScript to access user selections. You can then view these values in a JavaScript debug console or in JavaScript alerts.

Displaying values in a JavaScript console

You can view a user selection from a list gadget using 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:


```
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());
```

In both Internet Explorer and FireFox, you can inspect the JavaScript object using the following code:

```
console.dir(publisher);
```

This code writes the data exchanged between gadgets to the JavaScript console of the web browser. JavaScript code can give 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. Check your preferred web browser's documentation for supported JavaScript debug tools.

Displaying values in Internet Explorer

Internet Explorer 9 users can use Developer Tools to view JavaScript values in the console pane. For example, the following code is in the `onChange` function for a chart gadget. This code runs when a user changes the list gadget that the chart gadget links to.

```
console.log(JSON.stringify(event, "", 1));  
console.log(JSON.stringify(publisher, "", 1));  
console.dir(data);  
console.log(JSON.stringify(thisGadget, "", 1));
```

Figure 6-6 shows the console result of a user selecting a value in the list gadget. This console is in Developer Tools of Internet Explorer 9.

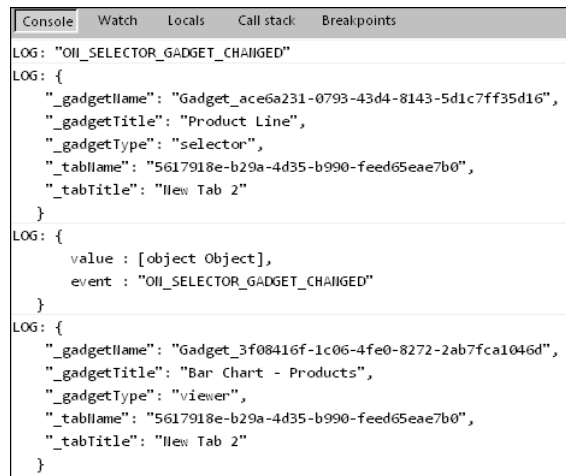


Figure 6-6 Viewing the console in Developer Tools

Some JavaScript objects will only display the word [object Object]. For example, JSON.stringify() works in Internet Explorer but it will not display JavaScript objects in the Developer Tools console.

Use the Internet Explorer watch pane to either expand these objects or make a list of objects to watch, as shown in Figure 6-7.

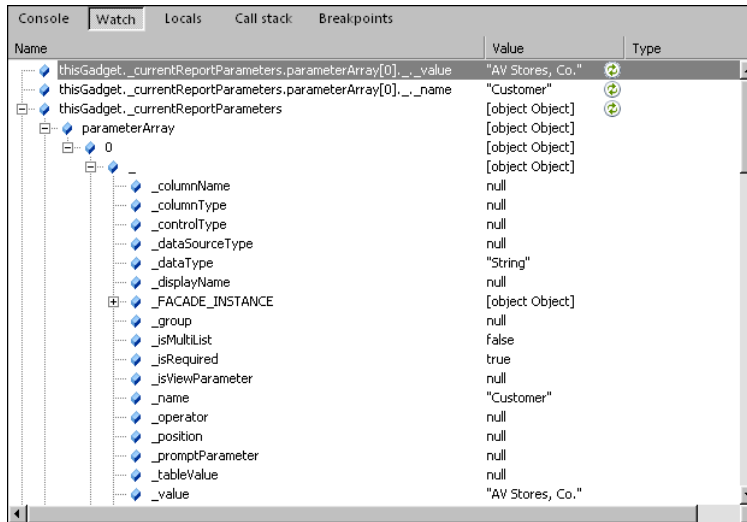


Figure 6-7 Viewing JavaScript objects in Developer Tools

Displaying selected values

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.

Using linked values

Dashboard developers can read and process values that a gadget receives. Scripts can use 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:

```
var key = data.value.keys();
alert("Published value: " + data.value.get(key).values);
```

This script takes the values published by a linked gadget and displays it in a JavaScript alert. To display only the first selected value, use:

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

JavaScript can change user selected values, such as changing the selection value of France to FR. This enables you 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 key = data.value.keys();
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;
  document.write(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 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;
    }
}
```

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 web sites, 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 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 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:8700/iportal/iv?__report=\Home\US
sales.rptdocument&__page=3
```

The following rewritten URL works in an HTML gadget:

```
http://localhost:8700/iportal/
iv?__report=%5CHome%5CUS%20sales.rptdocument&__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:8700/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:8700/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 web sites. 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 web sites 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 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, require 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 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 shared 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.

Cross-tab 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.

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 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, which 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 8-1 shows the minimessage feature in a gadget.

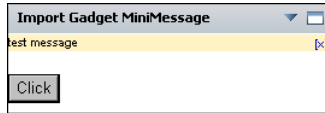


Figure 8-1 Using the minimessage feature

The following code shows the minimessage feature 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 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 enables 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 8-2 shows the tabs feature in a gadget.

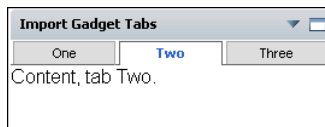


Figure 8-2 Using the tabs feature

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 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 on 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:8700/iportal/myGadgets/sampleGoogle.xml`

Figure 8-3 shows the gadget named `sampleGoogle.xml` loaded from directory on the Information Console server.

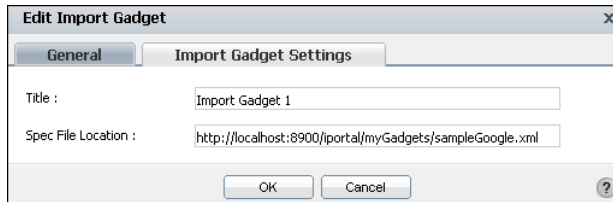


Figure 8-3 Adding a local Google gadget to the dashboard

Linking Google gadgets

Dashboard developers can link an import gadget to another Actuate gadget to receive user selections. The import gadget 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 gadgets together” 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 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>
    ]]>
  </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 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 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 8-4 shows JavaScript in a link event for an import gadget.

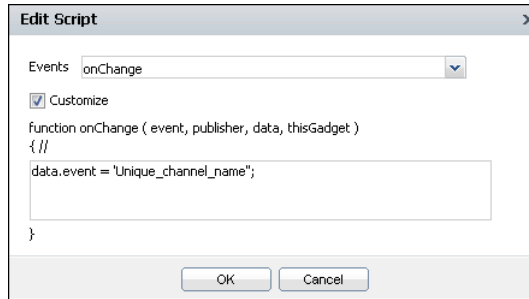


Figure 8-4 Changing the channel event name

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 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 Gadget. When the user selects the HTML button, the subscribing Google gadget receives the published message. Figure 8-5 shows the two gadgets communicating.

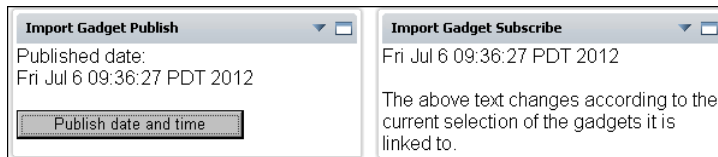


Figure 8-5 Communicating between Google gadgets

The dashboard developer does not need to link the two import gadgets together because the Google gadget contains all the necessary code to communicate, to publish, and to receive the message.

Linking public Google gadgets

Google gadgets that the dashboard developer does not own and cannot 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 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 Gadgets Editor
This editor requires a Google account and is available at the following URL:
<http://code.google.com/apis/gadgets/docs/tools.html#GGE>

Google Gadgets 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.

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