

Using Information Console

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Using Information Console describes how to use Actuate BIRT iHub Information Console to access, create, and run files stored in a volume. *Using Information Console also* describes how to use Actuate BIRT Viewers to view, navigate, and export data from report files stored in a volume. This document also describes how to use Interactive Viewer to change the appearance and structure of a report document and filter the contents of the document.

This document is a guide for general users of a default BIRT iHub Information Console installation. Technical concepts and explanations that describe how to accomplish common activities are included in the following chapters. For more detailed information about any of the subjects discussed, see the complete set of Actuate documentation included with Actuate software or contact your volume administrator.

The following chapters are included:

- *About Using Information Console.* This chapter provides an overview of this guide.
- Part 1. Working with files and jobs. This part introduces Information Console, describes how to set up a volume, and explains how to schedule and manage jobs.
- Chapter 1. Introducing BIRT iHub Information Console. This chapter explains how Information Console supports delivering BIRT content using a web browser. The chapter describes how to get started with Information Console and access content in a volume.
- *Chapter 2. Setting up a volume.* This chapter explains how to navigate the contents of a volume and work with files and folders in the volume. The chapter also explains working with access privileges.
- *Chapter 3. Scheduling and managing jobs.* This chapter describes the options available to schedule jobs and explains how to schedule and run file jobs using

Information Console. The chapter also describes how to set up notifications for completed or failed jobs and monitor the status of jobs.

- *Part 2. Understanding BIRT dashboards.* This part describes how to work with dashboards and gadgets to visualize data in a BIRT file.
- *Chapter 4. Using dashboards.* This chapter describes dashboards and explains the types of dashboard gadgets available, as well as how to use a gadget.
- Part 3. Using Actuate Viewers. This part describes how to use Actuate BIRT Viewers to view, navigate, and export data from report files stored in a volume. This part also describes how to use Interactive Viewer to change the appearance and structure of a report document and filter the contents of the document.
- Chapter 5. Introducing Actuate Viewers. This chapter introduces the available viewing environments for BIRT reports, and lists the modification capabilities each environment provides. The chapter also compares features in Actuate Viewer and Interactive Viewer.
- Chapter 6. Exporting report data and content. This chapter describes the exporting
 options in the viewers and explains how to export report data to various
 flat file formats. This chapter also describes exporting report content to
 various formats such as Word, PowerPoint, Excel, PostScript, PDF, or
 Extensible HTML using the viewers and Interactive Crosstabs.
- Chapter 7. Organizing and modifying data. This chapter discusses the functionality Interactive Viewer provides for organizing data, such as sorting data, moving columns, removing duplicate values, creating data groups, performing aggregate calculations, and setting page breaks in a report. This chapter also describes how you can insert calculated columns in a report and explains how to build expressions and create custom expressions to create new computed columns. The chapter also describes how you can use Interactive Viewer to specify viewing parameter values, and create filters for data in a report.
- Chapter 8. Editing and formatting a report. This chapter describes the formatting options in Interactive Viewer: formatting data columns and static text, formatting various types of data, and applying conditional formatting.
- Chapter 9. Modifying charts and gadgets. This chapter describes the types of charts in a report and explains how you can modify them using Interactive Viewer. The chapter provides procedures for changing the subtype and formatting of a chart, and also explains how to drill up and down through data hierarchies, drill through hyperlinks, and switch views between a chart and table or cross tab view of data. The chapter also describes gadgets and explains how you can modify them.
- Chapter 10. Analyzing data. This chapter describes cross tabs and explains how you can use Interactive Viewer to modify the formatting properties of data in a cross tab. The chapter also describes how you can create a cross tab using

Interactive Crosstabs, organize data in a cross tab, create computed measures, filter data in a cross tab, and display cross tab data in charts.

 Chapter 11. Functions and operators. This chapter is a reference for all the functions available in Interactive Viewer and Interactive Crosstabs. The chapter also describes the operators you can use when creating expressions for calculations and filter conditions, as well as creating expressions and filter conditions using relative time periods.

Part One

Working with files and jobs

- Introducing BIRT iHub Information Console
- Setting up a volume
- Scheduling and managing jobs

1

Introducing BIRT iHub Information Console

This chapter contains the following topics:

- About BIRT iHub Information Console
- Getting started with BIRT iHub Information Console
- Accessing optional browser-based tools
- Using browser bookmarks

About BIRT iHub Information Console

In a diverse and global business enterprise, corporations need a way to create, publish, and distribute content on a scheduled basis to a variety of users. These users require online and offline access to information from network environments, such as the internet, intranet, and extranet. Actuate BIRT iHub is a document server that generates, manages, and securely delivers BIRT documents stored in a volume. A volume is a disk-based repository containing designs, documents, information objects, shared libraries, and user information. You access a volume by logging in to Actuate BIRT iHub Information Console (Information Console). Information Console provides an efficient, scalable, searchable, and easily customizable solution for document delivery, data analysis and monitoring, as well as collaboration.

BIRT iHub extracts data from common data sources, such as relational databases, and includes the following components, which are accessible using a standard browser:

Information Console

Users and administrators can use this component to perform volume management tasks such as:

- Running designs
- Scheduling designs based on time and events
- Viewing and sharing documents
- Managing user and user group access to designs and documents using privileges
- Distributing documents
- Accessing scheduled and completed jobs
- Information Console—Administration Administrators can use this component to perform user management tasks such as:
 - Creating users
 - Creating user groups
 - Managing membership to user groups

Using Information Console users can perform the following tasks:

- Analyzing data using Actuate Interactive Crosstabs
- Distributing a report by sharing the file or a scheduled job with other users and user groups while determining access privileges

- Filtering data
- Visualizing multiple documents and mash-ups using Actuate Dashboards
- Scheduling customized BIRT content jobs
- Searching for a file
- Uploading and storing multiple types of files
- Viewing a report using Actuate Viewers
- Creating or editing a BIRT design using Actuate Report Studio

Information Console is a browser-based application that enables users to edit, print, run, schedule, share, and view business documents. A BIRT iHub system must contain one, but can contain several volumes. You access a volume by logging in to Information Console.

Information Console enables users to access additional licensed options, including browser-based tools such as Interactive Viewer for reorganizing and formatting report documents or Report Studio, a design tool for creating and editing report designs. Interactive Crosstabs enables you to analyze data in a cross tab or to create a cross tab using a BIRT data object store file. Dashboards and gadget tools enable you to create customized visualizations.

Browsing content in a volume

Figure 1-1 shows a high-level view of the interaction between Information Console and a volume in a BIRT iHub system.



 Figure 1-1
 Actuate browser-based application architecture

Understanding content life cycle

A volume stores BIRT content when users perform one of the following tasks:

• Run or schedule a job.

- Save BIRT content from available browser-based tools such as Report Studio, Interactive Viewer, Dashboards, and Interactive Crosstabs.
- Publish BIRT content using Actuate BIRT Designer Professional.
- Upload a file or folder containing BIRT content.

Using Information Console, users can either view an existing document for printing and editing, or run a job to create a document with updated or filtered data. Figure 1-2 shows a graphical representation of the typical content life cycle in Information Console.





Users can open BIRT design and document files in browser-based tools if they have the necessary access privileges and licenses to modify the design or underlying data sources. Users can save these modified BIRT designs in the volume.

Getting started with BIRT iHub Information Console

You launch Information Console using a URL in a web browser. Obtain the URL, login credentials, and volume name from your administrator. When a user logs in to a volume, the navigation pane displays the files and folders and available resources.

Information Console supports customization to meet diverse organizational needs. This document describes features and options available to a user granted read, write, and execute access privileges to the user's home folder and the volume's Resources folder, and to subfolders and files in both these folders.

Additionally, depending on the user group assigned, the user can have access to additional folders necessary for the group.

The example in Figure 1-3 shows parts of the Documents page that appears when a user who has not been assigned a home folder logs in to Information Console.

۱	Navigation pane	-Banner menu	Inner banner men	u
			Help pcastillo 上	
Default Volume	T - Action -	Create 🔹 👔 💼	Q T •	
Documents My Jobs	Name	Type Version # Size	Modified Pages	7
Notifications	Applications	Folder	1/6/2014 4:00 AM	
	📄 🔻 🚞 Dashboards	Folder	1/6/2014 9:39 PM	— Display pane
	🔲 🔻 🚞 Home	Folder	1/6/2014 4:00 AM	

Figure 1-3 Examining the Information Console page

Table 1-1 describes parts of the Information Console page.

Part name	Description
Banner menu	Contains options to view and modify the user profile, access online help, and log out of Information Console
Display pane	Displays the list of files and folders in the volume or in a selected folder
Inner banner menu	Contains links to select and deselect all items in the folder, perform operations on selected items, create a report or dashboard if you have purchased these licensed options, upload a file, create a folder, and search the volume using a text string or a filter
Navigation pane	Displays the folder hierarchy in the volume, and links to My Jobs and Notifications in the current volume

Table 1-1Parts of the Information Console web page

Contact your administrator if you need access to features described in this document that do not appear in your installation. For example, an administrator can limit access to several subfolders in the Documents folder. Even though a complete list of folders is visible in the navigation pane when you log in, without the appropriate access privileges, you may not be able to access files in all the visible folders.

Enabling ClearType on Windows platforms

To improve the display of iHub web pages, enable ClearType. Enabling ClearType makes the words on the screen look sharp and clear. The following procedure explains how to enable ClearType on a Windows 7 platform.

How to enable ClearType

- 1 In Control Panel, choose Appearance and Personalization.
- 2 Choose Display.
- **3** Choose Adjust ClearType text.
- **4** In ClearType Text Tuner, check Turn on ClearType, as shown in Figure 1-4. Choose Next.





- **5** In each of the next four screens, click the text sample that looks best to you. Choose Finish.
- 6 Turn off ClearType. Fonts remain anti-aliased.

Logging in to Information Console

The following section describes how to log in to Information Console as a regular user with an assigned home folder, accessing the default volume.

How to log in to Information Console

- 1 Launch a web browser.
- 2 In the address bar, type the URL you obtain from your administrator, such as:

```
http://localhost:8700/iportal
```

3 In Account Login, in the first field, type the user name, for example, pcastillo. In the next field, type the password for the user, as shown in Figure 1-5. Passwords can be up to 256 characters in length and can contain any characters except control characters or spaces. Passwords are case-sensitive.

🥏 actuate 🛛 Accou	nt Login
pcastillo	

Log I	n

Figure 1-5 Logging in to Information Console as a user

When a user with an assigned home folder logs in to Information Console, the user's home folder appears, as shown in Figure 1-6. If a user does not have a home folder, the volume root folder, named Documents, appears. The administrator typically creates a home folder for a user when creating the user, and assigns the privileges the user needs.



Figure 1-6 Viewing the home folder of a user named pcastillo

Accessing a different volume

An out-of-the-box BIRT iHub installation contains a default volume, named Default Volume. If you do not specify a volume name when logging in to Information Console, you log in to Default Volume. To access a different volume, specify the volume name during login, as described in the following section.

How to log in to a different volume

1 In the Information Console Login page, in the first field, type the volume name, followed by the backslash (\) character, and the user name.

Figure 1-7 shows Administrator logging in to a volume called sales_volume.

I ACTUATE		Account Login		
sales_v	sales_volume\Administrator			
Password				
		LogIn		
Figure 1-7	Loa	ging in to Information Con		

Figure 1-7 Logging in to Information Console to access sales_volume

- **2** Type the password for the user in the next field.
- 3 Choose Log In.

Modifying user profiles

Using Information Console, users can manage their profile information by changing their e-mail address, password, time zone, language, home folder path, and dashboard URL. The following section describes how to modify a user's profile information.

How to modify user profile information

- 1 Log in to Information Console as a user.
- **2** Select the user icon to display the menu, then choose My Profile. My Profile appears, as shown in Figure 1-8.
- **3** In My Profile, complete the following steps:
 - Type an optional description for the user.
 - Type a new e-mail address.

A user can update or add an e-mail address that Information Console associates with the user. This e-mail address is used to notify a user of document job completion or failure.

The notification can include the generated document as an attachment to the e-mail message. If e-mail notifications do not arrive, contact your administrator to see if the e-mail service is available.

- Select a new language from the list.
- Select a different time zone from the list.
- Specify a new path to the user's home folder.
- Specify the default dashboard. Type the path to a dashboard file to which you have access starting with the root of the volume, for example, /Dashboards/pcastillo/Dashboard_1.dashboard. After choosing Save on My Profile, as shown in Figure 1-8, you can open the default dashboard by entering the following URL in the browser address bar:

http://localhost:8700/iportal/dashboard

where <localhost> is the host name or IP address of the BIRT iHub server. If you enter this URL before logging in to Information Console, Account Login displays. Log in to Information Console. Information Console opens the default dashboard.

Modify your password.

The administrator sets an initial user name and password for each user. To change the password, complete the following steps:

- In Current Password, type your current password.
- □ In Password, type a new password.
- In Confirm Password, type the new password once again.

My Profile	
*Name:	pcastillo
Description:	
*Email:	pcastillo@mycompany.com
Language:	English (United States) 🔹
Time zone:	America/Los_Angeles 🗸
Home Folder:	/Home/pcastillo
Dashboard URL:	
Change Your Password	
Passwords are case sensitive.	
Current Password:	
Password:	
Confirm Password:	
	Cancel Save



Logging out of a volume

In Information Console, select the user icon to display the menu, as shown in Figure 1-9. Then, choose Logout.



Accessing optional browser-based tools

Browser-based tools that you can access using Information Console require specific licenses. The administrator chooses which users can access specific tools. Contact your administrator for information about the tools available to you.

The following browser-based Actuate tools are available using Information Console:

Interactive Crosstabs

Supports the multidimensional analysis of data cubes and viewing data as tables and charts. Interactive Crosstabs launches in the following instances; when a user edits a cross tab component inside a BIRT design, when a user runs a BIRT data object store file, when a user views a BIRT cube view file, and when a user maximizes a cross tab gadget on a dashboard. Users can save their data analysis as cube view files.

Actuate Viewers

Actuate Viewer supports basic viewing tasks, such as navigating BIRT documents, using a table of contents, modifying viewing parameters, and exporting data. This browser-based tool is the default viewer for BIRT design and document files. Additionally, Interactive Viewer supports viewing, filtering, formatting, and creating calculated data in BIRT document files. For example, the user can change the order in which values appear and show or hide detail rows.

To launch this browser-based tool, select Enable Interactivity from the Actuate Viewer menu or maximize a report gadget on a BIRT dashboard.

Report Studio

Enables business users to create new BIRT designs or edit existing designs. In Information Console, when a user selects a report design, and chooses Edit from the File menu, Report Studio launches displaying the selected design. Alternately, a user can select Create > New Report to create a new BIRT design using Report Studio. This option is available only if your organization or department has purchased the Report Studio licensed option. For more information about using Report Studio, see *Using Report Studio*.

Dashboards

A dashboard is a web application that uses interactive charts, cross tab tables, formatted text, and visualizations that users can modify in real time to view updated views of data. Dashboards display a variety of gadgets that enable users to find and analyze data. Users interact with dashboard data using the gadgets on the dashboard. To launch Dashboards, select Create New Dashboard.

Using browser bookmarks

Information Console is a browser-based application and uses URL addresses to interact with a volume. To enable quicker access to selected web pages in Information Console, users can bookmark URL addresses when performing the following tasks:

- Logging in to Information Console
- Running or scheduling a job
- Viewing a document file
- Launching an application in Information Console

To access pages with bookmarks for running a job or viewing a document, users must log in to Information Console. Many documents exist for temporary viewing. When the time-out period for such a document is reached, the web URL for the document becomes unavailable. Additionally, document privileges determine which users can view or run a bookmarked BIRT file.

Some browser-based tools, such as Actuate Viewer and Interactive Viewer, include a linking option that creates a URI to run a document on demand by any user with the appropriate privileges. For more information about accessing Information Console using custom URIs, see *Using Actuate JSAPI and URIs*. Users can also use e-mail notifications to share direct links to new documents.

Chapter

2

Setting up a volume

This chapter contains the following topics:

- Navigating a volume
- Searching a volume
- Working with files and folders
- Understanding file and folder privileges

Navigating a volume

Using Actuate BIRT iHub Information Console, users can navigate the contents of a volume using the folder hierarchy. The list of files and folders and options available differ between administrators and regular users.

Use the folder hierarchy in the navigation pane to perform the following actions:

- Display or hide subfolders of a selected folder in the navigation pane.
- Display the contents of a selected folder in the display pane.
- Access the file or folder menu in the display pane. You can also access a folder menu in the navigation pane.

The default volume typically consists of the following folders:

Applications

Contains sample applications, containing items such as BIRT design, document, dashboard, data object, library, and image files.

- Dashboards
 Contains a BIRT dashboard file and a BIRT gadget file
- Home Contains the home folders of all users.
- Public Contains sample BIRT design files, including utility report designs.
- Resources
 - data folder

Contains Excel spreadsheet (.xls, .xlsx) and comma separated values (.csv) files.

Data Objects folder

Contains data sources such as BIRT data object design (.datadesign) and data object store (.data) files.

A scheduled job runs a .datadesign file, generating a .data file. Opening the .data file supports viewing and working with the file using BIRT Interactive Crosstabs.

- images folder
 Contains Portable Network Graphics (.png) files.
- js folder
 Contains a javascript (.js) file.

Report Libraries folder
 Contains a BIRT Library (.rptlibrary) file.

The Resources folder also typically contains:

- Data object design (.datadesign) files, which a design developer creates in BIRT Designer Professional, then publishes to the Resources folder.
- BIRT data object store (.data) files, which contain the data that a scheduled job running a data object design file generates.
- BIRT Library files, which contain reusable and shareable report elements, such as BIRT data object and report document data sources, themes, which support applying a consistent style to a report, HTML buttons, and HTML 5 charts.

By default, folders in the default volume are visible to all users, and all users can view any file in the volume, or run any executable file in the volume. As for any volume, the administrator can define access privileges to any item the default volume contains.

The following section describes how to navigate the contents of a volume using the folder hierarchy.

How to navigate a volume

- **1** Obtain the URL and login information for you to access BIRT iHub Information Console from your administrator.
- **2** Log in to Information Console. A list of files and folders in your home folder appears in the display pane, as shown in Figure 2-1.



Figure 2-1 Viewing the folder hierarchy

The navigation pane indicates that you are viewing the contents of your home folder. If your home folder is empty, do one of the following:

- Contact your administrator to make sure you have access privileges to the files and folders you need.
- Upload the files and folders that you need from your local file system to your home folder.
- **3** To view the contents of a different folder, in the navigation pane, complete the following steps:
 - Select a folder in the navigation pane. The contents of the selected folder appear in the display pane.
 - If necessary, select a subfolder. The list of files and folders in the selected folder appear in the display pane.

Searching a volume

Information Console enables you to use filters that can limit the number of files displayed. The user creates a filter by specifying a text string in a file name to display only the items containing the string. Information Console displays the list items containing that string. Filtering is not case-sensitive.

Users and administrators can use filters to search the following navigation pane items:

Documents

Information Console filters on Name. Additionally, you can use the Filter menu to include or exclude the following items in the search results:

- Latest version only
- Folders
- Documents
- Executables
- My Jobs

Information Console filters on job name. Additionally, users can include or exclude jobs that succeeded or failed in the results.

 Notifications Information Console applies filters based on the job name.

How to filter a tabular list

1 Type inv in the Search field. Choose Apply. A list of files having names containing the string 'inv' appear in the display pane, as shown in Figure 2-2.

T - Actio	m 🔻 📑 Create 💌 👔 👘	Q inv	▼ • Reset	Apply
3 items found wit	hin pcastillo folder			
Nam	e	Туре	Version # Version Name	Size
🗖 🔻 調 Clien	it Investment History	BIRT Dashboard	1	2.65 KB
🗖 🔻 📊 Clien	it Investment Portfolio	BIRT Design	1	179 KB
🗖 🔻 📊 Clien	it Investment Portfolio	BIRT Document	1	420 KB

Figure 2-2 Filter for list items having names containing inv



2 In the Filter menu, deselect Documents, as shown in Figure 2-3. Then, choose Apply.

T -	Reset	Apply				
🗖 Include subfolders						
🗖 Lates	у					
🔽 Folde						
🗖 Docu	ments	Pages				
🔽 Execu	ıtables	м				

Figure 2-3 Deselecting Documents and choosing Apply

Information Console executes the filter condition to exclude all BIRT document files from the previous results, as shown in Figure 2-4.

Γ.	Action 🔻 📑 Create 💌 👔	Q inv	▼ • Reset	Apply
2 items fou	nd within pcastillo folder			
	Name	Туре	Version # Version Name	Size
□ - 🔳	Client Investment History	BIRT Dashboard	1	2.65 KB
🖬	Client Investment Portfolio	BIRT Design	1	179 KB

Figure 2-4Excluding document files from the results

3 To clear the filter and restore the original list, choose Reset.

How to filter reports in My Jobs

1 In My Jobs, choose Completed. A list of all completed file jobs appears.

2 In Search, type a string. Use the wildcard asterisk (*) character to broaden the search. For example, to display all job names that start with Customer, type:

Customer*

Choose Apply. Information Console displays jobs that match the filter condition you specified. As shown in Figure 2-5, only jobs with names that begin with the word Customer appear.

	Def	ault Volume			Q. Custor	mer* 🔽 🔻 Reset	Apply
~		Documents					
	,	Applications	Schedules	Waiting for Event	Pending	Running Completed	
	>	Dashboards	Job Name	Document Nam	e Result	Finished	Details
	~	Home Home	Customer Order Histo	ory	Succeeded	Jan 27, 2015 11:32:02 PM	=
		> pcastillo	Customer Order Histo	ory	Succeeded	Jan 26, 2015 11:32:02 PM	=
	>	Public					
	>	Resources	Customer Order Histo	ory	Succeeded	Jan 25, 2015 11:32:09 PM	
	Му	Jobs	Customer Order Histo	ory	Succeeded	Jan 24, 2015 11:32:11 PM	=
4	Not	lifications					

Figure 2-5 Filtering jobs

3 You can also use the Filter menu to create a filter that displays all completed jobs that succeeded or all completed jobs that failed.

Using special characters in a filter

If a filter expression contains one or more of the following special characters, a backslash ($\)$ must precede each special character.

- Ampersand (&)
- Asterisk (*)
- Backslash (\)
- Close square bracket (])
- Comma (,)
- Equal sign (=)
- Exclamation point (!)
- Greater than sign (>)

- Hyphen (-)
- Less than sign (<)
- Number sign (#)
- Open square bracket ([)
- Pipe sign (|)
- Question mark (?)
- Single quotation mark (')

For example, to search for a document named Newsfeeds#1, type the following search expression:

Q

Τ-

newsfeeds\#1

Using operators in a filter

The special characters described in Table 2-1 are also operators in a filter or search expression.

 Table 2-1
 Description of filter operators

Operator	Description
Asterisk (*) or question mark (?)	A wildcard character. Represents any character or characters.
Greater than sign (>)	Precede the first character of a search string with the greater than sign to return all rows in which the first n characters of the name has a value greater than the first n characters of the search string.
Greater than or equal to sign (>=)	Precede the first character of a search string with the greater than or equal sign to return all rows in which the first n characters of the name has a value greater than or equal to the first n characters of the search string.
Less than sign (<)	Precede the first character of a search string with the less than sign to return all rows in which the first n characters of the name has a value less than the first n characters of the search string.
Less than or equal to sign (<=)	Precede the first character of a search string with the less than or equal sign to return all rows in which the first <i>n</i> characters of the name has a value less than or equal to the first <i>n</i> characters of the search string.
Number sign (#)	Represents any single digit. If you type newsfeeds#, the search returns list item names that begin with newsfeeds and end with a number, such as newsfeeds1, newsfeeds2, for example.

Working with files and folders

Select the menu icon next to a file or folder in the display pane. The options that appear in the menu vary based on your selection. For example, a folder menu contains different options to a document menu, which contains different options to a BIRT design menu. Volume items containing a menu of options include:

- Folders
- Document files such as XML files, BIRT document (.rptdocument) files, and HTML files
- Design files containing executable XML, such as BIRT design (.rptdesign) files

The actions a user can perform on a file depend on the file type. For example, based on file type a user can view, run and save, edit, or create a parameter values file. Table 2-2 describes the menu options for folders and files.

Option	File type	Description
Auto Archive	All	Set the autoarchive policy for the file or folder. View the existing autoarchive policy for the item. For more information, see "Understanding autoarchiving" in Chapter 3, "Scheduling and managing jobs."
Сору То	All	Copy the item to a new destination on the volume. For more information, see "Moving and copying a file or folder," later in this chapter.
Create Parameter Values file	Design	Create an executable parameter value (.rov) file from the design.
Delete	All	Delete the file or folder. For more information, see "Deleting a file or folder," later in this chapter.
Details	All	View details about the item, such as general properties, your privileges on the item, and the autoarchive policy. For more information, see "Setting privileges on files and folders," later in this chapter.
Download	All	Open the item or save the item to the local file system. For more information, see "Downloading a file or folder," later in this chapter.
Edit Report Design	Design	Open the design in Report Studio.
Move To	All	Move file or folder to a new destination on the volume. For more information, see "Moving and copying a file or folder," later in this chapter.
Open	Dashboard	Point to a File menu icon next to a BIRT dashboard and choose Open to view the dashboard.
Open Folder	Folder	Display the contents of the folder in the files and folders list display pane.
Rename	All	Rename the file or folder.
Run	Design	Run the design and view the output document without saving it. For more information, see "Running a job" in Chapter 3, "Scheduling and managing jobs."
Run and Save	Design	Run the design and save the output document to the volume.
Schedule	Design, document	Run the design or document as a scheduled job. For more information, see "Scheduling options" in Chapter 3, "Scheduling and managing jobs."

 Table 2-2
 Menu options and their descriptions
	•	
Option	File type	Description
Share	All	Choose to share or not share the item. Assign privileges on the item to users and user groups. For more information, see "Setting privileges on files and folders," later in this chapter.
View Document	Document	Display the document for viewing or editing.

 Table 2-2
 Menu options and their descriptions

Information Console displays the files and folders in the volume available to the logged-in user. The navigation pane displays the available folders. When you select a folder, the adjoining display pane displays the contents of the folder.

An administrator specifies the privileges that a user or user group has on a file or folder. Purchased license options support access to product features. For example, running a BIRT design or document file requires that the user have execute and visible privileges on the file and also requires the BIRT license option.

Working with supported file types

Information Console provides access to several types of files stored in folders in a volume. A user who has the Write privilege can add a file to a folder. Contact your administrator for information about any file type in the volume that is not described in this document. A typical user works with the following types of files:

BIRT design and document files

A developer creates a BIRT design file using BIRT Designer Professional or Report Studio, and publishes or saves the file to the volume. When you run a BIRT design, Information Console retrieves data and generates a final document in a specified format, such as an Adobe PDF, Microsoft Excel, Microsoft Word, or BIRT document file.

Users interact with the data in BIRT document files using browser-based tools such as Actuate Interactive Viewer. Users schedule BIRT document files for conversion to a final document in various supported formats. BIRT documents embed their data in the file avoiding repeated database queries.

BIRT data object files

Data object files can contain one or more individual data sets, one or more linked data sets called data models, and data cubes. There are two types of data object files, a data object design file or a data object store file. Data object design files run on-demand queries to their data sources. Information Console enables you to cache this data as data object store files to avoid on-demand queries to external databases and ensure that multiple dashboards or designs use the same data. Data object store files support multiple versions. A developer creates data object files using BIRT Designer Professional, and publishes the file to the volume. When a user runs a BIRT data object store file containing a cube or a data model in Information Console, the file launches in Interactive Crosstabs, if the user has access to this licensed option. The user can then create a cross tab from the data model or cube.

BIRT dashboard files

Dashboard files contain one or more dashboards containing various gadgets. Dashboards present data from BIRT documents, BIRT data objects, and external web-based sources for user analysis and interaction. Dashboards appear as a file or as a subscribed web page in Information Console.

Users can interact with dashboard data using charts, cross tab gadgets and tables. Data selection gadgets enable users to simultaneously filter multiple displays of data.

BIRT information object files

A BIRT information object is a predefined SQL query that retrieves data from external databases. A developer creates an information object using BIRT Designer Professional, and publishes the object to the volume. The information object functions as a data source for BIRT designs.

Table 2-3 lists the types of files Information Console supports.

Icon	File type	Actuate file description	Available operations
CSV	CSV	Comma separated values file	Delete, Open, Share
	cubeview	BIRT cube view file	Delete, Open, Share
	dashboard	BIRT dashboard file	Edit, Delete, Open, Share
	data	BIRT data object store	Delete, Open, Share
3	datadesign	BIRT data object design file	Schedule, Delete, Share
w	doc	Microsoft Word document	Delete, Open, Share
w	docx	Microsoft Word 2007 and 2010 document	Delete, Open, Share
ø,	epr	External procedure object	Delete, Open, Share
3	gadget	Dashboard gadget file	Delete, Open, Share

 Table 2-3
 File types supported by Information Console

Icon	File type	Actuate file description	Available operations
HTML	htm or html	HTML document	Delete, Open, Share
G	iob	Information object	Create Design, Delete, Share
PDF	pdf	Adobe PDF file	Delete, Open, Share
P 7	ppt	Microsoft PowerPoint file	Delete, Open, Share
P ₇	pptx	Microsoft PowerPoint 2007 and 2010 file	Delete, Open, Share
PS	ps	PostScript document	Delete, Open, Share
P ₇	psv	Pipe-separated values file	Delete, Open, Share
	rov	Report parameter values	Run, Run and Save, Schedule, Delete, Share
11,	rptdesign	BIRT report design	Run, Run and Save, Schedule, Edit, Delete, Share
	rptdocument	BIRT report document	Delete, Schedule, Open, Share
	rptlibrary	BIRT report design library	Delete, Open, Share
Ь	rpttemplate	BIRT report design template	Delete, Open, Share
RTF	rtf	Rich text format	Delete, Open, Share
<u> </u>	sma	Data source map	Create Design, Delete, Share
TSV	tsv	Tab-separated values file	Delete, Open, Share
TXT	txt	Text file	Delete, Open, Share
E ₇	xls	Microsoft Excel spreadsheet	Delete, Open, Share
E	xlsx	Microsoft Excel 2007 and 2010 spreadsheet	Delete, Open, Share

 Table 2-3
 File types supported by Information Console

Viewing file properties

File properties include general information about the file such as file creator, type, location, version, author, access rights, and archiving policy for the selected file. The access rights show the file privileges for the current user. Access rights for other users are visible using the file's share operation.

How to view file properties

1 Navigate to a file.

2 In the File menu, choose Details.

The display pane shows the properties for the file, as shown in Figure 2-5. For more information about access rights, see "Working with file privileges," later in this document.

				Ŧ
E Default Volume				
Documents	General			
	Name: Client Investment Portfolio			
> Applications	Type: (RPTDESIGN)			
> 🔛 Dashboards	Location: /Home/pcastillo			
🗸 💼 Home	Version			
> 💼 pcastillo	Name:			
> 🖿 Public	Version: 1			
> 🖿 Resources	Description:			
My Jobs	Size: 1/9 KB			
	Created by Administrator			
Notifications	Created by: Administrator			
	Shared: Yes			
	Access Rights			
		~		
	✓ Read ✓ Write ✓ Execute ✓ Delete ✓ Grant	* Secure Read	✓ Visible	
	Auto Archive			
	This file will never expire.			

Figure 2-6 Viewing detailed information about a file in a user's home folder

3 To return to the file listing pane, in the navigation pane, select the folder containing the file you viewed.

Adding a file or folder

You create a folder in the volume that functions as a repository for files, such as BIRT design, BIRT document, and BIRT data object files. Developers use design tools to create design files to publish to the volume.

You can also upload a file to the volume from your local file system. To add a file from the local file system to a specific folder in Information Console, users require visible and write access privileges to the folder.

If a file with the selected name exists in the destination folder, a new version of the named file with duplicated archive rules, description, and privileges appears in the destination folder. After adding a file, edit the file privileges using the share option. For information about files and folders to which you have access, contact your administrator.

When you create a folder or upload a file, consider the string length that you use for that item's name and options. BIRT iHub imposes a fixed upper limit on the length of text strings that you provide for options such as names, descriptions, file types, and URLs. For more information, see "Naming a file or folder," later in this document.

How to add a file

- 1 In a volume, navigate to a folder to which you want to add a file.
- **2** Choose Upload, as shown in Figure 2-7.

Figure 2-7 Opening Add File

- **3** Select Browse. On your file system, navigate to the folder containing the file you want to upload.
- **4** Select the file and choose Open. File displays the name of the selected file.
- **5** Accept the default selection of Create a new version, as shown in Figure 2-8.



Figure 2-8 Selecting file upload options

- **6** If a file with the same file name already exists in the destination folder, optionally select the following options:
 - Copy file privileges for the new file from the current folder or the most recent version of the file that exists in the folder.
 - If a file already exists in the folder, you can select options to copy the description and autoarchive rules from the latest version of the file.
 - Use the volume default privileges for files of this type for the new file.
 - To expand a compressed file in ZIP or TAR format when adding it to the folder, select Expand archive.

Choose OK. The file appears in the destination folder.

How to add a new folder

- 1 In the navigation pane, navigate to a folder in which you want to add the new folder. For example, to add a folder to the root directory, choose Documents in the navigation pane.
- 2 In the inner banner, choose Add Folder, as shown in Figure 2-9.

🕂 Create 💌	b	È	
		Ad	d Folder

Figure 2-9 Choosing to add a folder

3 In Name, type a name for the folder. In Description, optionally, type a description. Then, choose OK, as shown in Figure 2-10.

Default Volume	Namo*
~ 💼 Documents	Description:
> Deplications	
> 🖿 Dashboards	Canad
> 🖿 Home	Calluer

Figure 2-10 Specifying a name and description for a folder

Deleting a file or folder

Users can delete a file or folder from the volume only if they have the delete privilege for the item. A user has the delete privilege for a folder or file if:

- The user owns the folder or file. Users own items that they create.
- The user is an administrator.
- The user has been granted the delete privilege by the administrator or owner of the folder or file.

If a user does not have the delete privilege for an item that the user tries to delete, Information Console displays a message stating that the user does not have the required permissions.

Deleting a file removes it from the volume. Deleting a file does not remove temporary versions or external links to the file. Temporary versions exist until they expire or time out and links to the deleted file fail. For example, temporary file links appear when:

- Other documents contain links to the deleted document.
- The deleted document is embedded using JavaScript in an external web page.
- Dashboard gadgets use the file.
- Notifications exist for the job that created the deleted file.
- Links to temporary or transient documents that have not expired exist in the memory cache of Information Console.

How to delete a file

- 1 Navigate to the file you want to delete.
- **2** To confirm that you have the Delete privilege for a file, from the File menu, choose Details.

In Detail, verify that a check mark appears next to Delete in Access Rights, as shown in Figure 2-11. Choose Back to return to the file view.

General Name: Type: Location: Version: Description: Size: Created: Created by: Shared:	Orders by Product (RPTDOCUMENT) /Home/pcastillo 1 2.85 MB 1/7/2014 4:00 AM pcastillo Yes				
Access R ✓ _{Read} ✓w	ights ∕rite √Execute √Delete	√ Grant	✓ Secure Read	√ Visible	— Delete access privilege
Auto Arc This file wil	hive I never expire.				

Figure 2-11 Viewing file privileges

3 Navigate back to the folder containing the file.



4 In the File menu, choose Delete, as shown in Figure 2-12.

View Document
31 Schedule
📥 Download
🛃 Share
🗉 Details
📂 Move To
🏠 Сору То
🥒 Rename
🛓 Auto Archive
🙁 Delete



On the message that appears asking you to confirm the action of deleting the selected file, choose OK. The selected file is deleted from the volume.

Moving and copying a file or folder

You can copy or move a single file or folder from one location on the volume to another. You can also download a file or folder to an external location.

How to copy or move a single file or folder

1 Select the menu icon next to a file or folder and choose Copy To or Move To.

Copy or Move appears. You provide the same information, in the same way, whether copying or moving an item. Figure 2-13 shows Copy.

New file name:	Product Orders by Customer		
Destination folder:	/Sales/esenoadi	Browse	
If the file already exists:	C Replace the latest version versions	Create a new version	🗖 Keep only the latest
Cancel			

Figure 2-13 Copying or moving a file

- **2** On Copy or Move, perform the following tasks:
 - In New file or folder name, if necessary, type the file or folder name.
 - In Destination folder, type the folder path or choose Browse to navigate to a folder location.
 - In If the file already exists, select one of the following options:
 - Select Replace the latest version to overwrite the latest version of the file with the new version.
 - Select Create a new version to create a new version of the file.
 - Select Keep only the latest *n* versions to replace the oldest version of the file with the new version, and keep only the latest *n* versions, where *n* is the number you specify. Selecting create a new version activates this option.
 - If you are copying or moving a folder, and the folder already exists at the destination, select one of the following options, as shown in Figure 2-14:
 - Select Replace the latest version to replace the latest version of any file in the folder or in any subfolder, with the new version.
 - Select Create a new version to create a new version of any file in the folder or in any subfolder.
 - Select Keep only the latest *n* versions to replace the oldest version of any file in the folder or in any subfolder, with the new version, and keep only the latest *n* versions, where *n* is the number you specify. Selecting create a new version activates this option.

New folder name:	Itineraries		
Destination folder:	/Sales/abarron	Browse	
If the folder already exists, deal with any duplicate files by:	C Replace the latest version versions	Create a new version	🔲 Keep only the latest
Cancel Copy			

Figure 2-14 Copying or moving a folder

3 Choose Copy or Move.

The file or folder appears in the location you specify.

Downloading a file or folder

Open a file or folder, or download the file or folder to the local file system.

How to download a file or folder



- 1 Select the menu icon next to a file or folder and choose Download.
- **2** On the dialog that appears, choose OK to download the file or folder to the local file system. Whether downloading a file or a folder, the dialog that appears also contains the option to open the file or folder. You can open a folder with a file compression utility, such as WinZip, as shown in Figure 2-15.

Opening Sales.zip		X
You have chosen to (ppen:	
🗐 Sales.zip		
which is: WinZ from: http://u	ip File (128 bytes) <-team-win-vm:8700	
What should Firefox do with this file?		
C Open with	WinZip (default)	
🖲 Save File		
🔽 Do this <u>a</u> uto	matically for files like this from now on.	
	OK Cancel	

Figure 2-15 Saving or opening a folder

You can browse for a program to open a file, depending on the file type. For a BIRT design, select the menu icon next to the file in Information Console and choose Edit Report Design, rather than browsing for a program to open the file.

Working with document files

A document file presents information accurate at a single point in time. Using Information Console, you view a document file immediately. The data appearing in the document is not updated when you view a document file. An Actuate document file presents formatted and structured content from a data source, such as a database, spreadsheet, or text file. An Actuate document file contains data that a user can view and manipulate, using the browser-based Interactive Viewer tool. You can save an Actuate document file in third-party document formats such as Adobe PDF and Microsoft Office formats such as Word, Excel, and PowerPoint.

Download third-party files for viewing and editing outside of the Actuate server system. An administrator can store custom file types in a volume. To open a custom file type, use the default viewing software. If multiple or no viewers are available locally for a selected file, choose or download a tool appropriate to open the file.

How to view a document

Select the menu icon next to a BIRT document and choose View Document, as shown in Figure 2-16.

View Document
31 Schedule
📥 Download
🛃 Share
🗉 Details
📂 Move To
🖺 Сору То
🥒 Rename
🛓 Auto Archive
🕴 Delete

Figure 2-16 File menu options for a document file

The document file appears in the viewer that supports opening the file type you chose, as described in the following list:

- Document files such as Adobe PDF or Microsoft Word, Excel, and PowerPoint open using the default viewer. For example, Adobe Acrobat Reader is the default viewer for Adobe PDF files.
- A BIRT document file opens in Actuate Viewer or Interactive Viewer.
- A cube view file opens in Interactive Crosstabs.

BIRT document files and cube view files do not support data sources that use data security rules. Your system administrator or report developer can tell you if a data source uses data security rules.

Creating a parameter values file

You can create a parameter values file from a BIRT design that contains filter parameter values. A parameter values file is saved as a report object value file with a .rov file-name extension. You can save a set of parameter values in a parameter value (.rov) file to avoid having to set the parameter values every time you run a design. A parameter values file is a design file, so you can run it immediately or schedule a job to run the file. At run time, you can modify the set parameter values if necessary.

A parameter values file has a dependency on the BIRT design file (.rptdesign) from which the parameter values file was created. To run a parameter values file, it must have a dependency on the BIRT design file from which it was created. To run a parameter values file, a user needs the execute privilege as well as either read, secure read, or visible privilege on the BIRT design file from which the parameter values file was created. BIRT iHub updates the dependency information if a user moves the BIRT design to a different location in the volume.

How to create a parameter values file

1 Select the menu icon next to a BIRT design and choose Create parameter values file, as shown in Figure 2-17.

🖋 Edit Report Design
🕨 Run
🕨 Run And Save
31 Schedule
👌 Create Parameter Value File
📥 Download
🗠 Share
🗉 Details
📂 Move To
🖹 Сору То
🕒 Rename
🛓 Auto Archive
🛛 Delete

Figure 2-17Selecting the option to create a parameter values file

- **2** On Create Parameter Values File, specify values for the following options, as shown in Figure 2-18:
 - File name
 - Navigate to a new folder location to save the file if necessary
 - Version information
 - Select a parameter value from the list, a Customer name in this example.

0

File name: Custome	r Order History *	1	
Folder: /Home/p	castillo/	Browse	*
If the parameter val	ues file already exists:		
Replace the late	st version 💿 Create a new version 🗆 Keep only the latest 🗌 ve	rsions	
Customer	AV Stores, Co.	•	
Cancel OK			

Figure 2-18 Specifying parameter properties

Choose OK. The parameter values file appears in the list of files and folders in the folder you specified.

Naming a file or folder

BIRT iHub names, such as file and folder names, must not exceed the character string lengths listed in Table 2-4. These character string length limits apply to the number of Unicode characters. For certain languages, such as Japanese and Thai, the length limit is expressed in terms of the number of code points used to compose Unicode characters. One Japanese character, for example, can comprise up to 4 code points. All code points used count toward the limit. For example, using more than 250 Japanese characters, consisting of 4 code points each, for the name of a file or folder exceeds the 1000-character string limit.

Names	Maximum character string length
Driver path	100
E-mail Address	80
E-mail description	100
File or folder description	500
File or folder version name	100
Headline, notice table	100
Headline, request	100
Input file name	1000
Job description	200
Job name	100
Node name	50
Output file name	1000
Output file version name	100
Printer name	100

 Table 2-4
 Length limits of names

Names	Maximum character string length
Schema name	30
Storage location name	50
User group description	500
User group name	50
User name	50

Table 2-4 Length limits of names

Running a BIRT design file

A design, such as an Actuate BIRT design (.rptdesign), is an executable file that when run, generates a document. This section shows how to run a BIRT design to generate a BIRT document (.rptdocument) immediately, without saving it.

How to run a design

1 Navigate to the folder containing the BIRT design to run. This example uses Customer Order History, a design in the /Applications/BIRT Sample App/ Report Designs folder, as shown in Figure 2-19.

 Default Volume Documents 	□ ▼ Action ▼ 📑 Create ▼ 📑	
 Applications 	Name	Туре
BIRT Sample App Dashboards	🗂 🔻 📊 Client Investment Portfolio	BIRT Design
> Data Objects	🗖 🔻 🖻 Cross-tab of Sales Metrics	BIRT Cube View
> 🖿 img	🗖 🔻 📊 Customer Order History	BIRT Design
Report Designs City Taxi	🗖 🔻 📊 Customer Revenue Metrics	BIRT Design
> Sample Application	🗂 🔹 📊 Monthly Revenue Analysis	BIRT Design
> 🔚 SF Wealth	🖂 💌 📊 Orders by Product	BIRT Design

Figure 2-19 Viewing sample BIRT design files

2 Select the menu icon next to the design, then choose Run, as shown in Figure 2-20.

E Default Volume	Action • FCreate •	
 Documents 		
 Applications 	Name	Туре
👻 💼 BIRT Sample App	🗖 🔻 📊 Client Investment Portfolio	BIRT Design
> 🖿 Dashboards		
> 🖿 Data Objects	Cross-tab of Sales Metrics	BIRT Cube view
> 🖿 img		BIRT Design
> E Report Designs	□ ► Run	BIRT Design
> 🚺 City Taxi	Run And Save	
> 🔚 Sample Application	Schedule	BIRT Design
> 🔚 SF Wealth	Create Parameter Value File	BIRT Design
> 🖿 Dashboards	📥 Download	
> 🔚 Home	🖸 🗠 Share	BIRT Design
> Public	Details	BIRT Design
	Move To	B.
> Kesources	🗖 🤊 🖺 Сору То	BIRT Library

Figure 2-20Choosing to run Customer Order History

3 In Parameters, choose the value Classic Gift Ideas, Inc., as shown in Figure 2-21.

Parameters	5				
Customer				Classic Gift Ideas, Inc	•
Cancel	Back	Next	Finish		

Figure 2-21 Running a design

4 Choose Finish. Information Console displays the document in the viewer, as shown in Figure 2-22.

	Lustomer Order	History		1/2 🕨		
Customer	Order History					
Classic Gift Ideas,	Inc					
782 First Street			Contact: Fran	ncisca Cerva	intes	
USA			Sales Repres	entative: Ju	lie Firrelli	
Philadelphia, PA 712	70					
Code	Description	Qtv	/ U	nit Price	Order Total	
Order Number:	10183	Order D	Date: Nov	13, 2011		
S10_1949	1952 Alpine Renault 1300	23		\$180.01	\$4,140.23	
S10_4962	1962 LanciaA Delta 16V	28		\$127.06	\$3,557.68	
S12_1666	1958 Setra Bus	41		\$114.80	\$4,706.80	
S32_3522	1996 Peterbilt 379 Stake Bed with Outrig	iger 49		\$52.36	\$2,565.64	
S700 2824	1982 Camaro Z28	23		\$85.98	\$1.977.54	
					\$34,606.28	

Figure 2-22 Document displayed in Actuate Viewer

Understanding file and folder privileges

The administrator provides access to files and folders by assigning privileges to users and user groups. Privileges determine what volume content a user can use. Additionally, when a user schedules a file job, the user can specify privileges on the job to share the job with specific users or user groups.

Working with folder privileges

Folder privileges

Table 2-5

Table 2-5 describes the access privileges that the volume supports for a folder.

Privilege	Description
Read or visible	A user can see the folder.
Write	A user can create, change, and rename the folder.
Delete A user can delete the folder.	
Grant	A user can change privileges on the folder.

Privileges for volume folders differ from privileges for folders in other file systems, such as Windows and Linux, in the following ways:

- Read privilege on a folder does not extend read privileges to items in the folder.
- Write privilege on a folder does not include read or delete privilege.
- Grant privilege is separate from write privilege.

Working with file privileges

Table 2-6 describes the privileges Information Console supports for a file.

ile privileges
Description
A user can delete the file.
A user can change privileges on the file.
A user can open and download the file.

(continues)

Privilege	Description
Execute	A user can execute a file if the user has both execute and one of the following privileges on the file:
	■ Read
	■ Secure read
	■ Visible
	A user has all privileges on a document the user creates.
Secure read	Restricts viewing of a document to HTML format and prohibits downloading. Typically, the volume administrator assigns Secure read privilege to a user accessing BIRT documents with the BIRT Page Level Security option. As an example, a developer creates a design that uses the BIRT Page Level Security option. The volume administrator assigns a user secure read privilege on the document. The user's ID determines what parts of a document generated from a BIRT design using BIRT Page Level Security the user can view. Read privilege overrides the secure read privilege. If a user has both read and secure read privileges on a document, the
Turatad	user can view and download the entire document.
execute	execute privilege for an information object without having execute privilege for an information object's underlying data sources. This privilege applies only to Actuate information object (.iob) files and data source map (.sma) files. Only a user with administrator privileges can grant the trusted execute privilege.
Visible	A user can see a file in the Files and Folders list, but not open it.

Table 2 6 File privileges (continued)

Setting privileges on files and folders

The volume administrator sets file or folder privileges by selecting Share from the file or folder menu.

If an item has shared access, where an item can be a file or a folder, the owner can assign or remove privileges on the item. A user who is not the owner of an item can assign or remove privileges on the item if it is shared and the user has grant privilege on the item. The volume administrator can always assign or remove privileges on an item. By default, all items are shared. If the volume administrator or owner does not want other users to have access to an item, that individual can make the item private by selecting not to share it. Only the owner and volume administrator can access a file or folder that is not shared.

The Available list displays user groups or users, depending on whether you select User Groups or Users. The example shown in Figure 2-23, shows the selection of User Groups. A list of user groups appears in Available. In Available, select a user group, then choose the right arrow. Selected displays the user group. Repeat the process to move items, one or more at a time, to Selected. In Selected, select each user or user group then select each access privilege to assign from the list.

Available		Selected
Administrators All Sales		(User) pcastillo - [VRWE] (User Group) All - [VRE]
Filter: User Groups Ap Users Cl Cancel OK	oply Filter ear Filter	Visible Secure Read Read Execute Write Delete Grant All Apply these privilege settings to the contents of the fold Recursively include subfolders and their contents Replace existing privilege settings

Figure 2-23 Viewing Properties—Privileges for a folder

You can also filter the list of users or user groups in Available. For example, to view only the user groups in the Available list that are sales related, type *sales* in Filter, and choose Apply Filter. Only the user group names containing the term sales appear in Available, as shown in Figure 2-24. Choose Clear Filter to show all Available list entries.

C Do not share Available	Share		Selected		
Sales Sales VP Sales VP		× > <	(User Group) Sa	les - [V]	×
Filter: *sales*	Apply Filter		☐ Visible ☐ Execute ☐ Grant	☐ Secure Read ☐ Write	☐ Read ☐ Delete ☐ All
O Users	Clear Filter		🗖 Apply these pri	vilege settings to the co	ontents of the folder
Cancel OK			📕 Recursively 📕 Replace exis	include subfolders and ting privilege settings	their contents

Figure 2-24 Filtering user groups or users in the Available list

How to set privileges on a folder



1 Select a folder icon to display the folder menu. Choose Share, as shown in Figure 2-25.



Figure 2-25 Choosing an existing folder

- **2** In Share, complete the following steps:
 - 1 Select share to share the folder or select Do not share to keep the folder private. By default, files and folders are shared.
 - 2 To assign privileges to one or more users:
 - 1 Select Users. Available displays a list of users.
 - 2 Select one or more users in Available, then choose the right arrow. Selected displays each user.
 - ³ In Selected, select a user or multiple users, then select access privileges to grant them from the list below Selected.
 - **3** To set privileges for the contents of a folder, use the selections below the list of privileges as follows:
 - To propagate the access privileges you set to the folder and its contents, including the subfolders and files in it, select Apply these privilege settings to the contents of the folder. BIRT iHub retains any previously assigned privileges.
 - To set privileges for the folder and its contents, including the subfolders and files at all levels below it, select Recursively include subfolders and their contents. BIRT iHub retains any previously assigned privileges.
 - To replace the existing privilege settings for the folder and its contents and specify new privileges, select Replace existing privilege settings.

The example in Figure 2-26, assigns read and write privileges on the //Sales/International folder to the user Eriza Senoadi. You can then assign read privilege for the folder to the Sales user group. These privileges are applied to the subfolders and files at all levels below Sales/International and replace any previously assigned privileges.

C Do not share Available	Share	Selected
Administrators All Sales Sales VP		(User) Eriza Senoadi - [RW] (User Group) Sales - [R]
Filter:		▼Visible Secure Read Read
🕑 User Groups	Apply Filter	☐ Execute ☐ write ☐ Delete ☐ Grant ☐ All ♥ Apply these privilege settings to the contents of the folder
C Users	Clear Filter	
Cancel OK		Recursively include subfolders and their contents Replace existing privilege settings

Figure 2-26 Setting privileges on a folder

Choose OK.

How to set privileges on a file

1 Select the menu icon next to a file and choose Share, as shown in Figure 2-27.





- **2** In Share, complete the following steps:
 - 1 Select Share to share the file or select Do not share to keep the file private. By default, files and folders are shared.
 - **2** To assign privileges to one or more users:
 - 1 Select Users. Available displays a list of users.
 - 2 Select one or more users in Available, then choose the right arrow. Selected displays each user.
 - ³ In Selected, select a user or multiple users, then select access privileges to grant them from the list below Selected.

For example, assign read and execute access privileges for a BIRT design file to Eriza Senoadi. Then, assign read, execute, and grant privileges for the file to the Sales VP user group, as shown in Figure 2-28.

C Do not share Available	Share		Selected		
Administrators All Sales Sales VP		× > <	(User) Eriza S (User Group)	ienoadi - [RE] I Sales VP - [REG]	×
Filter:			∏ Visible	C Secure Read	Read
Over Groups	Apply Filter		Grant	write	n All
C Users	Clear Filter				
Cancel OK					

Figure 2-28 Setting privileges on a single item

Choose OK.

Chapter

3

Scheduling and managing jobs

This chapter contains the following topics:

- About scheduling a job
- Understanding scheduling options
- Monitoring job status

About scheduling a job

Scheduling a job to run a design gives a user more control over document creation than running a design immediately. For example, the user can configure flexible scheduling options, and specify a location and output format in which to save the file. Scheduled jobs run in the background, allowing users to perform other tasks, without waiting for the completion of the job.

If you run a very large design or document job, the job can fail. Information Console uses a document generation time-out period of 30 minutes, by default. If the document generation process takes longer than the time period specified, Information Console displays a time-out message. In such cases where a design generates a large document, schedule a job to run the design.

When performing basic and advanced job scheduling, the user does not need to set options in all available categories. The user can set options in some categories and ignore others as needed. The user can submit the job after setting options in any of the available categories.

This document describes tasks that can be performed by both regular users and administrators and clearly identifies any tasks that can only be performed by an administrator. For more information about user roles, see *Managing Volumes and Users*.

Understanding scheduling options

Using Information Console, users and administrators can perform basic and advanced scheduling tasks.

Basic scheduling options include:

- Specifying when the design runs, if running the design just once
- Creating a schedule for running the design on a recurring basis

Advanced scheduling options include:

- Submitting a scheduled job when an event occurs
- Specifying privileges on the generated document to share it with other users
- Setting up a job completion or failure notification
- Specifying options for document distribution
- Specifying options for printing the document

This section describes the basic and advanced scheduling options available using Information Console. Options available only to an administrator are labeled as such.

Scheduling options

Basic scheduling options include specifying job priority, when to run the job, and which version of the design file to run, as shown in Figure 3-1.

Schedule	Parameters	Save As	
Advanced Scheduling			
	Job Na	me: Customer Ord	er History
	Prio	rity: O Low O Me	dium 🔿 High 📀 Other (1 - 1000): 1000
Executable version:		ion: 💿 Always use v	ersion 1 of Customer Order History.rptdesign
		C Always use l	atest version of Customer Order History.rptdesign
	Scheduling Optic	ons: 💿 Right now	O Once C Recurring
Cancel Bac	k Next Fini	sh	



Advanced scheduling options include specifying a time zone, scheduling based on an event, and specifying a job-retry policy, as shown in Figure 3-2. The Resource Group option shown in Figure 3-2 is available only to an administrator.

Schedule	Parameters	Output	Privileges	Datamart Security
Job name:	Customer Order Histo	ory		*
TimeZone:	America/Los_Angel	es		-
Run job:	€ Right now			
	O Once: date	# tir	ne (M/d/	(yyyy h:mm a)
	C Recurring: Ev C Advanced: Ec	ery day lit Schedule	time	(h:mm a)
	□ Wait for event:	e Event 🔄 Ev	ent name:	
Priority:	O Low (200) O Medi	um (500) — C High (80	0) 💿 Other (1 - 1000): 1000 (1)
Resource Group:		•		
Executable version	C Always use latest ve	ersion of Customer Ore	der History.rptdesign	
	Always use version	1 of Customer Ord	er History.rptdesign	
Retry failed jobs:	 Use volume default C Retry times; water 	ait hours mi	nutes between attemp	ots
C Do not retry (1) This job will use the lower priority of this setting and the one assigned to you in your user profile.				
Cancel OK				

Figure 3-2 Viewing advanced scheduling options

Table 3-1 describes the available scheduling options and whether they appear for jobs that use basic or advanced scheduling.

Table 3-1	Scheduling	options
Table 3-1	Scheduling	option

Option	Description	Basic	Advanced
Job name	Enables you to provide a name for the scheduled job.	1	1
TimeZone	Enables you to select a time zone based on which a scheduled job runs.		1
Scheduling options—Right now	Enables you to run the job immediately.	1	1
Scheduling options—Once	Enables you to run the job once, at a future specified date and time. The default date is the current date. You can use the calendar option # to select a new date. The default time is 10 minutes later than the current time.	✓	J
Scheduling options—Recurring	Enables you to run the job at regular intervals. You can select the interval in Recurring, specifying the day of the week and the time of day.	1	1
Scheduling options—Advanced	Enables you to specify a custom schedule using Job Schedule Builder.		1
Scheduling options—Wait for event	Enables you to set a system event as the criteria for running a job and type a name for the event. You can also select an event type.		1
Scheduling options—File event	Enables you to specify a full path to an operating system file or folder as the event criteria. Do not use a relative path. Information Console runs the event-based job when it finds the file or folder. If the item does not exist, Information Console waits until the item appears before running the job.		J
Scheduling options—Job event	Enables you to specify that a job runs after a scheduled job succeeds or fails. You can select the name of a scheduled job as the event criteria. Information Console runs the event-based job when the scheduled job completes. If a job meets the event-based criteria, Information Console runs the event- based job.		1

Option	Description	Basic	Advanced
Scheduling options—Custom event	Enables you to specify a web service that Information Console monitors. Information Console communicates with the web service and runs a custom event-based job when the web service returns a signal to Information Console. To specify a custom event, you must create a web service application and deploy it in the Information Console environment. For more information about configuring custom events, see <i>Managing</i> <i>Volumes and Users</i> .		•
Priority	Enables you to specify a priority level for the scheduled job.	1	1
Resource Group (Administrator only)	Enables an administrator to select a particular resource group to run a job. The default resource group for running designs is Default BIRT Factory.		1
Retry failed jobs	Enables you to specify a retry policy for a failed job. When scheduling a job, you can specify that Information Console run the job again if it fails. The volume-level job retry policy specifies the default policy for all jobs on the volume. When you schedule a job, you can accept or override this policy by setting one of the options described in "Specifying a job retry policy," later in this document.		1
Executable version	Enables you to specify the version of the BIRT design to run when there are multiple versions.	1	1

 Table 3-1
 Scheduling options

Running a job

You can schedule a job to run immediately or at a later scheduled time. You can set a specific time or base it on a system event. If you create a job that uses event-based criteria and schedule the job to run immediately, the job does not run until the event occurs. If you create a job that uses both a system event and a scheduled time, the job runs when both conditions are fulfilled.

For example, you can schedule a job to run at 4:00 P.M. on Monday if file \\server2\mydocuments\document.xls exists. If the file does not exist at that time, the job remains in the job queue until the file exists. Then, the job runs. If

BIRT iHub is not functional when the conditions to run the job are fulfilled, the job runs when BIRT iHub restarts.

Using date-and-time expressions in names

Information Console enables you to use date-and-time expressions to add the document generation date and time value to the following items:

- File name
- Version
- Folder location to save the file

For example, to set Sales Report followed by the report generation date as a document name, use the following expression:

Sales Report {mm-dd-yy}

On February 28, 2014, the name appears as:

Sales Report 02-28-14

When scheduling a report to run on a recurring basis, adding a date-and-time expression creates unique document, folder, or version names. A user can create date-and-time expressions in either of the following ways:

- Use the date-and-time formats described in Table 3-2.
- Create custom date-and-time formats based on the symbols described in Table 3-3 and Table 3-4. For information about using locale maps to create custom data-and-time formats, see *Managing Volumes and Users*.

Table 3-2 lists the custom date-and-time format keywords to use and the expression to which each keyword evaluates in a report. This table uses the locale English (USA). Actuate recommends not using General Date, Long Date, Long Time, Medium Time, and Short Time types.

 Table 3-2
 Date-and-time expressions

Keyword	Description	Example	Result
General Date	Returns a date and time in the Short Date Long Time format as defined in the Information Console locale map file	{General Date}	01/23/2015 8:53:03 PM
Long Date	Returns a Long Date as defined in the Information Console locale map file	{Long Date}	Tuesday, January 23, 2015
Long Time	Returns a Long Time as defined in the Information Console locale map file	{Long Time}	8:45:00 PM

Keyword	Description	Example	Result
Medium Date	Returns a date with the month name abbreviated to three letters: dd-mmm-yy	{Medium Date}.xls	23-Jan-15.xls
Medium Time	Returns hours and minutes in 12-hour format, including AM/PM designation (hh:nn AM/PM)	{Medium Time}	8:45 PM
Short Date	Returns a Short Date as defined in the Information Console locale map file	{Short Date}.xls	01-23-2015.xls
Short Time	Returns hours and minutes in 24-hour format (hh:nn)	{Short Time}	20:45

Table 3-2Date-and-time expressions

Table 3-3 lists the date format symbols to use and the expression to which each symbol evaluates in a report. The examples and results in Table 3-3 and Table 3-4 use a .xls file-name extension for names of document file types. The examples and results without a .xls file-name extension are version names. A time appears in 24-hour format unless you use an AM/PM symbol. The symbol for minute is n. The symbol for month is m.

Symbol	Description	Example	Result
c	Returns the Short Date Long Time format as defined in the Information Console locale map file	{c}	01/23/2015 8:53:03PM
d	Returns the day of the month without a leading zero (1-31)	Day{d}.xls	Day3.xls
dd	Returns the day of the month with a leading zero (01-31)	Day{dd}.xls	Day03.xls
ddd	Returns the three-letter abbreviation for the weekday	{ddd}.xls	Tue.xls
dddd	Returns the full name of the day of the week	{dddd}	Tuesday
ddddd	Returns the Short Date string as defined in the Information Console locale map file	{ddddd}	01/23/2015
ddddd	Returns the Long Date string as defined in the Information Console locale map file	{dddddd}.xls	Tuesday, January 23, 2015.xls
			(continues)

Table 3-3Date format symbols

Symbol	Description	Example	Result
m	Returns the number of the month without a leading zero	Month{m}.xls	Month1.xls
mm	Returns the number of the month with a leading zero	Month{mm}.xls	Month01.xls
mmm	Returns the three-letter abbreviation for the name of the month	{mmm}.xls	Jan.xls
mmmm	Returns the full name of the month	{mmmm}.xls	January.xls
W	Returns the day of the week as a number, where Sunday = 1, and Saturday = 7	Weekday{w}.xls	Weekday3.xls
WW	Returns the week of the year as a number (1-53)	Week{ww}.xls	Week4.xls
q	Returns the number of the quarter (1-4)	Quarter{q}.xls	Quarter1.xls
У	Returns the number of the day of the year (1-365)	Day{y}.xls	Day23.xls
уу	Returns the last two digits of the year (00-99)	Year{yy}.xls	Year15.xls
уууу	Returns all four digits of the year (1000-9999)	Year{yyyy}.xls	Year2015.xls

 Table 3-3
 Date format symbols (continued)

Table 3-4 lists the time format symbols that you use and the expression that each symbol evaluates in a report.

Table 3-4 Tim	e format symbols
---------------	------------------

Symbol	Description	Example	Result
AMPM	Uses the format that is defined in the Actuate Information Console locale map file. The default format is AM/PM.	{h:n:s AMPM}	8:45:3 PM
AM/PM	Returns AM/am for any hour before	{hh:nn:ss am/pm}	08:45:03 pm
	This symbol is case-sensitive.	{hh:nn:ss AM/PM}	08:45:03 PM
A/P or a/p	Returns A/a for any hour before	{h:n:s a/p}	8:45:3 p
	noon and P/p for any hour after noon. This symbol is case-sensitive.	{h:n:s A/P}	8:45:3 P
h	Returns the hour of the day without the leading zero (0-23).	Hour {h}.xls	Hour 9.xls

	•		
Symbol	Description	Example	Result
hh	Returns the hour of the day with a leading zero (00-23).	Hour {hh}.xls	Hour 09.xls
n	Returns the minute without a leading zero (0-59).	Minute {n}.xls	Minute 5.xls
nn	Returns the minute with a leading zero (00-59).	Minute {nn}.xls	Minute 05.xls
S	Returns the number of seconds without a leading zero (0-59).	Second {s}.xls	Second 1.xls
SS	Returns the number of seconds with a leading zero (00-59).	Second {ss}.xls	Second 01.xls
tttt	Uses the format that is defined in the Actuate Information Console locale map file.	{tttt}	8:45:00 PM

 Table 3-4
 Time format symbols

Specifying a job retry policy

When scheduling a job, you can specify that Information Console run the job again if it fails. The volume-level job retry policy specifies the default policy for all jobs on the volume. When you schedule a job, you can accept or override this policy by setting one of the options in Retry failed jobs on Schedule—Schedule, shown in Figure 3-3.

Retry failed jobs:	Ose volume default				
	O Retry times; wait hours minutes between attempts				
	🔘 Do not retry				

Figure 3-3 Specifying job retry options

The following conditions affect a job retry policy:

- For jobs that you schedule to run immediately, retry settings do not apply.
- When you select Retry N times, wait H hours M minutes between attempts, where N is not 0 and H and M are 0, the volume retries the job immediately after a failure.
- If a previous instance of a scheduled job is still in the process of retrying, Information Console cancels any new instance and displays a warning message, if the previous instance is still retrying. The number of times (N) to retry the scheduled job does not change.

Table 3-5 describes the available options for retrying a job.

Option	Description
Use volume default	Enables you to use the default job retry policy for the volume. An out-of-the-box (OOTB) Information Console installation uses the Do not retry policy. For more information about how an administrator can change this policy, see <i>Managing Volumes and Users</i> .
Retry <i>n</i> times; wait <i>n</i> hours <i>n</i> minutes between attempts	Enables you to specify how many times iHub should retry running the job and how long the system should wait between tries.
Do not retry	Makes no effort to retry the job.

Understanding saving options

Table 3-6 describes the available saving options you can specify.

· ·					
Option	Description				
Headline	Optionally type a headline to appear in the output document.				
Output Location	If you have a home folder, Information Console selects Home folder by default. If you do not have a home folder, Information Console selects Other, specifying the location of the folder containing the design or document being run. Accept one of these locations or specify a different location in Other.				
Document Name	The name Information Console gives to the output document. Accept the default value, the name of the design being run, or type a different name.				
Version Name	Optionally type a version name to distinguish one version of a particular output document from another.				
Document Format	The format of the output document.				
Notification	Optionally specify whether Information Console sends e-mail notification of job completion. Select No Attachment to receive the notification without the output document attached. Select Attachment with <document format type> to receive the notification with the output document attached, in the selected format.</document 				

Table 3-6	Saving options
-----------	----------------

Option	Description			
If the File Already Exists	Provides the following options for how to handle any existing versions of the output document:			
	 Create a new version 			
	Creates a new version of the output document.			
	 Keep only the latest <i>n</i> version(s) 			
	Select whether to keep the latest n versions. Specify a number for n from 1-99.			
	 Replace the latest version 			
	Replaces the latest version.			
Copy permissions from	Either copies the privileges of the location folder to the output document, or copies the privileges of the most recent version of the document to the scheduled job.			

The following example in Figure 3-4 shows the options available in the Save As dialog box.

Schedule	Paramete	rs	Save As					
Headline:		una faldar						
Out	put Location:	Oot	her (please specify)				Browse	
Doc	ument Name:	Cus	tomer Order History					
v	ersion Name:							
Docui	ment Format:	RPTDOCUMENT						
	Notification:	∏ Se	nd me an email notific	ation with	No Attachm	ient	~	
If the File A	lready Exists:	⊙ Cr	eate a new version	🗖 Keep or	nly the latest			version(s)
Copy perm	issions from:	O Re ⊙ Ou O La	place the latest versio itput folder test version of the file	'n				
Cancel Back	Next	Finis	sh					

Figure 3-4 Setting options on the saved document

Specifying parameter values

Table 3-6

Saving options

When scheduling a file containing parameters, you can specify parameter values based on which Information Console retrieves data to display in the file. For example, when running a design such as Customer Order History.rptdesign, you can select a customer from the list to view their order history, as shown in Figure 3-5. Parameter fields can use one or more lists, from which you select a value, a text box in which you type a value, or a combination text box and list, in which you can either type or select a value. Some parameters can also require selecting a comparison operator.

	Save As		Parameters			Schedule		
Australian Collectors, Co.	Customer							
		nish	Fin	Next	ack	В	Cancel	

Figure 3-5 Specifying parameters

Report developers use parameters to enable users to specify values for which they need to view data. User input can define the records retrieved, the sorting sequence of the data, and the output format for a report.

If a file uses parameters, the user sets the parameter values when running the file job or uses the default parameter values set by the developer. If a report parameter file is available, the user generates a report and report parameters are loaded using predefined values.

Understanding parameter types

Information Console supports the following parameter types:

Single value

A single-value parameter accepts one value to filter the document data. For example, a report that provides sales information by customer requires the user to select a customer from a list of existing customers.

Multiple value

A multiple-value parameter accepts more than one value to filter the document data. For example, a report that provides sales information about products sold can prompt the user to select multiple products.

Optional

A user can select or group the data presented in a report by typing values or conditions into the optional parameter. If a user does not specify a value for an optional parameter, the job uses a value set by the report developer.

Required

In a required parameter, the user must supply a value before the job can run. For example, a report that accesses a database can require a user name and password or require a user to select a city before running the report. Typically, a report designer supplies a default value for a required parameter.

Cascading

When working with cascading parameters, available options depend on other parameters. For example, in a parameter that requires you to specify a country

and city, the city list is populated based on the country selected in the previous field.

Dynamic filter

A dynamic filter parameter uses an operator and one or more values to retrieve or filter data from a data set. This data appears in the tables, charts, maps, or other presentation formats built into the report.

Figure 3-6 shows a range of parameters prompting the user to supply values.

Parameters		
ProductLine	No Condition	
Order Date	No Condition 🔻	
Credit Limit	No Condition	
ReleaseDate	1/29/2014 31	🗌 No value
InternalOnly	● Yes ○ No	
Comments	none	🗌 No value
City	No Condition	
Order Number		🖉 No value
Cancel Back Next Finish		

Figure 3-6 Using parameters to customize data displayed in a report

Using multiple-value parameters

Multiple-value parameters consist of drop-down lists or check lists. After you specify the values for a multiple-value parameter, the resulting document displays data only for those values. For example, when you select some years in a multiple-value parameter, the generated report displays data only for the selected years.

Using a dynamic filter parameter

Dynamic filters appear in BIRT design and document files. When you work with a BIRT file containing dynamic filter parameters, Information Console prompts you to select from a list of operators and supply a value. These choices define an expression used to select data to display in the document. The developer specifies which operators are available to the user when creating the filter parameter.

Dynamic filters support multiple values and complex string expressions, depending on the operator. The output file displays data based on evaluating the expression.

Figure 3-7 shows an example of using dynamic filter parameters to create an expression.

Parameters		
ProductLine	In Classic Cars Motorcycles Planes Ships Trains	Predefined value selector
Order Date	No Condition	
Cancel Back Next Finish		

Figure 3-7 Using dynamic filters

Table 3-7 lists the possible operators you can use in a dynamic filter parameter.

Table 3-7Dynamic filter operators

Operator	Usage	
Between	Finds data that is between two specific values	
Equal to	Finds data equal to a specific value	
Greater than	Finds data greater than the specific value	
Greater than or equal to	Finds data greater than or equal to the specific value	
In	Finds data that matches any of the selected values	
Is false	Finds data that equals zero	
Is not null	Finds data that does not have a null value	
Is null	Finds data that has a null value	
Is true	Finds data that does not equal zero	
Less than	Finds data less than the specific value	
Less than or equal	Finds data less than or equal to the specific value	
Like	Finds data matching the value's string pattern	
Match	Finds data matching the value's string expression	
No condition	Finds all values for this parameter	
Not between	Finds data that is not between two specific values	
Not equal to	Finds data not equal to a specific value	
Not in	Finds data that does not match any of the selected values	
Not like	Finds data not matching the value's string pattern	
Not match	Finds data not matching the value's string expression	
The Like operator supports using special characters as follows:

- % matches zero or more characters. For example, %ace% matches any value that contains the string ace, such as Ace Corporation, Facebook, Kennedy Space Center, and MySpace.
- _ matches exactly one character. For example, t_n matches tan, ten, tin, and ton. It does not match teen or tn.

The Match operator is case-sensitive and supports special metacharacters that combine to form text patterns called regular expressions. For example, using ^H.*(Gifts | Collectables)\$ to search through a list of company names matches all companies whose name starts with the letter H, has one or more letters after H, and includes the word Gifts or Collectables at the end of the name. To match using a metacharacter, a backslash (\) followed by the metacharacter causes the search to interpret the metacharacter as a normal character. For example, to look for a string containing the '\$' metacharacter, type the character preceded by a backslash (\) in the search expression, as follows:

\\$

Table 3-8 lists the metacharacters available to form regular expressions with the Match operator.

Metacharacter	Usage
•	Matches any single character.
*	Matches the previous character zero or more times. For example, po* matches Liverpool and Leipzig.
!	Matches everything not equal to the search expression.
()	Matches all characters in the set between the parentheses.
	Matches if any one of multiple conditions is true.
[]	Matches any character in the set between the brackets.
[^]	Matches any character not in the set between the brackets.
+	Matches the previous character one or more times. For example, po+ matches Singapore and Liverpool but not Leipzig.
?	Matches the previous character zero or one times. For example, po? matches Singapore and Leipzig.
$x{y}$	Matches the previous character exactly y times. For example, o{2} matches Liverpool but not Lyon.
^	Matches the start of the string. For example, ^A matches Australia but does not match Los Angeles.

 Table 3-8
 Regular expression metacharacters used with Match

(continues)

Metacharacter	Usage		
\$	Matches the end of the string. For example, n\$ matches Lyon.		
\	Used with a metacharacter to make it a literal character. For example, to search for a string containing a \$ symbol, use $\$.		
\A	Matches the start of a string.		
\b	Matches the edge of a word, beginning, or end.		
\B	Matches any place inside a word, but not the edge of a word.		
\d	Matches any decimal digit.		
\D	Matches any non-digit character.		
\s	Matches a space.		
\S	Matches a non-space.		
\w	Matches a word that is made of letters, numbers, or an underscore.		
$\setminus W$	Matches a non-word.		
\Z	Matches the end of a string.		

 Table 3-8
 Regular expression metacharacters used with Match (continued)

Table 3-9 provides examples of dynamic filter expressions.

	•		
Operator	Values	Matches	Does not match
Between	'A' 'D'	'Barcelona' 'Dublin'	'Zurich' 'Seattle'
Greater than	'Oslo'	'Oulu' 'Paris'	'Oslo' 'NYC'
In	'Lyon' 'New York'	'Lyon' 'New York'	'London' 'New Haven'
Is false		'0'	'11'
Like	'A%'	'Amsterdam' 'Auckland'	'Zurich'
Like	'B'	'Bern'	'Berlin' or 'Boston'
Like	'Be%n'	'Berlin' or 'Bern'	'Bergamo'
Like	'%& Co%n'	'Handji Gifts& Co' 'Models & Co.'	'Boards & Toys Co' 'Cruz & Sons Co.'
Match	'es.'	'Manchester'	'Nantes'

 Table 3-9
 Example results for dynamic filter expressions

Operator	Values	Matches	Does not match
Match	'ity'	'City' 'Makati City'	'Nantes' 'Paris'
Match	'ern'	'Stavern' 'Bern'	'Liverpool' 'Bergen'
Match	'(ern) (New)'	'Bern' 'Newark' 'New Bedford'	'Glendale' 'Cunewalde'
Match	'A'	'Allentown' 'Los Angeles'	'Nantes' 'Paris'
Match	'.A'	'Los Angeles'	'Allentown'
Match	'[A-C]'	'Burbank' 'Los Angeles' 'NYC'	'Frankfurt' 'Singapore'
Match	L[^o]s	'Lisboa'	'Los Angeles'

Table 3-9 Example results for dynamic filter expressions

Working with output formats

By default, running a BIRT design (.rptdesign) file generates a BIRT document (.rptdocument) file. When scheduling a BIRT design job using basic and advanced scheduling options, in Document format, you can specify any of the output formats shown in Figure 3-8.

Schedule	Parameters	Output	Privileges	Datamart Security	Notification
Document name:	Customer Dashboard		*		
Document format:	RPTDOCUMENT	•			
Version name:	RPTDOCUMENT PowerPoint (PPTX)				
Headline:	Excel (XLSX) PDF				
Folder:	PowerPoint (PPT) PostScript (PS)				
	Word (DOC)			Bro	wse
If the output docun	Word (DOCX)			_	
C Replace the lates	st version 💿 Create a r	new version 🛛 🕅 Kee	p only the latest	versions	



When you use advanced scheduling to schedule a design, and basic or advanced scheduling to schedule a document, Output displays additional flat file formats such as comma-separated, pipe-separated, and tab-separated value (CSV, PSV, or TSV) formats that you can select, as shown in Figure 3-9.

Schedule	Parameters	Output	Privileges	Datamart Security	Notification
Document name:	Customer Dashboard		*		
Document format:	PDF	•			
(PDF PowerPoint (PPTX) Excel (XLSX) PowerPoint (PPT) PostScript (PS) Word (DOC) Excel (XLS) Word (DOCX) CSV PSV TSV	য য ा			



You can view and read output files in these formats either using a text editor such as Microsoft Notepad or using Microsoft Excel. Table 3-10 describes the options available for CSV, PSV, or TSV flat file output formats.

Option	Description
Table name	Selects the name of the data set, which the design uses, from the list of all data sets in the data source.
Column list	Selects the name of the column, which the design includes in the result, from the names of all columns in the data set.
Export columns data type	Adds information about the column's data type to the second row of the output file.
Locale neutral format	Formats date-and-time values according to ISO 8601 standards as YYYY-MM-DD and HH-MM-SS using the 24-hour clock. It includes an offset from UTC time.
Encoding	Sets either UTF-16LE or UTF-8 encoding of the output data.
Maximum rows	Sets the maximum number of rows displayed in the output file.

 Table 3-10
 Supported options when exporting data to flat file formats

Understanding autoarchiving

Autoarchiving is an Information Console file management capability that supports file and folder archiving and deletion based on the age of the item. You

specify the age for an item by specifying a date and time in the future. When the item reaches that age, the item expires and Information Console can delete the item from the volume. You can also specify whether Information Console should archive the item before deleting it or that the item not be deleted.

To enable autoarchiving, you must specify an archive driver. For information about performing this task, see Chapter 14, "Aging and archiving volume items," in *Integrating Applications into BIRT iHub*.

You can assign an age to an item by specifying an age for the item itself, for the file type of the item, for the folder containing the item, or for the entire volume.

Set autoarchive properties by selecting the icon next to a file or folder and choosing Auto Archive. Auto Archive displays different options for a file and for a folder.

Specifying autoarchiving options

When you use advanced scheduling to schedule a job, the Output tab provides options to specify the autoarchive policy, as shown in Figure 3-10.

Document name:	Customer Order History	*	
Document format	RPTDOCUMENT		
Version name:			
Headline:			
Folder:	Home folder		
	C Other: /Applications/BIRT Sample App		Browse
If the output docu	ment already exists:		
C Replace the late Auto archive polic	est version 💿 Create a new version 👘 Keep ay for the document name:	only the latest versions	
Ouse the default	/inherited policy from the document's file type		
🔿 Do not automa	tically delete the document		
C Delete after dat	# time (M/d/yy	yy h:mm a)	
📕 Archive the d	ocument before deletion	View Policy	
Cancel OK			



Figure 3-11 displays the autoarchive options you can specify for a file.



Figure 3-11 Specifying autoarchiving properties for a file

Figure 3-12 displays the autoarchive options you can specify for a folder.



Figure 3-12 Specifying autoarchiving properties for a folder

Figure 3-13 shows Auto Archive Properties for multiple items.

This properties page does not display the combined properties of all the selected items. You can only set properties here, not view them.
Auto archive policy for the selected files (this will not affect folders' policies):
${f C}$ Use the default/inherited policy from this file's file type
${ m C}$ Do not automatically delete the files
C Delete when older than days hours
CDelete after date (M/d/yyyy) time (h:mm a)
Archive the files before deletion
Reset This will reset the AutoArchive policies
Cancel

Figure 3-13Viewing Auto Archive Properties for multiple items

Table 3-11 lists the configurable properties on Auto Archive Properties for a file or folder. These properties support setting and changing the archiving policy for the following volume items:

- A file
- A folder

- The contents of a folder
- The contents of a folder and the folder

Table 3-11	Autoarchive	properties
------------	-------------	------------

Field	Description	
File Type (folder only)	Provides a list of known file types to configure the autoarchive policy for a folder and its contents	
Enable expiration for this file (file only)	Enables setting deletion options for the item	
Delete after date <i>M/d/yyyy</i> time <i>h:mm a</i>	Specifies the date and time after which the autoarchive process can delete the item	
Archive files before deletion	Archives the item before deletion	
Expire Dependent Files (folder, file only)	Deletes files dependent on this file	
Use the default/inherited policy from the document's file type (folder only)	Inherits the parent folder or volume policy	
Use the default/inherited policy from this file's file type (multiple items only)	Inherits the parent folder or volume policy	
Do not automatically delete files (folder, multiple items only)	Prevents deletion by the autoarchive process	
Delete when older than <i>n</i> days <i>n</i> hours (folder, multiple items only)	Deletes items automatically after being on the system for the number of days and hours you specify	
View Policy (folder only)	Displays the autoarchive policy for the selected folder or for the file type you select in File Type	
Reset (multiple items only)	Choose to deselect all options on Auto Archive Properties.	

Using the File Type list

When working with a folder, the File Type list enables you to set the autoarchive policy by file type, for the folder and the contents of the folder, as shown in Figure 3-14.



Figure 3-14 Selecting a file type for which to set autoarchive policy

When defining the autoarchive policy for a folder, the options you specify apply to all subfolders and files that inherit the archive policy from the selected folder.

A file or folder for which you set an archive policy retains the policy you set. For example, if you first deselect Enable expiration for this file, for a specific BIRT design (.rptdesign) file, then specify an archive policy on the parent folder to delete all BIRT design (.rptdesign) file types at a specified date and time, the autoarchive process does not delete the BIRT design file for which you deselected Enable expiration for this file. This behavior also occurs when setting the archive policy for a group of files or folders.

File Type enables you to specify the following options:

<Default>

Determines the default autoarchive policy for the selected folder and its contents.

Folder (Directory)

Determines the default autoarchive policy for subfolders of the selected folder. The policy does not apply to files in subfolders of the selected folder. If you set a policy to delete the folder after a specific date and time, the autoarchive process deletes a subfolder only under the following conditions:

- The subfolder is empty.
- The subfolder contains only the following:
 - Files whose autoarchive policy indicates that the files have expired
 - Empty subfolders

All file types known to Information Console

Determines the default autoarchive policy for the file type you select. When you select an option in File Type, property settings on Auto Archive display the current settings for the selected file type.

You can set the archive option value for one file type after another. When done setting all the options, choose OK.

Understanding the inherited and default archiving policy

A file or folder at the root level inherits the autoarchive policy set by the administrator when performing volume management tasks. The autoarchive settings you specify for a folder and its contents function as the default autoarchive settings for all subfolders and their contents. For example, if the autoarchive policy for a BIRT design file in a folder named Sales is Delete after 12/31, the same policy applies to BIRT design files residing in any subfolder of Sales.

By default, expiration is disabled for all file types and folders. If you run autoarchive without changing this policy for an item in the volume, Information Console does not delete any files or folders in the volume.

About setting the autoarchive policy for multiple items

You can set the autoarchive policy for multiple items at the same time. The archive option values you choose for selected folders apply to all subfolders. The archive option values you choose for selected files apply only to the selected files. You cannot set the autoarchive policy for a particular file type when setting the autoarchive policy for multiple folders.

Viewing the existing archive policy

To view the autoarchive policy for a folder, choose Auto Archive from the folder menu. Then in Auto archive policy for this folder, choose View Policy. Figure 3-15 shows an example of the archive policy for a folder.

File type:	<default></default>		
Policy:	Do not automatically delete this file		
	Do not archive the file before deletion		
Defined by: Report Encyclopedia Settings			
Close			

Figure 3-15 Viewing the autoarchive policy

Enabling expiration of a file

To allow Information Console to delete a file after a period of time, select Enable expiration for this file.

Preventing automatic deletion of files and folders

To prevent the autoarchive process from removing a selected folder and its contents select Do not automatically delete files.

Deleting a file by specifying a time or date

To specify a date and time after which the autoarchive process can remove an item, select Delete after date M/d/yyyy time *h:mm a*. When you select this option, Information Console inserts the current date + 2 days for the date and the current time + 2 hours for the time. The language the administrator specifies for a user determines the date and time format available to that user. For example, when the locale is English (United States), the following formats apply:

M/d/yyyy

A date expression that translates to, for example, 12/1/2014 or 1/6/2015

∎ h:mm a

A time expression that translates to, for example, 1:59 P.M.

To select a date from a calendar when using the Delete after date *M*/*d*/*yyyy* time *h:mm a* option, choose the calendar icon.

If you define an archive driver for the volume, selecting one of the Delete options supports specifying whether iHub archives the selected file, folder, or selected multiple files before the autoarchive process deletes the selected file, folder, or multiple files. Depending on the following conditions, the name of the option appears differently on Auto Archive Properties:

- If setting the archive policy for a folder, the option name is Archive files before deletion.
- If setting the archive policy for a file, the option name is Archive this file before deletion.
- If setting the archive policy for multiple files, the option name is Archive the files before deletion.

Archiving files before deletion

Selecting a delete option when setting the autoarchive policy for a file enables the Archive this file before deletion option.

Selecting a delete option when setting the autoarchive policy for a folder enables the Archive files before deletion option.

Expiring dependent files

Selecting Expire Dependent Files supports an autoarchive cycle deleting a file on which a parameter values file (.rov) depends when the cycle deletes the ROV file. For example, if a user creates an ROV file from an Actuate BIRT design file (.rptdesign) named Sales by Customer.rptdesign, the autoarchive cycle deletes Sales by Customer.rptdesign when the autoarchive cycle deletes the ROV file.

How to set or modify the archive policy for a folder

- 1 Select the menu icon next to a folder. Choose Auto Archive.
- **2** In Auto archive policy for this folder, accept the selection of File Type set to <Default> to set the policy for the selected folder and its contents, or select a file type from File Type to set the policy only for files of that type within the selected folder.
- **3** Select one of the following options:
 - Use the default/inherited policy from the document's file type
 - Do not automatically delete files
 - Delete when older than *n* days *n* hours
 - Delete after date *M/d/yyyy* time *h:mm a*

If you select one of the Delete options, you can also select Archive files before deletion and Expire Dependent Files.

4 To set values for multiple file types, set archiving option values for each selection you make from File Type.

Choose OK.

How to set or modify the archive policy for a single file



- 1 Select the menu icon next to a file. Choose Auto Archive.
- **2** On Auto Archive, select Enable expiration for this file to enable the following options:
 - Delete after date *M/d/yyyy* time *h:mm a*
 - Archive this file before deletion
 - Expire Dependent Files

Choose OK.

How to set archive policy for multiple items simultaneously

1 In the files and folder display pane, select the items for which you want to set the archive policy. To select all items, left-click the arrowhead icon in the box to the left of Action and choose Select All, as shown in Figure 3-16. To deselect all items, choose Select None.

E Default Volume	T - Action - Create - T	
 Documents 	Solect All	
> E Applications	Select None	Туре
> 🖿 Dashboards	🗂 💌 🚞 BIRT Sample App	Folder

Figure 3-16 Selecting all items

Left-click the arrowhead icon to the right of Action and choose Auto Archive, as shown in Figure 3-17.

E Default Volume	🔽 👻 Action 🔻 📑 Create 👻 📑	
 Documents 	Сору То	
> E Applications	Move To	Туре
> 🖿 Dashboards	🔽 👻 🛅 Delete	Folder
> 🖿 Home	Download	Folder
> 🖿 Public	Auto Archive	
> 🔚 Resources		Folder
> 🚺 Sales	🔽 👻 🚞 SF Wealth	Folder

Figure 3-17 Choosing Auto Archive

- **2** On Auto Archive Properties, specify or modify the following options:
 - Use the default/inherited policy from this file's file type.
 - Do not automatically delete the files.
 - Delete when older than *n* days *n* hours.
 - Delete after date *M/d/yyyy* time *h:mm a*.

If you define an archive driver for the volume and you select one of the Delete options, you can also select Archive the files before deletion.

3 Optionally, choose Reset to deselect all selections you make on Auto Archive Properties.

Choose OK

Working with privileges

Using advanced scheduling, you can specify access privileges on the output document for users and user groups. The process to set privileges on an output document is the same as the process to set privileges on a file.

For more information, see "Setting privileges on files and folders" in Chapter 2, "Setting up a volume." Figure 3-18 shows Privileges.

C Do not share Available:	Share		Selected:		
Administrators					
All					
		← -			
Filter:			📕 Visible (V)	📕 Secure Read (S)	🔲 Read (R)
Culser Groups	Apply Filter		🔳 Execute (E)	🔲 Write (W)	🔲 Delete (D)
@oder oreapa	Apply mea		🔲 Grant (G)		🗖 All
OUsers	Clear Filter				
Cancel OK					

Figure 3-18 Setting privileges on the output document

Understanding notifications

The notifications option in advanced scheduling enables you to notify other users and user groups that a file job has completed and is available to view. You can select whether to notify users and user groups by e-mail, by sending a job completion notice, or both. Job completion notices are available in each user's Notifications folder. To access the Notifications folder a user selects Notifications in the navigation pane. For a successful job, Information Console sends the output document with the job completion notice. If you select notify by e-mail, you can also specify whether or not to send the output document.

When you specify that a user group receives notification of a completed job, iHub sends a job completion notice to the e-mail address that the administrator specified for the user group in Information Console—iHub Administration. If the administrator did not specify an e-mail address for the user group, iHub sends a job completion notice to every user belonging to the user group.

If Information Console is installed on a machine running Windows, you must enable e-mail notification to receive e-mail notifications. See the *System Administration Guide*, Chapter 5, "Managing Clusters."

When you share a scheduled job with other users either by sharing the document using an e-mail attachment, or sharing the output document using Notifications, the user must have read or secure read privilege on the document to be able to view it. If the user does not have read privilege, only the location of the document appears in the e-mail. If you select Attach document, you must select a value for Format for attached report if a value does not appear there. Format for attached report is blank if you accept the default value for Document format in Output. Figure 3-19 shows Notifications.

🗖 Override user pr	eferences (For all notified user	s)	
If job succeeds:	📕 Send e-mail notification 📕 Create completion notic	es în user':	☐Attach document s Notifications
Ifjob fails:	E Send e-mail notification Create completion notic	es în user':	s Notifications
Format for attached	l report:		-
Available:			Selected:
Administrators			
All			
		\rightarrow	
Filter:			
🖲 User Group	s Apply Filter		
CUsers	Clear Filter		
Cancel OK			

Figure 3-19 Setting notification options for the output document

Understanding printing options

Advanced scheduling enables users to print the output document. Information Console must have access to a printer to print the output of a scheduled job. The install program configures access to printers in Windows, but not in Linux.

To print the document, either by sending it to an iHub printer or printing it to a file on the server, you must first select Print the output document on the server. This setting activates the other options in Print. In Override default settings, accept the default values, or choose to override the default settings for any of the print options. Then, set print options. Figure 3-20 shows the available printing options.

The PostScript section contains additional options, including specifying page range, page style, and chart DPI.

Print the output document on the server:	Print output on server
Printer: Microsoft XPS Document Writer (redirected 1) (redirected 2) Manufacturer: Microsoft	7
Model: Microsoft XPS Document Writer	
Description:	— Read-only printer information
Location:	
Print to file:	Print to file
Override default settings for	
🗖 Scale:	
Resolution 600 X 600	
Mode: © B&W @ Color	
Number of copies Collate:	Override default settings
🔳 2-Sided printing: 🏾 1-Sided Print 🔹 Flip on long edge 🖉 Flip on short edge	
Page size:	
Paper tray: Automatically Select	
Print format: PostScript	
Page range	
BIDI processing 🖉	
Text wrapping 🖉	Print format settings
Font substitution 🔟	i init ionnat oottingo
Page style Auto	
Chart DPI 192	
Cancel OK	

Figure 3-20 Specifying printing options for a job

Table 3-12 describes the available print options for a scheduled job.

 Table 3-12
 Schedule—Print properties

Property	Description
Print the output document on the server	Prints the output document.
Printer	Selects a printer. The initial value is the user's default printer.

(continues)

Property	Description
Manufacturer Model	The following read-only text about the printer, if available:
Description	 The manufacturer's name
Location	 The printer model name
	 A description of the printer
	 The location of the printer
Print to file	Creates a PostScript (.ps) file.
Scale	The scale at which to print the output, expressed as a percentage.
Resolution	Resolutions at which to print the output, if supported.
Mode	Black-and-white or color.
Number of copies Collate	The number of copies to print, and whether to collate the copies.
2-Sided printing	Single-sided or double-sided, and specifies whether double-sided printing is top-to-top or side-to-side.
Page size	Pick from an extensive list of standard paper sizes.
Paper tray	Specify the paper source.
Page range (BIRT design or document only)	Selects all pages or selected pages by number or by range, or both.
Page style (BIRT design or document only)	Sets the size to either the actual size, fit to page width, or fit to whole page.
BIDI processing (BIRT design or document only)	Suppresses bidirectional processing of data.
Text wrapping (BIRT design or document only)	Wraps text. If deselected, text appears on one continuous line.
Font substitution (BIRT design or document only)	Substitutes fonts on the user's computer in lieu of the fonts specified by the design designer. If deselected prevents font substitution.
Chart DPI (BIRT design or document only)	Selects dots per inch, which determines the resolution of images and print in the document.

Table 3-12 Schedule—Print properties (continued)

How to set print options and print a document

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1 To print a document, choose Schedule. Choose Advanced Scheduling, then choose Print.

- **2** Select Print the output document on the server.
- **3** Select the printer to use and specify standard print options, such as scale, number of copies, and page range to print.

When you finish specifying the other scheduling options such as parameters, output format, privileges, and notifications, choose OK.

Understanding Datamart Security

Only an administrator has access to the Datamart Security option. Datamart Security supports filtering the data a scheduled job generates. Select one or more user groups or users in Datamart Security before submitting the job. The job generates a document containing only the data that the selected user groups or users have permission to view.

Optionally, in Custom users group, specify a string that the design recognizes and can also use to filter data the job generates.

For more information about page-level security development, see *Integrating Applications into BIRT iHub*. Figure 3-21 shows Datamart Security.

Available:		Selected:	
Administrators			
All		→ +	
Filter:		Custom users group:	Add
OUser Groups	Apply Filter		
OUsers	Clear Filter		
Cancel OK			

Figure 3-21 Selecting roles or users for which to filter job output

How to configure Datamart Security

- 1 Log in to Information Console as Administrator.
- **2** From the menu icon next to a file, choose Schedule.
- 3 Choose Advanced Scheduling, then select Datamart Security.
- **4** Select User Groups or Users to see the available user groups and users, as shown in Figure 3-21.
- **5** In Available, select the user or user group to use, then choose the right arrow. The user or user group appears in Selected.
- **6** Optionally, enter a string in Custom users group or Custom user. Select Add. The string appears in Selected.

Viewing the results of submitting a job

After you select options in all categories and submit a job using basic scheduling or advanced scheduling, Results appears providing the following information:

- Confirming that job submission was successful
- The name of the design submitted to run
- The name of the host and the port to which Information Console submitted the job

Additionally, the user can choose Job Status to view job details, or choose Delete Job to delete the job, as shown in Figure 3-22.

Results	
Job Status	Delete Job
The backgroun	job Top Sales Performers was successfully submitted to run.
Item:/Home/p	stillo/Top Sales Performers.rptdesign;1 on system: http://ch-ihub-0105:8000
For your reference, the job ID is 11000000100	

Figure 3-22 Viewing the results of submitting a scheduled job

Monitoring job status

In the navigation pane, choose My Jobs to obtain information about scheduled or completed jobs. For an administrator, all jobs are visible. For a user, only a job that the user schedules is visible.

Information Console groups job processing into five phases, represented by a set of categories. As a job progresses from one phase to another, the job name appears in the next category. Users and administrators have access to the same five categories, but the available options in each category differ. For example, administrators have access to an Advanced Jobs view that provides additional options to monitor scheduled jobs. Users only have access to basic information. Table 3-13 describes the available Jobs categories.

Table 3-13	JODS Calegones
Jobs category	Description
Schedules	Jobs that will run at a later date
Waiting for Event	Jobs that will run after a system event
Pending	Jobs that are in the process queue
Running	Jobs that are running

Table 3-13 Jobs categories

Table 3-13	Jobs categories
Jobs category	Description
Completed	Jobs that have run

Information Console sends a job completion notice to My Jobs—Completed after a scheduled job runs. A user submitting a job selects whether Information Console sends a completion or failure notice to other users. The notice is visible using Notifications. If the job is successful, Information Console includes a link to the output document in the completion notice, as shown in Figure 3-23. If the user deletes the output document in the folder location where the scheduled job saved the document, Information Console also deletes the link to the document from the completion notice on Jobs—Completed. Information Console does not delete any other part of the completion notice.



Figure 3-23 Viewing job completion notices on My Jobs—Completed

Using the available job monitoring options

My Jobs displays basic information about the status of jobs. Users can delete scheduled jobs, cancel running jobs, and open or delete completed jobs. In My Jobs, select the job you want to modify. Then select the action to perform.

Table 3-14 describes the options available to users in all categories in My Jobs.

Option	Description
Document Pages	Number of pages in the output document.
Event Name	Name the user gives to the event that triggers job execution.
Finished	Date and time the job finished.
Job Name	By default, the name of the design being run. Alternatively, a job name the user specifies.

 Table 3-14
 Job monitoring options

(continues)

Option	Description
Report Name	Name of the design being run.
Result	Succeeded or failed.
Started	Date and time the job started.
Submitted	Date and time the user submitted the job.
Event Parameter	Identifies the event criteria Information Console uses to determine whether to trigger job execution. For example, if Event Type is File Event and Event Parameter is a file name, Information Console executes the job when iHub detects that the file that Event Parameter specifies has been created.
Event Status	Status of the state between Information Console and the event that triggers job execution. Possible states are:
	Information Console did not start monitoring the system for the event.
	 Polling While monitoring the system for event criteria that triggers job execution, Information Console has not found matching criteria.
	 Satisfied Information Console found matching event criteria and executed the job.
	 Expired Information Console did not find matching event criteria within the polling interval or a user canceled the job.
Event Type	Can be one of the following:
	 File Event Information Console runs the job when a file the user specifies is created.
	Job Event
	Information Console runs the job when another job the user specifies succeeds or fails. The user specifies whether job event success or failure triggers execution of the job being scheduled.
	 Custom Event
	Information Console runs the job when a web service the user specifies returns a signal to Information Console.

Table 3-14	Job monitoring options (continued)
------------	------------------------------------

Deleting a job or completion notice

When Information Console completes processing a job, it dispatches all requested completion notices and displays the job in My Jobs. Users cannot recover a job completion notice after deleting it.

How to delete a job from My Jobs

1 Log in to Information Console using the login credentials provided by the administrator.



- **2** In the navigation pane, choose My Jobs.
- **3** In My Jobs, in the display pane, choose the job you want to delete, as shown in Figure 3-24.

Schedules	Waiting for Event	Pending	Running	Completed	
Job Name	Document Nan	ne Re	esult	Finished	
Client Investment Po	rtfolio 💼 Client Inve	estmentPortfolio 🧟	Succeeded	Feb 1, 2014 2:	40:04 AM
Client Investment Po	rtfolio 📩 Client Inve	estmentPortfolio 🥃	Succeeded	Jan 30, 2014 9	02:30 AM
Client Investment Po	rtfolio 📊 Client Inve	estmentPortfolio 🧟	Succeeded	Jan 30, 2014 8	3:56:42 AM

Figure 3-24 Viewing completed jobs

4 Choose Delete Job, shown in Figure 3-25.

Open	Delete Job	
Schedule (S	Succeeded)	
	Job Name:	Client Investment Portfolio
	Owner:	pcastillo
	Priority:	500
	Submitted:	Feb 1, 2014 2:40:00 AM
	Started:	Feb 1, 2014 2:40:00 AM
	Finished:	Feb 1, 2014 2:40:04 AM
	Run Job:	The job was scheduled immediately.
	Event Name:	
	Event Type:	No event
	Event Parameter:	
	Event Status:	

Figure 3-25 Deleting a job

How to delete a job notification



- 1 Choose Notifications from the navigation pane.
- **2** Choose the job to view the completion notice.

3 Choose Delete Job.

A confirmation notice appears letting you know that the job was successfully deleted.

Tutorial 1: Scheduling a job

This section provides step-by-step instructions for scheduling a BIRT document job. The user schedules the document using advanced scheduling options, specifies a CSV output format, shares the job with a user group and assigns the necessary access privileges to the group, sets up job success and failure notifications and finally checks the job status using My Jobs and views notifications for the completed job.

In this tutorial, you perform the following tasks:

- Run and save a job.
- Specify an output format.
- Set privileges on the output document.
- Set up notifications.
- View the status of the scheduled job.

Task 1: Running and saving a job

Log in to Information Console using the URL and credentials provided by your administrator.



1 Navigate to your home folder. From the menu icon next to the design or document you need to schedule, choose Schedule, as shown in Figure 3-26.



Figure 3-26 Choosing to schedule a BIRT document to run

- **2** In Schedule, choose Advanced Scheduling.
- **3** In Schedule, complete the following steps:
 - 1 In Job Name, if necessary, type a new name for the job.
 - 2 In Timezone, if necessary, select a new time zone from the list.
 - 3 In Run Job, select Recurring. In the next field, if necessary, select Every Day, and in the next field, type 9:10 AM.
 - 4 In Priority, if necessary, select Medium (500).
 - **5** In Executable Version, if necessary, select Always use version 1 of the BIRT design or document file.
 - 6 In Retry failed jobs, if necessary select Volume Default.
- 4 The report used in this tutorial does not use parameters. Choose Output.

Task 2: Specifying an output format

In this task you specify options to schedule the document in CSV output format.

- 1 In Document name, if necessary, type a new name.
- 2 In Document format, select CSV, as shown in Figure 3-27.

Schedule	Parameters	Output	Privileges	Notification	Print
Document name:	Client Investment Port	tfolio	×		
Document format:	CSV	•			
(Conversion opti	ons			
	Table name	Portfolio Table	2 🔻		
	Column list	%Change Asset Class Aggregation Current Price Current Volume	e		
	Export columns data t	ype 🕑			
	Locale neutral format				
	Encoding	UTF-8	•		
	Maximum rows	No Limit			
Version name: Headline:]]		
Folder:	Home folder				
(⊖ Other: /Home/pcast	illo			Browse
Cancel OK					



The conversion options for CSV appear.

- **3** In Table name, select a table from the list.
- **4** In Column list, if necessary, select the columns in the table to export to the output document.
- **5** Select Export Column data type.
- 6 If necessary, deselect Locale Neutral Format.
- 7 In Encoding, select an encoding format from the list.
- 8 In Maximum Rows, if necessary, select No Limit.
- **9** In Version Name, optionally specify a version name.
- **10** In Headline, optionally type a description for the job.
- 11 In Folder, if necessary, select Home folder, as shown in Figure 3-27.
- **12** In If the output document already exists, if necessary, select Create a new version, as shown in Figure 3-28.

13 In Auto archive policy for the document name, if necessary, select Use the default/inherited policy from the document's file type.

If the output document already exists:							
○ Replace the latest version							
Auto archive policy for the document name:							
Ise the default/inherited policy from the document's file type							
O Do not automatically delete the document							
Delete after date # time (M/d/yyyy h:mm a)							
Archive the document before deletion View Policy							
Cancel							

 Figure 3-28
 Setting version and archiving options for the output document

14 Choose Privileges.

Task 3: Setting privileges on an output document

In this task you share the output document with the sales user group and provide Visible, Read, and Execute access privileges to the group to enable them to work with the document.

1 If necessary, select Share.

2 If necessary, select User Groups.

A list of user groups appears in Available.

3 In Available, choose Sales, then select the right arrow.

The Sales user group appears in Selected.

4 Select Visible (V), Read (R), and Execute (E).

The selected privileges appear next to Sales in Selected, as shown in Figure 3-29.

Schedule	Parameters		Output	Priv	ileges	Notif	ication	Print
Do not share	۲	Share						
Available:			s	elected:				
Administrators				Sales		v	RE	
All			[
Sales								
			→					
Filter:				isible (V)	Secure	Read (S)	🖉 Read (R	1
User Groups	Apply	Filter		xecute (E)	Write (W)	Delete	(D)
0	- 11 5		G	rant (G)	_ 、	,	AII	
 Users 	Clear	Filter	_				_	
Cancel OK								

Figure 3-29 Sharing the output document and assigning privileges

5 Choose Notification.

Task 4: Setting up notifications

In this task you specify notification options if the scheduled job succeeds or fails. You also specify options to share the notifications with users or user groups.

- 1 Select Override user preferences.
- 2 In If job succeeds, select Create completion notices in user's Notifications.
- 3 In If job fails, select Create completion notices in user's Notifications.The Format for attached report field displays CSV as the output format.
- **4** If necessary, select User Groups.
- 5 In Available, select Sales, then select the right arrow.Sales appears in Selected, as shown in Figure 3-30.

Schedule	Parar	neters	Output	Privileges	Notification	Print				
If job succeeds:	🗌 Send e	e-mail noti	fication At	tach document						
	🕑 Create	completio	on notices in user's N	otifications						
If job fails:	🔲 Send e	e-mail noti	fication							
	🖌 Create	completio	on notices in user's N	otifications						
Format for attached report: CSV				•						
Available:			Selec	ted:						
Administrators			Sale	s						
All										
Sales										
			\rightarrow							
			←							
Filter:			· · ·							
Cancel OK										



Choose OK to submit the scheduled job. Results appears confirming that the scheduled job was submitted, as shown in Figure 3-31.

esults						
Job Status Delete Job						
The background job Client Investment Portfolio was successfully submitted to run.						
Item:/Home/pcastillo/Client Investment Portfolio.rptdocument;1 on system: http://ch-ihub-0105:8000						
For your reference, the job ID is 93000000100						

Figure 3-31 Confirmation of job schedule submission

Task 5: Viewing the status of a scheduled job

In this task, you view the status of the scheduled job and view notifications that appear after the job runs.



1 In Information Console, in the navigation pane, choose My Jobs.

2 Choose Completed.

The job you submitted appears in the list of completed jobs, as shown in Figure 3-32.

Schedules	Waiting for Event	Pending	Running	Completed	
Job Name	Document Na	ime	Result	Finished	
Client Investment Po	rtfolio 📩 Client Inv	vestment Portfolio	Succeeded Succeeded	Jan 30, 2015 9	:02:30 AM
Client Investment Po	rtfolio 👖 Client Inv	vestment Portfolio	Succeeded	Jan 30, 2015 8	:56:42 AM

A^E

Figure 3-32Viewing completed jobs in My Jobs

3 In the navigation pane, choose Notifications.

The completed job appears in the list, as shown in Figure 3-33.



Figure 3-33 Viewing successful job notifications

Part TWO

Understanding BIRT dashboards

Using dashboards

Chapter

4

Using dashboards

This chapter contains the following topics:

- About dashboards and gadgets
- Organizing a dashboard
- Using a gadget
- Using a chart gadget
- Using a tree selector to filter data in a dashboard

About dashboards and gadgets

An Actuate dashboard is a self-contained web application that delivers business performance data in interactive charts, cross tab tables, BIRT files, and external web services. You can download, explore, and monitor data displayed on your dashboards. Use the browser-based dashboard tools to organize dashboards, subscribe to shared dashboards, or build new ones.

Each dashboard displays one or more gadgets, such as a chart or a table, that enable users to find and analyze data. Data that appears in a dashboard is either queried on demand or cached in a BIRT data object for fast analysis.

Sales Data	Order Histo	ory Prod	Product Analysis			+	Edit	\sim
APPLICATIONS	INITIATIV	ES RE	GIONS		REPORTS		HELP	
Product L	ine _{Clear}	Sales Da	ta 2012	2013	Total	Profit by Territory, by Year		
Classic Cars		Product Lin	e QTY	QTY	QTY	500,000.00		
Motorcycles		Classic Cars	5,017	2,135	7,152		2012	
Planes		Planes	2,224	604	2,929	250,000.00	2013	
Ships		Ships	1,642	570	2,212			
Trains		Trains Vinters Com	326	177	503			
Trucks and B	uses	Grand Tota	s 3,570 1 12,785	1,911 .5.397	3,487	NA		
Order Dat	e Clear EMEA NA	CA	SA		eu AF	AS ME OC	Legend ow sales xpected sales bove expectatic	

Figure 4-1 shows a dashboard in BIRT iHub Information Console.

Figure 4-1 Displaying a sample dashboard layout

This chapter describes how to view and subscribe to shared dashboard files. For information about building and sharing dashboard and gadget files, see *Actuate BIRT Application Developer Guide*.

Understanding dashboard functionality

Users interact with data and files using dashboard gadgets. Each gadget is a self-contained data viewer that can display interactive BIRT files, tables, charts and external data such as HTML pages and web services. Other dashboard gadgets enable users to select data such as a list of customers or a calendar. Dashboard developers can link these gadgets to enhance your ability to select and find the data you need.

Actuate dashboards support the following user activities:

- Building web-based reports and performance indicators using charts, tables, cross tabs, and data visualizations
- Reviewing multiple BIRT files at the same time or viewing part of a BIRT file instead of the entire file
- Displaying and linking multiple data sources
- Interacting with data by launching browser-based tools such as Interactive Crosstabs
- Keeping information up to date using refresh timers
- Exploring and exporting data using filtering, drill-down analysis, and drill-through hyperlinks
- Mixing external web services with existing business data

Dashboard users can launch browser-based tools such as Interactive Crosstabs to analyze cross tab gadgets. For more information about maximizing gadgets, see "Maximizing gadgets," later in this chapter.

The Dashboards for iHub option is required to open dashboard files. Some optional features require appropriate BIRT iHub options. For example, to use browser-based tools such as Interactive Viewer for iHub or Report Studio for iHub, the appropriate iHub licensed options are required.

File permissions define which users can edit dashboards files or have read-only access. Shared dashboard files enable groups of users to monitor the same charts and analyze the same data by subscribing to the same dashboard file. User dashboard files are private and enable individuals to build and manage their own dashboard files for personal use.

Your user account defines what you can accomplish with a dashboard file. The Information Console administrator manages the following user types:

 All users can refresh dashboards, interact with data selector gadgets, and maximize gadgets for access to browser-based tools such as Interactive Viewer and Interactive Crosstabs. The dashboard file or gadget is reset each time it is viewed.

- Business users are the same as basic users but also use report and extra gadget types to create and share dashboards. This user can subscribe to shared dashboard files, copy shared dashboards, and use shared gadgets in their own dashboards. Business users can also share their dashboards.
- Dashboard developers are the same as business users but can also create gadget scripts, use data visualization gadgets, and use data selection gadgets.

How to create a new dashboard

1 If Information Console is not already open, open your web browser and type the URL address to launch Information Console and log in. If you have an assigned home folder, the home folder appears, similar to the one shown in Figure 4-2.



Figure 4-2 My documents

Ľ +

2 Select Create → New Dashboard to create a new dashboard, as shown in Figure 4-3.



Figure 4-3 Creating a new dashboard

The new dashboard appears in the dashboard editor.



How to open a dashboard for editing

Select the menu icon next to the dashboard you need to edit, then choose Edit Dashboard, as shown in Figure 4-4.



Figure 4-4

Editing a dashboard file

Working with the dashboard editor

Use the dashboard editor to organize and manage dashboard files, for example, add content, change the name of a dashboard tab, or refresh the content displayed in the dashboard. Dashboard options are in the dashboard editor's menu, as shown in Figure 4-5.

File	Edit	View	Layout	Insert	Data	Help		New Da	shboard	🗎 Save
= +		•		() [<u>ib</u>]	١ <u>ا</u>	i ii	[]	D 3	1	3
New	Tab 1	+							Hic	le 🔨



Shared dashboards have fewer options than a user dashboard. Table 4-1 lists dashboard options for shared and user dashboards.

Table 4-1	Dashboard editor options
-----------	--------------------------

Option	Description	
File—New Dashboard	Creates a new dashboard file	
File—Open	Opens a dashboard file in the dashboard editor	
File—Print	Prints the contents of the selected dashboard tab page	
		(

(continues)

Option	Description
File—Save	Saves the current dashboard file
File—Save As	Saves the dashboard as a file using a new name and location
Edit—Delete Tab	Removes the selected dashboard tab page
Edit—Duplicate Tab	Duplicates the dashboard tab as a new dashboard tab
Edit—New Tab	Adds a new tab to the dashboard
Edit—Options	Sets tab page options such as name, refresh rate, background color or image, display a header and footer
Edit—Refresh	Queries and updates data object design, BIRT design, and external files in use
Edit—Rename Tab	Changes the name of the selected tab page
Edit—Share Tab	Shares one or more tab pages as a dashboard file
View—Run	Displays the current dashboard in read-only mode
View—Hide Grid	Removes the freeform layout grid if it is displayed
View—Show Grid	Displays a grid when the dashboard layout is set to freeform
Layout	Selects one-, two-, or three-column layout or freeform layout
Insert—Chart	Adds a chart or measurement gadget to the dashboard
Insert—Current Selections	Displays and optionally resets any data selection gadgets on the dashboard
Insert—Data Selector	Adds a data selector gadget to the dashboard
Insert—Extra	Adds an HTML, image, import, text, or video gadget
Insert—Report	Adds a parameter, report, report library, or Reportlet gadget to the dashboard. Do not enter multiple values for a parameter that takes a single value.
Insert—Table	Adds a table or cross tab to the dashboard
Insert—Dashboard From Gallery	Adds a shared dashboard file as a new tab page to the dashboard
Insert—Gadget From Gallery	Adds a shared gadget file to the dashboard
Data—Manage Data	Selects one or more BIRT data objects or BIRT data object stores to be data sources of the dashboard
Help—Help	Displays the online help

 Table 4-1
 Dashboard editor options (continued)

For information about building and sharing dashboard and gadget files, see *Actuate BIRT Application Developer Guide*.
Subscribing to a dashboard file

Shared dashboard files contain one or more dashboard tabs. You subscribe to a shared dashboard by adding it to your dashboard. You can also interact with gadgets on a shared dashboard, for example, using data selectors to filter a report gadget, interact with the data using Interactive Viewer or Interactive Crosstabs. Modifications to gadgets on shared dashboards reset the next time the dashboard refreshes or updates.

Shared dashboards appear with the share icon on the dashboard title to indicate that editing is disabled. Users with write privileges to the dashboard file update shared dashboard files by overwriting the saved version of the dashboard. When a shared dashboard is changed by the dashboard owner, users that subscribe to the dashboard receive the changes the next time the dashboard opens or refreshes.

How to subscribe to a shared dashboard

- 1 Open a dashboard file to edit or create a new dashboard.
- 2 In the dashboard editor, choose Insert → Dashboard from Gallery, as shown in Figure 4-6.



Figure 4-6

3 In the dashboard gallery, select a dashboard file, as shown in Figure 4-7.



×

⊞1

Dashboard Gallery	×
 > The My Folders > Shared Folders (Version 1) 	
Operational.dashboard (Version 1)	
Service.dashboard (Version 1)	
Service_finished.dashboard (Versio	n 1)
	Cancel OK

Figure 4-7

Subscribing to a shared dashboard

Choose OK to subscribe to the Service dashboard. If you do not see a folder in the shared folders, you can select My Folders to select from a dashboard in your home folder.



The selected dashboard appears with the shared icon on the dashboard title, as shown in Figure 4-8.

/	Shared					
New Tab 1 😿 Serv	ice +				Hide	^
APPLICATIONS I	NITIATIVES	REGIONS	REPORTS		HELP	
Customer	Custom	ner Orders				
Clear Apply	ORDERNU	MBER PRODUCTO	ODF PRICEFAC	H STATUS S	SHIPPEDDATI	E
CUSTOMERNAME		10123 S18	1589 120.7	71 Shipped	Vay 21, 2011	-
-		10346 S24	3432 103.8	87 Shipped	Nov 29, 2012	
ORDERNUMBER		10223 S700	3167 79	.2 Shipped F	eb 23, 2012	
T		10342 S18	3782 57.8	32 Shipped	Nov 28, 2012	
-		10347 S18	3320 84.3	33 Shipped	Vov 29, 2012	
		10103 S10_	1949 214	.3 Shipped F	Feb 1, 2011	
Product Code		10309 S12_	2823 144	.6 Shipped	Oct 17, 2012	
Clear \$10_1678	Produc	t Stock				
S10_1949	Product Co	ode Product Name	e Stock	Buy Price	MSRP	
S10_2016 S10_4698	S10_1678	1969 Harley Davidson Ultimate Chop	7933 per	\$48.81	\$95.70	
310_4131	S10_2016	1996 Moto Gu 1100i	zzi 6625	\$68.99	\$118.94	
	S24_2000	1960 BSA Gol Star DBD34	d 15	\$37.32	\$76.17	
	S24 2360	1982 Ducati 90	6840	\$47.10	\$69.26	

Figure 4-8 Viewing the shared Service dashboard

Organizing a dashboard

Users can personalize the following dashboard options in Information Console:

- Change the order of a tab page.
- Copy a dashboard to enable editing.
- Delete a dashboard.
- Display all selections on a dashboard.
- Rename a dashboard.

A dashboard is divided into one or more pages called tabs. These tab pages enable you to organize the gadgets. For example, one tab page can contain gadgets necessary to make a new customer order and another tab page can contain gadgets displaying a customer's order history.

How to change the tab order

To change the tab page order, drag a tab title and drop it after an existing dashboard title, as shown in Figure 4-9. The placement indicator shows possible locations for the new dashboard.



Figure 4-9 Changing the dashboard order

How to delete a tab page

Delete a tab page from your dashboard when you no longer need it. When you delete a user dashboard from the personal dashboard it is permanently removed unless you previously saved the dashboard. You can subscribe again to shared dashboards that you remove from your personal dashboard.

1 On the dashboard menu, choose Edit → Delete Tab, as shown in Figure 4-10.



Figure 4-10 Choosing Delete Tab from the dashboard menu

2 In Delete Tab, choose Yes, as shown in Figure 4-11. The selected tab page is removed.

Delete Tab				
Delete Tab "New Tab 4"?				
No	Yes			



The dashboard appears without the deleted tab page.

How to rename a tab page

1 On the dashboard menu, choose Edit→Rename Tab, as shown in Figure 4-12.



Figure 4-12 Choosing Rename Tab from the dashboard menu

2 In Rename Tab, type a new dashboard name, as shown in Figure 4-13.

Rename Tab	×
Please enter a new name for the tab:	
Sales	
Cancel OK	

Figure 4-13 Renaming a dashboard

Choose OK. The tab page displays the new name.

Copying a shared dashboard

A user can copy a shared tab page to enable editing of the tab page content. A copied tab page does not link to the original shared dashboard. Updating the original shared dashboard file does not change a copied tab page.

You can edit a copied tab page in the following ways:

- Add or delete gadgets on the dashboard.
- Change gadget location, using a column or freeform layout.
- Set the auto refresh time for gadgets.
- Change or filter data sources for gadgets.
- Change chart and measurement gadget types.
- Show or hide selected gadget headers, borders, and browser-based tools.

For more information about building and editing a dashboard, see *Actuate BIRT Application Developer Guide*.

How to copy a dashboard

- **1** Select the tab page to copy.
- Ľ,
- 2 Select Edit→Duplicate Tab, as shown in Figure 4-14.



Figure 4-14Copying a tab page

The copied tab page appears at the end of the displayed dashboard names, as shown in Figure 4-15.

File	Edit	View	L	ayout.	Inser	t Da	ta	Help							
∷+			•		Ø]IL]	Ì⊞Ì	V			₿	Ð	8	۶	٠
Nev	v Tab 1		New	Tab 2	*	Sales		Sales	(1)	+					

Figure 4-15

Reviewing a copied tab page

Showing user selections on a dashboard

Data selection gadgets enable users to choose data to display on a dashboard. Choose Current Selections to display or remove all data selections on a dashboard.

How to reset selections on a dashboard

1 Choose Insert→Current Selections, as shown in Figure 4-16.

The Current Selections gadget appears on the tab page.

2 In the Current Selections gadget, select Clear All, as shown in Figure 4-17, to remove all selections from the dashboard.

File Edit View Layout	Insert Data Help
	Lable ▶
Sales +	☑ Data Selector ►
Territory	j©i Extra ▶
Clear	Current Selections
APAC EMEA Japan NA	☐ Dashboard From Gallery □ Gadget from Gallery



Sales +				
Territory 💌	Current S	Selections	•	
Clear			<u>Clear All</u>	Clear all
APAC	Territory	EMEA	Clear	selections
EMEA	Year	2012, 2013	Clear	
Japan NA				
Year 💌				
Clear 2011 2012 2012 2013				

Figure 4-17 Clearing all selections on a dashboard

Gadgets on the dashboard update to show data without filtering from user selections.

Printing a dashboard

In the dashboard menu, choose File -> Print to print the current dashboard. A print preview is generated displaying the gadgets on the dashboard.

Many gadget types can export a PDF as an alternative to printing the gadget contents. For more information about exporting gadget contents, see "Exporting gadget content," later in this chapter.

Printing a dashboard uses your web browser's printing capability. See the online help for your web browser for supported printing options.

How to print a dashboard

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1 Choose File→Print, as shown in Figure 4-18.





Print Preview appears.

2 In Print Preview, after reviewing the preview, choose Print, as shown in Figure 4-19.





3 In the web browser print window, select an available printer. Then, choose Print.

Saving dashboard changes

Changes to a dashboard file that you have permission to edit are saved automatically at a time interval configured by the volume administrator. You can also choose Save to save your latest changes to a dashboard.



Figure 4-20 shows a dashboard save option.



Figure 4-20 Verifying the save status of a dashboard

Dashboards opened as a file from the BIRT iHub Information Console have the following save options if you have permission to edit the dashboard:

- Save: saves the current dashboard settings to the existing dashboard file
- Save As: saves the current dashboard to a new dashboard file

How to save a dashboard as a new dashboard file

Follow these instructions to save a dashboard as a different dashboard file.

1 Choose File→Save As, as shown in Figure 4-21.

File Edit View	Layout	Insert Data	Help	
⊞+ New Dashboard	• -	() il ii		₽ 2 / D
Save Save As				
🖻 Print				

Figure 4-21 Selecting Save As

2 In Save As, select a location and name for the new dashboard file, as shown in Figure 4-22. Use Browse to navigate to a new location, if necessary.

Save As		×
Output location:		Browse
Name		Туре
		DIRECTORY
Name:	Sales.dashboard	
		Cancel OK

Figure 4-22 Selecting the location and name for the dashboard file

3 Choose OK to save the new dashboard file.

Using a gadget

A dashboard contains one or more gadget files that display data. Each gadget has actions common to all gadgets, such as printing, refreshing, and maximizing.

Some gadgets offer additional interactivity, depending on the gadget content. For example, report gadgets can include toolbars, launch browser-based tools, or contain hyperlinks to other Information Console documents or web sites.

You can interact with gadget content depending on the type of gadget:

- Analyze and edit cross tabs or add a chart view using Interactive Crosstabs.
- Export gadget content and data into a different format.
- Filter displayed data using data selectors.
- Modify and format reports and tables using Interactive Viewer.

Gadgets on a dashboard include a menu to interact with the gadget and its contents, as shown in Figure 4-23.





You can refresh data, interact with gadget content, or maximize gadgets to launch browser-based tools from shared dashboards. Users can move, resize, share, and edit gadgets on user dashboards.

Table 4-2 lists the options available on gadgets.

Option	Description	Shared	Edit
Show Header	Displays the gadget header, which includes the gadget icons		1
Analyze	Maximizes selected gadget and launches appropriate browser-based tool	1	1
Bring To Front	Moves a floating gadget in front of other gadgets		1
Delete	Removes the selected dashboard gadget		1
Dock	Changes a gadget floating freely to a gadget that is docked to a dashboard column		1
Edit	Displays general options and any special options available to the selected gadget		1
Float	Changes a docked gadget to a floating gadget that can be moved freely		1
Link	Chooses one or more data selection gadgets on the current dashboard that can filter data in the current gadget		1
Maximize	Maximizes selected gadget and launches appropriate browser-based tool	1	1
Refresh	Reloads the content of the selected gadget	1	1
Rename	Changes the name of the selected gadget		1
Restore	Restores a maximized gadget to its original size	1	1
Send To Back	Moves a floating gadget behind other gadgets		1
Share	Enables you to specify sharing options and privileges		1
Show Links	Displays an outline around gadgets that are linked together on the dashboard	1	1

 Table 4-2
 Gadget settings for shared and user gadgets

Filtering gadget content

Users can filter data displayed in gadgets to only display data matching one or more filter conditions. For example, to view top customers in a city, a user filters a pie chart of customers from the selected city whose total purchases are above \$30,000 USD. The following gadgets support filtering data:

- Chart gadgets
- Measurement gadgets
- Table gadgets

To filter report and Reportlet gadgets, use interactive mode to maximize the gadget.

Summary tables have special requirements when mixing Top and Bottom filter conditions with other filter conditions. In this case, the Equal to, Not Equal To, In, and Not In filter operators are not supported if the column values are a Float or Double data type. Use the Between operator in place of the Equal to operator to obtain correct results.

For example, you filter a summary table by the top five values in a column. You want to filter an additional column that uses Float data types to show revenue values. Use the filter operator Between 100068.76 and 100068.77 instead of using Equal to 100068.76000000001.

How to filter a chart gadget

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1 Select the gadget content to display the chart context menu. Choose the context menu. Figure 4-24 shows the gadget context menu.



Figure 4-24Displaying a chart gadget's context menu





Figure 4-25 Filtering a gadget's data

- **2** Select the following options:
 - Select the data to filter. This example uses Value:Measures/UnitsOrdered.
 - Select the filter condition. This example uses Greater Than or Equal To.
 - Type a value. This example uses 10000.

Figure 4-26 shows and example of selected filter values.

Filter		×
Filter By:	Value: Measures/UnitsOrdered	•
Condition:	Greater Than or Equal To	•
Value:	10000 Select Valu	Jes
	Advanced Filter Clear Filter	
	Cancel	ОК

Figure 4-26 Creating a filter

3 Choose OK to apply the filter condition.

Optionally, choose Select Values to see a list of possible values. Choose Advanced Filter to create additional filter conditions. Clear Filter erases the current values. Figure 4-27 shows an example of advanced filter conditions.

T

Advanced Filt	ter	×
Filter By: Condition:	Y Option: Dimension2/Year Equal To Specify literal value Use value from data field	•
Value:	2012 2011 2012 previous next	Select Values
Filters:	Add Condition Change Condition	1
Level Filters Dimension1, and Dimensi	TERRITORY = EMEA on2/Year=2012	and or not
Measure Filte Measures/Ur	rs itsOrdered >= 10000	Delete Validate
		Cancel

Figure 4-27 Creating an advanced filter condition

Filtering top and bottom values

You can filter top and bottom values displayed in a gadget to the highest or lowest values in a data set. For example, you can display the top 15% of sales or the lowest 25 customer orders. The following gadgets support filtering top and bottom values:

- Chart gadgets
- Table gadgets

To use top and bottom filtering for report and Reportlet gadgets in interactive mode, maximize the gadget.

How to filter the top values in a chart gadget

- 1 Select the chart content. The context menu appears.
- **2** Choose the context menu.
- **3** Choose Filter→Top/Bottom N, as shown in Figure 4-28.



Figure 4-28 Filtering the top or bottom values of a gadget's data

4 In Top/Bottom N, in Filter, select Top Percent and enter a value of 15, as shown in Figure 4-29.

Top/Bott	om N	×
Filter By:	Value: Measures/Uni	•
Filter:	No Condition Top N Bottom N Top Percent Bottom Percent	15
	Can	cel OK

Figure 4-29 Adding a top filter

5 Choose OK. The chart gadget displays the top 15% of the selected data.

Exporting gadget content

Report and data visualization gadgets can export visual content in the following formats: Microsoft Excel, Microsoft PowerPoint, Microsoft Word, PDF, PostScript, and XHTML formats

How to export a PDF from a report gadget

- 1 Select Export Content, as shown in Figure 4-30. Export Content appears.
- **2** In Export Content, select the PDF export format and choose OK, as shown in Figure 4-31. You can expand Page Settings for additional export options.





Export Content			\times	
Export Format:	PDF		•	Export format
Page range				Expand
BIDI processing				
Text wrapping				
Text hyphenation				
Font substitution	\checkmark			
Page style	Auto		•	
Embedded font				
Chart DPI	192			
Render chart in vector graphics				
Repaginate while rendering PDF				
Disable Flash animation for printing				
Disable Print				
		Cancel	OK	

Figure 4-31 Selecting the PDF export format

3 When prompted, save the PDF file to your desktop and open the file for printing using Adobe Reader.

How to export a PDF from a data visualization gadget

1 Select the gadget content to display the context menu.

2 Choose the context menu, as shown in Figure 4-32.



Figure 4-32 Opening a gadget's context menu

Choose Export Content.

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3 In Export Content, select the PDF export format and choose OK, as shown in Figure 4-33.

Export Content		×	
Export Format: • Page Settings	PDF	*	Export
	Can	cel OK	

Figure 4-33 Selecting the PDF export format

4 When prompted, save the PDF file to your desktop and open the file for printing using Adobe Reader.

Exporting gadget data

Data displayed in a gadget is a result set from the gadget's data source. Report and data visualization gadgets can export these result sets in the following formats: comma (CSV), pipe (PSV), tab (TSV), and semicolon (SSV). This data downloads as a file.

If you export column headers with the data, you can choose to export the column name or the display name. For example, if you export aggregated data from a table gadget and the column name is SUM(sold), exporting the column name gives the header name sold and exporting the display name gives the header name SUM(sold). Seeing the display name is useful when there are multiple

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aggregations of the same column data, such as SUM(sold), AVERAGE(sold) and MAX(sold).

Exported data can open in the user's default viewing software for the selected data format. For example, after viewing a report of orders by a specific customer, the user wants to export a list of the order numbers to include in an e-mail.

Exporting data from data visualization gadgets displays all result sets from all of your gadgets. Choose the name of the gadget from Available ResultSets to download the selected data. Chart gadgets export only their result set data while they are in minimized form.

Exporting data from report or Reportlet gadgets displays all result sets within the displayed BIRT document. Choose the result set from Available ResultSets to download the selected data.

Table 4-3 lists gadgets that support exporting their data in different formats.

 Table 4-3
 Availability of export data for dashboard gadgets

Gadget type	Normal gadget size	Maximized gadget size
Chart		1
Cross tab	✓ (in toolbar)	
Report	1	1
Reportlet	1	1
Table	✓ (in toolbar)	✓ (in toolbar)

How to export data from a gadget

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1 Select Maximize, as shown in Figure 4-34.





2 Select Export Data, as shown in Figure 4-35.



Figure 4-35 Exporting data from a chart gadget

- **3** In Export Data, complete the following steps:
 - Select the desired columns from Available Columns. This example uses Territory and Quantity in Stock.
 - Select an encoding style. This example uses UTF-8.
 - Select additional data export options that match the requirements of the software that will process the exported data. This example sets Values Separator to Comma (CSV), as shown in Figure 4-36.

xport Data					×
Available Columns:	+ +		Selected Columns:		
Order Date		» > <	Territory Quantity in Stock		
Encoding Style		«			
UTF-8 Other (if blank, u) Options	se the local e	ncoding)		
Maximum Rows	No Limit				
Values Separator	Comma (CS	SV)			•
Localize Column Name	Export Colu	mn Nam	e		-
Number Format	Unformatte	:d			•
Export Column Data typ	e D	kport Lo	cale Neutral format		
v countriester			a with carriage return	Cancel	ОК
NumberFormat Export Column Data typ Export Column Header Irre 4-36	Unformatte	kport Lo kport Da	cale Neutral format ta with Carriage return ata to export	Cancel	

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4 Choose OK. Data download begins.

Exported files use the default viewing software installed on the user's computer. If multiple viewers are available or there is no viewer for the selected file, the user can choose which software opens the file or choose to download the exported data file.

Maximizing gadgets

Although gadgets display in a column or freeform layout, users can maximize a gadget to fill the browser window. Maximizing a gadget enables more space for viewing data and can launch browser-based tools for editing.

The following browser-based tools are launched by maximizing gadgets on the dashboard:

- Interactive Crosstabs launches from cross tab gadgets.
- Interactive Viewer launches from chart, report, Reportlet, and table gadgets.

A browser-based tool can save changes to a gadget when the user has write privileges to the dashboard file.

Gadgets are maximized by:

- Double-clicking the gadget title
- Selecting Analyze from the gadget menu
- Selecting Maximize from the gadget menu

Interactive Viewer features, such as saving a file, hiding document parts, printing, and linking or embedding the document page, requires that the BIRT document or design file be opened from Information Console and not from within a gadget.

How to launch Interactive Crosstabs

Launch Interactive Crosstabs from a cross tab gadget or a report gadget that contains a cross tab by selecting Analyze from the gadget title. Optionally, double-click the cross tab gadget title to maximize the gadget.

- When the maximized gadget is a cross tab gadget, Interactive Crosstabs opens, as shown in Figure 4-37.
- When the maximized gadget is a report, Reportlet or report library gadget, select the cross tab and choose Analyze, as shown in Figure 4-38.





eport	- Book	markedObje	ects		
An	alyze	Classic Cars 🔻	Motorcycles	Motorcycles Planes Quantity Quantity	
		Quantity	Quantity		
2011	1	1383	399	460	
	2	1737	486	817	
	3	2439	895	371	
	4	7203	2251	2185	
2012	1	2916	953	971	
	2	2593	1390	1113	
	3	3947	1319	1178	
	4	6629	2314	2558	



Interactive Crosstabs opens.

How to launch Interactive Viewer

Maximize a chart, report, Reportlet, or table gadget by selecting Maximize. Optionally, double-click the gadget title to launch Interactive Viewer. After Interactive Viewer is enabled, right-click part of the report to display the Interactive Viewer context menu, for example, right-click a title in a column to display sorting, filtering, and additional interaction choices.

Figure 4-39 shows the process of maximizing a report gadget to enable interactive viewing such as custom formatting and aggregation.

Report -	Sales and Profit Analysis by	Country		•	-Gadget menu
≡		[4	1/1		-Context menu
Auto-Mo	to Classics Inc.				
Brickhaven	, USA				
Product	Vendor	Scale Buy Drice	OTV	Total Profit	
1917 Maxw	Report - Sales and Profit Ana	lysis by Country		Header	
1936 Chrys	=			🖳 Group	
1999 Yama	—			D. Column	•
America W				∎L+ cotanini	
American A	Auto-Moto Classics Inc.			Σ	_
Boeing X-3	Brickhaven, USA			Z Aggregation	1
HMS Bount	Product	Vendor	Scale	▼ Filter	•
	1917 Maxwell Touring Car	Exoto Designs	1:18		
	1936 Chrysler Airflow	Second Gear Diecast	1:24	* Sort	•
	1941 Chevrolet Special Deluxe Cabriolet	Exoto Designs	1:18	4 30TL	
	1999 Yamaha Speed Boat	Min Lin Diecast	1:18	Alignment	•
	America West Airlines B757-200	Motor City Art Classics	1:700	, anglinnen e	
	American Airlines: MD-11S	Second Gear Diecast	1:700	Aa Format	•
~	Boeing X-32A JSF	Motor City Art Classics	1:72		
	HMS Bounty	Unimax Art Galleries	1:700		
				Switch View	,
				Export Con	tent

Figure 4-39 Launching Interactive Viewer from a gadget

Refreshing gadget content

Users can refresh a gadget to redraw the gadget content. To update gadgets displaying data from a BIRT data object, such as a data visualization gadget, refresh the web browser. Gadgets displaying BIRT documents, external web sites, or real-time data display the latest data when the user refreshes the gadget.

Choose Refresh from the gadget menu, as shown in Figure 4-40, to refresh the content of a gadget.



Figure 4-40 Refreshing content of a chart gadget

Showing linked gadgets

You can see which gadgets are linked to a selected gadget by choosing Show Linked Gadgets from a gadget menu. For example, a user wants to see if any data selection gadgets can change the table gadget they are reviewing. By selecting Show Linked Gadgets in the table gadget's menu, the user can see which gadgets can change the data displayed in the table.

How to show linked gadgets

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1 In the gadget menu, choose Show Links, as Figure 4-41 shows.

Country	•	Crossta	ab - Da	ta Cube		Share
Uк	•		Year CITY	2011 TotalSales	 2 Tota 	Float Refresh Delete
Cowes Liverpool London Manchester	lear	UK Grand	Cowes Liverpool London Total	13596.9 49198.432 62795.332	55 45 13 1146	Show Header Edit Analyze Rename
Product Line	Clear Ships Trains					Link Show Links



Gadgets that link to the selected gadget appear outlined, as Figure 4-42 shows.

С	ountry	•	Crosstab - Data Cube				•
1	UK	•	≡			1/1	
				Year	2011	2012	2013
C	ity		COUNTRY	СПТҮ	TotalSales	TotalSales	TotalSales
City		UK	Cowes		55621.705		
	Clear	1	Liverpool	13596.9	45443.543	37258.941	
	Cowes		i	London	49198.432	13619.621	
	Liverpool		Grand	l Total	62795.332	114684.869	37258.941
	London		1				
	Manchester		i				
		2					
Ρ	roduct Line	• Clear					
6	Classic Cars	Ships					
	✓ Motorcycles	Trains					
	✓ Planes						

Figure 4-42

Reviewing which gadgets are linked together

2 In the gadget menu, choose Hide Links, as shown in Figure 4-43. The outline around linked gadgets disappears.

			Re	Refresh		
			Ar Hi	nalyze de Links		
	Year	2011	2			
COUNTRY	CITY	TotalSales	TotalSales	TotalSales		
UK	Cowes		55621.705	5		
	Liverpool	13596.9	45443.543	37258.941		
	London	49198.432	13619.621			
Grand	l Total	62795.332	114694.96	37258.941		

Figure 4-43 Hiding linked gadgets

Switching the view of a cross tab gadget

Gadget developers can add a chart view to a cross tab to represent the data displayed in the gadget. When the chart view has been added, users can switch between the tabular view and chart view of the data displayed in the cross tab. Choose Switch View in the context menu of the cross tab gadget.

BIRT developers can also add chart views to tables and cross tabs in BIRT design files. This content appears in report and Reportlet gadgets on the dashboard, but this gadget must be maximized for Switch View to appear in the context menu.

How to switch views in a cross tab gadget

1 Select a cell in the cross tab content. A context menu appears, as Figure 4-44 shows.

Crossta	ab - Da	ita Cube	5	
≡			1/1	
-	Year	2011	2012	2013
COUNTRY	СПУ	TotalSales	TotalSales	TotalSales
UK	Cowes		55621.705	
	Liverpool	13596.9	45443.543	37258.941
	London	49198.432	13619.621	
Grand	l Total	62795.332	114684.869	37258.941

Figure 4-44 Opening a cross tab gadget's context menu

- 2
 - **2** Select Switch View, as shown in Figure 4-45.

Crosst	ab - Da	ta Cub	e				
≡			•	1	/1	Þ	▶
-	Year	2011		2012		20	13
COUNTRY	Alignr	ment		•	2 5 05	Total	Sales
	Aa Form	at		٠	43 21	3725	58.941
Gran	Switc	h View			69	3725	8.941
	Expor	t Content					

Figure 4-45Selecting Switch View from a gadget's context menuThe chart view appears, as shown in Figure 4-46.



Using a chart gadget

Chart gadgets support interactive actions such as drilling into data details, time range selection, visual emphasis, and zoom.

You can interact with chart gadgets in the following ways:

- Select date ranges using the timeline range selector and slider.
- Drill into charts displaying data cubes to see summary or detail data.
- Drill through charts that contain hyperlinks to other reports.
- Zoom in to a chart's *x*-axis, *y*-axis, or both to view increased detail.

Improving chart gadget rendering performance

Many charts plot aggregated or summary values for one or more categories. For example, Figure 4-48 shows a column chart that displays the number of units ordered in several sales territories for the years 2011, 2012, and 2013 by displaying bars for each territory. The chart gadget aggregates the detail rows in the data source and displays bars for each category. If there are a large number of detail rows and the data source is a data set or data model, you can improve chart rendering performance by checking Data Summarize in Chart Builder—Data. If you check Data Summarize, the data is pre-aggregated and the summary rows are used to render the chart. Checking Data Summarize has the following benefits:

- Only summary data is written to the transient document thereby reducing its size.
- Only summary data is transmitted to the web browser, thereby reducing the size of the data and improving chart rendering performance.

Selecting date ranges in a chart

The time range selector appears under the chart title and enables a user to zoom in to 1-, 3-, or 6-month intervals, year to date, 1 year, and all values on the chart. The time range slider appears at the bottom of the chart and enables users to select a time period by sliding a bar to the beginning and end of the period.



Figure 4-47 shows chart timeline selectors.

Figure 4-47 Using a chart time range selector and bottom slider

Drilling into a chart gadget

Users can change the data displayed in a chart gadget when Drill into appears in the context menu. Users choose from available categories to view chart data in greater detail. For example, a user viewing a chart of sales data by state can drill down and see sales data by city, office, or employee.

How to drill down in a chart gadget

1 Select a shape in the chart to drill down into the category group, as shown in Figure 4-48.





The chart updates and shows values from the selected category, as shown in Figure 4-49.



Figure 4-49 Reviewing countries in a selected territory

2 Select a legend value to drill down into the value group. Then, choose Drill Down, as shown in Figure 4-50.



Figure 4-50 Drilling down into a selected value group

The chart updates and shows values from the selected value group, as shown in Figure 4-51.

3 Choose Drill up to 'Year' to summarize the chart data by year, as shown in Figure 4-52.



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Figure 4-51 Reviewing countries in a selected year



Figure 4-52 Drilling up into a summary view of the data

The chart displays the new data category or series selected. Users can continue to drill down and receive more detail or drill up to the previous chart view.

Zooming in to a chart

You can zoom in to a chart to view details of displayed data. Chart gadgets and charts in BIRT documents support zooming on the *x*-axis, *y*-axis, or both at the same time. Zoom is enabled by the BIRT dashboard developer.

To make an *x*-axis zoom, select a start point on the *x*-axis, drag the mouse to the end point, and then release the mouse button. Figure 4-53 shows an *x*-axis zoom.



Figure 4-53 Zooming on the x-axis

Figure 4-54 shows the results of an *x*-axis zoom. Choose Reset zoom to return the chart to the default display or continue to zoom to view additional detail.



Figure 4-54 Finished zoom on the *x*-axis

To make a *y*-axis zoom, select a start point on the *y*-axis, drag the mouse to the end point, and then release the mouse button. Figure 4-55 shows a *y*-axis zoom.





Figure 4-56 shows the results of a *y*-axis zoom. Choose Reset zoom to return the chart to the default display or continue to zoom to view additional detail.



Figure 4-56 Finished zoom on the *y*-axis

To make an *x*- and *y*-axis zoom, select a beginning point on the *y*-axis, drag the cursor and drop it at the end point on the *x*-axis. This creates a box around the points to zoom in to, as shown in Figure 4-57.









Figure 4-58 Finished zoom on the x- and y-axis

Choose Reset zoom to return the chart to the default display or zoom again to view additional detail.

Exploding a slice of a pie or doughnut chart

A pie chart is a circular chart used to compare proportions of different categories. Data is divided into sectors or slices and the size of each slice represents a value that is proportional to the total value. To emphasize one or more slices of a pie chart or doughnut chart, you explode a slice. Press the Ctrl key while selecting a slice on the chart to explode the slice away from the center of the chart.

Using a tree selector to filter data in a dashboard

Use a tree selector to filter hierarchical data in a dashboard. For example, if you want to show revenue by country and state or province, you create the tree

selector shown in Figure 4-59. You click the right arrow (>) for a category to display any subcategories.





The tree selector is only available in Information Console. It is not available in BIRT Designer Professional.

Understanding the tree selector

Each item in a tree selector can be in one of three states:

- If the box contains a blue square, some but not all items in the category are selected. In Figure 4-59, the box for Australia contains a blue square because NSW and Queensland are selected, but not all cities in Victoria are selected.
- If the box is empty, no items in the category are selected. In Figure 4-59, the box for Austria is empty because no provinces in Austria are selected.
- If the box contains a check mark, all items in the category are selected. In Figure 4-59, the box for Canada contains a check mark because all provinces in Canada are selected.

If you select Australia, Belgium, and Canada, as shown in Figure 4-59, charts, tables, and crosstabs in the dashboard show only data for these countries, as shown in the bar chart in Figure 4-60.



Figure 4-60 Bar chart showing revenue for Australia, Belgium, and Canada

If you select Australia and Belgium, as shown in Figure 4-61, charts, tables, and crosstabs in the dashboard show only data for these countries, as shown in the bar chart in Figure 4-62.









How to create a tree selector

- 1 On the Files and Folders page, choose Create→New Dashboard.
- **2** In New Dashboard, on the tool bar, choose Data Selector.



- **3** Choose Tree View from the menu.
- 4 In Data Selector Gadget Wizard—Data, in Use Data, choose a data model from the drop-down list. If no data models appear, choose New Data.
- **5** If you chose New Data in step 4, in Manage Data, in Available Data, select a data model and click the right arrow, as shown in Figure 4-63. Choose OK.

Manage Data				×
Available Data:		Selected Data:		ÇĴ
✓ Project Root	> 🛃 Classic Models.datadesign	Classic Models.	data Latest 🔻	
			Canaal	OK
			Cancel	OK



- **6** In Data Selector Gadget Wizard—Data, in Data Fields, choose the first field from the drop-down list.
- 7 Choose the second and subsequent fields up to a maximum of 6, as shown in Figure 4-64. Choose OK. The tree selector appears in the dashboard, as shown in Figure 4-65.

General	Туре		Data	Filter	For	mat		
lse Data:	Classic	Mod	els.data - Cla	assic Models Data	Model			•
Data Fields			Display Fiel	ds		Sort		
Customers/Country		-	Customers/	Country	-	None	-	\times
Customers/State		•	Customers/	State	-	None	-	×
Customers/City		•	Customers/	City	-	None	-	×
		•			-	None	-	×

Figure 4-64 Selecting data from a data model

~ Country	
> 🗌 Australia	
> 🗌 Austria	
> 🗌 Belgium	
> 🗌 Canada	
> Denmark	
Figure 4-65	Tree selector

8 Save the dashboard.

Linking a report or reportlet gadget to a tree selector

If you link a report or reportlet gadget to a tree selector in a dashboard, a dashboard user can provide values for report parameters using the tree selector. The report developer, however, must include code in the report design that consumes the JavaScript output of the tree selector as a filter. For example, the following code snippet consumes the expression Tree Filter Expression produced by a tree view selector. This code appears in the beforeFactory script, as shown in Figure 4-66.

```
var expressionStr = params["Tree Filter Expression"].value;
var filterCondition = StructureFactory.createFilterCond();
filterCondition.setExpressionProperty(
   FilterConditionElementHandle.EXPR_PROP, new
   Expression(expressionStr, ExpressionType.JAVASCRIPT));
filterCondition.setOperator(
   DesignChoiceConstants.FILTER_OPERATOR_TRUE);
filterCondition.setFilterTarget(
   DesignChoiceConstants.FILTER_TARGET_DATA_SET);
var table = reportContext.getDesignHandle().findElement(
   "Main Table");
var propHandle = table.getPropertyHandle( "filter");
propHandle.addItem( filterCondition );
```



Figure 4-66 before Factory script
Part Three

Using Actuate Viewers

- Introducing Actuate Viewers
- Exporting report data and content
- Organizing and modifying data
- Editing and formatting a report
- Modifying charts and gadgets
- Analyzing data
- Functions and operators

Chapter

5

Introducing Actuate Viewers

This chapter contains the following topics:

- About Actuate Viewers
- About Interactive Viewer

About Actuate Viewers

You can view BIRT (Business Intelligence Reporting Tools) reports using two web-based viewing environments, Actuate Viewer and Actuate Interactive Viewer. In this document, the term, viewers, refers to both Actuate Viewer and Interactive Viewer. A report is a category of documents that presents formatted and structured content from one or more data sources, such as a database, a spreadsheet, or a text file. A BIRT report can consist of several report components. At the very least, a BIRT report contains a table that holds data. In addition, a report can contain other elements such as animated or static charts, a cross tab, or a summary table. Figure 5-1 shows a simple listing report displaying credit limit information for customers, sorted by country.

	Report colu	umn label		Report colu	umn	
COUNTRY	CUSTOMERNAME	CONTACT	PHONE.	CITY	POSTALCODE	CREDITLIMIT
Oustralia						
	Australian Collectables, Ltd	Sean Clenahan	61-9-3844-6555	Glen Waverly	3150	60300
	Australian Collectors, Co.	Peter Ferguson	03 9520 4555	Melbourne	3004	117300
	Anna's Decorations, Ltd	Anna O'Hara	02 9936 8555	North Sydney	2060	107800
	Souveniers And Things Co.	Adrian Huxley	+61 2 9495 8555	Chatswood	2067	93300
	Australian Gift Network, Co	Ben Calaghan	61-7-3844-6555	South Brisbane	4101	51600
Oustria						
	Salzburg Collectables	Georg Pipps	6562-9555	Salzburg	5020	71700
	Mini Auto Werke	Roland Mendel	7675-3555	Graz	8010	45300
⊖Belgium						
	Petit Auto	Catherine Dewey	(02) 5554 67	Bruxelles	B-1180	79900
	Royale Belge	Pascale Cartrain	(071) 23 67 2555	Charleroi	B-6000	23500

Figure 5-1 An example report

This section describes the viewers and highlights the capabilities and functions of the viewers to navigate a report, print report data, and export the report and report data to several other formats. In addition, Interactive Viewer provides a high degree of interactivity, enabling users to easily modify the layout and formatting of reports, organize report data by sorting, filtering and grouping, perform calculations and compute report data, and edit graphical representations of report data by modifying charts in a report. You can also modify cross tabs and summary tables in a report and save the modified reports using Interactive Viewer.

If you need to analyze data in a cross tab, you can launch Interactive Crosstabs and modify data in the cross tab. Detailed information about performing each of these tasks is available in later sections of this document. In cases where the user interface does not display a specific option described in this document, upgrade to Interactive Viewer to access additional functionality.

The Actuate Viewer interface consists of a toolbar with the main menu icon and a page navigation tool. The report occupies the remaining portion of the viewer, as

shown in Figure 5-2. The report on the left in Figure 5-2 is displayed in Actuate Viewer, and the report on the right is displayed in Interactive Viewer.

≡			6	example_1	I	4 1	2/164	▶				
COUNTRY	CUSTOMERNAM	1E	Contact Name	PHONE			CITY					
Australia	Australian Collec	tors, Co.	Peter Ferguson	03 9520 4	4555		Melbo	urne				
	Australian Collec	tors, Co.	Peter Ferguson	03 9520 4	4555		Melbo	urne				
	≡			ex	kampl	e_1	I	•	12/	164	▶	M
Austria	COUNTRY	CUSTOM	ERNAME	Contact Name		PHONE				CITY		
	⊖Australia											
		Australia	n Collectors, Co.	Peter Ferguson		03 9520 -	4555			Melbo	urne	
		Australia	n Collectors, Co.	Peter Ferguson		03 9520 -	4555			Melbo	urne	
		Souvenie	rs And Things Co.	Adrian Huxley		+61 2 94	95 8555			Chats	wood	
		Souvenie	rs And Things Co.	Adrian Huxley		+61 2 94	95 8555			Chats	wood	
	_	Souvenie	rs And Things Co.	Adrian Huxley		+61 2 94	95 8555			Chats	wood	·
	<u></u>	Australia	n Collectables, Ltd	Sean Clenanan		61-9-384	4-6555			Gien V	vaver	<u>ciy</u>
	Austria	Coloburg	Collectables	Coord Diopo		6560.055	E			Colaby		
		Salzburg	Collectables	Georg Pipps		6562-955	5			Colobi	urg Irg	
		Mini Auto	Werke	Roland Mendel		7675-355	5			Graz	arg	
		Salzhurg	Collectables	Georg Pinns		6562-955	 15			Salzhi	Jra	
		Salzburg	Collectables	Geora Pipps		6562-955	55			Salzbu	ura	
		Mini Auto	Werke	Roland Mendel		7675-355	55			Graz	5	

Figure 5-2 Viewing a report in the viewers

Users working with Actuate Dashboards to interact with gadgets, such as chart gadgets or table gadgets, can access most menu options described in this document from the context menu of each gadget.

About Interactive Viewer

This section describes the additional functions available using Interactive Viewer. Interactive Viewer provides users with complete access to the features available in Actuate Viewer. In addition, Interactive Viewer enables users to easily customize reports based on individual needs and preferences. Using Interactive Viewer, users can modify the layout of the report, create computed data, move or delete columns, create aggregate data, modify tables displaying summary information, modify charts and graphs, modify data in cross tabs, and rearrange data using simple menu options. You can view and modify a report containing up to 200 pages in Interactive Viewer.

Interactive Viewer operates on a BIRT document file generated from a BIRT design created in Report Studio or BIRT Designer Professional. As a result, some properties specified at design time, such as formatting, filters, and so on, cannot be modified using Interactive Viewer. In Interactive Viewer, you can make

changes to the BIRT document file, save it as a BIRT design and edit the BIRT design using Report Studio and BIRT Designer Professional.

When you purchase the viewers, you have immediate access to Actuate Viewer. To access Interactive Viewer, your system administrator must enable this option on your system, for which you must purchase the Interactive Viewer license.

To view a BIRT report in Interactive Viewer, first view the report using Actuate Viewer. From the main menu, choose Enable Interactivity to launch Interactive Viewer. The menu displays two new options, Undo and Redo, indicating that you are in Interactive Viewer mode. Choose Disable Interactivity from the main menu to return to Actuate Viewer mode.

In Interactive Viewer, select and right-click any column in the report. The context menu provides options such as New Computed Column, Format, Sort, Filter, and so on, with additional options you can use to modify your report. To modify the column, choose an option from the context menu, shown in Figure 5-3.

	Header	•	
	Group	•	
∎₿-	Column	•	
Σ	Aggregation		
T	Filter	•	
\$	Sort	•	
	Alignment	•	
Aa	Format	•	
	Switch View		
	Export Content		

Figure 5-3 Column menu

Chapter

6

Exporting report data and content

This chapter contains the following topics:

- About exporting options
- Exporting content
- Exporting report data

About exporting options

The viewers enable you to export report data, report content, and elements such as charts, gadgets, cross tabs, or summary tables, to various formats. You can export data to several flat file formats that can be read by Excel. In addition, the viewers and Interactive Crosstabs provide various emitters to enable you to export content in a report table and other report elements to formats such as Excel, Word, PowerPoint, PostScript, and PDF.

When you export content or report elements to other formats, each emitter such as the PDF emitter or the Excel emitter provides several options that you can select to maintain the existing properties of the exported content, enabling users to easily perform additional analysis on the exported output. For example, when you export an element such as a cross tab to Excel, the Excel emitter supports exporting the content as a pivot table. This feature is useful for sharing content with users who do not have access to the viewers, who can analyze the output in Excel. This section discusses the exporting options available when exporting report data or report content.

Exporting content

You can export an entire report, as well as each individual report element, such as a chart, summary table, or cross tab, to several different formats. Exporting content to one of these formats creates a file that can be used by other applications in addition to viewers.

Using viewers, dashboards, and Interactive Crosstabs, you can export report content to the following file formats:

- Microsoft Excel (.xls and .xlsx)
- PDF (.pdf)
- PostScript (.ps)
- Microsoft Word (.doc and .docx)
- Microsoft PowerPoint (.ppt and .pptx)
- Extensible HTML (.xhtml)

Table 6-1 describes the exporting options available when exporting to each output format.

Description
Automatically adjusts the exported content for display in a pivot table.
When a report contains languages that are read from left to right, such as English or French, and those that are read from right to left, such as Hebrew or Arabic, the text from both languages can be presented in the same report in the appropriate direction. This text is called bidirectional (BIDI) text. Select BIDI processing if you have a report in two or more such languages and need the data to be correctly presented in the PDF or PostScript output.
Specify the DPI at which the chart engine exports the chart component. If you do not specify a DPI, the chart engine exports the image with a DPI value of 192.
Renders Flash content as static images to enable printing.
Disables the option to print the exported content.
Embeds HTML source code in the output file.
Embeds a font currently being used, in the exported output.
Exports live formulas when exporting content from a BIRT report that contains expressions created using EasyScript.
Exports the report as a pivot table, if it fits on a single page, to facilitate data analysis in Excel.
Exports the chart as an image.
Exports the file so that the output is compatible with features in Microsoft Office 2010/2013.
Substitutes one font in place of another when the original font is not available. For example, the classification of fonts into families ensures that only a sans serif font replaces another sans serif font.
Modifies the appearance of exported output such that it resembles the report viewed in viewers more than it does a spreadsheet.

Table 6-1 Exporting options for output formats

(continues)

Option	Description
Output to multiple sheets	Ignores existing pagination properties when you export a multipage report.
Page range	Enables you to specify the number of pages to export if you are working with a multipage BIRT file.
Page style	 Auto: This option lays out the data such that the report content fits the width of the output page. Existing pagination properties in the report are not retained in the output file, but the output is paginated.
	 Actual size: This option retains existing pagination properties from the original report, causing the font in the output file to sometimes be significantly smaller than in the original file.
	• Fit to whole page: This option retains existing pagination properties from the original file in the output file, sometimes shrinking fonts and images to fit content from each exported page on each page in the output file.
Re-paginate while rendering the specified format	Paginates the output for the specified export format.
Render chart in vector graphics	For existing SVG images, selecting this option improves the resolution of the exported image, while maintaining a smaller file size.
Text hyphenation	Enables hyphenation for text that spills over onto the next line.
Text wrapping	Eliminates the need for horizontal scrolling in the exported report.

 Table 6-1
 Exporting options for output formats (continued)

How to export a report or report element to supported formats

- 1 Choose Export Content from the main menu or from the context menu of a column. Export Content appears.
- **2** In Export Content, in Export Format, select a format from the drop-down list.
- **3** Select Page Settings to expand it. Make your selection based on the options described in Table 6-1.

Choose OK.

4 File Download appears, as shown in Figure 6-1. The default name assigned to the file and the file extension are visible. Choose Open or Save.

Do you want to ope	en or save Example_1.pdf from localhost?	Open	Save	•	Cancel	×
Figure 6-1	Exporting data					

When you open the file, the report appears in the export format you selected.

Exporting content to Microsoft Excel

You can use the viewers to export a BIRT report, selected pages of a BIRT report, or a specific report element such as a chart, or cross tab, to Microsoft Excel, Excel 2007, Excel 2010, and Excel 2013. The Excel emitter supports exporting cross tab content as a pivot table. Users who do not have access to Interactive Crosstabs can analyze the exported cross tab output using Excel. If the cross tab contains a grand total, however, the grand total in the Excel pivot table is different from the grand total in the BIRT report. In this case, do not export cross tab content as a pivot table.

When exporting content to Excel 2010, we recommend that you use the XLSX format in order to have access to several features supported only in that format, and to avoid compatibility issues that occur when using Microsoft Office 2010. The exported content in any version of Excel has exactly the same layout as the HTML page in the Viewer.

When you export a cube-based cross tab report to Excel, the Fields pane in Excel displays unused fields in the form dimension@Cube or measure@Cube. These fields represent non-aggregated values and are not used in the cross tab. They can be used in the cross tab without modification.

If you export a cross tab to a pivot table and generate a chart, the chart includes all data in the cross tab. For example, the columns of the cross tab are shown in the chart.

How to export a report or report element to Excel

1 To export a report, or report element, such as a cross tab, or a chart, choose Export Content from the main menu, as shown in Figure 6-2. Export Content appears.

<u>()</u>	Enable Interactivity
7	Save Design
	Save Document
4	Print
₿.	Export Content
₿	Export Data
Ē	Parameters
÷:	тос
K	Hide/Show Item
Ŷ	Link to this page
	Help

Figure 6-2 Exporting a report

2 On Export Content in Export Format, select Excel, as shown in Figure 6-3.

Export Content		х
Export Format:	Excel (XLS)	
 Page Settings 		_
Page range		
Text wrapping	\checkmark	
Enable pivot table		
Auto adjustment for pivot table	\checkmark	
Chart DPI	192	
Export charts as images		
Enable live formulas	\checkmark	
Hide grid lines		
Output to multiple sheets		
0	K Cancel	?

Figure 6-3 Exporting content to Excel

- **3** Select Page Settings. In Page Settings, provide the following information:
 - 1 Select the page range, or specify the page numbers that you want to export.
 - **2** Select Text wrapping to eliminate the need for horizontal scrolling in the exported report.
 - **3** Select Enable pivot table to export the report as a pivot table, to facilitate data analysis in Excel.
 - 4 Select Auto adjustment for pivot table, to enable the Viewers to automatically adjust the content for display in a pivot table.

- 5 If exporting a BIRT chart:
 - 1 Specify the DPI at which the chart is exported. If you do not specify a value, the Viewers export the chart at 192 DPI.
 - 2 To export each chart as an image, select this option.
- 6 Select Enable live formulas, to export live formulas when exporting content from a BIRT report that contains expressions created using EasyScript.
- 7 Select Hide grid lines.
- 8 To export the output to multiple sheets, select this option.

Choose OK.

4 File Download appears. The default name assigned to the file and file extension are visible. Choose Open or Save.

When you open the file, the report displays in Excel, and can be edited as needed.

Exporting content to Microsoft Word

The viewers support exporting content to Microsoft Word, Word 2007, and Word 2010. When exporting content to Word 2010, we recommend that you use the DOCX format in order to have access to several features supported only in that format, and to avoid compatibility issues that occur when using Microsoft Office 2010.

Exporting content to Microsoft PowerPoint

The viewers support exporting content to Microsoft PowerPoint, PowerPoint 2007, and PowerPoint 2010. When exporting content to PowerPoint 2010, we recommend that you use the PPTX format in order to have access to several features supported only in that format, and to avoid compatibility issues that occur when using Microsoft Office 2010.

When you export content to PPTX format:

- A BIRT table element is exported as a native PowerPoint table if all the functionality in the BIRT table is supported in PowerPoint. Table styles are exported to PowerPoint. Nested tables are supported in BIRT tables but not in PowerPoint.
- A BIRT text component is exported as a single PowerPoint text element if all the functionality in the BIRT text component is supported in PowerPoint. Text components include labels, text controls, and dynamic text controls. For text containing HTML content or dynamic text controls of type html, there may not be a one-to-one mapping between the BIRT text component and the PowerPoint text element.

- In the exported PowerPoint presentation, a slide master is generated based on the settings in the BIRT report design's master page, including the header, footer, and any other settings that can be applied to the slide master. You retain the look and feel of the rest of the presentation when adding new content and slides to the exported PPTX, and you can modify the header and footer. Page variables, dynamic text controls, and data controls are not supported in the slide master.
- The content is editable by default. If you do not want the content to be easily editable, deselect Edit Mode.

Exporting content to PDF format

You can export report content or report elements, such as charts, or cross tabs, to PDF format. The PDF emitter in the viewers provides consistent layout and pagination properties between PDF and HTML output formats. The PDF emitter also produces a high-quality PDF file, with a small file size. In addition, it provides high-quality images for charts, and Scalable Vector Graphics (SVG) format in PDF output.

Exporting content to PostScript format

When you export content to PostScript format, the PostScript emitter displays the content in the output file almost exactly the same way as it appears when printed.

Exporting content to Extensible HTML format

Extensible HTML (XHTML) is the next generation of HTML, compliant with XML (Extensible Markup Language) standards. The XHTML emitter is useful when users need to provide accessibility options for the exported content. XHTML (Extensible HyperText Markup Language) format enables users to access the content from a wide range of applications and is extremely easy to update and maintain.

Exporting report data

You export report data to extract some or all of the data from a report. For example, you can export customer sales data from a previous quarter, then use the numbers in a spreadsheet to create a forecast for an upcoming quarter. When you export data, you cannot export a table or chart element, but you can export the data displayed in both these elements. You can also export data from dashboard gadgets.



tab-separated values (.tsv) file, or a semicolon-separated values (.ssv) file. These files store data in a flat file format, which Excel can read. The difference between these formats is the character used as the data delimiter, which can be a comma, pipe, tab, or semicolon. You choose a format to export report data based on the requirements of the application to which you export the data, and the purpose for which you plan to use the exported data.

Once you choose a format, Excel displays the exported data in a spreadsheet. You can resize columns and format the data as you would do for any other spreadsheet.

How to export data in comma-separated values (.csv) file format

- 1 From the main menu, choose Export Data.
- **2** On Export Data, Available ResultSets lists the report elements, such as tables, charts, cross tabs, charts and gadgets, and so on, that contain data. Select an element from which to export data.
- **3** Available Columns lists the columns you can export from the specified table. You can export any of the data the report uses, including the data in aggregate rows and calculated columns. In Available Columns, select the columns to export one by one and choose the single right arrow after each selection, as shown in Figure 6-4. To select all columns, choose the double right arrow.

xport Data vailable ResultSets: Table		•
vailable Columns:	↑↓ Selected	Columns:
COUNTRY	>	
Customername	//	
Customer credit limit	>	
Contact first name		
Contact last name	<	
Contact	11	
	«	
Encoding Style		
ILITE-R		
Other		
(if black u	e the local encoding)	
Options	e the total encouning/	
Maximum Rows	No Limit	
Values Separator	Comma (CSV)	•
Localize Column Name	Export Column Name	•
Number Format	Scientific Notation	•
Export Column Data typ	e Export Locale Neutral	format
Export Column Header	Export Data with Carri	age return
		Connect C
		Cancel

Figure 6-4 Exporting report data

To deselect a column, choose a column from Selected Columns, then choose the single left arrow. To deselect all the selected columns, choose the double left arrow.

- **4** In Encoding Style, select UTF-8, or specify a style in Other. If you do not specify a style, Actuate Viewer uses the local encoding style.
- 5 In Options, specify the following information:
 - In Maximum Rows, type the maximum number of data rows to export. To export all the data rows in the report, accept the default value of No Limit.
 - In Values Separator, choose the Comma (CSV) delimiter.
 - In Localize Column Name, select an option from the following:
 - Select Export Column Name to export the column name specified in the data source.
 - Select Export Column Display Name to export the column name specified in the report design.
 - Select Export Column Name and Display Name to export both.
 - In Number Format, do one of the following:
 - Choose Scientific Notation.
 - Choose Unformatted.
- **6** You can select the following additional options to export column data type, export the data in locale neutral format, export the column header, and export the data with carriage return.
 - Select Export Column Data Type to include the data type information in the flat file. In the following example, the second line identifies the type of data in the file:

```
FirstName, LastName, AccountID
STRING, STRING, INT
"Jane", "Doe", 1234 ...
```

- When you export report data that contains date-and-time values, by default, the values are formatted according to the current locale. For example, if you export the date 01/10/2009 in the original format, it can be interpreted as January 10, 2009 or October 1, 2009, depending on whether the locale is US or France. On Export Data, select Export Locale Neutral Format to export report data without considering locale information, so that the date is interpreted correctly in every locale.
- When you select Export Column Header, viewers export the column header in addition to the data in the column. The spreadsheet displays each exported column below the corresponding column header.

When you select Export Data With Carriage Return, viewers export the data using a Carriage Return (CR) character for each line break.

Choose OK.

7 On File Download, the default name and the file extension of the spreadsheet file appear.

Choose Save.

- **8** On Save As, complete the following tasks:
 - 1 In Save in, navigate to the folder in which you want to save the file.
 - 2 In File name, change the name of the file. Choose Save. The comma-separated values (.csv) file appears in the new location.

When you open the file, the output data appears as an editable Microsoft Excel worksheet. You can expand the columns to view all the data.

Use the same process to export data to pipe-separated values (.psv) files, tab-separated values (.tsv) files, and semicolon-separated values (.ssv) files.

Chapter

7

Organizing and modifying data

This chapter contains the following topics:

- About sorting, filtering and organizing data
- Managing a column
- Sorting data in a column
- Organizing data in groups
- Specifying page breaks
- Inserting a computed column
- Aggregating data
- Hiding and displaying report elements
- Filtering data
- Working with merged columns
- Working with summary tables

About sorting, filtering and organizing data

Interactive Viewer enables you to organize report data in several ways. You can change the width of columns, and move and remove columns to improve presentation or change the order of data in a report. You can sort data in a column in ascending or descending order, organize data columns into groups, and create computed columns. You can create aggregate data such as sums, standard deviations, rankings, and differences. You can also use Interactive Viewer to change group and column headers, and to customize pagination in a multipage report by defining page breaks before or after groups.

You can hide columns as well as report elements based on your needs. You can also hide duplicate data rows in a column, or a group. You can use Interactive Viewer to create calculations to count items in a warehouse or provide more complex financial data, such as tracking stock portfolio performance over time.

Oftentimes, a report or report element provides more information than you need. You can display specific rows of a report by using a filter. For example, instead of listing all customer sales, you can create a filter to list only the sales data for a particular week or a specific region. Filtering data helps you work effectively with large amounts of data. This document describes how to perform each of these tasks.

Managing a column

This section describes how to use Interactive Viewer to change the order of columns in a report, delete report columns that are not necessary, hide existing columns, and display hidden columns. When you delete a column from the report, you cannot insert it back into the report design at a later time. If you might have a need for data in the column later on, you can hide the column, and display it whenever necessary. You can optimize the layout of a report by adjusting the width of report columns according to the space occupied by column data.

How to reorder columns

- 1 Select and right-click the column. Choose Column→Reorder Columns. Reorder Columns appears, as shown in Figure 7-1.
- **2** In Available Columns, select the column to move. Choose the up or down arrow on the right until the column is in the correct position. Moving a column up in the list moves it to the left in the report. Moving a column down in the list moves it to the right in the report.

Choose OK.



Figure 7-1 Arranging columns in Interactive Viewer

How to remove one or more columns from the report

To remove a column, select and right-click the column. Choose Column→Delete Column.

To remove multiple columns, press Ctrl and select each column.

How to hide a column

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Select and right-click a column. Choose Column → Hide Column. Interactive Viewer displays the report without the selected column.

How to display a hidden column

Select and right-click a column. Choose Column→Show Column. Show columns appears listing the hidden columns. In Pick Hidden Column, select the column to display. Choose OK. The column appears in the report.

How to modify column width

Select the column. Place the cursor on the right or left border of the highlighted column. Using the cursor, drag the border inwards or outwards to increase or decrease the width of the selected column.

Sorting data in a column

Sorting data is an important task in creating a useful report. A customer phone list, for example, is easier to use if it is in alphabetical order. A sales report is more useful if it presents sales figures from highest to lowest, or the reverse, if you want to see lowest to highest performers.

You sort data to display report content in a more meaningful order. You can sort data in ascending or descending order, and you can sort by as many as three fields. For example, you can sort a list of customers by credit rank, then by customer name.

Sorting on a single column

To sort data on a single column, select and right-click the column. Choose Sort → Sort Ascending or Sort Descending.

Sorting on multiple columns

1

You can sort data by as many as three columns. When you sort by multiple columns, you use the Advanced Sort dialog box, shown in Figure 7-2. It is important to understand the order of precedence for a multiple sort action. On Advanced Sort, select the columns in the order in which you want to sort the data. For example, to sort data by country first, and then by customer name within each country, select the columns in that order.

How to sort data on multiple columns

- 1 Select and right-click a column. Choose Sort→Advanced Sort.
- **2** In Advanced Sort, in Sort By, select a column from the list, then choose either Ascending or Descending, as shown in Figure 7-2.
- **3** Select a second column from the next drop-down list. Choose the sort order.

Advanced Sort	×
Sort By:	
Select a Column 🔹	 Ascending Descending
Then By:	
Select a Column 🔹	 Ascending Descending
Then By:	
Select a Column 🔹	 Ascending Descending
	Cancel OK

You can also select a third column on which to sort. Choose OK.

Figure 7-2 Sorting data on multiple columns

Reverting data to its original order

To revert data to its original unsorted order, select and right-click a column. Choose Sort-Advanced Sort. In Advanced Sort, for each column containing sorted data, choose Select a Column from the drop-down list. Choose OK.

Organizing data in groups

Sorting is typically only one of the tasks you perform when organizing data in a report. It is common for reports to present data that is organized into meaningful groups, especially reports that contain large amounts of data.Data groups contain related data rows. Organizing data in groups makes it easier to compare and analyze information.

A report that groups data provides a more effective way to view data. When you group data, you can:

- Add subtotals, counts, averages, or other aggregate information at the beginning or end of each group.
- Insert a page break before or after each group to start each data group on a new page.
- Hide the details of each group to view a summary report.

In addition, Interactive Viewer performs the following actions when you group data:

- Removes duplicate values for each group.
- Sorts the values of each group. For example, a country group displays the countries in alphabetical order.
- Generates a table of contents that displays the values of every group when you
 view the finished report in the viewers. The table of contents allows you to
 navigate to specific locations in the report. This feature is particularly useful
 when a report contains many pages.

How to group data

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Select and right-click the column that contains the values to group. Choose Group->Add Group.

If the column you selected contains string or numeric data, Interactive Viewer groups the data by each unique value in the column. If the column you selected contains date-and-time data, additional grouping options appear.

Grouping data on a date-and-time column

When you group data on a date-and-time column, you have an additional option to group the data by a specific time interval, which is the typical option. You can organize a shipping report, for example, showing shipment data by month or by quarter, rather than by individual date.

Figure 7-3 shows three reports that contain the same data.

Shipment Date	Order	Shipped To						
Jan 10, 2011	10100	Online Diecast	t 🛛					
		Creations Co.						
Jan 11, 2011	10101	Blauer See Au	ito, Co.				_	
Jan 14, 2011	10102	Vitachrome Ir	Shipment Date	Order	Shipped 1	0		
Feb 1, 2011	10104	Euro+ Shoppi	OJanuary, 2011					
		Channel		10100	Online Die	cast Creations Co.		
Feb 2, 2011	10103	Baane Mini In		10101	Blauer See	e Auto, Co.		
Feb 12, 2011	10105	Danish Whole		10102	Vitachrom	Shipment Date	Order	Shipped To
		Imports	February, 2011			Olan 10, 2011		
Feb 21, 2011	10106	Rovelli Gifts		10104	Euro+ Sho		10100	Online Diecast Creations Co.
Feb 26, 2011	10107	Land of Toys		10103	Baane Min	⊖Jan 11, 2011		
				10105	Danish Wł		10101	Blauer See Auto, Co.
				10106	Rovelli Giff	⊖Jan 14. 2011		
				10107	Land of To		10102	Vitachrome Inc.
		,				-Feb 1 2011		
						0.001,2011	10104	Euro+ Chopping Chappel
						-Eab 2, 2014	10104	Earth Shopping charmen
						OFeb 2, 2011	10100	Denne Miri Inne ente
						~	10103	Baane Mini Imports
						EFeb 12, 2011		
						_	10105	Danish Wholesale Imports
						⊖Feb 21, 2011		
							10106	Rovelli Gifts

Figure 7-3 Comparing reports with grouped and ungrouped data

The report on the left displays data that has not been grouped. The second report groups shipment dates by month. The third report groups shipment dates using individual date values.

How to group date-and-time data

- 1 Select and right-click the column that contains the date-and-time data. Choose Group→Add Group.
- **2** In Group Detail, select one of the group options. If you opt to group by interval:
 - Select an interval type, such as weeks, months, or quarters, from the drop-down list.
 - Type a number to indicate the grouping for the selected interval type. For example, if you selected Weeks, type 2 to group data in two-week periods.

Figure 7-4 shows grouping the Shipped Date column by month.

Group Detail			×
Group On: SHIPPEDD Group Options:	DATE		
Group using ind	lividual value	Months	•
		Cancel	ОК

Figure 7-4 Grouping by shipping date

Grouping on multiple columns

When you group data on multiple columns, consider the order of precedence before you create the groups. To group customer data by state, then by city, create the groups in that order.

Changing the grouping order

After you create groups, you can change their order to provide a new perspective on the report data. Evaluate the effect of changing the grouping order, so that the organization of columns remains logical.

How to change the grouping order

1 Select and right-click a column. Choose Column→Reorder Columns. Reorder Columns, as shown in Figure 7-5, shows the columns in the order in which the report currently displays the data.

	×
:	
	•
	1
	•
Cancel	ОК
	: Cancel

Figure 7-5 Reordering grouped columns

2 In Reorder Columns, select the grouped column from Available Columns. Use the up or down arrow buttons to move the column up or down the list. Choose OK.

Specifying page breaks

Using Interactive Viewer, you can set page breaks after a preset number of rows in a data column and you can start each group on a new page by specifying a page break before or after grouped data.

How to set and remove a page break on a report column

- 1 Select and right-click a column. Choose Group→Page Break.
- **2** On Page Break, define an interval by typing the number of rows you want to display on each page, as shown in Figure 7-6. Choose OK.

Page Break	×
Interval: 40	
	Cancel OK

Figure 7-6 Setting a page break on a data column

3 To delete an existing page break, type 0 in the Interval field. Choose OK.

How to set and remove a page break on a grouped column

1 Select and right-click a grouped column. Choose Group→Page Break. Page Break appears, as shown in Figure 7-7.

Page Break	×
Before group:	After group:
Always	Always
Always except	○ Always except
the first	the last
 None 	 None
	Cancel

Figure 7-7 Setting a page break before or after groups

- **2** You can set a page break for every group, or for every group except the first or last groups. Choose OK.
- **3** To delete an existing page break, select None in Before group or After group. Choose OK.

Inserting a computed column

To display calculated data in a report, you create a computed column, such as the Total column in the report shown in Figure 7-8. In the example, you need to calculate the Total because the original report does not provide this data.

Customer Name	Order Number	Price of each	Quantity Ordered	Total
Baane Mini Imports				
	10103			
		214.3	26	\$5,571.80
		119.67	42	\$5,026.14
		121.64	27	\$3,284.28
		61.84	35	\$2,164.40
		86.92	25	\$2,173.00
		86.31	46	\$3,970.26

Figure 7-8 Report with computed column

An expression is a statement that produces a value. An expression can be a literal value, such as:

1.23 "Hello, World!"

An expression can contain any combination of literal values, operators, functions, and references to data fields, as shown in the examples in the following sections. In BIRT iHub, Interactive Viewer provides a convenient expression builder wizard to create computed data. You use the expression builder to do one of the following:

- Enable Interactive Viewer to build an expression.
 Select a function to use, then select one or more columns across which Interactive Viewer performs the calculation.
- Create a custom expression.

Select a function, then create an expression and validate it, after which Interactive Viewer performs the calculation.

Building an expression

The expression builder in Interactive Viewer supports typical mathematical functions, such as percent of total, running sum, and percent of difference. It also supports a range of financial, logical, date-and-time, text, and comparison functions.

Figure 7-9 shows an example of building an expression to calculate the extended price, which is not included in the report.



Figure 7-9 Building an expression

The expression builder contains categories with functions and operators that you use to create and edit expressions. When you build an expression to create a computed column, first select a category, then select an associated function to compute the data. Next, select the columns on which to perform the calculation.

How to build an expression for a new computed column

- 1 Select and right-click the column to the left of the location of the new computed column. Choose Column → New Computed Column. New Computed Column appears.
- **2** In Column Label, type a name for the new computed column. The name you specify appears in the column header.
- 3 In Select Category, select an option from the following categories:
 - Financial
 - Math
 - Date and time
 - Logical
 - Comparison
 - Text

A list of functions appears in Select Function.

- **4** In Select Function, do one of the following:
 - Select a function from the list, then go to step 5.
 - Select Advanced to manually create an expression. Then perform the steps listed in "How to create a custom expression for a new computed column," later in this section.
- **5** Based on the function you select, one or more column fields appears. In each column field that appears, select a column from the list.

Choose OK. The new computed column, based on the expression you built, appears in the report.

Creating a custom expression

If you are familiar with writing expressions, you can create custom expressions to insert computed columns in a report. In the example shown in Figure 7-10, you multiply each value in the QUANTITYORDERED field with the corresponding value in the PRICEEACH field, to obtain the value in the Total column. When you use a data field in an expression, you must enclose the field name within brackets ([]).

The following section describes examples of custom expressions.



Figure 7-10 Performing a calculation

The following expression displays a customer's first and last names, which the database stores in two fields. The & operator concatenates string values.

[FirstName] & " " & [LastName]

The following expression displays a full address by concatenating values from four data fields and adding commas as appropriate:

[Address1] & ", " & [City] & ", " & [State] & " " & [Zipcode]

The following expression calculates a gain or loss percentage. The expression uses the mathematical subtraction, division, and multiplication operators, -, /, and *.

```
([SalePrice] - [UnitPrice])/[UnitPrice] * 100
```

The following expression uses the DIFF_DAY function to calculate the number of days it took to process an order for shipping:

DIFF_DAY([OrderDate], [ShippedDate])

The following expression uses the ADD_DAY function to calculate a payment due date when the payment term is net 30:

```
ADD_DAY([InvoiceDate], 30)
```

The following expression uses the IF function to evaluate if the value in the country column is UK. If the condition is true, the function replaces the value with United Kingdom. If the condition is false, the country values are displayed as stored.

```
IF(([Country]="UK"), "United Kingdom", [Country])
```

The following example uses the TRIM function to remove leading or trailing blank characters:

```
TRIM([CustomerName])
```

How to create a custom expression for a new computed column

This procedure assumes you have provided a column label, selected a category, and selected the advanced function in New Computed Column.

- 1 In Enter Expression, type the expression that performs the calculation:
 - To use a data field in the expression, type the left bracket ([), then select the required field from the list that appears. The list displays only fields in the report.
 - To use a function, type the first letter of the function, then select the function from the list that appears. The functions indicate the arguments, if any, that you need to specify.
- **2** After you complete typing the expression, choose Validate. If the expression is syntactically correct, Information appears, informing you that the expression is valid, as shown in Figure 7-11.

Information
The expression is valid.
ОК

Figure 7-11 Expression valid confirmation message

Choose OK.

3 In New Computed Column, choose OK. The computed column appears in the report.

Using numbers and dates in a custom expression

When you create an expression that contains a literal number, type the number according to the conventions of the US English locale. In other words, use a period (.), not a comma (,) as the decimal separator, even if you are working in, for example, the French locale. For example:

```
Correct: ([Quantity] * [Price]) * 1.5
Incorrect: ([Quantity] * [Price]) * 1,5
```

Similarly, when you create an expression that contains a literal date, type the date according to the conventions of the US English locale. For example, if you are working in the French locale, type 03/12/2007 to represent March 12, 2007. Do not type 12/03/2007, which is the convention for the French locale. You must enclose literal date values in double quotation marks (" "), as shown in the

following expression that calculates the number of days from the order date to Christmas:

```
DIFF_DAY([OrderDate], "12/25/08")
```

How to add days to an existing date value

D+

To create a column that displays date values that are greater than the date values in another column, complete the following steps.

- 1 Select and right-click a column. Choose Column → New Computed Column. New Computed Column appears.
- **2** In Column Label, type a name for the calculated column. For example, type Forecast Shipping Date.
- **3** In Enter Expression, type the letter A. A list appears, displaying functions that begin with A.
- 4 Choose ADD_DAY(date, daysToAdd).
- **5** For the first argument, type a left bracket ([) and select the date column from the list. For example, select Order Date.
- 6 For the second argument, type the number of days to add. In this case, type 7.
- 7 Validate the expression and choose OK. The calculated column appears in the report. For every value in the Order Date column, the calculated column displays a date seven days later than the order date.

How to subtract date values in a calculated column

The following section describes how to display the difference between two date values.

- 1 Select and right-click a column. Choose Column → New Computed Column. New Computed Column appears.
 - **2** In Column Label, type a name for the calculated column. For example, for a calculation that subtracts the date requested from the actual shipping date, type Shipping Delay.
 - **3** In Enter Expression, type the letter d. A list appears, displaying functions that begin with d.
 - **4** Choose DIFF_DAY(date1, date2).
 - **5** For the first argument, type a left bracket ([) and select the first date column from the list. For example, select Date Requested.
 - **6** For the second argument, type a left bracket ([) and select the second date column from the list. For example, select Actual Shipping Date.
 - **7** Validate the expression and choose OK. The calculated column appears in the report, displaying the difference between the two dates.

Using reserved characters in a custom expression

Some characters are reserved for internal use and have a special meaning. For example, Interactive Viewer uses brackets to denote a data field. The following characters are reserved in Interactive Viewer:

```
[
]
?
' (single quotation mark)
```

If the name of a data field contains a reserved character, Interactive Viewer encloses the reserved character in single quotation marks (') when you select the data field for use in an expression, for example '['. If the name of a data field is OBSOLETE?, Interactive Viewer changes it to [OBSOLETE?'] in the expression. If you type [OBSOLETE?] in the expression, the dialog box displays an error message.

To minimize syntax errors, select the field from the list in the New Computed Column dialog box and allow the software to construct the expression, instead of typing it yourself. The following examples show the appearance of data fields containing reserved characters in the New Computed Column dialog box. The examples show both versions of the names, the changed name and the original name with reserved characters, as follows:

```
[ORDER''S STATUS] - ORDER'S STATUS
[PRODUCTCODE'['4-digit']'] - PRODUCTCODE[4-digit]
[OBSOLETE'?'] - OBSOLETE?
```

Aggregating data

One of the useful features in a report is the ability to display summary, or aggregate, data. Aggregating data involves performing a calculation on a set of values. For a simple listing report that does not organize data in groups, you can perform aggregate calculations on values in a selected column, across all the data rows in a table. For example, consider a report that has a column calculating extended price, price*quantity. You can use the sum of the calculations in this column to obtain the total extended price of all items. You can create up to three aggregations for each report column.

When you aggregate data, you choose whether the aggregation appears in the table header or footer. If the column is grouped, you can display the aggregate value in the group header or footer. The report in Figure 7-12 displays aggregate data for the Total and the Profit columns at the end, or footer, of the table.

In a report that organizes data in groups, you can perform aggregations for each group of data rows, and for all the data rows in the table. In the example report shown in Figure 7-13, the aggregate data appears at the footer of each group.

Product name Total Profit 1952 Alpine Renault \$9,568.00 \$4,934.74 1300 2001 Ferrari Enzo \$9,571.00 \$5,078.27 2001 Ferrari Enzo \$9,974.00 \$5,385.68 1952 Alpine Renault \$9,467.00 \$4,833.74 1300 \$4,833.74
1952 Alpine Renault \$9,568.00 \$4,934.74 1300 2001 Ferrari Enzo \$9,571.00 \$5,078.27 2001 Ferrari Enzo \$9,974.00 \$5,385.68 1952 Alpine Renault \$9,467.00 \$4,833.74 1300 \$4,833.74
1300 2001 Ferrari Enzo \$9,571.00 \$5,078.27 2001 Ferrari Enzo \$9,974.00 \$5,385.68 1952 Alpine Renault \$9,467.00 \$4,833.74 1300 \$100 \$4,833.74
2001 Ferrari Enzo \$9,571.00 \$5,078.27 2001 Ferrari Enzo \$9,974.00 \$5,385.68 1952 Alpine Renault \$9,467.00 \$4,833.74 1300 \$4,833.74 \$4,833.74
2001 Ferrari Enzo \$9,974.00 \$5,385.68 1952 Alpine Renault \$9,467.00 \$4,833.74 1300 \$4,833.74
1952 Alpine Renault \$9,467.00 \$4,833.74 1300
1300
1969 Dodge Charger \$11,170.00 \$5,473.19
2003 Harley-Davidson \$9,394.00 \$4,934.02
Eagle Drag Bike
1952 Alpine Renault \$10,286.00 \$5,554.16
1300
2003 Harley-Davidson \$11,503.00 \$5,495.68
Eagle Drag Bike
2003 Harley-Davidson \$9,299.00 \$4,839.02
Eagle Drag Bike
1952 Alpine Renault \$10,072.00 \$5,143.00
1300
Max \$11,503.00 Max \$5,554.16
Avr \$10,030.40 Avr \$5,167.15
Sum \$100,304.00 Sum \$51,671.50

Figure 7-12	Report d	lisplaying	aggregate data
-------------	----------	------------	----------------

⊖Product line		Classic Car	s	
Product name	Price each	Quantity ordered	Total s	ales
1952 Alpine Renault 1300	203.59	47	\$9	9,568
1952 Alpine Renault 1300	214.3	48	\$10),286
1952 Alpine Renault 1300	201.44	50	\$10),072
1968 Ford Mustang	163.44	64	\$10),460
2001 Ferrari Enzo	203.64	47	\$9	9,571
2001 Ferrari Enzo	207.8	48	\$9	9,974
1969 Dodge Charger	115.16	97	\$11	l,170
1956 Porsche 356A Coupe	127.79	76	\$9	9,712
			Total \$80	,813
			Maximum \$11	,170
			Average \$10	,102
⊖Product line		Motorcycle	es	
Product name	Price each	Quantity ordered	Total s	ales
2003 Harley- Davidson	174.29	66	\$11	L,503
Eagle Drag Bike				
			Total \$11	,503

Figure 7-13 Aggregate data by product line group

How to aggregate data

- Σ
- 1 Select and right-click the column containing the data to aggregate. Choose Aggregation. Aggregation appears. The syntax of the selected function appears in the lower part of Aggregation, as shown in Figure 7-14. From the Select Function menu, select the aggregate function to use.

Aggregation					~	-Column
Selected Column:	Total sales		ļ	Delete Aggreg	ation	
Select Function:	Sum •	Sort direction:	None	•		
Aggregate on:						
🖌 table level		🔵 header 🧿 fo	oter			
🗸 group level	country -	🔵 header 💿 fo	oter			
						-runction syntax
SUM (Total sales)	En	ter Label: Sum		Format		oyntax
	Add	Aggregation				
			[Cancel	ок	

Figure 7-14 Aggregating the Total sales column as a sum

- **2** Specify a sort direction for the resulting aggregation. If you select Ascending or Descending from the Sort direction list, the groups appear in ascending or descending order in the report. Select None if you do not want to sort the groups in any order.
- 3 In Aggregate on:
 - Select table level to aggregate data across all the rows in the table. Select either header or footer as the location in which to display the aggregate data.
 - Select a group from the next list to aggregate data at the group level. Select either header or footer as the location in which to display the aggregate data.
- **4** In Enter Label, enter a name for the label. Optionally, set a font for the aggregation label by choosing Format.
- **5** To create a second aggregation, choose Add Aggregation. In Select Function, select a function from the list. Repeat step 2 to step 4 to define the aggregation. Choose OK. Figure 7-15 shows two aggregations defined for the report.

How to add additional aggregate rows to a column

After you create a single aggregate value for a column, you can add up to two more aggregate values for the same column. For an order total column, for example, you can create a sum of all the values, count all the values, and get the average order total.

- 1 To add an aggregate value, select a column that contains an aggregate value. Choose Aggregation from the context menu.
- **2** On Aggregation, choose Add Aggregation.

An additional section appears on Aggregation, shown in Figure 7-15.

3 Create the second aggregate value and choose OK.

Σ

Aggregation		×	
Selected Column: Total	sales		
		Delete Aggregation 🔺	
Select Function: Max	Sort direction: None	*	
Aggregate on:			
🗸 table level	🔵 header 🧿 footer		
group level	leader footer		
MAX(Total sales)	Enter Label: Max	Format	
		Delete Aggregation	
Select Function: Average	Sort direction: None	-	
Aggregate on:			
🗸 table level	🔵 header 💽 footer		-Create a new aggregate
group level	 header () footer 		Tow in this section
AVE(Total sales)	EnterLabel: Avr	Format	
	Add Aggregation	Delete Aggregation	
		Cancel OK	

Figure 7-15 Adding an aggregate row for a column

How to delete an aggregate value

- Σ
- **1** Select the column that contains the aggregation to remove. From the context menu, choose Aggregation.
- **2** Aggregation appears, displaying all the aggregations for the column. Choose Delete Aggregation for the aggregation you want to remove. Choose OK.

Hiding and displaying report elements

This section describes how to use Interactive Viewer to hide or display elements in a report, such as a column or table header, a report table, a chart or gadget, and an image in the report.

How to hide or display report items

- 1 Choose Hide/Show Items from the main menu. Hide or Show Items appears, as shown in Figure 7-16.
- **2** Select the items to display. Deselect the items to hide. To hide all items, choose Clear. Then, choose OK.

Hide/Show Items	×
Check Item(s) to Show	
🗹 Report Header	
🗹 Table Header	
🕀 🗹 Table	
<u>Clear</u>	
	Cancel OK

Figure 7-16 Hiding or displaying report items

Hiding group details

When you work with a report that organizes data in groups, you can change the report to a summary report by hiding the group details. Hiding details, particularly for a report that runs into hundreds of pages, helps you display key information at a glance.

In a report containing multiple groups, it is sometimes useful to hide the details for a specific group if you do not want to display all the information at the same time. Figure 7-17 shows two reports that contain the same data. The report on the left shows all details. The report on the right hides the details within each product line group.

OProduct line		Classic Car	's		Product line		Classic Cars	_	
Product name	Price each	Quantity ordered	To	otal sales	Product name	Price each	Quantity ordered	То	tal sales
1952 Alpine	203.59	47		\$9,568				Total	\$80,813
Renault 1300								Maximun	n \$11,170
1952 Alpine Renault 1300	214.3	48		\$10,286				Average	\$10,102
1952 Alpine	201.44	50		\$10,072	Product line		Motorcycles	•	
Renault 1300					Product	Price each	Quantity	То	tal sales
1968 Ford	163.44	64		\$10,460	name		ordered		
Mustang								Total	\$11,503
2001 Ferrari	203.64	47		\$9,571				Maximun	n \$11,503
Enzo								Average	\$11,503
2001 Ferrari	207.8	48		\$9,974	Product line		Vintage Car	s	
Enzo	115.16	07		£11.170	Product	Price each	Quantity	То	tal sales
Charger	115.16	97		\$II,I/U	name		ordered		
1956 Porsche	127.79	76		\$9,712				Total	\$10,723
356A Coupe								Maximun	n \$10,723
			Total	\$80,813				Average	\$10,723
			Maximur	m \$11,170				Total	\$103,039
			Average	\$10,102				Maximun	n \$11,503
OProduct line		Motorcycle	es					Average	\$10,304
Product name	Price each	Quantity ordered	Тс	otal sales					
2003 Harley- Davidson Eagle Drag Bike	174.29	66		\$11,503					
			Total	\$11,503					

Figure 7-17 Comparing reports showing and hiding product details
How to hide group details

Select and right-click the grouped column whose details you want to hide. Choose Group→Hide Detail.

How to redisplay group details

Select and right-click the grouped column, then choose Group→Show Detail.

Suppressing duplicate values

Sometimes a report column displays duplicate values in consecutive data rows. When the duplication is unnecessary or makes the report difficult to read, you can suppress consecutive duplicate values in a regular or grouped column. For example, a report that lists customer orders, grouped by customer, shows some data values such as the address, contact information, customer number, and so on, multiple times for every order placed by the customer. You can prevent the duplicate occurrence of these values by moving data rows from the column to the group header.

In addition, as you modify a report, you can collapse groups to display only the column headings and summary data, such as aggregate data rows.

In the report shown in Figure 7-18, the city and state columns show the city and state each time they occur.

customerName	city	state	salesRepEmployeeNumber
Diecast Classics Inc.	Allentown	PA	1216
Diecast Collectables	Boston	MA	1188
Gifts4AllAges.com	Boston	MA	1216
Collectables For Less Inc.	Brickhaven	MA	1188
Online Mini Collectables	Brickhaven	MA	1188
Auto-Moto Classics Inc.	Brickhaven	MA	1216
Gift Depot Inc.	Bridgewater	CT	1323
Signal Collectibles Ltd.	Brisbane	CA	1165
West Coast Collectables Co.	Burbank	CA	1166
Technics Stores Inc.	Burlingame	CA	1165
Marta's Replicas Co.	Cambridge	MA	1216
Cambridge Collectables Co.	Cambridge	MA	1188
Gift Ideas Corp.	Glendale	CT	1323
Boards & Toys Co.	Glendale	CA	1166
Signal Gift Stores	Las Vegas	NV	1166
Men 'R' US Retailers, Ltd.	Los Angeles	CA	1166
Microscale Inc.	NYC	NY	1286
Classic Legends Inc.	NYC	NY	1286
Vitachrome Inc.	NYC	NY	1286

Figure 7-18 Duplicate values in columns

As Figure 7-19 shows, the report appears neater and more organized when duplicate values are not repeated. If a column extends across multiple pages, the first row on each page displays a value, even if duplicate values are suppressed for that column.

customerName	city	state	salesRepEmployeeNumber
Diecast Classics Inc.	Allentown	PA	1216
Diecast Collectables	Boston	MA	1188
Gifts4AllAges.com			1216
Collectables For Less Inc.	Brickhaven		1188
Online Mini Collectables			
Auto-Moto Classics Inc.			1216
Gift Depot Inc.	Bridgewater	CT	1323
Signal Collectibles Ltd.	Brisbane	CA	1165
West Coast Collectables Co.	Burbank		1166
Technics Stores Inc.	Burlingame		1165
Marta's Replicas Co.	Cambridge	MA	1216
Cambridge Collectables Co.			1188
Gift Ideas Corp.	Glendale	CT	1323
Boards & Toys Co.		CA	1166
Signal Gift Stores	Las Vegas	NV	
Men 'R' US Retailers, Ltd.	Los Angeles	CA	
Microscale Inc.	NYC	NY	1286

Figure 7-19 A report suppressing duplicate values

How to suppress duplicate values in a column

Select and right-click the column containing duplicate values. Choose Column→Do Not Repeat Values.

How to show hidden duplicate values in a column

Select and right-click a column that does not repeat duplicate values. Choose Column→Repeat Values.

A report displays the values for the Customer Number and Credit Limit columns multiple times for the same customer. By moving the data row values to the group header, you limit the appearance of these fields of data so that they only appear once, as shown in Figure 7-20.

Customer Country	Customer Name	Customer Number	Credit Limit	Product Line	Product Name
Oustralia					
	⊖Anna's Decorations, Ltd	276	107800		
				Classic Cars	1993 Mazda RX- 7
				Classic Cars	1965 Aston Martin DB5
				Classic Cars	1995 Honda Civic
				Classic Cars	1999 Indy 500 Monte Carlo SS
				Classic Cars	1992 Ferrari 360 Spider red

Figure 7-20 A report suppressing duplicate values in a group

How to suppress duplicate values in a grouped column

1 Select and right-click the column with the duplicate values. Choose Column→Move to Group Header.

- **2** On Move to Group Header, as shown in Figure 7-21, perform the following tasks:
 - Select the group to which you want to move the data values, if the report contains more than one group.
 - Select the header row to which Interactive Viewer should move the data values.

Move to Grou	p Header	×
Move to group:	customerName	•
Header row:	1	•
	Cancel	ОК

Figure 7-21 Selecting a group header

Repeat this step for each report column for which you want to move data rows to the group header. Choose OK. The value from the first data row in each group appears in each group header. The Product Line, Customer Number, and Credit Limit columns display a single data row for each Customer Name group header, as shown in Figure 7-22.

Customer Country	Customer Name	Product Line	Customer Number	Credit Limit	Product Name
 Australia 					
	⊖Anna's Decorations, Ltd	Classic Cars	276	107800	
					1993 Mazda RX-7 1965 Aston Martin DB5 1995 Honda Civic 1999 Indy 500 Monte Carlo SS 1992 Ferrari 360 Spider red 1948 Porsche Type 356 Roadster



Filtering data

Filtering enables you to present the information that answers specific business questions, such as which sales representatives generated the top 10 sales accounts, which products generated the highest profit in the last quarter, which customers have not made a purchase in the past 90 days, and so on.

Using Interactive Viewer, you can filter data at the report table level to narrow the scope of data in a table, and also remove unwanted fields of data that show too much information. You can also filter data for report elements such as charts.

Sometimes when you view a report with existing filters, the report requires you to enter parameter values to determine which data to display each time you run the report. You can view specific data in the report by modifying these parameter values.

Creating a filter

T

To create a filter, you define a condition specifying which data rows to display. A filter condition is an If expression that must evaluate to True for a data row to be included. The following list shows examples of possible filter conditions:

```
If the credit limit is greater than 100000
If the sales office is San Francisco
If the order date is between 4/1/2008 and 6/30/2008
```

Figure 7-23 shows an example of a filter condition. When defining a filter condition, you can break it down into the following parts, as shown in Figure 7-23:

- The column to evaluate, such as credit limit
- The comparison operator specifying the type of comparison test, such as Equal To
- The value to which all values in the column are compared, such as 100000



Figure 7-23 Creating a filter

When creating a filter condition, users can specify whether or not the aggregate data in the BIRT design is recalculated to meet the filter condition. This feature is useful when comparing the filtered data values with the unfiltered totals, for example, when performing a percentage calculation of the unfiltered aggregate totals. Table 7-1 lists examples of filter conditions.

Type of filter condition	Usage	Example
Multiple comparison values	Returns columns that are valid for more than one comparison value.	Country In USA, UK, France, Japan
Empty or blank values	Tests if a field contains a value or not.	E-mail Is Null, Email Is Not Null
Excluding data	Excludes data that fulfills the condition.	Country Not In USA, UK, France, Japan Order Amount Not Between 1000 and 5000 Product Code Not Like 'MS%'
Top or Bottom ' <i>n</i> ' values	Tests if the column value is within the top or bottom $'n'$ values.	Order Amount Top N 50 Median Price Bottom
	Use at the report table level or at the group level.	Percent 10
	Use the Top/Bottom N dialog box to modify a group level filter.	
Comparing to a date value	Compares the date-and-time values in a column to a specific date.	Order Date Equal To 3/26/2008
	The value supplied must be in one of the following formats, regardless of your locale:	Shipped Date Equal To 3/26/2008 2:30:00 PM
	3/26/2008	
	3/26/2008 2:30:00 PM	
	Use the calendar icon to select a date.	
Comparing to a string pattern	Tests if each string value in the column matches a string pattern.	Customer Like M%
Comparing to a value in another column	Tests values in one column against values in the specified column.	Price>MSRP

Table 7-1 Examples of filter conditions

How to create a filter

- 1 Select and right-click the column containing the data values to evaluate. For example, to create a filter that displays data rows based on specific values in the credit limit column, select the credit limit column.
- T
- **2** Choose Filter → Filter. Filter appears.
- **3** In Condition, select the comparison test, or operator, to apply to the selected column. Depending on the operator you select, Filter displays either one or two additional fields, or a completed filter condition.

- **4** If you select an operator that requires a comparison value, you can specify the value in one of the following ways:
 - Type the value.
 - Choose Select Values to select from a list of existing data values. Figure 7-24 shows how you can select a credit limit value of 11000 from the list of possible credit limit values. Use the Previous and Next buttons to navigate the list of values that appears.
- **5** Select or deselect Recalculate Totals based on whether you want the aggregate data in the report to be modified or not. Choose OK.

Filter		\times
Filter By:	Customer credit limit	
Condition:	Equal To 🔹	
Value:	11000 Select Values	
	11000	
	21000	
	23000	
	23500	
	34800	
	20000	
	previous hext	
Recalculat	e lotals	
	Advanced Filter Clear Filter	
	Cancel	

Figure 7-24 Selecting a value for the filter condition

If the report or report element such as a chart contains no data that matches the filter condition, Interactive Viewer does not display any data. Make sure you test the filter by applying it and viewing the resulting report.

When you create a filter condition on a column containing Float or Double data type, the In or Equal to operators do not work as expected. To make sure you obtain the results you expect, do one of the following:

 When using the In operator in a filter condition specified on a computed column, make sure you round the values in the column to a specified number of digits. For example, the following expression rounds the value obtained by three decimal places:

ROUND([dbo_ITEMS:PRICEQUOTE]*[dbo_ITEMS:QUANTITY]*0.001, 3)

• Use the Between operator in filter conditions in place of the Equal to operator.

Selecting multiple values for a filter condition

Sometimes you need to view a wider range of data, such as details for several asset types, not only for a single asset type, as shown in Figure 7-25.

Filter		\times
Ciltar D	6 t	
Fitter by:	Accounts	
Condition:	In •	
Value:	Bonds	
	Cash	
	Add Values Delete Values	
Find Value:	Find)
	Bonds	
	Cash	
	Funds	Hide
	Stock	<u>List</u>
	previous next	
🗹 Recalculat	e Totals	
	Advanced Filter Clear Filter	
	Cancel	ОК

Figure 7-25 Selecting multiple values for a filter condition

To select more than one comparison value, select the In operator, choose Select Values, then select each value. Use the Previous and Next buttons to navigate the list of values that appears. Figure 7-25 shows the selection of Bonds and Cash from a list of asset value types. Choose OK.

Alternatively, type the values in Enter Values, separated by a delimiter such as newline, or copy and paste the values. Then, choose Add Values, as shown in Figure 7-26.

Filter By	Customer City
Condition	In 💌
Value	*
Enter Value(s)	Add Value(s) Delete Value(s) Nantes (h) Las Vegas Melbourne
	Enter values with delimiter: Newline

Figure 7-26 Adding multiple values to a filter condition

To remove values from a filter condition, type the values in Enter Values, separated by a delimiter such as newline, or copy and paste the values. Then, choose Delete Values, as shown in Figure 7-27.

Filter By	Customer City
Condition	In 💌
Value	Nantes Las Vegas Melbourne
Enter Value(s)	Add Value(s) Delete Value(s) Las Vegas
	Enter values with delimiter: Newline

Figure 7-27 Deleting a value from a filter condition

Make sure none of the values in Value is selected. Selected values are also deleted when you choose Delete Values. For example, in Figure 7-28, when you choose Delete Values, Las Vegas and Melbourne are deleted, not just Las Vegas. If any of the values in Value is selected, Ctrl-click the value to deselect it.

Filter By	Customer City
Condition	In 🗸
Value Enter Value(s)	Nantes Las Vegas Melbourne Add Value(s) Delete Value(s)
	Enter values with delimiter: Newline

Figure 7-28 Deleting a selected value from a filter condition

The default delimiter is the newline character. To change the delimiter, you must change the value of the FilterValueDelimiter parameter in AC_SERVER_HOME \modules\BIRTiHub\iHub\web\iportal\WEB-INF\web.xml. Supported delimiters include comma (,), semicolon (;) and newline. For example, to change the delimiter to a comma (,) modify web.xml as follows:

```
<context-param>
<param-name>FilterValueDelimiter</param-name>
<param-value>,</param-value>
</context-param>
```

Defining multiple filter conditions

You can add as many filter conditions as you want, but each condition narrows the scope of data further, and adds complexity to the filter. Design and test filters with multiple conditions carefully. As you add filter conditions, Interactive Viewer inserts the logical operator And between each filter condition. You can change this operator to Or. You can also add the Not operator to either the And or Or operators to exclude a small set of data.

When you define more than two conditions, you can use parentheses to group conditions to get the results you expect. For example, A And B Or C is evaluated in that order, so A and B must be true or C must be true to include a data row. In A And (B Or C), B Or C is evaluated first, so A must be true and B Or C must be true to include a data row.

To define multiple filter conditions, use the Advanced Filter dialog box, shown in Figure 7-29. Advanced Filter displays all the filter conditions defined for the report table or chart element. You can also use Advanced Filter to modify or delete existing filter conditions.

Advanced Fi	lter	\times
Filter By:	Product line •	
Condition:	Equal To 👻	
	 Specify literal value O Use value from data field 	
Value:	Vintage Cars Select Values	
Find Value:	Find	
The value.	motorcycles	
	Planes	
	Ships	
	Trains	
	Trucks and Buses	
	Vintage Cars 🔽	
	previous next	
	Add Condition Change Condition	
Filters:		
Sales office =	San Francisco	
or PRODUCTI	INF = Vintage Cars	
on Roboon	()	
	Delete Validate	
Recalculate	e Totals	_
	Cancel	

Figure 7-29 Adding a filter condition

How to define multiple filter conditions

- T
- **1** Select and right-click the report column that contains the values to evaluate, then choose Filter.
- **2** In Filter, choose Advanced Filter. Advanced Filter appears. Filter By displays the selected column.
- **3** Define the first filter condition as follows:
 - 1 In Condition, select a comparison operator.

2 In Value, select or type the comparison value. For conditions that test equality and for the Between condition, you can either set a literal value or you can base the value on another data column by selecting the Use value from data field option. For example, you can request actual shipping dates that are greater than the forecast shipping dates, or actual sales that are less than sales targets.

The conditions that support basing the filter value on another column are Equal to, Not Equal to, Less Than, Less Than or Equal to, Greater Than, Greater Than or Equal to, Between, and Not Between.

3 Choose Add Condition.

The filter condition appears in the Filters area, as shown in Figure 7-30.

Advanced F	ilter	<
Filter By:	Product line -	
Condition:	Equal To 🔹	
	Specify literal value O Use value from data field	
Value:	Vintage Cars Select Values	
Find Value:	Find	
	- A	
	Planes	
	Ships	
	Trains	
	Vintage Cars	
	previous next	
	Add Condition Change Condition	
Filters:		Filter conditions
Sales office -	- San Francisco	
and PRODUC	TINE=Vintage Cars	
anarresse	()	
	Delete Validate	
🗸 Recalculat	e Totals	
	Cancel OK	

Figure 7-30 Adding or modifying a filter condition

- **4** Define the second filter condition as follows:
 - 1 In Filter By, select another column.
 - 2 In Condition, select a comparison operator.
 - **3** In Value, select or type the comparison value. You can select Specify literal value, or Use value from data field.
 - 4 Choose Add Condition.

In the Filters area, the second filter condition appears below the first condition, as shown in Figure 7-30. By default, the second condition is preceded by the logical operator, AND.

- 5 Choose a different logical operator, if necessary.
- **6** Add additional filter conditions using the previously outlined method.
- 7 If you create more than two filter conditions and you use different logical operators, you can use the Parentheses buttons to group conditions and define the order of evaluation of the filter conditions.
- 8 Choose Validate to verify the syntax of the filter conditions.
- **9** Select or deselect Recalculate Totals based on whether you want the aggregate data in the report to be modified. Choose OK.
- **10** Verify that the report displays the results you need.

How to modify a filter condition

In Advanced Filter, in the Filters area, select the condition to modify, as shown in Figure 7-31. Modify the condition by changing the values in the Filter By, Condition, or Value fields. Then, choose Change Condition. Select or deselect Recalculate Totals based on whether you want the aggregate data in the report to be modified. Choose OK to apply the modified condition.

Advanced F	ilter		×
Filter By:	Sales office	•	
Condition:	Equal To	•	Modify the condition
	 ● Specify literal value ○ Use value from data field 		
Value:	San Francisco	Select Values	
Find Value:		Find	
	Classic Cars		
	Motorcycles		
	Planes		
	Ships		Select the conditio
	Trains	•	
	previous next		
/	Add Condition Change Condition	1	
Filters:			Choose Change
Sales office =	= San Francisco	and or not	Condition
and PRODUC	CTLINE = Vintage Cars		Conduction
		()	
		Delete Validate	
🗸 Recalculat	te Totals		
		Cancel	к

Figure 7-31 Changing a filter condition

When working with Interactive Viewer, you can only modify filters that you create in Interactive Viewer. Interactive Viewer operates on a report document file generated from a BIRT design, so you cannot modify any filters defined using report designers such as Report Studio or BIRT Designer Professional. When you specify a filter condition using Interactive Viewer and save the modified report as a BIRT design file, you must use the report designer tools to modify this filter

condition. You cannot modify this filter condition using Interactive Viewer because Report Studio and BIRT Designer Professional reapply the filters when you generate the report. Interactive Viewer displays the filtered report document file.

How to delete a filter condition

To delete a condition, select the condition in Filter. Then, choose Clear Filter. Choose OK.

To delete an advanced filter condition, in the Filters area in Advanced Filter, select the condition. Then, choose Delete.

Verify that the remaining filter conditions are still valid.

If you perform the following steps, you cannot remove a filter condition:

- 1 In Interactive Viewer, open an .rptdesign file that contains a chart.
- **2** Apply a filter to the chart.
- **3** Save and close the .rptdesign file.
- 4 Open the saved .rptdesign file.
- **5** Remove the filter from the chart.

The chart data is still filtered because, when you saved the .rptdesign file, only the data that appeared in the report at that point (the filtered data) was saved, so removing the filter has no effect.

Working with merged columns

Using Interactive Viewer, you can format, sort, aggregate, and filter data in a merged column. When working with merged columns, when you choose Filter from the context menu, Select Data Item appears, as shown in Figure 7-32, providing a drop-down list of columns in the merged column.

Select Data Item	\times
ADDRESSLINE1	•
Cancel	OK

Figure 7-32 Selecting a data item

From the drop-down list, select the data item or column to modify. Choose OK.

You can now modify data in the column as described in the previous sections of this document. To modify each column in the merged column, repeat this step for each data item, and specify a modification action.

Working with summary tables

Using Interactive Viewer, you can modify summary tables. Table 7-2 compares the actions you can perform on dimension, attribute, and measure columns in a summary table.

Action	Dimension	Attribute	Measure
Create filters.	1	1	1
Delete the column.	1	1	\checkmark
Edit and format the column header.	1	1	\checkmark
Filter data using the Top/Bottom N condition.			1
Format data.	1	1	1
Modify aggregate data.			\checkmark
Show or hide columns.	1	1	1
Sort column data in ascending or descending order.	1	1	

 Table 7-2
 Modification options for data in a summary table

Chapter

8

Editing and formatting a report

This chapter contains the following topics:

- About editing and formatting options
- Formatting report data based on conditions
- Working with data formats

About editing and formatting options

Interactive Viewer provides you with the flexibility to modify the presentation properties of reports. This section discusses the editing and formatting options available to you.

You can use the context menu in a column in Interactive Viewer to define new font properties and change text alignment for a selected report column, or for the report table. You can also specify these style properties for one column, and copy the style to other columns. You can highlight report data based on certain defined conditions and format data, depending on the type of data in a column. For example, you can format data into currency, telephone number, postal code, date-and-time, or decimal formats.

How to select and format a report element

In a report table, you can format column headers as well as data in the columns. Select and right-click the element, then choose the formatting option from the menu that appears.

Select and right-click a column header and choose a formatting option from the context menu. To select data for formatting, select and right-click the column. A box appears, highlighting the selected element and displaying the menu of available options.

Formatting report data based on conditions

When you format data in a selected column, the format applies to all the values. Often, it is useful to change the format of data when a certain condition is true. For example, you can display numbers in red if the value is a negative number and in black if the value is a positive number. Conditional formatting is the formatting of data according to defined conditions.

You can also change the format of data in a column according to the values in another column. For example, in a report showing customer names and the number of days each customer's invoice is past due, you can highlight in blue any customer name that has an invoice past-due value between 60 and 90 days. Then, you can highlight in red and bold any customer name that has an invoice past-due value greater than 90 days.

As another example, in a sales inventory report, when you apply conditional formatting to the Product column, you can define the condition based on the Quantity in Stock column, such that conditional formatting is applied to the Product column if the quantity in stock is below a specified value. After you create the condition, you define the format in which to display data that satisfies

the condition. The formatting appears on the selected column and not on the column on which you based the condition.

To apply conditional formatting, you create a rule defining when and how to change the appearance of data. You can apply conditional formats only to data in columns. The rule consists of the condition that must be true, and the text attributes to apply to column entries that satisfy the condition. You can define up to three conditions or rules for a single column and remove or modify conditional formatting for a column.

How to set conditional formats

1 To define the condition, select and right-click the column on which to display conditional formatting. Choose Format→Conditional Formatting. Conditional Formatting appears, as shown in Figure 8-1. The example shown in Figure 8-1 highlights all customers with a credit limit of less than \$100,000.

Conditional Fo	rmatting	×	
Selected Column:	Customer credit limit	Delete Rule	Select formatting options
Format	AaBbCeYyZz		Preview of the selected format
Column Name:	Customer credit limit	•	
Condition:	Less Than or Equal to		The condition to meet to apply
Value:	100000	Change Value	the format
	Add Rule		
		Cancel OK	

Figure 8-1 Defining conditional formatting

The report in Figure 8-2 displays conditional formatting for the data fields in the Credit Limit column that satisfy the defined condition.

Customer country	Customer name	Contact	Customer credit limit
⊖Australia			
	Australian Collectors, Co.	Peter Ferguson	\$117,300
	Souveniers And Things Co.	Adrian Huxley	\$93,300
	Australian Gift Network, Co	Ben Calaghan	\$51,600
	Souveniers And Things Co.	Adrian Huxley	\$93,300
	Australian Gift Network, Co	Ben Calaghan	\$51,600
	Australian Collectables, Ltd	Sean Clenahan	\$60,300
⊖Austria	Souveniers And Things Co.	Adrian Huxley	\$93,300
	Salzburg Collectables Mini Auto Werke	Georg Pipps Roland Mendel	\$71,700 \$45,300
	Salzburg Collectables	Georg Pipps	\$71,700
	Mini Auto Werke	Roland Mendel	\$45,300
	Salzburg Collectables	Georg Pipps	\$71,700



- **2** In Conditional Formatting, create a rule specifying the following information, then choose OK:
 - The format to apply, such as bold style. Choose Format to select formatting options.
 - The condition that must be true to apply the format, such as Credit Limit Less Than or Equal to 100000.

Specifying a condition

The condition in a conditional formatting rule is an If expression that must evaluate to True. For example:

```
If the order total is less than 1000
If the customer credit limit is between 100000 and 200000
If the sales office is Tokyo
If the order date is 7/21/2008
```

The Conditional Formatting dialog box helps you construct the If expression by breaking it down into its logical parts. In Figure 8-1, the expression consists of three parts. In Figure 8-3, the expression has four parts.

In Column Name, select a column. This column contains the value that determines when conditional formatting takes effect. The column you select here does not have to be the same as the column that you selected for formatting in the report. For example, if Product Name is the column selected for formatting, you can select Profit in this field to indicate that for a certain profit amount, conditional formatting applies to the product name.

Conditional Fo	Conditional Formatting ×			
Selected Column:	CREDITLIMIT			
				Delete Rule
Format		Preview		
Column Name:	CREDITLIMIT		•	
Condition:	Between		•	
Value:	100000			Change Value
Value:	200000			Change Value
	4	Add Rule		
				Cancel OK

Figure 8-3 Selecting data fields between two values

In Condition, select the comparison test, or operator, to apply to the column you selected. You can select Equal to, Less than, Less Than or Equal to, and so on. If you select Is Null, Is Not Null, Is True, or Is False, the If expression does not require additional information.

If you select an operator that requires a comparison to one or more values, one or more additional fields appear. For example, if you select Less Than or Equal to, a third field appears. In this field, type the comparison value. If you select Between or Not Between, a third and fourth field appear. In these fields, type the lower and upper values, respectively, as shown in Figure 8-3.

Comparing to a literal value

The conditional expression, shown in Figure 8-3 in the previous section, evaluates the Credit Limit column and compares each value to determine if it matches a value between 100000 and 200000. The 100000 and 200000 values are literal values that you type.

Alternatively, you can select a value from the list of values in the Credit Limit column. Selecting from a list of values is useful if the comparison value is a customer name and you do not know the exact customer names, or if the comparison value is a date and you do not know the date format to type. If the comparison value is a date, Interactive Viewer also provides a calendar tool, which you can use to select a date.

How to select a comparison value from a list of values

1 On Conditional Formatting, choose Change Value, below the Condition field.

Select Values appears. Choose Specify literal value, then choose Select Values. The values in the selected column appear.

2 Select a value from the list, then choose OK. The value appears in the comparison value field on Conditional Formatting.

Comparing to a value in another column

In a conditional expression, you can compare the values of one column with the values of another column. For example, in a report that displays products, sales prices, and MSRP (manufacturer suggested retail price), you can create a conditional formatting rule that compares the sales price and MSRP of each product, and highlight the names of the products whose sales price is greater than the MSRP.

How to compare to a value in another column

- 1 On Conditional Formatting, choose Change Value, below the Condition field.
- **2** On Select values, select Use value from data field. A list of columns used in the report appears.
- **3** Select a column from the list, then choose OK. The column name appears in the comparison value field on Conditional Formatting.

Figure 8-4 shows a condition that compares the sales price with the MSRP value. If the sales price value is greater or equal, the product name appears in bold.

Conditional Formatting X				
Selected Column:	Product Name			
		Delete Rule		
Format	AaBb CcYyZz			
Column Name:	Price	-		
Condition:	Greater Than or Equal to	-		
Value:	[MSRP]	Change Value		
	Add Rule			
		Cancel OK		

Figure 8-4 Comparing data to a value in another column

You can now define up to two additional rules for the report column on Conditional Formatting. Choose OK. Figure 8-5 shows the conditional formatting applied to the report column.

Product Line	Product Name	Sale Price	MSRP
⊖Vintage Cars			
	18th Century Vintage Horse Carriage	\$84.82	\$104.72
	1917 Maxwell Touring Car	\$81.35	\$99.21
	1913 Ford Model T Speedster	\$101.31	\$101.31
	1913 Ford Model T Speedster	\$87.13	\$101.31
	1941 Chevrolet Special Deluxe Cabriolet	\$105.87	\$105.87

Figure 8-5 Report displaying conditional formatting

Specifying multiple conditional formatting rules

You can create up to three conditional formatting rules for a single column. You can, for example, create three rules to set the values of a profit column to one of three colors, depending on its value. Figure 8-6 shows this example.

□Sales Office:	Boston		
Product Line	Product Name	Total	Profit
EClassic Cars			
	1969 Corvair Monza	\$3,345.03	\$938.25
	1969 Dodge Charger	\$3,230.37	\$1,292.28
	1969 Dodge Charger	\$2,674.08	\$1,088.37
	1969 Dodge Charger	\$2,542.80	\$1,133.28
	1969 Dodge Super Bee	\$2,964.00	\$1,100.10
	1969 Dodge Super Bee	\$2,692.08	\$926.28
	1969 Ford Falcon	\$6,324.01	\$2,752.86
	1969 Ford Falcon	\$5,803.20	\$2,564.25
	1970 Chevy Chevelle SS 454	\$2,664.74	\$842.86
	1970 Chevy Chevelle SS 454	\$2,050.50	\$573.30
	1970 Dodge Coronet	\$2,832.20	\$1,246.07
	1970 Dodge Coronet	\$2,184.75	\$728.10
	1970 Plymouth Hemi Cuda	\$2,577.54	\$1,364.58
	1970 Plymouth Hemi Cuda	\$1,558.41	\$888.09
	1970 Triumph Spitfire	\$4,984.98	\$1,400.10
	1970 Triumph Spitfire	\$5,744.80	\$2,068.00

Figure 8-6	A report with multiple conditional formatting rule	es
------------	--	----

For each row of data in the report, Interactive Viewer evaluates the rules in the order in which they appear in the list of rules. As it evaluates each rule, Interactive Viewer applies the specified format properties if the condition is met.

When creating multiple rules for a column, be careful that the conditions do not cover overlapping values. Consider the following scenario:

- The first rule sets a profit value to blue if the value exceeds 5000.
- The second rule sets the profit value to pink if the value exceeds 1000.

If the profit value is 6000, the value appears in pink, not blue as you expect, because the condition in both rules is true (6000 exceeds 5000 and 1000), and the second rule supersedes the first rule. For the rules to make sense, the second rule should set the profit value to pink if the value is between 1001 and 5000.

Working with data formats

Data types are types of values—numbers, strings, and Booleans, for example—that you can manipulate in any programming language. Every element of report data has a certain data type, and every expression that you create returns a value of a particular data type.

This concept is important because, if the expression you type does not handle data types properly, you do not obtain the expected results. For example, you cannot perform mathematical calculations on numbers if they are of string type, and you cannot convert values in a date field to uppercase characters.

If you type an expression to manipulate a data field, make sure you verify its type, particularly if the data consists of numbers. Numbers can be of string type or numeric type. For example, databases typically store postal codes and telephone numbers as strings. Item quantities or prices are always of numeric type so that you can manipulate the data mathematically. IDs such as customer IDs or order IDs are usually of numeric type so that the application can store them in numeric order, such as 1, 2, 3, 10, 11, rather than in alphanumeric order, such as 1, 10, 11, 2, 3.

To view the data type of a column, select the column and choose Format → Format Data from the context menu. The name of the dialog box that appears tells you the type of data in the column. For example, if you select the credit limit column, the dialog box that appears is called Number column format.

When working with multiple columns containing the same data type, you can use Interactive Viewer to specify a format for the data in one column, and copy the format to other columns. This section also explains how to copy other formatting properties.

Understanding standard formats

Interactive Viewer provides common formats to change how numbers appear. You can, for example, display numbers with or without decimal values, in scientific notation, as a percentage, or as currency with the appropriate symbol. Sometimes, even though a column displays numbers, the data can have a string data type. Postal codes, for example, are frequently stored as string data. Numeric formats do not apply to numbers of string type. When you work with merged columns, select each column from the drop-down list of columns in the merged column, and define a new format each time, based on the column's data type.

Applying a standard number format

Table 8-1 shows the standard number formats that Interactive Viewer supports. The examples in the table reflect the English (United States) locale. If you work in a different locale, the data appears differently. For example, a number that appears as 1352.45 in the English (United States) locale appears as 1352,45 in the French (France) locale.

Format	Example of data display
General Number	6066.45 or 6066.5 or 6067, depending on the original value. This format displays up to two decimal places. Whole numbers and numbers with one or two decimal places appear in their original format.
Currency	\$6,067.45 or ¥6067 or 6067€, depending on the symbol, symbol position, decimal place, and thousands separator values that you set.
Fixed	6067 or 6067.5 or 6,067.45, depending on the decimal place and thousands separator values that you set.

Table 8-1	Standard number	formats

Table 8-1	Standard number formats
Format	Example of data display
Percent	45% or 45.8% or %45, depending on the symbol position and decimal place values that you set. This format multiplies the original value by 100 and adds the percent (%) symbol.
Scientific	2E04 or 2.67E04, depending on the decimal place value you set. The number after the E represents the exponent of 10. For example, 2.67E04 means 2.67 multiplied by 10 raised to the fourth power.

How to apply a standard number format

1 Select and right-click a column that contains numeric data. Choose Format → Format Data.

Number column format appears, as shown in Figure 8-7.

Number column format		×
Format Number as:	Currency	•
Symbol:	\$	•
Symbol Position:	Before	-
Decimal Places:	2	•
	Use 1000s Separator	
Negative Numbers:	-1234.56	•
	Cancel	OK

Figure 8-7 Setting number column format

2 On Number column format, in Format Number as, select a format. For example, you can format the credit limit column as currency in dollars (\$). Select the appropriate options from the remaining drop-down lists on Number column format. Choose OK.

You can select a standard format or define a custom format. Standard and custom formats are described in the next sections.

Applying a standard date-and-time format

Table 8-2 shows the supported standard date-and-time formats. The examples in the table reflect the English (United States) locale. If you work in a different locale, the date appears differently. For example, a date that appears as

March 5, 2008 in the English (United States) locale appears as 5 mars 2008 in the French (France) locale.

Format	Example of data display
General Date	March 5, 2008 4:42:00 PM PDT
Long Date	March 5, 2008
Medium Date	Mar 5, 2008
Short Date	3/5/08
Long Time	4:42:00 PM PDT
Medium Time	4:42:00 PM
Short Time	16:42

 Table 8-2
 Standard date-and-time formats

How to apply a standard date-and-time format

- 1 Select and right-click a column that contains date-and-time data. Choose Format→Format Data.
- **2** In Date column format, select one of the formats from the list. Choose OK.

Applying a standard Boolean format

A Boolean expression evaluates to True or False. For example, consider a calculated column displaying values for the following expression:

ActualShipDate <= TargetShipDate

If the actual ship date is before or on the target ship date, the expression evaluates to True. If the actual ship date is after the target ship date, the expression evaluates to False. If you do not format a column of Boolean data type, the column displays the values True and False. To specify different labels, select the column, and from the context menu, choose Format → Format Data. Type the new labels on Boolean column format, as shown in Figure 8-8.

Boolean column	format	×
For "True", show:	True	
For "False", show:	False]
	Cancel OK	

Figure 8-8 Specifying display values for True and False

Applying a standard string format

Table 8-3 describes the string formats that you can choose and illustrates how the formatted data appears.

Format Description Lowercase The string appears in all lowercase, for example: john smith Uppercase The string appears in all uppercase, for example: JOHN SMITH

Table 8-3 Standard string formats

How to apply a standard string format

- Select and right-click a column that contains string data. Choose Format → Format Data.
- **2** In String column format, select one of the formats from the list.

Choose OK.

Understanding custom formats

Interactive Viewer also enables you to specify a custom format for numeric, date-and-time, and string data, in cases where the available standard formats do not meet your requirements. To apply a custom format to data, you specify a format pattern.

Defining a custom number format

You can define a custom number format using special symbols to construct a format pattern. A format pattern shows where to place currency symbols, thousands separators, and decimal separators. Table 8-4 shows examples of custom format patterns and their effects on numeric data.

Format pattern	Data in the database	Result of formatting
0000.00	12.5 124.5 1240.553	0012.50 0124.50 1240.55
#.000	100 100.25 100.2567	100.000 100.250 100.257
		(continues)

Table 8-4	Results of	f custom	number	formats
	itesuits 0	i custom	number	ionnais

Format pattern	Data in the database	Result of formatting
\$#,###	2000.00 20000.00	\$2,000 \$20,000
ID #	15	ID 15

 Table 8-4
 Results of custom number formats (continued)

Defining a custom date-and-time format

You can define a custom date-and-time format using special symbols, shown in Table 8-5, to construct a format pattern. Use custom date formatting only for reports viewed in a single locale. Custom formats always display dates in the format you set, which can be inappropriate in other locales. For example, if you use the format MM-dd-yy, the date January 10, 2006 always appears as 01-10-06, regardless of the locale in which you view the report. For locales that customarily display dates in day-month-year format, Interactive Viewer interprets the date 01-10-06 as October 1, 2006.

Symbol	Description	Example
уу	Short year	08
уууу	Long year	2008
MM	Month as a number	07
MMM	Short month name	Jul
MMMM	Full month name	July
d	Day in month	10
W	Week in month	2
W	Week in year	28
DD	Day in year	192
Е	Short day of week	Thu
EEEE	Long day of week	Thursday
Н	Hour in day (0 - 23)	0
k	Hour in day (1 - 24)	24
Κ	Hour in AM/PM (0 - 11)	0
h	Hour in AM/PM (1 - 12)	12
a	AM/PM	12:00:00AM
mm	Minutes	30
SS	Seconds	55

 Table 8-5
 Symbols for defining custom date-and-time formats

Table 8-6 shows examples of custom formats and their effects on a date stored as April 15, 2006 12:15:30 PM in the database.

Result of formatting Format pattern MM-dd-yy 04-15-06 E, M/d/yyyy Fri, 4/15/2006 MMM d Apr 15 MMMM April 2006 уууу W 3 (the week in the month) 15 (the week in the year) w DD 105 (the day in the year) h:mm:ss 12:15:30

 Table 8-6
 Results of custom date formats

Defining a custom string format

You can define a custom string format using special symbols to construct a format pattern. Table 8-7 describes these symbols. See Table 8-8 for examples.

	Cymbols for denning edstorn string formats
Symbol	Description
@	Character placeholder. Each @ character displays a character in the string. If the string has fewer characters than the number of @ symbols that appear in the format pattern, spaces appear. Placeholders are filled from right to left, unless you specify an exclamation point (!) at the beginning of the format pattern.
&	Same as @, except that if the string has fewer characters, spaces do not appear.
!	Specifies that placeholders are to be filled from left to right.
>	Converts string characters to uppercase.
<	Converts string characters to lowercase.

 Table 8-7
 Symbols for defining custom string formats

Table 8-8 shows examples of custom string format patterns and their effects on string data.

Format pattern	Data in the data source	Results of formatting
(@@@) @@@-@@@@	6175551007 5551007	(617) 555-1007 () 555-1007
పడిచిపి-పడిప (పడిపి)	6175551007 5551007	(617) 555-1007 () 555-1007
!(@@@) @@@-@@@@@	6175551007 5551007	(617) 555-1007 (555) 100-7
పిపిచిచి-పడిపి (పిపిపి)!	6175551007 5551007	(617) 555-1007 (555) 100-7
!(@@@) @@@-@@@@ + ext 9	5551007	(555) 100-7 + ext 9
!(&&&) &&&-&&&&+ ext 9	5551007	(555) 100-7 + ext 9
&&-&&&&	D1234567xy	D12-34567-XY
<&&&-&&&&	D1234567xy	d12-34567-xy

Table 8-8 Results of custom string formats

Reverting to default formats

If you applied a number, date-and-time, or string format to a column of data, you can restore these formats to those in the original report. Select and right-click the column. Choose Format > Format Data. Then, select Unformatted from the drop-down list.

Copying a format to other columns

When working with columns of similar data types, you can apply a format to data in one column, and copy the format to data in other columns. For example, consider a simple report that lists sales price, profit, and revenue for products sold in a region. If you format the sales price column as currency in US dollars, you can copy this format to the profit and revenue columns, so that all amounts are formatted as currency in US dollars.

How to copy a data format

1 Select and right-click the column containing the formatting properties you want to share. Choose Format → Copy Format. Copy Format appears, as shown in Figure 8-9.

Copy Format	×
Country	
	Cancel OK

Figure 8-9 Sharing formatting properties with other columns

2 Select the column to which you want to copy the current formatting properties. To select multiple columns, press Ctrl, then select each column.

Choose OK. The report displays the copied formatting properties in the specified columns.

Chapter

9

Modifying charts and gadgets

This chapter contains the following topics:

- Types of charts
- Modifying charts
- Modifying gadgets

Types of charts

Specific types of data are best depicted with a specific type of chart. This section describes the common types of charts you can modify in Interactive Viewer.

Working with bar charts

A bar chart displays data values as a set of horizontal bars. A bar chart is useful for displaying data side by side for easy comparison. There are three subtypes of bar charts: side-by-side, stacked, and percent stacked. The stacked and percent stacked bar chart are functionally similar to the stacked area chart and percent stacked area chart subtypes.

In a side-by-side bar chart, multiple series appear as side-by-side bars, as shown in the chart on the left in Figure 9-1.

In a stacked bar chart, multiple series are stacked horizontally, as shown in the chart in the center in Figure 9-1. The stacked bar chart shows totals for each category, each product line in this example, as well as the proportion that each series contributes to the total.



Figure 9-1 Side-by-side, stacked, and percent stacked bar charts

In a percent stacked bar chart, multiple series are stacked horizontally, and the values are shown as a percentage of the whole. As shown in the chart on the right

in Figure 9-1, the sales values are shown in percentages instead of the actual numbers shown in the other bar charts.

The percent stacked bar chart is meaningful only when displaying and comparing multiple series. Do not use this chart subtype if you are displaying only one series, for example, only sales for Asia.

Working with column charts

A column chart displays data values as a set of vertical bars. Categories appear on the horizontal axis and values appear on the vertical axis. As with a bar chart, this layout is useful for displaying data side by side for easy comparison, as shown in the chart on the left in Figure 9-2.

This chart type also supports a stacked or percent stacked subtype that shows the relationships of values in each category to the whole, as shown in the charts in the center and on the right in Figure 9-2.





Working with line charts

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. A line chart is the most basic type of chart in finance. A line chart is similar to an area chart, except that the line chart does not fill in the area below the line. In an overlay line chart, multiple series appear as overlapping lines, as shown in the chart on the left in Figure 9-3. The line chart supports stacked and percent stacked subtypes.

In a stacked line chart, multiple series are stacked vertically, as shown in the chart in the center in Figure 9-3. The stacked line chart shows totals for each series, as well as the proportion that each series contributes to the total. In a stacked area chart, the filled-in areas provide a clear visual cue that each part is compared to the whole.

In a percent stacked line chart, multiple series are stacked vertically and the values are shown as a percentage of the whole. As shown in the chart on the right in Figure 9-3, the sales values appear in percentages instead of numbers. Like the percent stacked area chart, the percent stacked line chart makes sense only when displaying and comparing multiple series. Do not use this chart subtype if you are displaying only one series, for example, only sales for EMEA. Both the stacked line chart and the percent stacked line chart are not as effective as their area chart counterparts.

In addition, as the example shows, a user can easily misinterpret the data in a stacked line chart. There is no obvious indication that the top line shows the total sales amount for each product line, and the middle line shows the difference in the sales amount between EMEA and APAC.



Figure 9-3 Overlay, stacked, and percent stacked line charts

Working with meter charts

A meter chart displays a value as a needle pointer on a semicircle, called a dial. As Figure 9-4 shows, a meter chart resembles a speedometer, with tick marks and numbers showing a range of values. A meter chart supports standard and superimposed subtypes.

The standard meter chart typically creates a dashboard effect. A standard meter chart displays multiple values in multiple dials, where each dial displays a single value, as shown in the chart in Figure 9-4. The chart in this example displays quantities ordered by product line. A superimposed meter chart displays multiple values in a single dial, as shown in the chart on the right in Figure 9-5, which shows pointers that represent two distinct values: profit and revenue totals for each territory. Use the superimposed meter chart type when there are few values to display and when each value is distinct. Duplicate values result in overlapping needles, as shown in the superimposed meter chart on the left in Figure 9-5. In this chart, it is not easy to view the individual quantities ordered for each product line.









Working with pie charts

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. Use a pie chart to show the relationship of parts to the whole, for example, the order quantity each product line contributes to the total, as shown in Figure 9-6.



Working with doughnut charts

Doughnut charts are similar to pie charts. Doughnut charts are ring charts that consist of segments. Each segment represents a value that is proportional to the total value, as shown in Figure 9-7.



Figure 9-7 A doughnut chart

Working with scatter charts

A scatter chart presents data as *x*-*y* coordinates by displaying two sets of numeric values as 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. For example, use a scatter chart to compare salaries and years of experience or weight and body fat. The more data values you include in a scatter chart, the clearer the trends the data reveals.

The scatter chart in Figure 9-8 shows the relationship between quantity ordered and profit over three years. Each pair of values, quantity ordered and profit, is plotted as a single *x*-*y* value.


Figure 9-8 A scatter chart

Working with stock charts

A stock chart displays a stock's open, close, high, and low values for a set of trading dates. A stock chart can show the data for one stock or for multiple stocks. Although a stock chart is typically used to display stock data, you can also use it to chart other values such as four daily temperature values for a set of dates: high, low, sunrise, sunset. The stock chart has two subtypes: the candlestick and bar stick stock charts.

A candlestick stock chart consists of a series of boxes with lines extending up and down from the ends, as shown in the chart on the left in Figure 9-9. The top and bottom points of each line indicate the high and low values, respectively. The top and bottom of each box indicate the open and close values. If the close value is higher than the open value, the box is white. If the open value is higher than the close value, the box is shaded. This style enables you to see immediately whether a value posted a gain or a loss for a given day.



Figure 9-9 A candlestick and bar stick stock chart

A bar stick stock chart consists of a series of vertical bars with horizontal tick marks, as shown in the chart on the right in Figure 9-9. The top and bottom points of each bar indicate the high and low values, respectively. The horizontal tick marks indicate the open and close values. The tick mark on the left of the bar is the open value. The tick mark on the right of the bar is the close value. A bar stick stock chart typically shows the change in price over a period of time. The

candlestick stock chart shows the gain or loss pattern more clearly than the bar stick stock chart.

Working with radar charts

Radar charts compare the aggregate values of one or more series of data. A separate spoke from the chart center is shown for each category and each spoke is connected by an arc or line. A line is drawn connecting the data values for each spoke giving the chart a star-like appearance. Radar charts have two subtypes: standard radar charts and spider radar charts, shown in Figure 9-10.

A spider radar chart connects the outer spokes using lines and a standard radar chart uses arcs, as shown in the chart on the left in Figure 9-10. Radar charts are most effective for small data sets containing only a few hundred data rows. For larger data sets, or those containing a time series, use a line chart.



Figure 9-10 Standard and spider radar charts

Working with difference charts

A difference chart shows a variation between two sets of data by shading the area between points of comparison. A difference chart is useful when you want to display the deviation between two sets of data values, as shown in Figure 9-11.



Figure 9-11 A difference chart

Working with Gantt charts

A Gantt chart graphically presents project scheduling information by displaying the duration of tasks. One axis contains the time series, and the other contains tasks. Gantt charts use symbols on bars to mark beginning and ending dates. Bars can use multiple colors to differentiate between stages. The colors of the bars represent the task status. Figure 9-12 shows a Gantt chart.



Figure 9-12 A Gantt chart

Working with bubble charts

A bubble chart displays three sets of numeric data values at a time. Two values are data points with *x*-*y* coordinates on the axes. The third value defines the size of the bubble at each point. A typical use of a bubble chart is to present financial data such as quantity sold, profit margin, and total sales of multiple product lines. Figure 9-13 shows a bubble chart.



Figure 9-13 A bubble chart

Working with tube, cone, and pyramid charts

Interactive Viewer supports modifying tube, cone, and pyramid charts. These chart types are variations of the bar chart that use tubular, conical, and pyramid-shaped risers in place of bars. You use a bar, tube, cone, or pyramid chart to display data values as a set of vertical or horizontal columns.

You can use Interactive Viewer to modify the subtype of tube, cone, and pyramid charts to side-by-side, stacked, or percent stacked, depending on which type best represents the data being used.

The charts shown in Figure 9-14, Figure 9-15, and Figure 9-16 use the same data, profit and revenue by sales office, to illustrate these different chart types.



Figure 9-14 A tube chart showing profit and revenue by sales office







Figure 9-16 A pyramid chart showing profit and revenue by sales office

Modifying charts

The basic characteristics of a chart are determined in the report design. You can modify the chart in Interactive Viewer in the following ways:

- Change the chart subtype.
- Filter data.
- Format the chart.

To choose any of these options, select the chart to highlight it, then right-click the chart area to display the context menu containing these options.

Changing chart subtype

If a type of chart offers subtypes, you can change the subtype in Interactive Viewer.

How to modify the chart subtype

1 Select and right-click the chart. Choose Change Subtype.

2 In Chart Subtype, choose an option from the available subtypes. Choose OK to apply your selection.

Filtering chart data

You can filter chart data in the same way that you apply filters to data in a report column. In a chart, you can filter data on the *x*-axis or the *y*-axis. Select and right-click the chart, then choose Filter. Filter. Filter appears, as shown in Figure 9-17.

Filter	×	
Filter By:	COUNTRY	The column to evaluate
Condition:	Equal To 🔹	The value to which to compare
Value:	Select Values	
	Advanced Filter Clear Filter	
	Cancel OK	

Figure 9-17 Creating a filter condition for a chart

Complete the steps to create one or more filter conditions, based on which data is displayed on the axes of the chart.

When filtering a Gantt chart, the value set as the task label and the value by which legend items are grouped can impact the filtered data displayed. For example, in a Gantt chart displaying order processing times, if the task label is set to Country and the legend is grouped by product line, specifying a filter on the country column appears to display data for the selected country. However, because the tasks are aggregated by product line, each bar in the Gantt chart contains data aggregated by product line for several countries, even though the task label displays the name of a single country specified in the filter condition. So although the filtered data is accurate, it can appear confusing to the user.

Formatting a chart

Charts include many different visual elements, as shown in Figure 9-18. You can customize the appearance of many of these elements using Interactive Viewer. To clarify the presentation of data, or to create a more pleasing composition, you can rearrange the layout of the chart. Some of the formatting for a chart, such as the colors of the bars in a bar chart and the background color of the chart, are defined in the original report, and cannot be modified. When viewing the report you can modify the fonts and font sizes of the chart title and axis labels, and the height and width of the chart. You can hide axis labels, place labels at an angle relative to the axis, and hide the legend or determine where to display the legend in relation to the chart. Depending on the type of chart you are working with, you can also transpose the axes in some cases.





Figure 9-18 displays the elements of a basic bar chart that you can format using Interactive Viewer. In this example, the category series consists of a set of regions, and the value series consists of a set of sales figure values.

A chart organizes data points into value sets called series. Series can be of two types—a category series and a value series. The category series typically determines what text, numbers, or dates you see on the *x*-axis. The value series typically determines the text, numbers, or dates on the *y*-axis. A value axis positions data points relative to the axis tick marks. You do not plot text on a value axis. In most charts with axes, the *x*-axis is the category axis, and the *y*-axis is the value axis.

The plotting options available for the *x*- and *y*-axes can differ in name and function, depending on the chart type. For example, when you modify a meter chart, which has no axes, you define the position of a needle on a dial instead of defining the *y*-axis. When you modify a pie chart, you define the size of the slices instead of the *y*-axis.

Using Interactive Viewer, you can change the titles of the axes, modify the scale of the *y*-axis, and modify the orientation of the labels on the axes. Table 9-1 describes these options.

Formatting options category	Properties and usage
Chart	■ Title
	Add a title for the chart. If you select Auto, Interactive Viewer automatically generates a chart title based on the data in the chart.
	■ Width
	Width of the chart in the units specified.
	 Height
	Height of the chart in the units specified.
	 Flip Axis
	Select to transpose the <i>x</i> - and <i>y</i> -axes.
	 Use Glass Style
	Select this option to show smooth rounded edges for bars or columns in a chart.
Legend	 Show Legend
	Select to show the chart legend. Deselect to hide the chart legend.
	 Position
	If Show Legend is selected, specify the position of the legend relative to the chart.

Table 9-1 Formatting options and their usage

Formatting options category	Properties and usage
Category (X) Axis	■ Title
	Provide a title that appears below the x-axis.
	 Is Category Axis
	Select if you want the <i>x</i> -axis to display the category for each data point, for example Qtr1, Qtr2, and Qtr3. Deselect to display scaled numerical values.
	Show Labels
	Select to show <i>x</i> -axis labels. Deselect to hide <i>x</i> -axis labels.
	 Labels Angle
	If Show Labels is selected, this option places the labels at the specified number of degrees to the <i>x</i> -axis.
	 Stagger Labels
	This option places the labels in a zigzag arrangement to improve readability.
	 Interval
	This value on the <i>x</i> -axis is set to 1 by default, which means every value appears. To display alternate values, set Interval to 2.
Value (Y) Axis	• YAxis
	Specify the column whose values to display on the <i>y</i>-axis.Title
	Provide a title that appears to the left of the <i>y</i> -axis.
	Show Labels
	Select to show <i>y</i> -axis labels. Deselect to hide <i>y</i> -axis labels.
	 Labels Angle
	If Show Labels is selected, this option places the labels at the specified number of degrees to the <i>y</i> -axis.
	 Min
	Type a number that represents the lowest value to display on the <i>y</i> -axis. This number appears at the bottom of the <i>y</i> -axis.
	 Max
	Type a number that represents the highest value to display on the <i>y</i> -axis. This number appears at the top of the <i>y</i> -axis.
	 Step Interval
	Type a number that represents the increment between each value.

Table 9-1Formatting options and their usage

How to format a chart

- 1 Select and right-click the chart. Choose Format Chart from the context menu.
- **2** On Format Chart, shown in Figure 9-19, you can specify formatting options. Choose OK.

Format Char	t						\times
▲ Chart							
Title:	Bar Chart Ti	tle		Auto			
Width:	6.9375	inches	•	Height:	3.760416666	inches	-
Use Glas	ss Style			Flip Aa	cis		
✓ Show Le ▲ Category	egend (X) Axis	Po	sitio	n: Right		•	
Title:						Label Font	
🖌 Show La	abels		Lab	els Angle:	0.0		
■ Stagger Value (Y)	Labels Axis			Interval:	1		
Y Axis:	1		•				
Title:						Label Font	
🗸 Show L	abels.		Lab	oels Angle	0.0		
Min:		Max:		Step Inter	val:		
						Cancel	OK

Figure 9-19 Formatting a chart

Drilling up or down data hierarchies in a chart

In some charts that contain hierarchical data, such as a chart in a cross tab, Interactive Viewer supports drilling down into category or value series to view more detailed data, or drilling up to view summary data. For example, if the category axis of a chart displays location in regions, such as North America, EMEA, APAC, and so on, you can select a region to view detailed data for that region. You can then select each country in the region to view detailed data for that country, and select each city to view details about sales, customers, and so on, in the selected city. Similarly, you can drill up from a city view to get a summarized country view of the data, or a broader region view of the data.

In the following example, the category axis displays time in years. By selecting the label for each year, you can drill down to view detailed data for each quarter in the year and further to view details for each month in the quarter. Similarly, you can drill up to view summarized data for the same hierarchies. You can drill up from a month view, to a quarter view, or directly to a year view of the data in the chart. This section also explains how you can perform a similar action on hierarchical data in a value series.

How to drill down through a category series to view detailed information

1 In Interactive Viewer, select and right-click the chart. Choose Drill into 'DateTime', as shown in Figure 9-20.



Figure 9-20 Drilling into a year category

2 Categories appears listing the years for which data is available. Select a year from the list, as shown in Figure 9-21. Choose OK.

Categories		×
Category:	2011-01-01 00:00:00.000-0800	•
	2011-01-01 00:00:00.000-0800	
	2012-01-01 00:00:00.000-0800	
	2013-01-01 00:00:00.000-0800	K



The chart displays data for the selected year, as shown in Figure 9-22.





- **3** To drill further into subcategories of the data, from the chart menu, choose Drill into 'Quarter'.
- **4** Categories appears listing the quarters for which data can be viewed. Select the quarter for which you want to view detailed data, then choose OK.

The chart displays data for the quarter you selected.

How to drill up through a category series to view summary information

To drill up to a higher level in the data hierarchy, from the context menu, as shown in Figure 9-23, choose Drill up from Categories or Drill into 'DateTime'.

	Drill up from Categories Drill into 'DateTime'	
T	Filter •	
	Change Subtype Format Chart	
	Export Content	

Figure 9-23 Drill-up menu

The chart in the report displays the data for the selected category.

In the following example, the category axis displays the product line, and the value axis displays sales. The data in the value series is grouped by year. You can drill down to view sales by product line for each quarter, or up to a higher level to view summary information across years.

How to drill down through a value series to view detailed information

1 In Interactive Viewer, select and right-click the chart. Choose Drill into 'Year,' as shown in Figure 9-24.



Figure 9-24 Drilling into time series

2 Series appears listing the years for which data is available. Select a year from the list, as shown in Figure 9-25. Choose OK.

Series		×
Series:	2011	•
	2011	
	2012	_
	2013	

Figure 9-25 Selecting a series value

The chart displays data for the selected year, 2011, as shown in Figure 9-26.





- **3** To drill further into subcategories of the data, from the chart menu, choose Drill into 'Quarter'.
- **4** Series appears listing the quarters for which data can be viewed. Select the quarter for which you want to view detailed data, then choose OK.

The chart displays data for the quarter you selected.

How to drill up through a value series to view summary information

To drill up to a higher level in the data hierarchy, from the context menu, as shown in Figure 9-27, choose Drill up to 'Year.' The chart in the report displays the data for the selected series.

	Drill into 'PRODUCTLINE'
	Drill up to 'Year' Drill into 'Quarter'
T	Filter •
	Change Subtype Format Chart
	Export Content



Interactive Viewer supports drill-up and drill-down capability for the following types of charts:

- Bar
- Line
- Area
- Pie
- Scatter
- Bubble
- Stock
- Difference
- Tube
- Cone
- Pyramid

Selecting a legend item to hide specific chart or gadget data

Using Interactive Viewer, you can select a legend item in a chart, to hide data for that item in the chart. For example, the bar chart in Figure 9-28 shows sales totals by product line, grouped by country. Select each product line in the legend for which you want to hide data. In the example, the chart displays sales information for the Planes, Ships, and Trains product lines. Each selected legend item is displayed in gray, and the corresponding data is hidden in the chart.





Switching views between a table and a chart

If data in a report table or a cross tab is also represented graphically in a chart, in some cases you can switch between the chart view of the data, and the tabular view of the data, using Interactive Viewer.

How to switch between a table and chart view of data

In Interactive Viewer, select and right-click the report table, then choose Switch View. The chart view of the data appears. A report developer must enable this option when creating a report in BIRT Designer Professional, for it to appear as an available action in Interactive Viewer.

If you are working with a cross tab, choose Switch View from the context menu. You can also further analyze the data in a cross tab by choosing the Analyze option from the context menu. The cross tab appears in Interactive Crosstabs.

Similarly, to switch back to the table view, select and right-click the chart, then choose Switch View. The table or cross tab view of the data appears.

Using the timeline options

In Interactive Viewer, if your chart contains a time range selector or a timeline slider bar you can view specific time intervals in area, bar, column, difference, line, scatter, and stock charts. Figure 9-29 shows a chart displaying the time range selector and bottom slider.



Figure 9-29Enabling the timeline option in a column chart

When the category is a time field, you can select the time range selector and bottom slider. The time range selector appears below the chart title and enables you to view details in small time intervals, year to date, or one year, in addition to all the values displayed in the chart. The time range slider appears at the bottom of the chart and enables you to select a time period by sliding a bar to the beginning or end of the time period.

Modifying gadgets

Gadgets are a chart-like set of visualizations that generally display a single value, such as a meter or a gauge. Gadgets add animation and other visual elements that display data in a manner that is easy to understand. Gadgets differ from charts in that they generally only display a single value or a set of independent values and can represent less complex sets of data.

If your report contains gadgets, you can use Interactive Viewer to modify the subtype of the gadget, format the information that the gadget illustrates, create filters for gadget data, and export gadget data in a manner that is similar to performing these actions for chart data.

Using gadgets

You can work with meter, linear gauge, cylinder, thermometer, bullet, and sparkline gadgets using Interactive Viewer. The following section describes these gadgets and shows examples of each type of gadget.

Working with a meter gadget

A meter is similar to the speedometer or fuel gauge of a car. It uses a radial scale to display the data range, and one or more needles to indicate data values. A meter displays specific data, utilizing an indicator that moves within a semicircular range to indicate whether the monitored data is within defined limits. You can select colors for the data range to suit the application, such as green for satisfactory, yellow for caution, and red for alarm.

You can convert meter gadgets into linear gauge gadgets. The example in Figure 9-30 shows shipped orders illustrated using a meter gadget.



Figure 9-30 Meter gadget

Working with a linear gauge gadget

A linear gauge is a slider gauge with many additional features. It uses a horizontal scale to display your data range and fully configured data needles to indicate data values.

You can convert linear gauge gadgets into meter gadgets. The example in Figure 9-31 uses a linear gauge to illustrate the revenue for resolved orders.



Working with a cylinder gauge gadget

A cylinder gauge is represented by a vertical cylinder, whose fill level is indicative of the data to be displayed. It is used to show inventory levels, power plant reports, and fuel levels. The example in Figure 9-32 uses a cylinder gadget to illustrate the potential revenue for orders that are on hold. You can convert cylinder gadgets into thermometer or bullet gadgets.



Figure 9-32 Cylinder gadget

Working with a thermometer gadget

A thermometer gadget displays a single value. The fill level of the thermometer indicates the value. You can convert thermometer gadgets to cylinder gadgets or bullet gadgets. The example in Figure 9-33 shows a thermometer gadget illustrating lost revenue for canceled orders.



Figure 9-33 Thermometer gadget

Working with a bullet gadget

A bullet gadget is a variation of a bar chart and serves as a replacement for dashboard gauges and meters, which typically require too much space, and are cluttered with distracting decoration. There are horizontal and vertical bullet gadgets. The example in Figure 9-34 shows a horizontal bullet gadget illustrating the expected revenue for orders in progress. You can convert bullet gadgets into cylinder gadgets or thermometer gadgets.



Figure 9-34 Bullet gadget

Working with a sparkline gadget

Sparkline gadgets are data-intense, design-simple, word-sized graphics charts for embedding in a context of words, numbers, and images. Whereas the typical chart shows as much data as possible, and is set off from the flow of text, sparkline gadgets are succinct, memorable, and located where they are discussed. The example in Figure 9-35 shows a sparkline gadget illustrating the volatility of product line orders. Sparkline gadgets have no subtypes.



Figure 9-35 Sparkline gadget

The use of sparkline gadgets inline typically means that they are about the same height as the surrounding text. Also, sparkline charts can be used in space-efficient executive dashboards to show a lot of KPIs in a single view.

Modifying the subtype of a gadget

You can change the subtype of a meter gadget to a linear gadget, or change the subtype of a bullet gadget to a cylinder or thermometer gadget.

How to modify the subtype of a gadget

- 1 To change gadget subtypes, select the gadget to highlight it, then choose Change Subtype from the gadget menu.
- **2** On Gadget Type, select the subtype. Then, choose OK.

The example in Figure 9-36 shows how you can change the subtype of a linear gadget to a meter gauge.

Gadget Type		×
(iiiiiiii)	<u>(/)</u>	
Linear Gauge	Meter	
	Cancel	ОК

Figure 9-36 Changing the subtype of a linear gadget

In the example in Figure 9-37, you change the subtype of a bullet gadget to a cylinder or thermometer gadget.



Figure 9-37Changing the subtype of a bullet gadget

Formatting a gadget

Each gadget has a different set of formatting properties, which change specific aspects of the gadget's appearance. Figure 9-38 displays the formatting options you can modify in a linear gauge gadget. Figure 9-39 and Figure 9-40 display the Format Gadget dialog box for the linear gauge gadget.



Figure 9-38 Formatting options displayed for a linear gauge gadget

Format Gao	lget				×
▲ Gadget					
Width	5		inches	•	
Height	2.28125		inches	•	
Font	Arial	•	10	-	Auto 🝷
🗹 Show T	ooltip				
▲ Needle					
🗸 Show N	eedle Value		Above Nee	edle	•
Show Needle On			Bottom 🔻		•
▲ Scale					
	alue				
🗹 Show V					
Show V	lues				
✓ Show V Auto Va Minimum V	lues alue	0			

Figure 9-39 Formatting gadget dimensions, needle values, and scale

A		Add
В	•	Remove
. C.		
Label	Α	RGB(154,204,0) -
Start Value	0	
End Value	1500000	
 Tick Marks 		
🗹 Show Tick Marks	Bottom 💌	Outside 🔻
🗹 Auto Adjust Tickmarks		
Major Tickmarks Count	0	
		Cancel
		Cancer

Figure 9-40 Formatting gadget region and tick marks

For a linear gauge gadget, you can modify a set of general formatting options, as well as needle, plot, scale, region, tick marks, and value properties.

The following section describes the formatting options you can modify for each type of gadget.

Modifying general properties

General properties of a gadget control overall appearance, such as color, size, and font properties. General properties can also define the title text, tooltip, and

orientation for specific gadget types. Table 9-2 describes the general formatting properties available to specific gadgets, and their usage.

Option	Gadget	Usage
Color	Bullet, cylinder, thermometer	Sets the color of the gauge.
Font	All	Set the font type, size, style, and color of displayed values. You can select a standard color using color picker, or specify a custom color.
Height	All	Specifies the height of the gadget.
Orientation	Bullet	Specifies whether to display the gadget horizontally or vertically.
Title	Sparkline, bullet	Adds a title to the gadget.
Tooltip	Linear gauge, meter	Specifies text for the tooltip.
Width	All	Specifies the width of the gadget.

 Table 9-2
 Formatting general properties

Modifying needle properties

Needle properties define the position of a needle. A needle appears only in a linear gauge and in a meter gauge. Table 9-3 describes the needle properties you can modify in Interactive Viewer.

 Table 9-3
 Formatting needle properties

Option	Gadget	Usage
Show Needle On	Linear gauge, meter	Specifies the position of the needle
Show Needle Value	Meter	Displays or suppresses the value to which the needle points, and specifies the display position for the values

Modifying plot properties

Plot properties control the appearance of elements in the data plot area of bullet and sparkline gadgets. In both gadgets, you can specify whether to display or hide plot values. Additionally, in a sparkline gadget, you can specify whether to display the open, close, lowest, or highest values. Table 9-4 describes the plot properties you can modify using Interactive Viewer.

Option	Gadget	Usage
Show Close Value	Sparkline	Enables and disables the display of the close value
Show High and Low Values	Sparkline	Enables and disables the display of the high and low values
Show Open Value	Sparkline	Enables and disables the display of the open value
Show Plot Value	Bullet, sparkline	Displays or suppresses the plotted values

Table 9-4Formatting plot properties

Modifying scale properties

Scale properties define the range of values and the number of tick marks that a gadget displays. The scale properties affect the numbers displayed on the gadget, not its size. Minimum Value and Maximum Value specify the lowest and highest numbers, respectively. However, if the data set value (represented by the needle value) is lower than the minimum value or higher than the maximum value, the minimum or maximum value is ignored. Table 9-5 describes the scale properties you can modify using Interactive Viewer.

	r ormatting scale properties		
Option	Gadget	Usage	
Auto Values	All	Enables a scale to be specified by Interactive Viewer	
Maximum Value	All	Sets the highest value of the scale	
Minimum Valu	e All	Sets the lowest value of the scale	
Show Value	Cylinder, meter, bullet, linear gauge	Shows values of the scale	

 Table 9-5
 Formatting scale properties

Modifying region properties

Region properties enable the division of the data plot into regions. Use regions to provide more information about values in a gadget. Table 9-6 describes the region formatting properties you can modify in Interactive Viewer.

Option	Gadget	Usage
Color	Linear gauge, meter, bullet	Specifies the color of the region.
End Value	Linear gauge, meter, bullet	Specifies where the region ends.
Label	Linear gauge, meter, bullet	Specifies the name of the region.
Region	Linear gauge, meter, bullet	Chooses the region for which the settings apply. You can also add or remove a region from the list.
Start Value	Linear gauge, meter, bullet	Specifies where the region starts.
Show Labels	Linear gauge	Displays or suppresses the region labels.

 Table 9-6
 Formatting region properties

Modifying tick marks

Ticks properties define the position and count of tick marks on a gadget. Tick marks can appear in the positions listed in Table 9-7.

 Table 9-7
 Formatting tick marks

Option	Gadget	Usage
Auto Adjust Tick Marks	All but sparkline	Enables or disables tick marks created evenly across the scale
Position	Cylinder, thermometer	Positions tick marks on the right side of the gadget
Position Above	Linear gauge, meter, bullet	Sets tick marks to appear above the gadget
Position Below	Linear gauge, meter, bullet	Sets tick marks to appear below the gadget
Position Left	Cylinder, thermometer	Positions tick marks on the left side of the gadget

	Tornaturing tick marks		
Option	Gadget	Usage	
Show Tick Marks	Linear gauge, meter, bullet, cylinder, thermometer	Enables or disables the display of tick marks on the gadget	
Show Tick Values	Linear gauge, meter, bullet, cylinder, thermometer	Enables or disables the display of values on tick marks	
Major Tickmarks Count	All but sparkline	Specifies the number of tick marks to display on the scale	

Modifying the value property

You can also display or hide the value in a cylinder or thermometer gadget, as described in Table 9-8.

Table 9-8	Formatting the value property
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Formatting tick marks

Option	Gadget	Usage
Show Value	Cylinder, thermometer	Displays or hides the value illustrated in the gadget

How to format a gadget

≣◄

Y

Table 0-7

To format a gadget, select and right-click the gadget. Choose Format Gadget and modify the information on Format as needed.

Choose OK to apply your selection.

Filtering data in a gadget

You can create filters for gadget data in the same way you do for charts. You can limit the appearance of data on a chart or gadget by setting filters for the chart or gadget data.

How to filter data in a gadget

Select and right-click the gadget. Choose Filter. Create conditions as needed. To define more than one condition, choose Advanced Filter and modify the options in the same way you did when creating filters for report data.

Chapter

10

Analyzing data

This chapter contains the following topics:

- Introducing cross tabs
- Using Interactive Crosstabs
- Working with cross tabs
- Creating a cross tab

Introducing cross tabs

A cross tab displays summary, or aggregate values, such as sums, counts, or averages, in a row-and-column matrix similar to a spreadsheet. For example, you can use a cross tab to view sales data for each product line, by year, or total sales for each product line, by geography, and so on.

The aggregate values in a cross tab are arranged in dimensions and measures, and each cross tab can display multiple dimensions and multiple measures.Dimensions are categories, such as products, customers, or sales periods, by which measures are aggregated. Measures represent values that are counted or aggregated, such as costs or units of products. Each detail cell in a cross tab displays an aggregate value.

A cross tab consists of the following three areas, as shown in Figure 10-1:

- The row area
- The column area
- The detail area

The row and column areas contain the dimension values. The detail area contains one or more measures displaying aggregate data.

Figure 10-1 shows the example report, which groups data by year. Each number in the cross tab represents the sales total of a country for a particular year. Grand Total displays the total sales across years for each country, and the total sales for each year across all countries. Grand Total also displays the total sales across all countries for all years.

	Row	S		Columns	
/		📀 2012	€ 2013	Grand Total	
	REVENUE	REVENUE	REVENUE	REVENUE	
📀 Australia	\$226,808.03	\$204,213.18	\$131,561.38	\$562,582.59	
📀 France	\$283,366.39	\$506,660.01	\$217,347.62	\$1,007,374.02	
📀 New Zealand	\$78,141.08	\$233,362.27	\$165,343.66	\$476,847.01	—Detail area
📀 Spain	\$369,488.73	\$439,881.84	\$290,018.52	\$1,099,389.09	
📀 USA	\$1,172,200.59	\$1,526,499.65	\$574,579.81	\$3,273,280.05	
Grand Total	\$2,130,004.92	\$2,910,616.95	\$1,378,850.99	\$6,419,472.76	

Figure 10-1 Parts of a cross tab

Using Interactive Crosstabs

Cross tabs appear in reports you view in Interactive Viewer or in cross tab gadgets in dashboards. You can modify cross tabs using a tool called Interactive Crosstabs. You can add, remove, reorganize, and customize the data in a cross tab to examine relationships and trends. Interactive Crosstabs provides you with the ability to drill down into dimension levels to display detail data, drill up to display summary data, filter, group, and sort data in a cross tab, perform calculations, create aggregate data, and display cross tab data in a grid or in a chart. These actions enable you to gather business intelligence information such as a product's sales over a period of time, which products sell more or less by geography, how many units of a product shipped in a specific month, and so on.

You can launch Interactive Crosstabs in the following ways:

- Launch Interactive Crosstabs when viewing a cross tab in Interactive Viewer or Dashboards.
- Create a cross tab directly from a BIRT data object store (.data) file.

If you have integrated BIRT iHub with another application, you can launch Interactive Crosstabs in the following ways:

- Click on the URL that has been integrated into your application.
- Use Actuate JavaScript API to access Interactive Crosstabs embedded in a web page by a developer.For more information, see *Using Actuate JavaScript API*.

Working with cross tabs

You can modify a cross tab in the following ways:

- Compare values. You can compare values in a cross tab's rows or columns.
- Organize data. You can sort cross tab data, add dimensions and measures, pivot the cross tab, and drill down to display details.
- Filter data. You can filter the data in a cross tab, or filter its dimensions and measures.
- Insert calculated data. You can add measures to a cross tab and display data for periods of time such as a month or a quarter.
- Display a chart. You can display cross tab data in charts such as column charts and pie charts.
- Format data. You can change the width of a column or the height of a row, as well as apply themes to a cross tab.

Comparing values in a cross tab

You can compare values in a cross tab's rows or columns and display the difference between the values. For example, you can compare profit from quarter to quarter or year to year, or between different product lines or sales offices.

The following are known limitations of comparative calculations in a cross tab:

- Grand totals are not supported.
- Pivot is not supported.
- If you are comparing computed values, you can compare the values in rows, but not in columns.
- Comparing numeric computed values that use the FIRST or LAST functions is not supported in iHub3.1.1.

Consider the cross tab in Figure 10-2, which shows the profit for the Classic Cars and Motorcycles product lines for the London and New York sales offices.

	📀 London	📀 NYC
Product Line	Profit(SUM)	Profit(SUM)
📀 Classic Cars	\$249,737.10	\$190,786.43
Motorcycles	\$59,327.47	\$80,046.37

Figure 10-2 Cross tab with two rows and two columns

You can compare the profit values for Classic Cars and Motorcycles and display the difference, as shown in Figure 10-3.

	📀 London	NYC
Product Line	Profit(SUM)	Profit(SUM)
📀 Classic Cars	\$249,737.10	\$190,786.43
 Motorcycles 	\$59,327.47	\$80,046.37
Difference	\$190,409.63	\$110,740.06

Figure 10-3 Displaying the difference between the values in two rows

You can also compare the profit values for London and New York and display the difference, as shown in Figure 10-4.

	📀 London	NYC	Difference
Product Line	Profit(SUM)	Profit(SUM)	Profit(SUM)
📀 Classic Cars	\$249,737.10	\$190,786.43	\$58,950.67
 Motorcycles 	\$59,327.47	\$80,046.37	\$(20,718.90)

Figure 10-4 Displaying the difference between the values in two columns

You can display the difference for more than one measure, as shown in Figure 10-5.

	•	London	📀 NYC		
Product Line	Profit(SUM)	Sales Amount(SUM)	Profit(SUM)	Sales Amount(SUM)	
📀 Classic Cars	\$249,737.10	\$644,626.76	\$190,786.43	\$469,355.06	
	\$59,327.47	\$141,552.32	\$80,046.37	\$189,573.30	
Difference	\$190,409.63	\$503,074.44	\$110,740.06	\$279,781.76	

Figure 10-5 Displaying the difference for more than one measure

You can display the difference between two rows in a subcategory. Figure 10-6 shows the difference between the values in the last two rows in the product subcategory and the subtotals for each product.

 • 1936 Harley Davidson El Motorcycles Knucklehead 	\$1,978.06	\$5,878.72
	\$4,861.66	\$2,679.43
● 1960 BSA Gold Star DBD34	\$4,576.44	\$6,210.68
€ 1969 Harley Davidson Ultimate Chopper	\$5,644.74	\$7,313.22
€ 1974 Ducati 350 Mk3 Desmo	\$4,442.91	\$3,349.26
€ 1982 Ducati 900 Monster	\$1,354.98	\$975.68
● 1982 Ducati 996 R	\$1,160.76	\$856.30
📀 1996 Moto Guzzi 1100i	\$1,626.78	\$8,197.71
1997 BMW F650 ST	\$2,530.04	\$5,333.58
1997 BMW R 1100 S	\$8,364.59	\$6,746.02
€ 2002 Suzuki XRED	\$7,088.52	\$12,367.77
€ 2002 Yamaha YZR M1	\$3,972.16	\$3,742.60
€ 2003 Harley-Davidson Eagle Dr. Bike	ag \$11,725.83	\$16,395.40
Subtotal of 2002 Yamah	a <i>\$3,972.16</i>	\$3,742.60
Subtotal of 2003 Harley Differe	y <i>\$11,725.83</i> nce <i>\$(7,753.67)</i>	\$16,395.40 \$(12,652.90)

Figure 10-6 Displaying the difference between two rows in a subcategory

You can display the difference between sums of values. Figure 10-7 shows the difference between the profit for Classic Cars and Motorcycles and the profit for Planes and Ships.

	📀 London	📀 NYC
Product Line	Profit(SUM)	Profit(SUM)
📀 Classic Cars	\$249,737.10	\$190,786.43
Motorcycles	\$59,327.47	\$80,046.37
Planes	\$56,813.43	\$44,942.84
📀 Ships	\$48,145.89	\$32,477.34
Subtotal of Classic Cars Subtotal of Planes,Ships Difference	\$309,064.57 \$104,959.32 \$204,105.25	\$270,832.80 \$77,420.18 \$193,412.62

Figure 10-7	Displaying the difference between sums of values
-------------	--

How to compare values in a cross tab

- 1 In a cross tab report or gadget, right-click a row or column heading and choose Compare.
- **2** In Compare, do the following, then choose OK:
 - 1 In Label, type a label for the difference value or accept the default value.
 - **2** In First Label, type a label for the first value(s).
 - **3** In First Value(s), select the appropriate category. To display subcategories, click the greater than symbol (>). Use Ctrl+click to select multiple categories or subcategories.
 - **4** In Second Label, type a label for the second value(s).
 - **5** In Second Value(s), select the appropriate category or subcategory. The second value(s) must be at the same level as the first value(s). The difference is equal to the first value minus the second value, or the sum of the first values minus the sum of the second values.

- **6** To show subtotals, as shown in Figure 10-6 and Figure 10-7, select Show comparative subtotal rows/columns.
- 7 If the cross tab contains a large number of rows or columns, make sure Show all the table data after calculation is deselected. Figure 10-8 shows the Compare dialog.

Compare		×	
Label:	Difference		
First Label:	Classic Cars		
First Value(s):	> Classic Cars	A	
	> Motorcycles		
	> Planes		
	> Ships		
	> Trains	-	
Second Label:	Motorcycles		
Second Value(s):	> Classic Cars	<u> </u>	
	> Motorcycles		
	> Planes		
	> Ships		
	> Trains	-	
Show comparativ	e subtotal rows/columns — data after calculation———		Display subtotals for selected values Display all data, not just comparison values
		Cancel OK	

Figure 10-8 Comparing values in two categories

Modifying a comparison

To modify a comparison, right-click a row or column heading and choose Edit Compare. Then, make the necessary changes in the Compare dialog, shown in Figure 10-8. Choose OK.

Removing a comparison

To remove a comparison, right-click a row or column heading and choose Remove Compare. Choose OK to confirm.

Organizing data in a cross tab

Using Interactive Crosstabs you can organize cross tab data in the following ways:

- Sort data in a column in ascending or descending order.
- Add, remove, or reorder attribute, dimension, and measure columns.
- Pivot the cross tab, which transposes the columns and rows axes.

Drill down to display details or drill up to display summary information.

The following section describes these actions in more detail.

Sorting data in a cross tab

You can sort data in a cross tab to display the content in a meaningful order. A sales cross tab is more useful if it presents sales figures from highest to lowest, or the reverse, if you want to see lowest to highest performers. The default sort order in a cross tab displays data sorted by dimension values. The column and row heading values, which are dimensions, appear in ascending order.

Compare the cross tabs in Figure 10-9. The cross tab on the left displays sales revenues for products by alphabetically sorted country names. The cross tab on the right displays the same data, with sales revenues sorted from the highest to lowest in the grand total column.

PRODUCTLINE	📀 Planes	📀 Ships	Grand Total		
COUNTRY	Revenue	Revenue	Total Revenue		
📀 Australia	\$65268.04	\$4410.00	\$69678.04		
📀 France	\$88434.03	\$58768.59	\$147202.62		
📀 Japan	\$41534.63	\$16112.10	\$57646.73		
📀 UK	\$39589.51	PRODUCTLIN	IE 📀 Planes	📀 Ships	Grand Total
📀 USA	\$275545.11	COUNTRY	Revenue	Revenue	Total Revenue
		📀 USA	\$275545.11	\$189664.32	\$465209.43
		📀 France	\$88434.03	\$58768.59	\$147202.62
		📀 UK	\$39589.51	\$65252.74	\$104942.25
		📀 Australia	\$65268.04	\$4410.00	\$69678.04
		📀 Japan	\$41534.63	\$16112.10	\$57646.73



Interactive Crosstabs supports sorting values in a column or row. For dimension-level groups, you can specify a sort order for fields in the hierarchy. For example, you can specify an ascending or descending sort order for the time period hierarchy of year and quarter, as shown in Figure 10-10.

		Leve	el sorted ending				
	PRODUCTLINE	📀 Planes	📀 Ships	Grand Tot	:al	 Level sorte 	ed
Year	Quarter	Revenue	Revenue	Total Reve	nue	descendin	g
<u> </u>	1	\$37136.27	\$2444	5.99 <i>\$61.58.</i>	3.26		
	2	\$66587.81		PRODUCTLINE	📀 Planes	📀 Ships	Grand Total
	3	\$28846.56	Year	Quarter	Revenue	Revenue	Total Revenue
	4	\$177213.56	- 2011	4	\$177213.56	\$105167.52	\$282381.08
	2011 Total	\$309794.20		3	\$28846.56	\$42395.99	\$71242.55
		\$471971.46		2	\$66587.81	\$50171.58	\$116759.39
				1	\$37136.27	\$24446.99	\$61593.26
				2011 Total	\$309784.20	\$222182.09	\$531966.29
			↔ 2012		\$471971.46	\$337326.10	\$809297.56

Figure 10-10 Sorting data on a level

How to sort data

1 Right-click a cell, and choose Sort.

In Sort, Sort By displays the value by which you can sort.

2 In Sort On, as shown in Figure 10-11, select an option from the list.

Sort				×	
Sort By:	Total Sales				
Sort On:	Column		*		 Select an item from the list
Sort Direction:	◯ Ascending	Descending	O None		
			Cancel	ОК	

Figure 10-11 Sorting data on a column

3 In Sort Direction, select Ascending or Descending. Choose OK.

How to revert back to the default order

- 1
- **1** To revert data to its original order, for a column, dimension level, or row, right-click a cell and choose Sort.
- 2 In Sort, select None. Choose OK.

Managing columns in a cross tab

Using Interactive Crosstabs you can add or delete one or more dimension, measure, or attribute columns from the available data in the cube or data model data source to the cross tab. The following section describes how to add, remove, and reorder dimension columns to a cross tab.

How to add a dimension to cross tab columns or rows

Drag a dimension from the data pane, and drop it in Columns or Rows in the structure pane. Figure 10-12 shows dragging a Year dimension from the data pane and dropping it in Columns in the structure pane.

File Edit View Insert Data Format Help					
G 🗘 O O 🛊 🛙	.≡+ Ţ ‡ <	S Aa 🎤			1 / 1 🌗 🜗
✓ Measures ✓ Measures ✓ ■ Summary Field	Rows COU	NTRY -			
Dial Sales	Columns PROI	DUCTLINE - A			
✓ Dimensions	Measures Total	Sales 👻	Year		
		/			^
COUNTRY STATE	Filters				
Product Product ProductLine ProductNAME	Grid	hart			^
Var	PRODUCTLINE	📀 Classic Cars	📀 Motorcycles	📀 Vintage Cars	Grand Total
> Lifear	COUNTRY	Revenue	Revenue	Revenue	Revenue
/ D Quarter	📀 Australia	\$187965.47	\$84583.19	\$148624.30	\$562582.59
	📀 Austria	\$101526.38	\$18039.49	\$25635.77	\$199540.06
	📀 Belgium	\$18459.90		\$40313.89	\$100068.76
	🕀 Canada	\$59659.68	\$3726.90	\$36013.94	\$205911.86
					Cancel OK

Figure 10-12 Adding a Year dimension to cross tab columns

Interactive Crosstabs updates the cross tab, adding the Year dimension to each PRODUCTLINE column.

How to remove a dimension from cross tab columns or rows

In the structure pane, in Columns or Rows, right-click a dimension, such as the Year dimension. Then, choose Delete.

How to change the order of dimensions

In the structure pane, in the list of dimensions, drag a dimension from its current position, and drop it in a new position. For example, drag the Year dimension from the left to the right of the PRODUCTLINE dimension.

How to add, remove, or move a measure column in a cross tab

To add a measure, drag the field from the data pane, and drop it in Measures in the structure pane. To remove a measure, in the structure pane, in Measures, right-click a measure and choose Delete. To reorder measures, in the structure pane, in the list of measures, drag a measure from its current position, and drop it in a new position. For example, in a cross tab displaying Revenue and Profit measures, drag the Profit measure and place it to the left of the Revenue measure.

How to add, remove, or move an attribute column in a cross tab

1 Right-click the dimension heading for which you want to add or remove an attribute value. Then, choose Add/Remove Attributes, as shown in Figure 10-13. The following example shows how to remove a DateTime attribute value.

File Edit View Insert Da	ata Format	Help	
	ւ ≣+ ▼	Show Detail Tooltip	
Measures Summary Field	Rows	Drill Up Or Drill Down Add/Remove Attributes Hide Level Header	Choose Add/Remove
QUANTITYORDERED	Measures	≡+ Totals	
COUNTRY	Filters	▼ Filter \$ Sort	
CITY Product Product		E Alignment	
 PRODUCTLINE PRODUCTNAME Order Date 	Grid	Width Delete	
> 🚹 Year > 🚹 Quarter	T 1	🕒 Export Content	
	- 2011	Options	

Figure 10-13 Choosing Add or Remove Attributes

2 In Add or Remove Attributes, deselect the DateTime attribute to remove it, as shown in Figure 10-14.





Choose OK.

Interactive Crosstabs updates the cross tab, removing the attribute, as shown in Figure 10-15.

		 Motorcycles 	📀 Planes	📀 Ships	Grand Total
Year	Quarter	Revenue	Revenue	Revenue	Total Revenue
─ 2011	1	\$33062.22	\$37136.27	\$24446.99	\$94645.49
	2	\$43490.68	\$66587.81	\$50171.58	\$160250.07
	3	\$77984.28	\$28846.56	\$42395.99	\$149226.83
	4	\$194372.06	\$177213.56	\$105167.52	\$476753.14
	2011 Total	\$348909.24	\$309784.20	\$222182.08	\$880875.52
2012		\$527243.84	\$471971.46	\$337326.10	\$1336541.40
2013		\$245273.04	\$172881.88	\$104490.16	\$522645.09
Gra	and Total	\$1121426.12	\$954637.54	\$663998.34	\$2740062.00

Figure 10-15 Displaying the cross tab without the DateTime attribute

Viewing detail or summary data

Typically, a cross tab displays data in a hierarchy, specified in the cube or data model data source. For example, a cross tab might display data by country, state, and city, or by year, quarter, month, and day. Interactive Crosstabs supports drilling up to display higher-level summary information, or drilling down to display detail information. Hiding details, particularly for a cross tab that runs into hundreds of pages, helps you view key information at a glance.

Because viewing details for a very lengthy cross tab report can cause performance issues, Interactive Crosstabs provides the option of specifying the number of data row to retrieve for a drill down action. Interactive Crosstabs also limits the displayed page size to approximately 33 MB. Displaying a larger cross tab can freeze the browser. The following message appears if you attempt to display an oversize cross tab page:

```
Oversize page content can freeze your browser. Open the options dialog to apply page break or open the drill dialog to apply the appropriate filter to reduce its size.
```

You can hide details to reduce the size of a cross tab. Additionally, a BIRT iHub system administrator can change the value of the MAX_PAGE_SIZE parameter in web.xml to display a larger cross tab. You can also use Options to specify a smaller drill size during a drill-down action.

How to hide or show details

In the structure pane of a cross tab that consists of multiple dimensions in Columns or Rows, do the following:

Right-click the dimension for which you want to show or hide details. Select Show detail or Hide detail from the context menu.

How to drill up or down dimension hierarchies

1 In the structure pane, in Rows or Columns, right-click a dimension and choose Drill Up Or Drill Down. The example in Figure 10-16 shows the selection of this option for the Product Line column.

Rows	Year 🔻	Quarter 👻
Columns	Product Line	Drill Up Or Drill Down
Measures	Revenue 🔻	🛢 Delete
		Show Detail

Figure 10-16 Choosing Drill Up Or Drill Down for columns

Drill Up Or Drill Down appears.

2 In Drill Up Or Drill Down, select items from the list for which Interactive Crosstabs displays detail data. For example, in Figure 10-17, double check marks for the Ships product line indicate that detail data for this

dimension is available in the cross tab. Single check marks for the Motorcycles and Planes product lines indicate that summary data is displayed in the cross tab for these dimensions. The Classic Cars, Trains, and Trucks and Buses product lines are deselected, indicating that these dimensions are not displayed in the cross tab.



Figure 10-17 Specifying Drill Up Or Drill Down properties

3 To recalculate the totals displayed in the cross tab based on the selections made, if necessary, select Recalculate Totals.

Choose OK.

Figure 10-18 shows part of a cross tab that displays detail data for products in the Ships product line and summary data for the Motorcycles and Planes product lines.

 Motorcycles 		📀 Planes	😑 Ships				
			18th century schooner	1999 Yamaha Speed Boat	HMS Bounty	Pont Yacht	The Mayflower
Year	Revenue	Revenue	Revenue	Revenue	Revenue	Revenue	Revenue
• 2011	\$348909.24	\$309784.20	\$40373.05	\$26831.40	\$20872.61	\$16729.57	\$24775.71
2012	\$527243.84	\$471971.46	\$55492.20	\$35298.20	\$38656.18	\$22806.48	\$33249.20
2013	\$245273.04	\$172881.88	\$16561.87	\$11997.64	\$13769.63	\$8014.35	\$11506.70
Grand Total	\$1121426.12	\$954637.54	\$112427.12	\$74127.24	\$73298.42	\$47550.40	\$69531.61

Figure 10-18 A cross tab displaying detail and summary data

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4 You can also specify the drill size when drilling down into rows or columns to view detailed data. Complete the following steps:

- Choose Options.
- In Options, select Drill Size. In Max Drill Size, type the number of data rows for which aggregate values are calculated in the cross tab.

Choose OK.
Viewing details for cross tab data

Displaying detail tooltip information is specifically useful if you are analyzing data in a large cross tab where you cannot simultaneously view the column heading, row heading, and data cell in your browser window.

To view details, right-click any cell in the detail area, and choose Show Detail Tooltip. A tooltip displays the column and row-level details, the measure value, and which aggregate function applies for the selected cell, as shown in Figure 10-19.

	PRODUCTLINE	0	Classic Cars	 Motorcycles
Year	Quarter	٦	t es	Total Sales
2011			\$1374832.22	\$348909.24
2012			Detail	× ₁₄
• 2013			Row Level	14
Gran	d Total		Year : 2011 Quarter : Column Level PRODUCTLINE Measure Total Sales :	2 E : Classic Cars \$1374832.22
			Function SUM	

Figure 10-19 Viewing details about cross tab data

Pivoting a cross tab

Pivot a cross tab to transpose the axes. Pivoting a cross tab provides users with a different perspective on the displayed data. Figure 10-20 displays a cross tab before pivoting the axes.

	 Motorcycles 	📀 Planes	📀 Ships	Grand Total
	Revenue	Revenue	Revenue	Revenue
2011	\$348,909.24	\$309,784.20	\$222,182.08	\$880,875.52
2012	\$527,243.84	\$471,971.46	\$337,326.10	\$1,336,541.40
2013	\$245,273.04	\$172,881.88	\$104,490.16	\$522,645.09
Grand Total	\$1,121,426.12	\$954,637.54	\$663,998.34	\$2,740,062.00

Figure 10-20 Before pivoting axes

Figure 10-21 displays the cross tab after pivoting the axes.

				⊕ 2013	Grand Total
 Motorcycles 	Revenue	\$348,909.24	\$527,243.84	\$245,273.04	\$1,121,426.12
📀 Planes	Revenue	\$309,784.20	\$471,971.46	\$172,881.88	\$954,637.54
📀 Ships	Revenue	\$222,182.08	\$337,326.10	\$104,490.16	\$663,998.34
Grand Total	Revenue	\$990,975.52	\$1,336,541.40	\$522,645.09	\$2,740,062.00

Figure 10-21 After pivoting axes

How to pivot a cross tab

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In Interactive Crosstabs, choose Pivot.

Interactive Crosstabs pivots the cross tab, displaying the year dimension as the column headings and the product line dimension as the row headings.

Filtering data in a cross tab

In Interactive Crosstabs, you can create filter conditions at the cross tab level to narrow the scope of data displayed and make the cross tab easier to use. You can also create filters for dimensions and measures present in the cross tab's cube or data model, but not in use in the cross tab.

Using filters can limit the ability to drill up or down to view summary or drill detail data in a cross tab. When you create a filter condition, take into consideration the data values you need to view and the trends or relationships that you aim to analyze. If you need to save a cube view (.cubeview) file or a BIRT document (.rptdocument) file, and share it with other users for analysis, consider how any filters you applied can limit the ability for others to drill up or drill down the data hierarchy.

When you apply a filter condition, select Recalculate Totals to enable Interactive Crosstabs to recalculate totals for the filtered data. If you want to retain existing totals for comparison with the filtered cross tab data, deselect Recalculate Totals. In this case, the cross tab displays columns and rows based on the filters you apply, but the original totals for the unfiltered data remain.

Creating a filter at the cross tab level

When you create a filter condition in Interactive Crosstabs, you specify the dimension, measure, row, or column to evaluate, select a comparison operator, and specify a value to which to compare, as you did when creating a filter in Interactive Viewer. Defining a filter condition at the cross tab level displays only a subset of data retrieved from the cube or data model data source.

You can also create a slicer filter condition for dimension or measure data fields in the cube or data model data source that are not in use in the cross tab. Slicer filters limit the data retrieved from the cube or data model. This filter is specifically useful when working with cubes or data models containing large amounts of data.

For more information about comparison operators to use when you create filter condition expressions, see Chapter 11, "Functions and operators."

How to create a filter at the cross tab level

You can use this procedure to create a filter condition using an attribute, dimension, or measure value from the cross tab.

- 1 Right-click a cross tab cell that contains a value to evaluate. From the menu, choose Filter. Filter. Filter appears.
 - **2** In Filter, complete the following steps:

T

- 1 In Apply To, select a location to apply the filter condition. Depending on the cell you selected in step 1, the following options appear:
 - All Measures
 - Row
 - Column
- 2 Select the comparison operator for the filter condition based on which Filter displays either one or two additional fields or a completed condition.
 - If you choose All Measures as the location to apply the filter condition, you can type a value to compare to, or select from a list of values. Proceed to step 3.
 - If you choose Row or Column as the location to apply the filter condition, based on the comparison operator you select, do one of the following:
 - Select Absolute Value. Proceed to step 3.
 - Select Value from Level. Proceed to step 4.
- **3** If you select an operator that requires a comparison value, specify a value in one of the following ways:

Type a	literal	value,	as sho	wn in	Figure	10-22.
					0	

Filter	×	
Apply to: 💽 All Measures 🔵 Column		
Show items for which: PROFIT(SUM)		
Greater Than or Equal To	-	
30000	Select Values	-
Recalculate Totals		— Type a value
<u>Clear</u>		
	Cancel OK	

Figure 10-22 Typing a value for the filter condition

 Choose Select Values to select from a list of existing data values, as shown in Figure 10-23. Select a value from the list of values.

Show items for v	hich: PROFIT(SUI	м)		
Greater Than or	Equal To			•
			Select \	/alues
13456.75				
17651.26				
20489.51				-
21374.33				
28848.16				-
20240.51		Land		_
	previous	next		

Figure 10-23 Selecting a value for the filter condition

Proceed to step 5.

4 Choose Value from Level to compare to a specific dimension level value. The example filter condition in Figure 10-24 displays Profit values in the cross tab that are less than the Profit values for the UK dimension level.

Filter		×
Apply to: 🔷 All Measures 💿 Column		
Show items for which: PROFIT(SUM)		
Less Than		•
O Absolute Value 💿 Value from Level		
PROFIT(SUM) - COUNTRY: UK		-
✓ Recalculate Totals		
Clear		
	Cancel	OK

Figure 10-24 Selecting a value from a dimension level

5 Select Recalculate Totals to display cross tab totals based on the filter condition you defined.

Choose OK to apply the filter condition.

Creating a slicer filter

In Interactive Crosstabs, you can also create a filter condition for an attribute or dimension field that is not currently in use in the cross tab, but present in the cube or data model data source. Defining a filter condition for fields in the cube or data model limits the data retrieved for the cross tab.

How to create a slicer filter

From the data pane, drag an attribute or dimension field and drop it in the Filters area of the structure pane. The example in Figure 10-25 shows dragging the Year

dimension to the Filters area to create a filter condition. The Filters area displays all the filter conditions applied in the cross tab.

File Edit View Insert D	ata Format H	Help						
မာ အ ြ ဆ 🗧 🛛	[}. ≡+ ▼ ‡	🍮 Aa 🎢			1 / 1)			
 ✓ Measures ✓ masses ✓ Summary Field 	Rows C	OUNTRY 🔻 STATE	•					
🖬 Total Sales 🛐 QUANTITYORDERED	Columns PRODUCTLINE -							
 Dimensions → □S Location COUNTRY 	Measures T	otal Sales 🔻						
STATE CITY Product PRODUCTLINE PRODUCTNAME	Filters Delete All Image: Strain and Stra							
✓ D Order Date > D Year > D Quarter	Grid	Chart						
		📀 Planes	📀 Ships	Grand Total				
		Revenue	Revenue	Revenue				
	📀 Australia	\$65268.04	\$4410.00	\$69678.04				
	📀 France	\$88434.03	\$58768.59	\$147202.62				
	📀 Japan	\$41534.63	\$16112.10	\$57646.73				
	(†) UK	\$39589.51	\$65252.74	\$104842.25	Cancel			

Figure 10-25 Dragging a dimension from the data pane to the Filters area

Filter appears. Specify a filter condition as you did when creating a filter at the cross tab level. For more information, see "How to create a filter at the cross tab level," earlier in this chapter. You can edit or delete filter conditions by selecting the condition in the Filters area, and choosing an action.

Interactive Crosstabs also supports using relative time period operators when creating a filter condition for a data field that contains date-and-time data. If you specify a reference date, Interactive Crosstabs performs comparisons based on the following relative time period operators:

- Month to date
- Month to date last year
- Quarter to date
- Quarter to date last year
- Year to date
- Year to date last year

For example, if the reference date is March 4, 2011, the relative time period, year-to-date last year, is January 1, 2010 to March 4, 2010.

Inserting calculated data in a cross tab

Each detail cell in a cross tab contains an aggregate data value. Interactive Crosstabs supports creating additional aggregate calculations to these values. For example, in addition to displaying the total profit generated by product line by geography, you can also display the average profit. The functions available for aggregate calculations in Interactive Crosstabs are similar to those in Interactive Viewer, with a few additions.

Additionally, you can add a new computed measure column to a cross tab. The calculation functions available are based on EasyScript and are similar to those available in Interactive Viewer. You cannot apply aggregation to a computed measure.

Because meaningful data analysis requires displaying data in time intervals, Interactive Crosstabs supports calculating data using relative time periods, such as current month, current year, month to date, quarter to date last year, trailing 30 days, and trailing 6 months.

For more information about available functions, see Chapter 11, "Functions and operators."

Creating additional aggregate data

- You can use various available aggregate functions to evaluate column and row totals and group subtotals as aggregate data values. For example, Figure 10-26 displays the following aggregate data values in the Planes and Ships columns:
 - The revenue sum for each numbered month
 - The quarterly revenue subtotals, labeled 1 Total and 2 Total, and so on, for the 2011 year
 - The annual subtotals, labeled 2011 Total, for each year
 - The total revenue sum for each column, labeled Grand Total

You can display the grand totals and subtotals on columns and rows either before or after the detail values.

You can use the Options dialog box to specify the location of grand totals and subtotals in the cross tab.

		📀 Planes	📀 Ships	Grand Total	
		Revenue	Revenue	Revenue	
- 2011	⊝ ⊕ 2	\$37,136.27	\$24,446.99	\$61,583.26	
	1 1 Total	\$37,136.27	\$24,446.99	\$61,583.26	Sum subtotals for
	⊝ ⊕ 4	\$33,693.01	\$25,207.17	\$58,900.18	ouon quartor
	2 📀 6	\$32,894.80	\$24,964.41	\$57,859.21	
	2 Total	\$66,597.91	\$50,171.59	\$116,759.39	
	⊖ ↔ 8	\$28,846.56	\$24,272.54	\$53,119.10	
	3 📀 9		\$18,123.45	\$18,123.45	
	3 Total	\$29,846.56	\$42,395.99	\$71,242.55	
	⊖ 🕂 10	\$70,846.57	\$32,020.58	\$102,867.15	
	4 📀 11	\$87,193.11	\$73,146.94	\$160,340.05	
	⊕ 12	\$19,173.88		\$19,173.88	
	4 Total	\$177,213.56	\$105,167.52	\$282,381.09	
	2011 Total	\$309,794.20	\$222,182.09	\$531,966.29	Sum subtotals for the vear
€ 2012		\$471,971.46	\$337,326.10	\$809,297.56	
€ 2013		\$172,881.88	\$104,490.16	\$277,372.04	
Grand	l Total	\$954,637.54	\$663,998.34	\$1,619,635.99	— Sum grand totals

Figure 10-26 Displaying subtotals and grand totals

Adding a computed measure

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To display computed data in a cross tab, you can create a column that displays calculated data based on an expression that Interactive Crosstabs evaluates. For a complete list of supported functions and their descriptions, see Chapter 11, "Functions and operators."

Working with relative time periods

Because analysis of stock performance, revenue, or productivity is typically meaningful only if it can be measured over time, such as by day, week, month, quarter, or year, Interactive Crosstabs supports several useful relative time period functions. For example, a cross tab can display revenue data for a particular month, quarter, or year. Figure 10-27 displays sales revenue by region by quarter for two years.

	⊖ 2010			• 2011				
		2	\varTheta 3	4	⊕ 1	📀 2	📀 3	\varTheta 4
Europe	6000	6000	8000	10000	12000	14000	16000	18000
North America	4000	5000	7000	9000	11000	13000	15000	17000

Figure 10-27 Displaying sales revenue by region by quarter for two years

Displaying data by relative time periods supports, for example, the comparison of current data with past data of the same period. Figure 10-28 shows profit year-to-date 2013 values, using the date 11/30/2013, and the comparable year-to-date values for the previous year for France, Japan, and the UK.

	YTD Profit	PYTD Profit			
📀 France	85257.33	99026.25			
📀 Japan	11843.47	34406.11			
📀 UK	16139.58	29493.35			

 Π_{+}

Figure 10-28 Displaying profit year-to-date in 2013 and previous year-to-date

How to create a calculation using a relative time period

- 1 In Interactive Crosstabs, choose New Computed Measure. Computed Measure appears.
- **2** In Computed Measure, shown in Figure 10-29, complete the following steps. The procedure can differ based on the selected category and time period.
 - In Measure Label, type a name for the new measure. The name you specify appears in the heading.
 - In Select Category, select Relative Time Period.
 - In Time Period, select a time period from the list. For example, select Year to Date.
 - In Measure, select a measure to which to apply the function. For example, select Revenue.
 - In Function, select one of the following aggregate functions to apply to the measure:
 - □ AVERAGE
 - COUNT
 - □ MAX
 - MIN
 - □ SUM

Computed Measur	e	×
Measure Label:	Year to Date to November 30	
Select Category:	Relative Time Period	-
Time Period:	Quarter to Date Last Year Quarter to Date (QTD) Trailing N Months Trailing N Periods Year to Date(YTD) Calculate the specified metric for same year	•
Measure:	Revenue	•
Function:	SUM	•
Time Dimension:	Order Date	•
Reference Date:	Today This date 11/30/2013 This date 11/30/2013 Last date in the period	
	Cancel	ОК

Figure 10-29 Creating a year-to-date computed measure

For example, select SUM to display the sum values for each year.

- In Time Dimension, select a dimension to which to apply the function.
- In Reference Date, select one of the following options:
 - To use today's date as the reference date, select Today.
 - To specify a date, select This date. Then, type a date or choose Select Values to display the calendar tool from which you select a date. For example, select This date and type 11/30/2013.
 - To specify the last date in the available time period, select Last date in the period.

Choose OK.

The cross tab displays the computed measure values, as shown in Figure 10-30.

⊕ France		nce	e 📀 Japan			📀 UK		
		Revenue- Year	Revenue - YTD Nov 30	Revenue- Year	Revenue - YTD Nov	Revenue- Year	Revenue - YTD Nov	
					30		30	
2011		\$969,959.90	\$916,838.21	\$267,249.40	\$250,056.34	\$549,551.94	\$549,551.94	
2012		\$1,465,229.84	\$1,290,109.20	\$151,761.45	\$151,761.45	\$706,014.52	\$692,342.70	
2013		\$648,571.84	\$648,571.84	\$38,099.22	\$38,099.22	\$181,384.24	\$181,384.24	

Figure 10-30 Displaying the Year-to-Date to November 30 computed measure

Using the * to Date and Trailing N * time periods

Interactive Crosstabs calculates time periods, such as Month to Date, Month to Date Last Year, Quarter to Date, Quarter to Date Last Year, Previous Month to Date, Previous N Year to Date, Next N Periods, and Trailing N Periods, using the

year, month, and day parts of a reference date. For example, Month to Date covers the period starting at the beginning of the reference date's month and ending at the reference date. If the reference date is 2012-01-08, the period is 2012-01-01 to 2012-01-08. Contrast this with Current Month, which is calculated using only the year and month parts of a reference date. For a reference date of 2012-01-08, Current Month covers the entire month, 2012-01-01 to 2012-01-31.

Because the * to Date and Trailing N * time periods use the day part of a reference date, the time dimension defined in the cube must include the Day Of Year level. Figure 10-31 shows a cross tab data pane displaying time period levels, including the Day Of Year level.

✓ Measures	
👌 🛅 Summary Field	
✓ Dimensions	
> 🔂 Customers	
> 🖥 Employees	
> 🖻 Products	
> 🖥 Product Scale	
> 🖥 Product Vendor	
> 🖥 Order Status	
🗸 🖥 Order Date	
> 🚺 Year	
> 🚺 Quarter	
> 🔂 Month	
🔉 🚺 Week Of Month	— Time period levels
> 🚺 Week Of Year	
> 🚺 Day Of Week	
> 🚺 Day Of Month	
> 🛅 Day Of Year	 Day Of Year level

Figure 10-31 Displaying time period levels in the data pane

If the time dimension in the cube does not include the Day Of Year level, and you use a * to Date or a Next N * or Trailing N * time period in a relative time period calculation, the measures display the wrong results. Month to Date returns the same results as Current Month, Quarter to Date returns the same results as Current Quarter, and so on. In other words, the day part of the reference date has no effect.

Working with charts in a cross tab

A report is often more useful when you display information in graphical format, such as in a chart. Interactive Crosstabs enables you to easily present an alternative view of the same information, making the information visually compelling and highlighting key information at a glance. In Interactive Crosstabs, data is presented as a grid in tabular format and as a chart. For every cross tab you create, the default chart type generated is a column chart. You can edit the chart type to select from a range of supported charts that are best suited to present your data. You can also modify the data selected for the chart. Interactive Crosstabs supports the same chart types as Interactive Viewer.

Displaying a chart

In Interactive Crosstabs, in the structure pane, choose Chart, as shown in Figure 10-32.

	c	hoose Chart					
Grid	Chart						
		2011		2012		2013	
	2011		0 1011		0 2010		
	PROFIT(SUM)	REVENUE (SUM)	PROFIT(SUM)	REVENUE (SUM)	PROFIT(SUM)	REVENUE (SUM)	
📀 Australia	\$93,419.54	\$226,808.03	\$78,176.66	\$204,213.18	\$50,610.98	\$131,561.38	
	\$116,230.64	\$283,366.39	\$211,528.15	\$506,660.01	\$85,257.33	\$217,347.62	
📀 Japan			\$56,004.59	\$133,326.77	\$11,843.47	\$34,583.18	
📀 UK	\$63,399.65	\$161,494.57	\$93,425.03	\$238,193.93	\$16,139.58	\$37,258.94	

Figure 10-32 Choosing the chart view

A column chart appears as shown in Figure 10-32, displaying data from the cross tab shown in Figure 10-33. The chart displays the profit values for Australia, France, Japan, and the UK for three years.



Figure 10-33 Displaying cross tab data in a column chart

The profit totals are plotted on the *y*-axis of the chart. Because the cross tab displays values for the Profit and Revenue measures, or multiple value series, you can use the chart's context menu to select either value series or display data for both series in the same chart. Right-click the chart to view the available options.

Modifying a chart

You can modify a chart to change its appearance and the data it displays. For more information about modifying a chart, see "Modifying charts" in Chapter 9, "Modifying charts and gadgets."

How to choose a chart type

1 In Interactive Crosstabs—Chart, right-click a chart and choose Edit, as shown in Figure 10-34.

View Value Series 1 View Value Series 2	* *
Edit	

Figure 10-34 Choosing Edit

Chart Builder—Data appears.

- 2 In Chart Builder—Data, choose Type.
- **3** In Chart Builder—Type, select a chart type.

For all chart types, you must select one dimension as the category series and at least one measure as the value series. You can select two dimensions to display two value series. Then, depending on the cross tab data that a chart uses, you can group and aggregate the values to customize the chart's appearance.

For more information about the supported chart types, see "Types of charts" in Chapter 9, "Modifying charts and gadgets." For more information about selecting data for a chart, see *Using Report Studio*.

Formatting a chart

Interactive Crosstabs provides similar formatting options for charts as Interactive Viewer. Additionally, you can customize the chart title in Interactive Crosstabs. By default, every chart displays a title using the following cross tab values and syntax:

<measure name> by <row dimension name>, by <column dimension name>

where <measure name>, <row dimension name>, and <column dimension name> are character strings that match the values in the structure pane for Measures, Rows, and Columns, respectively.

Customize the chart title by typing a new title in Chart Builder—Format.

For more information about formatting a chart, see "Formatting a chart" in Chapter 9, "Modifying charts and gadgets."

Formatting a cross tab

To view available formatting options, right-click a cross tab element. Choose Format to view the formatting options available for the selected element.

To format the values in a multilevel dimension group, select a cell in the grouped column, then from the context menu, select a formatting option. When you select a column to modify, the changes you specify are applied to the data values in each data group. If you choose the group at the highest level, the data values in this group are formatted based on the options you select. You must choose each group to specify formatting options for that group level. You can also specify formatting properties for the group label for each group.

Changing the width of a column or height of a row

Using Interactive Viewer and Interactive Crosstabs, you can optimize the layout of a cross tab by changing the width of cross tab columns and the height of rows. Using this option enables you to eliminate the extra space when you print or export the cross tab to other formats, and also creates additional space to avoid truncated column entries in the cross tab.

How to change column width

Select any cell in the cross tab. Hover the mouse pointer on the right or left border of the highlighted cell, as shown in Figure 10-35. Using the mouse pointer, drag the border outward or inward to increase or decrease the width of the selected cell. The modified width applies to all rows in the column.

	PRODUCTLINE	Classic Cars
Year	Quarter	Total Sales 🛛 👯
2011 Jan 1, 2011	1 Jan 1, 2011	152581.55
	2 Apr 1, 2011	194291.40
	3 Эл/ 1, 2011	268968.43
	4 Oct 1, 2011	758990.84
	2011 Total	1374932.22

Figure 10-35 Modifying column width in a cross tab

You can change the column width for every column by choosing the following options:

- Right-click a cross tab element and in Width choose Reset Cell Width. This
 removes a cross tab's width value and sets each column to the current default
 cell width. Default cell width is set in the cross tab options.
- Right-click a cross tab element and in Width choose Clean Cell Width. This sets the cross tab's width to 100% of available space and removes any column width values. Each column receives the same width to fit in the cross tab.

How to change row height

Select any cell in the cross tab. Hover the mouse pointer on the top or bottom border of the highlighted element, as shown in Figure 10-36.

	PRODUCTLINE	Classic Cars
Year	Quarter	Total Sales
2011 Jan 1, 2011	1 Jan 1, 2011	152581.55 †
	2 Apr 1, 2011	♦ 194291.40
	3 Jul 1, 2011	268968.43
	4 Oct 1, 2011	758990.84
	2011 Total	1374932.22

Figure 10-36 Modifying row height in a cross tab

Using the mouse pointer, drag the border up or down to increase or decrease the height of the selected element. The modified height applies to the entire row.

Using themes

You can modify themes in a cross tab using Interactive Crosstabs. Themes are optional. Interactive Crosstabs provides a set of predefined themes, but you can also use custom themes, if they exist. A developer creates a theme library, a library (.rptlibrary) file, using BIRT Designer Professional, and publishes it to the Resources folder in the Encyclopedia volume, for example:

/Resources/ThemesReportItems3.rptlibrary

A library can include multiple themes if the library developer chooses to provide users with different style options to apply to cross tabs.

How to specify a theme for a cross tab



In Interactive Crosstabs, choose Format→Theme. Select a theme from the menu that appears.

A cross tab displaying the Grayscale theme is shown in Figure 10-37.

PRODUCTLINE	Classic Cars	Motorcycles	Planes	Ships	Trains	Trucks and Buses	Vintage Cars	Grand Total
year	Total Sales	Total Sales	Total Sales	Total Sales	Total Sales	Total Sales	Total Sales	Total Sales
	\$505,223.85	\$157,766.69	\$74,969.13	\$53,674.44	\$26,844.40	\$113,518.50	\$240,203.58	\$1,172,200.59
2012	\$535,515.77	\$257,416.12	\$151,683.09	\$91,283.85	\$20,753.90	\$211,146.29	\$258,700.63	\$1,526,499.65
2013	\$222,207.10	\$51,907.92	\$48,892.89	\$44,706.03	\$11,995.53	\$40,792.54	\$154,077.80	\$574,579.81
Grand Total	\$1,262,946.72	\$467,090.73	\$275,545.11	\$189,664.32	\$59,593.83	\$365,457.33	\$652,982.01	\$3,273,280.05

Figure 10-37 Viewing the grayscale theme in a cross tab

Specifying additional display options

Using Interactive Crosstabs, you can customize pagination properties in a cross tab by specifying the row and column interval for page breaks. You can additionally specify the display location for grand totals and subtotals, before or after the dimensions or measures; specify number of data rows to retrieve when drilling up or down dimension hierarchies; and specify cell width.

You can also specify display properties for header rows and empty cells in a cross tab. You can hide dimension level header and measure header rows using the cell context menu. You can also specify whether to display a measure header horizontally in a single row spanning the cross tab or vertically as rows in a single column. You can hide or display empty cells in a cross tab, and optionally specify a custom text string to display in the empty cells.

How to specify display options

1 In Interactive Crosstabs, choose Options.

Options appears as shown in Figure 10-38.

Options		×
 Measure Header Orientati 	on	
Empty Rows and Columns		
 Page Break 		
👻 Totals Display		
 Drill Size 		
▼ Width		
	Cancel OK	

Figure 10-38 Specifying display options

2 Make your selections and choose OK.

Creating a cross tab

To create a cross tab, you need access to a BIRT data object containing a cube or data model in the volume. When you populate a cross tab in Interactive Crosstabs, the default view available is the grid or tabular view. You can switch to chart view to display the same data graphically in a chart. The default chart type is a column chart. You can change this to a chart type more suited for the data in your cross tab as described in later sections of this document.

When you create a cross tab, you choose the dimension, attribute, and measure fields to display. For dimension fields containing date-and-time data, you also specify a grouping interval. For measure fields, you specify a function based on which the aggregate value in each detail cell is calculated. You can also specify whether to display subtotals or grand totals, or both, and the location.

How to create a cross tab using Interactive Crosstabs

- 1 In the volume, in the navigation pane, select the Resources folder. Select a BIRT data object store (.data) file containing a cube or data model to use for the cross tab. The example in this procedure uses the sample data object store file, Classic Models.data.
- **2** Select Data appears. In Available Data, select a cube or data model from the list. Figure 10-39 shows the selection of Data Model.

Select Data	×	Ċ
Available Data:	Data Model 🔹	
	Cancel OK	

Figure 10-39 Selecting a cube or data model

Choose OK.

The BIRT data object store file containing the selected data model appears in Interactive Crosstabs, as shown in Figure 10-40. The data pane displays the

available dimension, attribute, and measure fields available for use in the cross tab. The structure pane displays blank fields and the placeholder for a grid.



Figure 10-40 Viewing the selected data model in Interactive Crosstabs

- **3** To create the cross tab, complete the following steps:
 - 1 Drag the COUNTRY field from the data pane, and drop it in Rows, in the structure pane, as shown in Figure 10-40.
 - 2 Drag the ORDERDATE field and drop it in Columns. Date Group appears, as shown in Figure 10-41, displaying the available time intervals for grouping the Order date field. Select Year and Quarter to group display data values grouped by year and by quarter. Columns displays the group labels Year and Quarter.



Figure 10-41 Specifying grouping intervals

3 Drag the REVENUE field and drop it in Measures. New Measure appears, as shown in Figure 10-42. Measure Name displays the measure field and the aggregate function assigned to it in the cube or data model. In Function, select a different aggregate function, if necessary. This example uses the default SUM function.

New Measure		\times
Data Field	REVENUE	
Measure Name	REVENUE(SUM)	
Function	Sum	-
	Cancel	ОК

Figure 10-42 Specifying an aggregate function

Choose OK. As you drag and drop data fields in the Rows, Columns, and Measures areas, the cross tab grid in the structure pane displays aggregate data in the cross tab, as shown in Figure 10-43.



Figure 10-43 Viewing the cross tab grid view in the structure pane

- **4** Now that you have populated your cross tab, specify whether to display grand totals, subtotals, or both, and the location. The following example displays grand totals for the row and column fields. Complete the following steps:
 - 1 On the main toolbar, select Totals. Totals—Grand Totals appears. Complete the following steps:
 - In the available measures in Row Area and Column Area, in Aggregate On, select the measures for which to display grand totals.
 - For each selected measure, in Function, select a function from the list to calculate the grand total, as shown in Figure 10-44.
 - Specify one of the following:
 - Deselect On Detail Row to enable Interactive Crosstabs to use the cross tab display values to calculate grand totals.
 - Select On Detail Row to enable Interactive Crosstabs to use the detail row values in the cube or data model to calculate grand totals.

Totals		×
Grand Totals	Subtotals	
Row Area:		
Aggregate On	Function	On Detail Row
REVENUE(SUM)	Sum	•
Column Area:		
Aggregate On	Function	On Detail Row
REVENUE(SUM)	Sum	•
		Cancel OK



2 Choose OK. The resulting cross tab resembles the one shown in Figure 10-45.

ORDERDATE-Year	• 2011	• 2012	• 2013	Grand Total
ORDERDATE-Quarter				
COUNTRY	REVENUE(SUM)	REVENUE(SUM)	REVENUE(SUM)	REVENUE(SUM)
📀 Australia	226808.03	204213.18	131561.38	562582.59
📀 Austria	78079.2	49233.67	61227.19	199540.06
📀 Belgium	2755.76	74335.37	22977.63	100069.76
📀 Canada	53437.45	123404.03	29070.38	205911.86
📀 Denmark	90123.67	107232.63	21638.62	218994.92
📀 Finland	100042.38	78948.21	116158.76	295149.35
📀 France	283366.39	506660.01	217347.62	1007374.02
📀 Singapore	150123.15	108032.41	5842.22	263997.79
📀 Spain	369488.73	439881.84	290018.52	1099389.09
📀 Sweden	51842.03	107829.78	27966.54	197639.35
Switzerland		108777.92		108777.92
📀 UK	161494.57	238193.93	37258.94	436947.44
📀 USA	1172200.59	1526499.65	574579.81	3273280.05
Grand Total	3317349.39	4515905.51	1770936.71	9604190.61

Figure 10-45 Viewing a cross tab displaying grand totals for rows and columns

≡+

- **5** You can use the '+' symbols next to the Country names and the Orderdate-Year values to drill down into details for each field. Drilling down into each Year field displays aggregate data for each quarter in the year. Drilling down into each Quarter displays aggregate data for each month in the quarter, and so on. When you drill down further into each quarter, the Month interval appears in the Columns area.
- **6** To format the values in the cross tab as currency in US dollars (\$), complete the following steps:
 - To format the detail rows as currency, select and right-click a detail cell in the cross tab. Choose Format → Format Data.
 - To complete the steps to format currency see "How to apply a standard" number format" in Chapter 8, "Editing and formatting a report."
 - To format values in the grand total row, right-click a cell in the bottom row of the cross tab and repeat the steps to apply a currency format.
 - To format values in the grand total column, right-click a cell in the rightmost column of the cross tab and repeat the steps to apply a currency format.
 - To format the grand total value for all rows and all columns, right-click the grand total cell in the bottom right corner of the cross tab and repeat the steps to apply a currency format.

The cross tab resembles the one shown in Figure 10-46.

ORDERDATE-Year	• 2011	2012	• 2013	Grand Total
ORDERDATE-Quarter				
COUNTRY	REVENUE(SUM)	REVENUE(SUM)	REVENUE(SUM)	REVENUE(SUM)
📀 Australia	\$226,808.03	\$204,213.18	\$131,561.38	\$562,582.59
📀 Austria	\$78,079.20	\$49,233.67	\$61,227.19	\$199,540.06
📀 Belgium	\$2,755.76	\$74,335.37	\$22,977.63	\$100,069.76
📀 Canada	\$53,437.45	\$123,404.03	\$29,070.38	\$205,911.86
📀 Denmark	\$90,123.67	\$107,232.63	\$21,638.62	\$218,994.92
📀 Singapore	\$150,123.15	\$108,032.41	\$5,842.22	\$263,997.78
📀 Spain	\$369,488.73	\$439,881.84	\$290,018.52	\$1,099,389.09
📀 Sweden	\$51,842.03	\$107,829.78	\$27,966.54	\$197,639.35
📀 Switzerland		\$108,777.92		\$109,777.92
📀 UK	\$161,494.57	\$238,193.93	\$37,258.94	\$436,947.44
📀 USA	\$1,172,200.59	\$1,526,499.65	\$574,579.81	\$3,273,280.05
Grand Total	\$3,317,348.39	\$4,515,905.51	\$1,770,936.71	\$9,604,190.61

Figure 10-46

Examining a cross tab with data formatted as currency in US dollars



7 Finally, to save the cross tab you just created, choose Save. Complete the following steps:

- In Save As, in Save in, navigate to a folder in the volume.
- In File Name, type a name for the cross tab.
- In Description, optionally provide a description for the cross tab.

 In File Type, select a file type from the list. Figure 10-47 shows the selection of the BIRT cube view (.cubeview) file type.

Save As				×
Save In				
administrator	- 0	Search.		Q,
File Name				
Enter File Name				
Description				
File Type				
BIRT Cube View (*.cubeview)				-
			Cancel	ОК

Figure 10-47 Saving a cross tab as a BIRT cube view file

Choose OK. Interactive Crosstabs saves the cross tab using the file name you provided, in the specified location.

Chapter

11

Functions and operators

This chapter contains the following topics:

- Functions
- Functions used in computed column expressions
- Functions used in aggregate calculations
- Operators

Functions

This section is a complete reference to all of the functions in Interactive Viewer, Interactive Crosstabs, and BusinessReport Studio. This reference organizes the functions into two sections based on those used in expressions when creating a computed column and functions that are used to perform aggregate calculations.

Functions used in computed column expressions

The following list of functions appear when you create expressions to compute column data. Each function entry includes a general description of the function, its syntax, the arguments to the function, the result the function returns, and an example that shows typical usage. Use this reference to find information about a function that you want to use when you insert a computed column to display calculated data in a BIRT design.

% OF

Calculates the percentage value of a selected measure compared to a selected base group value.

Category Math
Measure Select a measure name from the list.
% Base Select a base group from the list.
Returns For the selected measure, Interactive Crosstabs calculates the percentage of the base group total and displays the percentage value.
Example For example, compare a cross tab revenue value to the grand total of all revenue values, using the following calculation:

(<cross tab revenue value>/<cross tab revenue grand total>) * 100%

% OF COLUMN

Calculates the percentage of the column total for each measure value in each column.

Category Math

Measure Select a measure name from the list.

- **Returns** For each measure in each column, Interactive Crosstabs calculates the percentage of the column total and displays the percentage value. The sum of percent-of-column values in each column is 100%.
- **Example** In Measure, select the sales revenue measure. Interactive Crosstabs displays a percentage value in the cell next to each sales revenue value. The percentage value equals the sales revenue value divided by the column sum, and multiplied by 100%, as follows:

```
(<sales revenue value>/<column sum>) * 100%
```

% OF DIFFERENCE

cells.

Calculates the percentage of the difference between measure values.

Category Math Measure Select the first measure name from the list. Measure Select the second measure name from the list. Returns Interactive Crosstabs calculates the percentage of the difference between the second measure and the first measure, as follows: ((measureB - measureA)/measureA) * 100% Interactive Crosstabs displays the percentage of the difference in the cross tab

% OF ROW

Calculates the percentage of the row total for each measure in each row.

- Category Math
- **Measure** Select a measure name from the list.
- **Returns** For each measure in each row, Interactive Crosstabs calculates the percentage of the row total and displays the percentage value, as follows:

(<measure value>/<row sum>) * 100%

The sum of percent-of-row values in each row is 100%.

Example In Measure, select the sales revenue measure. Interactive Crosstabs displays a percentage value in the cell next to each sales revenue value. The percentage value equals the sales revenue value divided by the row total, and multiplied by 100%.

% OF TOTAL

Calculates the percentage of the cross tab grand total for each measure in each column and row.

Category Math
 Measure Select a measure name from the list.
 Returns For each measure in each column and row, Interactive Crosstabs calculates the percentage of the cross tab grand total and displays the percent value, as follows: (<measure value>/<cross tab grand total>) * 100%
 The sum of all percent-of-total values in the cross tab is 100%.
 Example In Measure, select the sales revenue measure. Interactive Crosstabs displays a percentage value in the cell next to each sales revenue value. The percentage value equals the sales revenue value, divided by the row total, and multiplied

ABS()

by 100%.

Returns the absolute value of a number without regard to its sign. For example, 6 is the absolute value of 6 and -6.

	o is the absolute value of o and o.
Syntax	ABS(num)
Argument	num The number, or numeric expression that specifies the number for which you want to find the absolute value.
Returns	A number that represents the absolute value of num.
Example	The following example returns the absolute value for each number in the TemperatureCelsius data field:
	ABS([TemperatureCelsius])

ADD_DAY()

Adds a specified number of days to a date value.

Syntax ADD_DAY(date, daysToAdd)

Arguments date

The date or date expression that represents the start date.

daysToAdd

The number of days to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date value that results from adding the specified number of days to the start date.
- **Example** The following example adds 15 days to each date value in the InvoiceDate data field:

```
ADD_DAY([InvoiceDate], 15)
```

ADD_HOUR()

Adds a specified number of hours to a date value.

Syntax ADD_HOUR(date, hoursToAdd)

Arguments date

The date or date expression that represents the start date. If a start date does not have a time value, the function assumes the time is midnight, 12:00 AM.

hoursToAdd

The number of hours to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date-and-time value that results from adding the specified number of hours to the start date.
- **Example** The following example adds eight hours to each date value in the ShipDate data field:

```
ADD_HOUR([ShipDate], 8)
```

ADD_MINUTE()

Adds a specified number of minutes to a date value.

Syntax ADD_MINUTE(date, minutesToAdd)

Arguments date

The date or date expression that represents the start date. If a start date does not have a time value, the function assumes the time is midnight, 12:00 AM.

minutesToAdd

The number of minutes to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

Returns The date-and-time value that results from adding the specified number of minutes to the start date.

Example The following example subtracts 30 minutes from each date in the StartTime data field:

```
ADD_MINUTE([StartTime], -30)
```

ADD_MONTH()

Adds a specified number of months to a date value.

Syntax ADD_MONTH(date, monthsToAdd)

Arguments date

The date or date expression that represents the start date.

monthsToAdd

The number of months to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date value that results from adding the specified number of months to the start date. This function always returns a valid date. If necessary, the day part of the resulting date is adjusted downward to the last day of the resulting month in the resulting year. For example, if you add one month to 1/31/08, ADD_MONTH() returns 2/29/08, not 2/31/08 or 2/28/08, because 2008 is a leap year.
- **Example** The following example adds two months to each date value in the InitialRelease data field:

ADD_MONTH([InitialRelease], 2)

ADD_QUARTER()

Adds a specified number of quarters to a date value.

Syntax ADD_QUARTER(date, quartersToAdd)

Arguments date

The date or date expression that represents the start date.

quartersToAdd

The number of quarters to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

Returns The date value that results from adding the specified number of quarters to the start date. A quarter is equal to three months. For example, if you add two quarters to 9/22/08, ADD_QUARTER() returns 3/22/09.

Example The following example adds two quarters to each date value in the ForecastClosing data field:

```
ADD_QUARTER([ForecastClosing], 2)
```

ADD_SECOND()

Adds a specified number of seconds to a date value.

Syntax ADD_SECOND(date, secondsToAdd)

Arguments date

The date or date expression that represents the start date. If a start date does not have a time value, the function assumes the time is midnight, 12:00 AM.

secondsToAdd

The number of seconds to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date-and-time value that results from adding the specified number of seconds to the start date.
- **Example** The following example adds 30 seconds to each date value in the StartTime data field:

ADD_SECOND([StartTime], 30)

ADD_WEEK()

Adds a specified number of weeks to a date value.

Syntax ADD_WEEK(date, weeksToAdd)

Arguments date

The date or date expression that represents the start date.

weeksToAdd

The number of weeks to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date value that results from adding the number of weeks to the start date.
- **Example** The following example adds two weeks to each date value in the OrderDate data field:

ADD_WEEK([OrderDate], 2)

ADD_YEAR()

Adds a specified number of years to a date value.

Syntax ADD_YEAR(date, yearsToAdd)

Arguments date

The date or date expression that represents the start date.

yearsToAdd

The number of years to add to the start date. If you specify a negative number, the result appears to subtract the number from the start date.

- **Returns** The date value that results from adding the number of years to the start date.
- **Example** The following example adds five years to each date value in the HireDate data field:

ADD_YEAR([HireDate], 5)

BETWEEN()

Tests if a value is between two specified values.

Syntax BETWEEN(value, upperBound, lowerBound)

Arguments value

The value to test. The value can be a string, numeric, or date value.

upperBound

The first value in the range of values to which to compare. String and date values must be enclosed in double quotation marks (" ").

lowerBound

The second value in the range of values to which to compare. String and date values must be enclosed in double quotation marks (" ").

- **Returns** True if value is between upperBound and lowerBound, or equal to upperBound or lowerBound; returns false otherwise.
- **Examples** The following example tests each value in the SalesTotal data field to see if the value is between 10000 and 20000:

BETWEEN([SalesTotal], 10000, 20000)

The following example tests each value in the CustomerName data field to see if the value is between A and M:

BETWEEN([CustomerName], "A", "M")

The following example tests each value in the ReceiptDate data field to see if the value is between 10/01/07 and 12/31/07:

BETWEEN([ReceiptDate], "10/01/07 12:00 AM", "12/31/07 12:00 AM")

The following example uses BETWEEN() in conjunction with the IF() and ADD_DAY() functions to calculate a shipment date. If an orderDate value is in December 2007 (between 12/1/07 and 12/31/07), add five days to the orderDate value. If an orderDate value is in a month other than December, add three days to the orderDate value.

```
IF((BETWEEN([orderDate], "12/1/07 12:00 AM", "12/31/07 12:00
AM")), (ADD_DAY([orderDate], 5)), (ADD_DAY([orderDate], 3)))
```

CEILING()

Rounds a number up to the nearest specified multiple.

- Syntax CEILING(num, significance)
- Arguments num

The numeric value to round up.

significance

The multiple up to which to round num.

- **Returns** The number that results from the rounding. If num is an exact multiple of significance, no rounding occurs.
- **Examples** CEILING() is commonly used to round up prices. For example, to avoid dealing with pennies, if the Price value is 20.52, CEILING() returns 20.55. You can round prices in a Price data field up to the nearest nickel with the following expression:

```
CEILING([Price], 0.05)
```

If the Price value is 20.52, CEILING() returns 20.60. If the Price value is 20.40, CEILING() returns 20.40. No rounding occurs because 20.40 is already a multiple of 0.1. The following example rounds prices up to the nearest dime:

```
CEILING([Price], 0.1)
```

The following example rounds prices up to the nearest dollar. If the Price value is 20.30, CEILING() returns 21.0.

```
CEILING([Price], 1)
```

DAY()

Returns a number from 1 to 31 that represents the day of the month.

Syntax	DAY(date)
Argument	date The date or date expression from which you want to extract the day.
Returns	The number of the day of the month for the specified date value.
Example	The following example gets the number of the day for each date value in the ShipDate data field:
	DAY([ShipDate])

DIFF_DAY()

Calculates the number of days between two date values.

Syntax DIFF_DAY(date1, date2)

Arguments date1

The first date or date expression to use in the calculation.

date2

The second date or date expression to use in the calculation.

- **Returns** The number of days between date1 and date2.
- **Example** The following example calculates the number of days between each value in the invoiceDate data field and each value in the paymentDate data field:

DIFF_DAY([invoiceDate], [paymentDate])

The results show how long it takes to pay invoices.

The following example calculates the number of days from an order date to Christmas:

```
DIFF_DAY([orderDate], "12/25/08")
```

The following example calculates the number of days from the current date to Christmas. TODAY() is a function that returns the current date:

```
DIFF_DAY(TODAY(), "12/25/08")
```

DIFF_HOUR()

Calculates the number of hours between two date values.

Syntax DIFF_HOUR(date1, date2)

Arguments date1

The first date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

date2

The second date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

- **Returns** The number of hours between date1 and date2.
- **Example** The following example calculates the number of hours between each value in the startTime data field and each value in the finishTime data field:

DIFF_HOUR([startTime], [finishTime])

The following example calculates the number of hours from the current date to Christmas. NOW() is a function that returns the current date and time. If you supply a literal date as an argument, you must include the time value, as shown in the following example:

```
DIFF_HOUR(NOW(), "12/25/08 12:00 AM")
```

DIFF_MINUTE()

Calculates the number of minutes between two date values.

Syntax DIFF_MINUTE(date1, date2)

Arguments date1

The first date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

date2

The second date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

- **Returns** The number of minutes between date1 and date2.
- **Example** The following example calculates the number of minutes between each value in the startTime data field and each value in the finishTime data field:

DIFF_MINUTE([startTime],[finishTime])

The following example calculates the number of minutes from the current date to Christmas. NOW() is a function that returns the current date and time. If you supply a literal date as an argument, you must include the time value, as shown in the following example:

```
DIFF MINUTE(NOW(), "12/25/08 12:00 AM")
```

DIFF_MONTH()

Calculates the number of months between two date values.

Syntax	DIFF_MONTH(date1,date2)
Arguments	date1 The first date or date expression to use in the calculation.
	date2 The second date or date expression to use in the calculation.
Returns	The number of months between date1 and date2. The function calculates the difference by subtracting the month number of date1 from the month number of date2. For example, if date1 is 8/1/08 and date2 is 8/31/08, DIFF_MONTH() returns 0. If date1 is 8/25/08 and date2 is 9/5/08, DIFF_MONTH() returns 1.
Example	The following example calculates the number of months between each value in the askByDate data field and each value in the ShipByDate data field:
	DIFF_MONTH([askByDate],[shipByDate])
	The following example calculates the number of months from each value in the hireDate data field to the end of the year:
	DIFF_MONTH([hireDate], "1/1/09")

DIFF_QUARTER()

Calculates the number of quarters between two date values.

Syntax	DIFF_QUARTER(date1, date2)
Arguments	date1 The first date or date expression to use in the calculation.
	date2 The second date or date expression to use in the calculation.
Returns	The number of quarters between date1 and date2. DIFF_QUARTER calculates the difference by subtracting the month number of date1 from the month number of date2. A difference of three months is equal to one quarter. For example, if date1 is 8/1/08 and date2 is 10/31/08, DIFF_QUARTER() returns 0. If date1 is 8/25/08 and date2 is 11/5/08, DIFF_QUARTER() returns 1.
Example	The following example calculates the number of quarters between each value in the PlanClosing data field and each value in the ActualClosing data field:
	DIFF_QUARTER([PlanClosing],[ActualClosing])
	The following example calculates the number of quarters from each value in the orderDate data field to the end of the year:
	DIFF_QUARTER([orderDate], "1/1/09")

DIFF_SECOND()

Calculates the number of seconds between two date values.

Syntax DIFF_SECOND(date1, date2)

Arguments date1

The first date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

date2

The second date or date expression to use in the calculation. If the date does not have a time value, the function assumes the time is midnight, 12:00 AM.

- Returns The number of seconds between date1 and date2.
- **Example** The following example calculates the number of seconds between each value in the startTime data field and each value in the finishTime data field:

DIFF_SECOND([startTime],[finishTime])

The following example calculates the number of seconds from the current date to Christmas. NOW() is a function that returns the current date and time. If you supply a literal date as an argument, you must include the time value, as shown in the following example:

```
DIFF_SECOND(NOW(), "12/24/08 12:00 AM")
```

DIFF_WEEK()

Calculates the number of weeks between two date values.

Syntax DIFF_WEEK(date1, date2)

Arguments date1

The first date or date expression to use in the calculation.

date2

The second date or date expression to use in the calculation.

- **Returns** The number of weeks between date1 and date2. The function calculates the difference by subtracting the week number of date1 from the week number of date2. For example, if date1 is 1/3/08 (week 1 of the year), and date2 is 1/7/08 (week 2 of the year), DIFF_WEEK() returns 1.
- **Example** The following example calculates the number of weeks between each value in the askByDate data field and each value in the shipByDate data field:

DIFF_WEEK([askByDate],[shipByDate])

The following example calculates the number of weeks from each value in the orderDate data field to the end of the year:

```
DIFF_WEEK([orderDate], "1/1/09")
```

DIFF_YEAR()

Calculates the number of years between two date values.

Syntax	DIFF_YEAR(date1, date2)
Arguments	date1 The first date or date expression to use in the calculation.
	date2 The second date or date expression to use in the calculation.
Returns	The number of years between date1 and date2. The function calculates the difference by subtracting the year number of date1 from the year number of date2. For example, if date1 is 1/1/08 and date2 is 12/31/08, DIFF_YEAR() returns 0. If date1 is 11/25/08 and date2 is 1/5/09, DIFF_YEAR() returns 1.
Example	The following example calculates the number of years between each value in the HireDate data field and each value in the TerminationDate data field:
	<pre>DIFF_YEAR([HireDate],[TerminationDate])</pre>
	The following example calculates the number of years from each value in the HireDate data field to the current date. TODAY() is a function that returns the current date:
	DIFF YEAR([HireDate], TODAY())

```
_ ...
```

FIND()

Finds the location of a substring in a string.

 Syntax
 FIND(strToFind, str)

 FIND(strToFind, str, startPosition)

 Arguments
 strToFind

 The substring to search for. The search is case-sensitive.

 str

 The string in which to search.

 startPosition

 The position in str where the search starts.

- **Returns** The numerical position of the substring in the string. The first character of a string starts at 1. If the substring is not found, FIND() returns 0.
- **Example** The following example searches for the substring, Ford, in each ProductName value:

FIND("Ford", [ProductName])

If the product name is 1969 Ford Falcon, FIND() returns 6.

The following example searches for the first hyphen (-) in each product code:

FIND("-", [ProductCode])

If the product code is ModelA-1234-567, FIND() returns 7.

The following example uses FIND() in conjunction with the LEFT() function to display the characters that precede the hyphen in a product code. The LEFT() function extracts a substring of a specified length, starting from the first character. In this example, the length of the substring to display is equal to the numerical position of the hyphen character.

LEFT([ProductCode], FIND("-", [ProductCode]))

If the product code is ModelA-1234, LEFT() returns the following string:

ModelA

IF()

Returns one value if a specified condition evaluates to TRUE, or another value if the condition evaluates to FALSE.

Syntax IF(condition, dolfTrue, dolfFalse)

Arguments condition

The condition to test.

dolfTrue

The value to return if condition evaluates to TRUE.

dolfFalse

The value to return if condition evaluates to FALSE.

- **Returns** Returns the dolfTrue value if condition is TRUE or the dolfFalse value if condition is FALSE.
- **Example** The following example calculates and displays different discount amounts based on the value in the Total data field. If the Total value is greater than 5000, the discount is 15%. Otherwise, the discount is 10%.

IF([Total]>5000, [Total]*15%, [Total]*10%)

The following example uses IF() in conjunction with the BETWEEN() and ADD_DAY() functions to calculate a shipment date. If an orderDate value is in December 2007 (between 12/1/07 and 12/31/07), add five days to the orderDate value. If a orderDate value is in a month other than December, add three days to the orderDate value.

```
IF((BETWEEN([orderDate], "12/1/07 12:00 AM", "12/31/07 12:00
AM")), (ADD_DAY([orderDate], 5)), (ADD_DAY([orderDate], 3)))
```

The following example checks each value in the Office data field. If the value is Boston, San Francisco, or NYC, the computed column displays U.S. If the value is something other than Boston, San Francisco, or NYC, the computed column displays Europe and Asia Pacific.

```
IF([Office]="Boston" OR [Office]="San Francisco" OR
[Office]="NYC", "U.S.", "Europe and Asia Pacific")
```

IN()

Tests if a value is equal to a value in a list.

Syntax IN(value, check1,..., checkN)

Arguments value

The value to test. The value can be a string, numeric, or date value.

check1, ..., checkN

The value or values to which to compare.

- **Returns** True if value is equal to one of the check values; returns false otherwise.
- **Example** The following example tests if New Haven, Baltimore, or Cooperstown are values in the city data field. If any one of the cities is in the data field, IN() returns true.

IN([city], "New Haven", "Baltimore", "Cooperstown")

The following example tests if 9/15/08 or 9/30/08 are values in the payDate data field. If you supply a literal date as an argument, you must include the time value, as shown in the following example:

IN([payDate], "9/15/08 12:00 AM", "9/30/08 12:00 AM")

The following example uses IN() in conjunction with the IF() function to test if Ships or Trains are values in the ProductLine data field. If Ships or Trains is a value in the field, the computed column displays Discontinued Item; otherwise, the product line value is displayed as it appears in the field.

IF(IN([ProductLine], "Ships", "Trains"), "Discontinued Item",
 [ProductLine])
ISNULL()

Tests if a value in a specified data field is a null value. A null value means that no value exists.

 Syntax ISNULL(value)
 Argument value The data field in which to check for null values.
 Returns True if a value in the specified data field is a null value; returns false otherwise.
 Example The following example uses ISNULL() in conjunction with the IF() function to test for null values in the BirthDate data field. If there is a null value, the computed column displays No date specified; otherwise the BirthDate value is displayed. IF(ISNULL([BirthDate]), "No date specified", [BirthDate])

LEFT()

Extracts a substring from a string, starting from the leftmost, or first, character.

Syntax LEFT(str)

LEFT(str, n)

Arguments str The string from which to extract a substring.

n

The number of characters to extract, starting from the first character.

- **Returns** A substring of a specific length:
 - If you omit n, the number of characters to extract, the function returns the first character only.
 - If n is zero, the function returns an empty string.
 - If n is greater than the length of the string, the function returns the entire string.
- **Example** The following example displays the first letter of each name in the CustomerName data field:

LEFT([CustomerName])

The following example uses the LEFT() and FIND() functions to display the characters that precede the hyphen in a product code:

```
LEFT([ProductCode], FIND("-", [ProductCode]))
```

If the product code is ModelA-1234, LEFT() returns the following string: $\tt ModelA$

LEN()

1

Counts the number of characters in a string.

Syntax	LEN(str)
Argument	str The string expression to evaluate.
Returns	The number of characters in the specified string.
Example	The following example returns the length of each value in the ProductCode data field:
	LEN([ProductCode])
	The following example uses LEN() in conjunction with the RIGHT() and FIND() functions to display the characters that appear after the hyphen in a product code. RIGHT() extracts a substring of a specified length, starting from the last character. In this example, the length of the entire string returned by LEN() minus the length up to the hyphen is the number of characters to display.
	RIGHT([PRODUCTNAME], LEN([PRODUCTNAME]) - (FIND("-", [PRODUCTNAME])))

If the product code is ModelA-Ford, RIGHT() returns the following string:

A-Ford

LIKE()

Tests if a string matches a pattern.

Syntax LIKE(str, pattern)

str

The string to evaluate.

pattern

The string pattern to match. You must enclose the pattern in double quotation marks (" "). The match is case-sensitive. You can use the following special characters in a pattern:

• A percent character (%) matches zero or more characters. For example, %ace% matches any string value that contains the substring ace, such as Facebook,

and MySpace. It does not match Ace Corporation because this string contains a capital A, and not the lowercase a.

An underscore character (_) matches exactly one character. For example, t_n matches tan, ten, tin, and ton. It does not match teen or tn.

To match a literal percent (%), underscore (_), precede those characters with two backslash ($\backslash \rangle$) characters. For example, to see if a string contains M_10, specify the following pattern:

"%M_10%"

Returns True if the string matches the pattern; returns false otherwise.

Example The following example returns true for values in the customerName field that start with D:

LIKE([customerName], "D%")

The following example returns true for productCode values that contain the substring Ford:

```
LIKE([productCode], "%Ford%")
```

The following example uses two LIKE() expressions to look for the substrings "Ford" or "Chevy" in each ProductName value. If a product name contains either substring, the computed column displays U.S. Model; otherwise, it displays Imported Model.

LOWER()

Converts all letters in a string to lowercase.

Syntax LOWER(str)

Argument str

The string to convert to lowercase.

- **Returns** The specified string in all lowercase letters.
- **Example** The following example displays all the string values in the productLine data field in lowercase:

LOWER([productLine])

MATCH()

Returns a Boolean indicating whether a pattern exists within a string.

Syntax MATCH(source, pattern)

Arguments source

The string to evaluate.

pattern

The string pattern to match. The pattern uses ECMAScript (JavaScript) syntax, as defined in Section 15.10 of Standard ECMA-262.

- **Returns** True if the pattern matches; false otherwise.
- **Example** The following example uses ECMAScript syntax in the pattern to detect any set of characters followed by the letter C, and returns true:

```
MATCH("ABC",".*C")
```

The following example checks whether the string starts with the letter X, followed by any single character, and ending with C. It returns false.

```
MATCH("ABC", "X.C")
```

MOD()

Returns the modulo value for a number and a divisor.

Syntax M	OD(number,	divisor)
----------	------------	----------

Argumentsnumber
The number from which to derive the mod value.divisor
The divisor for the mod function.ReturnsReturns the remainder value of number divided by divisor.

Example The following example computes the remainder of PriceEstimate data field divided by 12, returning an integer. For example, if the PriceEstimate value is 27365, MOD() returns 5.

MOD([PriceEstimate], 12)

MONTH()

Returns the month for a specified date value.

Syntax MONTH(date)

MONTH(date, option)

Arguments date

The date or date expression whose month to get.

option

A number that represents the month format to return. Use one of the following values:

- 1 to get the month as a number from 1 to 12.
- 2 to get the full month name, for example, January. The result is locale-specific.
- 3 to get the abbreviated month name, for example, Jan. The result is locale-specific.

If you omit option, MONTH() returns the month as a number.

- **Returns** The month for a specified date value.
- **Example** The following example returns the month (1 12) for each value in the ShipDate data field:

MONTH([ShipDate])

The following example returns the full month name for each ShipDate value:

```
MONTH([ShipDate], 2)
```

NOT()

Negates a Boolean expression.

Syntax	NOT(expression)
Argument	expression The Boolean value or expression to negate.
Returns	True if the expression evaluates to FALSE, and false if the expression evaluates to TRUE.
Example	The following example uses NOT() in conjunction with the IF() and LIKE() functions. It tests if the value in the State data field is not CA. If the value is not CA, it returns the value of the Markup data field multiplied by 10%. If the value is CA, it returns the value of the Markup data field multiplied by 15%:
	IF(NOT(LIKE([State], "CA")),[Markup]*10%,[Markup]*15%)
	The previous IF() statement is semantically equivalent to the following statement:
	IF(LIKE([State], "CA"),[Markup]*15%,[Markup]*10%)

NOTNULL()

Tests if a value in a specified data field is a non-null value.

Syntax	NOTNULL(value)
Argument	value The data field in which to check for non-null values.
Returns	True if a value in the specified data field is not a null value; returns false otherwise.
Example	The following example uses NOTNULL() in conjunction with the IF() function to test for non-null values in the BirthDate data field. If there is a non-null value, the BirthDate value is displayed; otherwise the string "No date specified" is displayed.
	IF(NOTNULL([BirthDate]), [BirthDate], "No date specified")

NOW()

Returns the current date and time.

Syntax NOW() Returns The current date and time. For example:

Sep 23, 2008 11:56 AM

Example The following example uses the DIFF_MINUTE() and NOW() functions to calculate the number of minutes from the current date and time to Christmas:

DIFF_MINUTE(NOW(), "12/25/08 12:00 AM")

QUARTER()

Returns the quarter number for a specified date value.

Syntax QUARTER(date)
Arguments date The date or date expression whose quarter number to get.
Returns A number from 1 to 4 that represents the quarter for a specified date value. Quarter 1 starts in January.
Example The following example displays the quarter number for each value in the CloseDate data field: QUARTER([CloseDate]) The following example displays a string—Q1, Q2, Q3, or Q4—for each value in the CloseDate data field: "Q" & QUARTER([CloseDate])

RANK()

Returns the rank of a value in a set of values. The rank of a value ranges from 1 to the number of values in the set. If two values are identical, they have the same rank.

Syntax RANK(expr)

RANK(expr, ascending, groupLevel)

Arguments expr

The expression that specifies the values to evaluate. The field can be of string, numeric, or date type.

ascending

Use one of the following values:

- 0 to rank values in descending order. In descending order, the highest value is ranked 1, and the lowest value is equal to the number of values in the set.
- 1 to rank values in ascending order. In ascending order, the lowest value is ranked 1, and the highest value is equal to the number of values in the set.

If you omit the ascending argument, RANK() assumes 0 (descending order).

groupLevel

The numeric index of the group whose values to use in the calculation. 0 indicates the table, 1 indicates the first group, 2 indicates the second group, and so on. If you do not supply a value for groupLevel, the function performs the calculation over all the values in the table.

- **Returns** A number that represents the rank of a value in the specified data field in the table or in the specified group.
- **Example** The following example ranks each value in the Score data field. The ranking is performed over all the values in the table.

RANK([Score])

The following example ranks each value in the Score data field in ascending order. The ranking is performed over all the values in each group at the second level.

```
RANK([Score], 1, 2)
```

RATIO

Returns the ratio, MeasureA/MeasureB.

Category Math

- Measure Select the first measure name from the list.
- **Measure** Select the second measure name from the list.
- **Returns** Interactive Crosstabs divides the first measure value by the second measure value and displays the ratio value.
- **Example** In a product line column, display a revenue column and a customer count column. Use the computed measure, Ratio, to divide revenue by the number of customers. Display the ratio in a Ratio of Revenue to CustomerCount column, as shown in Figure 11-1. Where the results of division by zero or an empty value occurs, NaN indicates the ratio value is not a number.

Product Line		📀 Classic Cars	
State	Ratio	Revenue	Number of Customers
•	\$45,961	\$2,298,038	50
⊕ BC	\$13,962	\$27,924	2
OA	\$41,688	\$458,564	11
📀 CT	\$29,890	\$89,671	3
📀 Isle of Wight	\$4,174	\$4,174	1
MA	\$27,921	\$223,367	8
OH	\$69,150	\$69,150	1

Figure 11-1 Displaying computed ratio values

RIGHT()

Extracts a substring from a string, starting from the rightmost, or last, character.

Syntax RIGHT(str)

RIGHT(str, n)

Arguments str

The string from which to extract a substring.

n

The number of characters to extract, starting from the last character.

- **Returns** A substring of a specific length.
 - If you omit n, the number of characters to extract, the function returns the last character only.
 - If n is zero, the function returns an empty string.
 - If n is greater than the length of the string, the function returns the entire string.

Example The following example displays the last four characters of each value in the ProductCode data field:

RIGHT([ProductCode], 4)

The following example uses RIGHT() in conjunction with the LEN() and FIND() functions to display the characters that appear after the hyphen in a product code. This example assumes that the number of characters after the hyphen varies. Therefore, the length of the entire string (returned by LEN()) minus the length up to the hyphen (returned by FIND()) is the number of characters to display.

```
RIGHT([ProductCode], (LEN([ProductCode]) - FIND("-",
[ProductCode])))
```

If the product code is ModelA-Ford, RIGHT() returns Ford. If the product code is ModelB-Toyota, RIGHT() returns Toyota.

ROUND()

Rounds a number to a specified number of digits.

Syntax ROUND(num)

ROUND(num, dec)

Arguments num

The number to round.

dec

The number of digits up to which to round num. If you omit dec, ROUND() assumes 0.

- **Returns** A number rounded to a specified number of digits.
- **Example** The following example rounds the numbers in the PriceEstimate data field to return an integer. For example, if the PriceEstimate value is 1545.50, ROUND() returns 1546. If the PriceEstimate value is 1545.25, ROUND() returns 1545.

```
ROUND([PriceEstimate])
```

The following example rounds the numbers in the PriceEstimate data field to one decimal place. For example, if the PriceEstimate value is 1545.56, ROUND() returns 1545.6. If the PriceEstimate value is 1545.23, ROUND() returns 1545.2.

```
ROUND([PriceEstimate], 1)
```

The following example rounds the numbers in the PriceEstimate data field to one digit to the left of the decimal point. For example, if the PriceEstimate value is 1545.56, ROUND() returns 1550. If the PriceEstimate value is 1338.50, ROUND() returns 1340.

```
ROUND([PriceEstimate], -1)
```

ROUNDDOWN()

Rounds a number down to a specified number of digits.

Syntax ROUNDDOWN(num)

ROUNDDOWN(num, dec)

Arguments num

The number to round down.

dec

The number of digits up to which to round num down. If you omit dec, ROUND() assumes 0.

- **Returns** A number rounded down to a specified number of digits.
- **Example** The following example rounds down the numbers in the PriceEstimate data field to return an integer. For example, if the PriceEstimate value is 1545.25, ROUNDDOWN() returns 1545. If the PriceEstimate value is 1545.90, ROUNDDOWN() returns 1545.

ROUNDDOWN([PriceEstimate])

The following example rounds down the numbers in the PriceEstimate data field to one decimal place. For example, if the PriceEstimate value is 1545.56, ROUNDDOWN() returns 1545.5. If the PriceEstimate value is 1545.23, ROUNDDOWN() returns 1545.2.

```
ROUNDDOWN([PriceEstimate], 1)
```

The following example rounds the numbers in the PriceEstimate data field down to one digit to the left of the decimal point. For example, if the PriceEstimate value is 1545.56, ROUNDDOWN() returns 1540. If the PriceEstimate value is 1338.50, ROUNDDOWN() returns 1330.

```
ROUNDDOWN([PriceEstimate], -1)
```

ROUNDUP()

Rounds a number up to a specified number of digits.

Syntax ROUNDUP(num)

ROUNDUP(num, dec)

Arguments num The number to round up. dec

The number of digits up to which to round num up. If you omit dec, ROUND() assumes 0.

- **Returns** A number rounded up to a specified number of digits.
- **Example** The following example rounds up the numbers in the PriceEstimate data field to return an integer. For example, if the PriceEstimate value is 1545.25, ROUNDUP() returns 1546. If the PriceEstimate value is 1545.90, ROUNDUP() returns 1546.

ROUNDUP([PriceEstimate])

The following example rounds up the numbers in the PriceEstimate data field to one decimal place. For example, if the PriceEstimate value is 1545.56, ROUNDUP() returns 1545.6. If the PriceEstimate value is 1545.23, ROUNDUP() returns 1545.3.

```
ROUNDUP([PriceEstimate], 1)
```

The following example rounds up the numbers in the PriceEstimate data field to one digit to the left of the decimal point. For example, if the PriceEstimate value is 1545.56, ROUNDUP() returns 1550. If the PriceEstimate value is 1338.50, ROUNDUP() returns 1340.

```
ROUNDUP([PriceEstimate], -1)
```

RUNNINGSUM()

Calculates a running sum for each data row. A running sum is a total accumulated from row to row.

- Syntax RUNNINGSUM(expr)
- Arguments expr

The expression that specifies the values to use in the calculation. The data type must be numeric.

- **Returns** A cumulative total for each row.
- **Example** The following example calculates a running sum for each value in the LineItemTotal. For example, if the LineItemTotal field contains 50, 75, 80, 90, and 95, RUNNINGSUM() returns 50, 125, 205, 295, and 390 for each row, respectively.

RUNNINGSUM([LineItemTotal])

SEARCH()

Finds the location of a substring in a string. The substring can contain wildcard characters.

Syntax SEARCH(pattern, str)

SEARCH(pattern, str, startPosition)

Arguments pattern

The string pattern to search for. You must enclose the pattern in double quotation marks (" "). You can use the following special characters in a pattern:

- An asterisk (*) matches zero or more characters, including spaces. For example, t*n matches tn, tin, and teen.
- A question mark (?) matches exactly one character. For example, t?n matches tan, ten, tin, and ton. It does not match teen or tn.

str

The string in which to search.

startPosition

The position in str where the search starts.

- **Returns** The numerical position of the string pattern in the string. The first character of a string starts at 1. If the substring is not found, SEARCH() returns 0.
- **Example** The following example searches for the string pattern, S*A, in each product code. If the product name is KBS5412A, SEARCH() returns 3.

SEARCH("S*A", [ProductCode])

The following example uses SEARCH() in conjunction with the LEFT() function to display the characters that precede the first space character in a product name. The LEFT() function extracts a substring of a specified length, starting from the first character. In this example, the length of the substring to display is equal to the numerical position of the space character.

LEFT([ProductName], SEARCH(" ", [ProductName]))

If the product name is 1969 Ford Falcon, the expression returns 1969.

SQRT()

Calculates the square root of a number.

Syntax	SQRT(num)
Argument	num The number, or numeric expression that specifies the number, for which you want to find the square root. The number must be a positive number.
Returns	A number that is the square root of num.

Example The following example calculates the square root of each value in the LotSize data field:

```
SQRT([LotSize])
```

The following example uses SQRT() to calculate the actual distance traveled uphill, given the base distance and elevation values. This example applies the Pythagorean theorem, which states that $a^2 + b^2 = c^2$. Using this theorem, the actual distance traveled is c, which means we want to calculate:

$$c = \sqrt{a^2 + b^2}$$

which translates to the following expression:

```
SQRT((([Distance] * [Distance]) + ([Elevation] * [Elevation])))
```

TODAY()

Returns the current date that includes a time value of midnight, 12:00 AM.

Returns The current date in the following format:

Sep 25, 2008 12:00 AM

Example The following example calculates the number of days from the current date to Christmas:

DIFF_DAY(TODAY(), "12/25/08")

The following example calculates the number of years from each value in the HireDate data field to the current date:

DIFF_YEAR([HireDate], TODAY())

TRIM()

Removes the leading and trailing blanks from a specified string. TRIM() does not remove blank characters between words.

Syntax	TRIM(str)
Argument	str The string from which to remove leading and trailing blank characters.
Returns	A string with all leading and trailing blank characters removed.
Example	The following example uses TRIM() to remove all leading and trailing blank characters from values in the FirstName and LastName data fields. The

expression uses the & operator to concatenate each trimmed FirstName value with a space, then with each trimmed LastName value.

```
TRIM([FirstName]) & " " & TRIM([LastName])
```

TRIMLEFT()

Removes the leading blanks from a specified string.

Syntax	TRIMLEFT(str)
Arguments	str The string from which to remove the leading blank characters.
Returns	A string with all leading blank characters removed.
Example	The following example concatenates a literal string with each value in the customerName data field. TRIMLEFT() removes all blank characters preceding the customerName value so that there are no extra blank characters between the literal string and the customerName value.
	"Customer name: " & TRIMLEFT([customerName])

TRIMRIGHT()

Removes the trailing blanks from a specified string.

Syntax	TRIMRIGHT(str)
Argument	str The string from which to remove the trailing blank characters.
Returns	A string with all trailing blank characters removed.
Example	The following example concatenates each value in the Comment data field with a semicolon, then with a value in the Action data field. TRIMRIGHT() removes all blank characters after the Comment value so that there are no extra blank characters between the Comment string and the semicolon.
	TRIMRIGHT([Comment]) & "; " & [Action]

UPPER()

Converts all letters in a string to uppercase.

Syntax UPPER(str)

Argument	str The string to convert to uppercase.
Returns	The specified string in all uppercase letters.
Example	The following example displays all the string values in the customerName data field in all uppercase:
	UPPER([customerName])

WEEK()

Returns a number from 1 to 52 that represents the week of the year.

Syntax	WEEK(date)
Argument	date The date or date expression whose week of the year to get.
Returns	A number that represents the week of the year for the specified date value.
Example	The following example gets the week number of the year for each date value in the ShipDate data field:
	WEEK([ShipDate])

WEEKDAY()

Returns the day of the week for a specified date value.

Syntax WEEKDAY(date, option)

Arguments date

The date or date expression from which you want to get the day of the week.

option

A number that represents the weekday format to return. Use one of the following values:

- 1 to get the day as a number from 1 (Sunday) to 7 (Saturday).
- 2 to get the day as a number from 1 (Monday) to 7 (Sunday).
- 3 to get the day as a number from 0 (Monday) to 6 (Sunday).
- 4 to get the full weekday name, for example, Wednesday. The result is locale-specific.
- 5 to get the abbreviated weekday name, for example Wed. The result is locale-specific.

If you omit option, WEEKDAY() assumes option 1.

Returns The day of the week for a specified date value.

Example The following example gets the full weekday name for each date value in the DateSold data field:

```
WEEKDAY([DateSold], 4)
```

YEAR()

Returns the four-digit year value for a specified date value.

Syntax	YEAR(date)
	date The date or date expression from which you want to extract the year part.
Returns	The number that represents the four-digit year for the specified date value.
Example	The following example gets the four-digit year for each date value in the ShipDate data field, and adds 15 to the four-digit year. For example, if the ShipDate value is Sep 16, 2008, YEAR() returns 2023.
	(YEAR([ShipDate]) + 15)

Functions used in aggregate calculations

This section describes the range of functions that perform aggregate calculations. In Report Studio, you can perform aggregate calculations across the data rows in a group, section, or across an entire report table, as shown in Table 11-1.

Description
Returns the average, or mean for a set of data rows. For example, if a report column contains values 5, 2, 7, and 10, AVERAGE returns 6.
Counts the number of data rows. If a column contains values 5, 2, 7, and 10, COUNT returns 4.
Counts the number of unique values in a set of data rows. If a report column contains values 5, 2, 5, 7, and 10, COUNTVALUE returns 4.
Returns the first value in set of data rows. If a report column contains data rows 5, 2, 7, and 10, FIRST returns 5.

 Table 11-1
 Aggregate functions

Aggregate function	Description
LAST	Returns the last value in a set of data rows. If a report column contains data row values 2, 5, 7, and 10, LAST returns 10.
MAX	Returns the largest value in a set of data rows. If a report column contains data row values 5, 2, 7, and 10, MAX returns 10. For string values, MAX returns the last alphabetical value. For date values, MAX returns the latest date.
MEDIAN	Returns the median, or middle value in a set of data rows. If a report column contains values, 5, 2, 7, and 10, MEDIAN returns 6.
MIN	Returns the smallest value in a set of data rows. If a report column contains data row values 5, 2, 7, and 10, MIN returns 2. For string data, MIN returns the first alphabetical value. For date values, MIN returns the earliest date.
MODE	Returns the mode, or the value that occurs most frequently in a set of data rows. If a report column contains values, 5, 2, 5, 7, and 10, MODE returns 5.
QUARTILE	Returns the quartile value in a set of data rows, given a specified quart (0-4). A quartile can be defined as any three values that divide a set of values into four equal parts, such that each part represents 1/4 of the set of values. MIN, MEDIAN, and MAX return the same value as QUARTILE when quart is equal to 0, 2, and 4, respectively. If a set of data rows contains 50, 75, 80, 90, and 95, and you specify a quart of 2, QUARTILE returns 80.
STDDEV	Returns the standard deviation of a set of data rows. Standard deviation is a statistic that shows how widely values disperse from the mean value. If a set of data rows contains 50, 75, 80, 90, and 95, STDDEV returns 17.536.
SUM	Adds all the values in a set of data rows. If a report column contains 50, 75, 80, 90, and 95, SUM returns 390.
	(continues)

 Table 11-1
 Aggregate functions (continued)

Aggregate function	Description
VARIANCE	Returns the variance of a set of data rows. 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 data rows contains 50, 75, 80, 90, and 95, VARIANCE returns 307.5. If a set of data rows contains 5, 2, 5, 7, and 10, VARIANCE returns 8.7.
WEIGHTEDAVE	Returns the weighted average value in a set of data rows, given weights specified in another set of values. In a weighted average, each number is assigned a weight or degree of importance. These weights determine the relative importance of each number on the average. Grades are often computed using a weighted average. For example, for a set of scores 50, 75, 80, 90, and 95, with respective weights, 10, 25, 15, 30, and 20, WEIGHTEDAVE returns 81.75.

Table 11-1 Aggregate functions (continued)

Operators

This section is a complete reference to all of the operators that you can use when you create expressions. This reference organizes the operators into the following categories:

- Operators in computed column expressions
- Operators in conditional formatting and filter condition expressions

Operators in computed column expressions

Table 11-2 lists the operators you can use when you write expressions for a computed column.

Operator	Use to	Example
+	Add two or more numeric values.	[OrderAmount] + [SalesTax]
-	Subtract one numeric value from another.	[OrderAmount] - [Discount]

 Table 11-2
 Operators in computed column expressions

Operator	Use to	Example
*	Multiply numeric values.	[Price] * [Quantity]
/	Divide numeric values.	[Profit]/12
\wedge	Raise a numeric value to a power.	[Length]^2
%	Specify a percent.	[Price] * 80%
=	Test if two values are equal.	IF([ProductName] = "1919 Ford Falcon", "Discontinued Item", [ProductName])
>	Test if one value is greater than another value.	IF([Total] > 5000, [Total]*15%, [Total]*10%)
<	Test if one value is less than another value.	IF([SalePrice] < [MSRP], "Below MSRP", "Above MSRP")
>=	Test if one value is greater than or equal to another value.	IF([Total] >= 5000, [Total]*15%, [Total]*10%)
<=	Test if one value is less than or equal to another value.	IF([SalePrice] <= [MSRP], "Below or equal to MSRP", "Above MSRP")
<>	Test if two values are not equal.	IF([Country] <> "USA", "Imported product", "Domestic product")
AND	Test if two or more conditions are true.	IF(([Gender] = "Male" AND [Salary] >= 150000 AND [Age] < 50), "Match found", "No match")
OR	Test if any one of multiple conditions is true.	IF(([City] = "Boston") OR ([City] = "San Francisco"), "U.S.", "Europe and Asia")
&	Concatenate string values.	[FirstName] & " " & [LastName]

 Table 11-2
 Operators in computed column expressions

Operators in conditional formatting and filter condition expressions

Table 11-3 lists the operators you can use when you create expressions for conditional formatting and filter conditions.

Operator	Use to	Example
Between	Test if a column value is between two specified values.	Profit Between 1000 and 2000
Bottom N	Test if a column value is among the lowest <i>n</i> values.	SalesAmount Bottom N 10
Bottom Percent	Test if a column value is in the bottom <i>n</i> percent of all values.	SalesAmount Bottom Percent 5
Equal to	Test if a column value is equal to a specified value.	Country Equal to France
Greater Than	Test if a column value is greater than a specified value.	Total Greater Than 5000
Greater Than or Equal to	Test if a column value is greater than or equal to a specified value.	Total Greater Than or Equal to 5000
In	Test if a column value is in the list of specified values. Use to select more than a single comparison value.	Country In USA, Canada, Mexico
Is Blank	Test if a column value is blank (" "). This operator applies only to string values.	E-mail Is Blank
Is False	Test if a column value is false.	LoanApproved Is False
Is Not Blank	Test if a column value is not blank. This operator applies only to string values.	Email Is Not Blank
Is Not Null	Test if a column value is not a null value. A null value means that no value is supplied.	CreditLimit Is Not Null
Is Null	Tests if a column value is a null value. A null value means that no value is supplied.	CreditLimit Is Null
Is True	Test if a column value is true.	LoanApproved Is True
Less Than	Test if a column value is less than a specified value.	Total Less Than 5000
Less Than or Equal to	Test if a column value is less than or equal to a specified value.	Total Less Than or Equal to 5000

 Table 11-3
 Operators in conditional formatting and filter condition expressions

Operator	Use to	Example
Like	Test if a column value matches a string pattern.	ProductName Like %Ford%
Month to Date	Test if a column value matches a date value.	Month to Date 3/15/2011
Month to Date Last Year	Test if a column value matches a date value and displays last year's values.	Month to Date Last Year 3/15/2011
Match	Test if a column value matches a string pattern.	ProductCode Match S20
Not Between	Test if a column value is not between two specified values.	Profit Not Between 1000 and 2000
Not Equal to	Test if a column value is not equal to a specified value.	Country Not Equal to France
Not In	Test if a column value is not in the specified list of values.	Country Not In USA, Canada, Mexico
Not Like	Test if a column value does not match a string pattern.	ProductName Not Like %Ford%
Not Match	Test if a column value does not match a string pattern.	Product Code Not Match S10
Top N	Test if a column value is among the top <i>n</i> values.	SalesAmount Top N 10
Top Percent	Test if a column value is in the top n percent of all values.	SalesAmount Top Percent 5
Year to Date	Test if a column value matches a date value.	Year to Date 3/15/2011
Year to Date Last Year	Test if a column value matches a date value and displays last year's values.	Year to Date Last Year 3/15/2011

 Table 11-3
 Operators in conditional formatting and filter condition expressions

Operators in relative time period conditions

Table 11-4 describes the time periods available for the Time Period property. All the time periods are relative to a reference date, which can be the current date defined as the date the report runs, a date you specify, or the latest date in the time dimension.

	supported time periods
Time period	Description
Current Month	The entire month relative to the month and year portions of the reference date. For example, if the reference date is 2011-01-10, the period is 2011-01-01 to 2011-01-31.
Current Period	The entire period from a specified period relative to the reference date. For example, use to aggregate data for the same quarter five years ago.
	This time period requires two additional properties:
	 The First Period, which specifies year, quarter, or month as the type of period for which to aggregate data
	 Number of Periods Ago, which specifies the number of prior periods (type of period specified next), from which to begin the calculation
	 The Second Period, which specifies year, quarter, month, or day as the type of period
	For example, if the reference date is 2012-02-08, to aggregate data for the same quarter five years ago, specify the following:
	■ The First Period: Quarter
	 Number of Periods Ago: 5
	The Second Period: Year
	Data is aggregated for the entire quarter, 2007-01-31 to 2007-03-31.
Current Quarter	The entire quarter relative to the month and year portions of the reference date. For example, if the reference date is 2011-12-15, the period is 2011-10-01 to 2011-12-31.
Current Year	The entire year relative to the year portion of the reference date. For example, if the reference date is 2011-06-30, the period is 2011-01-01 to 2011-12-31.
Month to Date (MTD)	The period starting at the beginning of the reference date's month and ending at the reference date. For example, if the reference date is 2011-12-25, the period is 2011-12-01 to 2011-12-25.
Month to Date Last Year	Same as Month to Date, but for the previous <i>n</i> th year. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, if the reference date is 2011-12-25 and Number of Years Ago is 1, the period is 2010-12-01 to 2010-12-25.

 Table 11-4
 Supported time periods

Time period	Description
Next N Periods	The next <i>n</i> periods from the reference date. This time period requires two additional properties:
	 Number of Periods Ago, which specifies the number of periods
	 The First Period, which specifies year, quarter, month, week, or day as the period in which to begin the calculation
	For example, if the reference date is 2012-01-01, Number of Periods Ago is 1, and The First Period is Month, then the period is 2012-01-01 to 2012-01-31.
Period To Date	The period from a specified period relative to the reference date. For example, use to aggregate data for the same quarter to date, five years ago.
	This time period requires three additional properties:
	 The First Period, which specifies either year, quarter, or month as the type of period for which to aggregate data
	 Number of Periods Ago, which specifies the number of prior periods (type of period specified next), from which to begin the calculation
	 The Second Period, which specifies either year, quarter, month, or day
	For example, if the reference date is 2012-02-08, to aggregate data for the same quarter up to 02-08, five years ago, specify the following:
	The First Period: Quarter
	 Number of Periods Ago: 5
	 The Second Period: Year
	Data is aggregated for 2007-01-01 to 2007-02-08.
Previous N Month	The previous <i>n</i> th month relative to the month and year portion of the reference date. The day portion is ignored. This time period requires another property, Number of Months Ago, which specifies which prior month. For example, to specify three months back from the reference month, type 3. If the reference date is 2012-01-15 and N Months Ago is 3, then the period is 2011-10-01 to 2011-10-31.

Table 11-4 Supported time periods (continued)	
--	--

(continues)

Time period	Description
Previous N Month to Date	The previous <i>n</i> th month relative to the reference date. This time period requires another property, Number of Months Ago, which specifies which prior month. For example, to specify three months back from the reference date, type 3. If the reference date is 2012-01-15 and Number of Months Ago is 3, then the period is 2011-10-01 to 2011-10-15.
Previous N Quarter	The previous <i>n</i> th quarter relative to the month and year portion of the reference date. The day portion is ignored. This time period requires another property, Number of Quarters Ago, which specifies which prior quarter. For example, to specify one quarter back from the reference date, type 1. If the reference date is 2012-03-15 and Number of Quarters Ago is 1, then the period is 2011-10-01 to 2011-12-31.
Previous N Quarter to Date	The previous <i>n</i> th quarter relative to the reference date. This time period requires another property, Number of Quarters Ago, which specifies which prior quarter. For example, to specify one quarter back from the reference date, type 1. If the reference date is 2012-03-15 and Number of Quarters Ago is 1, then the period is 2011-10-01 to 2011-12-15.
Previous N Year	The previous <i>n</i> th year relative to the year portion of the reference date. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, to specify two years back from the reference date, type 2. If the reference date is 2011-09-30 and Number of Years Ago is 2, then the period is 2009-01-01 to 2009-12-31.
Previous N Year to Date	The previous <i>n</i> th year relative to the reference date. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, to specify two years back from the reference date, type 2. If the reference date is 2011-09-30 and Number of Years Ago is 2, then the period is 2009-01-01 to 2009-09-30.
Quarter to Date (QTD)	The period starting at the beginning of the reference date's quarter and ending at the reference date. For example, if the reference date is 2011-12-25, the period is 2011-10-01 to 2011-12-25.
Quarter to Date Last Year	Same as Quarter to Date, but for the previous <i>n</i> th year. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, if the reference date is 2011-12-25 and Number of Years Ago is 1, then the period is 2010-10-01 to 2010-12-25.

 Table 11-4
 Supported time periods (continued)

Time period	Description
Trailing N Days	The last <i>n</i> days from the reference date. This time period requires another property, Number of Day(s) Ago, which specifies the number of trailing days. For example, if the reference date is 2011-12-25, and Number of Day(s) Ago is 15, then the period is 2011-12-10 to 2011-12-24.
Trailing N Months	The last <i>n</i> months from the reference date. This time period requires another property, Number of Months Ago, which specifies the number of trailing months. For example, if the reference date is 2011-12-25, and Number of Months Ago is 3, then the period is 2011-09-25 to 2011-12-25.
Trailing N Periods	The last n periods from a specified period relative to the reference date. For example, use to aggregate data for the two months prior to the reference date five years ago.
	This time period requires four additional properties. The first and second properties define the period for which to aggregate data:
	 Number of Periods Ago, which specifies the number of periods
	 The First Period, which specifies year, quarter, month, or day as the type of period
	The third and fourth properties define the period relative to the reference date from which to begin the calculation.
	 Number of Periods Ago, which specifies the number of prior periods
	 The Second Period, which specifies either year, quarter, month, or day as the type of period
	For example, if the reference date is 2012-01-01, to aggregate data for the two months prior to January 1 five years ago, specify the following:
	 Number of Periods Ago: 2
	 The First Period: Month
	 Number of Periods Ago: 5
	The Second Period: Year
	Data is aggregated for the period 2007-11-01 to 2007-12-31.
Year to Date (YTD)	The period starting at the beginning of the reference date's year and ending at the reference date. For example, if the reference date is 2011-06-30, the period is 2011-01-01 to 2011-06-30.

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 Supported time periods (continued)

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