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SQL Server® 2008 Reporting Services

Stacia Misner



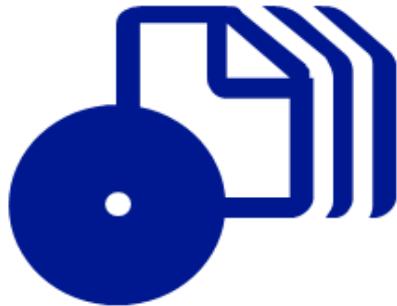
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Acknowledgments

Each time I start a new book project, I am amazed to see the way it develops a life of its own after it leaves my custody. Many other people have left their mark on this book's pages as they made the changes necessary to improve upon my initial work and I'm so grateful for their commitment to quality and accuracy. As always, I enjoy working with Microsoft Press and appreciate the great team of people they have brought together for this project.

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Of course, my family deserves many thanks as well. My husband, Gerry, has learned to indulge me in my writing projects and patiently sacrifices some of our time together so that I can focus on writing, but he's also my biggest cheerleader and encourages me every step of the way. For this, and all he has done for me in our many years together, I am eternally grateful.

I also appreciate my daughter's help on this project. Erika's glimmer of understanding of what I do for a living first developed when she provided feedback from a "newbie's" perspective on my last book, *Microsoft SQL Server 2005 Express Edition: Start Now!* (Microsoft Press, 2007). Little did either of us realize at the time that she would decide to learn more about what I do and eventually join me in my practice as a business intelligence consultant. Her experience using Reporting Services 2005 on a variety of projects since that time has given her an excellent perspective on the features that make Reporting Services 2008 compelling, and consequently, she was a great help to me in preparing many of the procedures in this book to highlight those features. I look forward to many more collaborative ventures together in the future.

Introduction

Microsoft Reporting Services is the component of Microsoft SQL Server 2008 that provides an enterprise-ready and extensible presentation layer for the Microsoft business intelligence platform. In its third release, Reporting Services continues its support for the three stages of the reporting life cycle, but it now includes several new features that improve the report development, management, and delivery processes. The new tablix and chart controls give you more options for presenting data in a report, and the new server architecture makes it easier for administrators to manage server resources and for users to access and page through large reports. As you complete the step-by-step procedures in this book, you are introduced to these and other new features, in addition to all the other features that have made Reporting Services a popular choice for implementing a reporting platform in organizations of all sizes since its initial release in 2004.

When you have finished the book, you will know how to build reports using each type of structure supported by Reporting Services and how to enhance reports with interactivity and data visualization techniques. You use these reports to learn how to move reports from the development workstation to the server environment and how to manage and secure the reports once they're on the report server. Then you use these reports again to learn how users can access reports online and subscribe to reports for delivery on a scheduled basis. You also learn how to build and use a report model for ad hoc reporting. If you have programming skills, you can continue learning about the extensibility of Reporting Services by enhancing the reports with custom code, by developing tools to manage the report server, and by exploring techniques for integrating access to reports managed by Reporting Services into portals and custom applications.

Who This Book Is For

Because Reporting Services is a platform of technologies rather than a single application, a variety of people serving in different roles and having different skill sets all need to learn how to work with some aspect of Reporting Services. Whether you're a report developer, IT administrator, or business user, you can use this book to learn how to perform the tasks for which you are responsible. If you're completely new to Reporting Services, this book teaches you the fundamental concepts required to build, manage, and access reports. You need no prior experience with Reporting Services to use this book successfully. On the other hand, if you're already familiar with an earlier version of Reporting Services, this book gives you a guided tour of the new features found in Reporting Services 2008.

Finding Your Best Starting Point in This Book

Even if your primary responsibility with Reporting Services requires you to focus on only one component, you benefit from an understanding of all the capabilities that Reporting Services supports. For this reason, if you have time, you should work through the book from beginning to end for the best experience.

Because this book can be used by readers with different needs, you can also choose to work through only the chapters that focus on your area of responsibility. Each part of the book contains related chapters in which the procedures are designed to build up your skills progressively and are necessarily interconnected. For the best experience, you should read all the related chapters and perform the steps in these chapters in sequence. Where applicable, instructions at the beginning of a chapter alert you to a requirement to complete procedures in a previous chapter before continuing. If you plan to read only about the features that apply to you, use the following table to find your best starting point.

If You Are	Follow These Steps
A business user who wants to access managed reports online	<ol style="list-style-type: none">1. Install the sample files as described in the section entitled "Sample Files," later in this Introduction.2. Work through the first two chapters to learn about Reporting Services and to install it on your computer.3. Complete Part IV, "Viewing Reports," to learn how to access reports that have been published to the report server.
A business user or report developer who uses report models for ad hoc reporting	<ol style="list-style-type: none">1. Install the sample files as described in the section entitled "Sample Files," later in this Introduction.2. Work through the first two chapters to learn about Reporting Services and to install it on your computer.3. Complete Chapter 9, "Developing Report Models," to learn how to construct a report model, and Chapter 14, "Creating Ad Hoc Reports," to learn how to develop ad hoc reports using a report model. Even if you're a business user who is not responsible for report model development, you should complete Chapter 9 to learn key concepts and terminology and to build the report model that you will need when developing ad hoc reports in Chapter 14.4. Review the remaining chapters in Part IV to learn how to access ad hoc and managed reports that have been published to the report server.

If You Are	Follow These Steps
A business user with some experience developing database queries who develops managed reports	<ol style="list-style-type: none">1. Install the sample files as described in the section entitled "Sample Files," later in this Introduction.2. Work through the chapters in Part I, "Getting Started with Reporting Services," to learn about Reporting Services, to install it on your computer, and to learn how to use Report Builder 2.0.3. Review the chapters that interest you in Part II, "Developing Reports," to learn how to build more advanced reports. In many cases, you can adapt the procedures in these chapters for use with Report Builder 2.0.4. Review the chapters that interest you in Part IV to learn how users access reports from the report server.
A report developer	<ol style="list-style-type: none">1. Install the sample files as described in the section entitled "Sample Files," later in this Introduction.2. Work through the chapters in Part I to learn about Reporting Services, to install it on your computer, and to learn how to use Report Builder 2.0.3. Complete Part II to learn how to use all the report development features available in Reporting Services.4. Review the chapters that interest you in Parts III and IV to become familiar with overall functionality in Reporting Services.5. If you have programming skills, complete Chapter 16, "Programming Reporting Services," to learn how you can customize Reporting Services.
A server administrator	<ol style="list-style-type: none">1. Install the sample files as described in the section entitled "Sample Files," later in this Introduction.2. Work through Chapter 1, "Introducing Reporting Services," and Chapter 2, "Installing Reporting Services," to learn about Reporting Services and to install it on your computer.3. Complete Part III to learn how to configure and manage the report server.4. Review the chapters that interest you in Part IV to understand how users interact with the report server.5. Skim Chapter 16 to discover how customization of Reporting Services might require changes on the report server and how to perform administrative tasks programmatically.

Conventions and Features in This Book

This book presents information using conventions designed to make the information readable and easy to follow. Before you start, read the following list, which explains conventions you see throughout the book and points out helpful features that you might want to use.

Conventions

- Each exercise is a series of tasks. Each task is presented as a series of numbered steps (1, 2, and so on). A round bullet (•) indicates an exercise that has only one step.
- Notes labeled “Tip” provide additional information or alternative methods for completing a step successfully.
- Notes labeled “Important” alert you to information you need to check before continuing.
- Text that you type appears in **bold**.
- A plus sign (+) between two key names means that you must press those keys at the same time. For example, “Press Alt+Tab” means that you hold down the Alt key while you press the Tab key.

Other Features

- Sidebars throughout the book provide more in-depth information about the exercise. The sidebars might contain background information, design tips, or features related to the information being discussed.
- Each chapter ends with a section entitled “Quick Reference,” which contains brief reminders of how to perform the tasks that you learned in the chapter.

Hardware and Software Requirements

You’ll need the following hardware and software to complete the exercises in this book:

- Windows Vista Home Premium, Windows Vista Business, Windows Vista Ultimate, Windows Vista Enterprise, Windows Server 2003 Standard SP2, Windows Server 2003 Data Center SP2, Windows Server 2003 Enterprise SP2, Windows Server 2008 Standard, Windows Server 2008 Data Center, or Windows Server 2008 Enterprise. The exercises also run using Microsoft Windows XP Professional SP2.
- Microsoft SQL Server 2008 Standard, SQL Server 2008 Enterprise, SQL Server 2008 Developer, or SQL Server 2008 Evaluation.
- Optional: Microsoft Windows SharePoint Services 3.0 or Microsoft Office SharePoint Server 2007.
- Optional: Microsoft Visual Studio 2008 Standard or Professional with either the Microsoft Visual Basic .NET or Microsoft Visual C# .NET library, and Visual Studio 2008 Service Pack 1.



Note Visual Studio 2008 is required only to complete Chapter 16. If you install it before you complete the other chapters, you will notice that the steps that you must follow to start a new project or to open an existing project will vary slightly from the steps written in those chapters. These steps were written with the assumption that you do not install Visual Studio 2008 until you reach Chapter 16.

- 1 gigahertz (GHz) Pentium III+ processor, or faster, with 2 GHz recommended.
- 512 GB of available, physical RAM with 2 GB recommended.
- Video (1,028 x 768 or higher resolution) monitor with at least 256 colors.
- CD-ROM or DVD-ROM drive for installation from disc.
- Microsoft mouse or compatible pointing device.

You also need to have Administrator access to your computer to configure SQL Server 2008 Reporting Services.

Sample Files

The companion CD inside this book contains the sample files that you use as you perform the exercises. By using these sample files, you won't waste time creating files that aren't relevant to the exercise. The files and the step-by-step instructions in the lessons also let you learn by doing, which is an easy and effective way to acquire and remember new skills.

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Installing the Sample Files

Perform the following steps to install the sample files and required software on your computer so that you can use them with the exercises.

1. Remove the companion CD from the package inside this book and insert it into your CD-ROM drive.



Note A license agreement should open automatically. If this agreement does not appear, open My Computer on the desktop or Start menu, double-click the icon for your CD-ROM drive, and then double-click StartCD.exe.

2. Review the license agreement. If you accept the terms, select the Accept option and then click Next.

A menu appears with options related to the book.

3. Click Install Practice Files.
4. Follow the instructions that appear.

The code samples are installed to the Microsoft Press\Rs2008sbs folder in your Documents folder on your computer. If your computer's operating system is Windows Vista or Windows Server 2008, your Documents folder is located at C:\Users\<login>\Documents, where <login> is your login name. If the operating system is Windows XP or Windows Server 2003, your Documents folder is located at C:\Documents And Settings\<login>\My Documents.

Using the Practice Files

Each chapter in this book explains when and how to use any practice files for that chapter. When it's time to use a practice file, the book lists the instructions for how to open the files.

Uninstalling the Code Samples

Perform the following steps to remove the code samples from your computer.

1. In Control Panel, open Add Or Remove Programs.
2. From the list of Currently Installed Programs, select Microsoft SQL Server 2008 Reporting Services Step by Step.
3. Click Remove.
4. Follow the instructions that appear to remove the code samples.

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Chapter 4

Designing Reports

After completing this chapter, you will be able to:

- Create a report server project in Business Intelligence Development Studio.
- Add a new or existing report to a report server project.
- Add a shared data source to a report server project.
- Define a dataset.
- Design a report using data regions and report items.
- Group and total data in a data region.
- Embed a report in another report as a subreport.
- Use properties to define placement and appearance of report items.
- Define page breaks and set properties related to paging.
- Add report items to the page header and page footer.

In this chapter, you learn how to use Report Designer in Business Intelligence Development Studio (BI Dev Studio) to develop reports. Many of the principles that you have already learned about using Report Builder 2.0 are also applicable to using Report Designer, so you can use either tool comfortably when you finish this chapter. You start by preparing a report server project to contain your reports and creating a data source and dataset to provide data for your report. Then you learn a variety of techniques for structuring data in a report and enhancing the appearance of your report.

Getting Started with Report Designer

Before you start report development using Report Designer, you must first perform some tasks to prepare the environment. Whereas Report Builder 2.0 supports development of one report at a time, as explained in Chapter 3, “Exploring Reporting Services,” the integrated development environment in BI Dev Studio allows you to work with multiple reports in the same environment. You use a *report server project* as a container to store these reports in a common location. Another difference from Report Builder 2.0 that you encounter when using BI Dev Studio is the ability to create a *shared data source* to store data source connection information independently of the reports. After creating a shared data source, you define the query used to extract data from the source for display in the report. After finishing these tasks, you’re ready to start developing reports.

Creating a Report Server Project

BI Dev Studio is a Microsoft Visual Studio shell program that provides many of the features of Visual Studio without requiring you to purchase and install Visual Studio. If you're new to the Visual Studio integrated environment, don't worry. You don't need to be a programmer to use this tool effectively. Before you start report development, you must create a report server project, which is a folder created to store a set of reports and shared data sources. When you create a new report server project, you define the location for this folder and a name for the solution to contain the report server project. A solution is simply a container for one or more projects, which can be any combination of project types supported by Visual Studio, including a report server project.

In this procedure, you create a report server project in BI Dev Studio.

Create a report server project

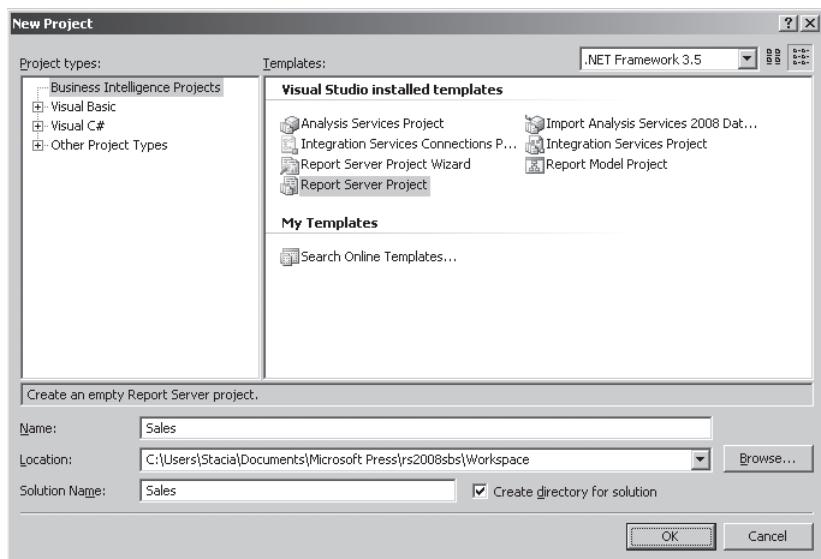
1. Click Start, select All Programs and Microsoft SQL Server 2008, and click SQL Server Business Intelligence Development Studio.
2. On the File menu, point to New, and click Project.
3. In the New Project dialog box, in the Templates pane, select Report Server Project.

When you create a new project, you have three templates from which to choose: Report Server Project Wizard, Report Server Project, and Report Model Project. You can use the Report Server Project Wizard to accelerate basic report design using a wizard interface. (To learn more about the Report Project Wizard, refer to the sidebar, "Using the Report Project Wizard," later in this chapter.) To meet specific report design requirements, however, you will likely find it better to use the Report Server Project as you learn how to do in this procedure. You learn how to use the Report Model Project in Chapter 9, "Developing Report Models."

4. In the Name box, type **Sales**.
5. In the Location box, type **C:\Users\<Username>\Documents\Microsoft Press\Rs2008sbs\Workspace**, as shown here.



Note If you're using Microsoft Windows XP or Windows Server 2003, navigate to C:\Documents and Settings\<Username>\My Documents\Microsoft Press\Rs2008sbs\Workspace.



6. Click OK.

Using the Report Project Wizard

The Report Project Wizard walks you step by step through the report development process. You define an embedded or shared data source, provide a query string, select a report layout, define groupings, and apply a style to set colors and fonts for the report. The wizard limits you to using a tabular or matrix layout. However, after the report is created, you can continue to fine-tune the report to meet your specifications.

Adding a Report to a Project

Now that you have a report server project ready, you can add a report to your report server project by using the Report Project Wizard, adding a new report manually, or importing a report from Microsoft Office Access.

In this procedure, you add a report to your report server project.

Add a report to a report server project

1. In Solution Explorer, right-click the Reports folder, select Add, and click New Item.

You might be tempted to click the Add New Report command on the context menu for Reports, but this command starts the Report Project Wizard. The Report Project Wizard is useful for quickly producing a basic report, but most report developers prefer to build a report manually.

2. In the Templates pane, select Report.

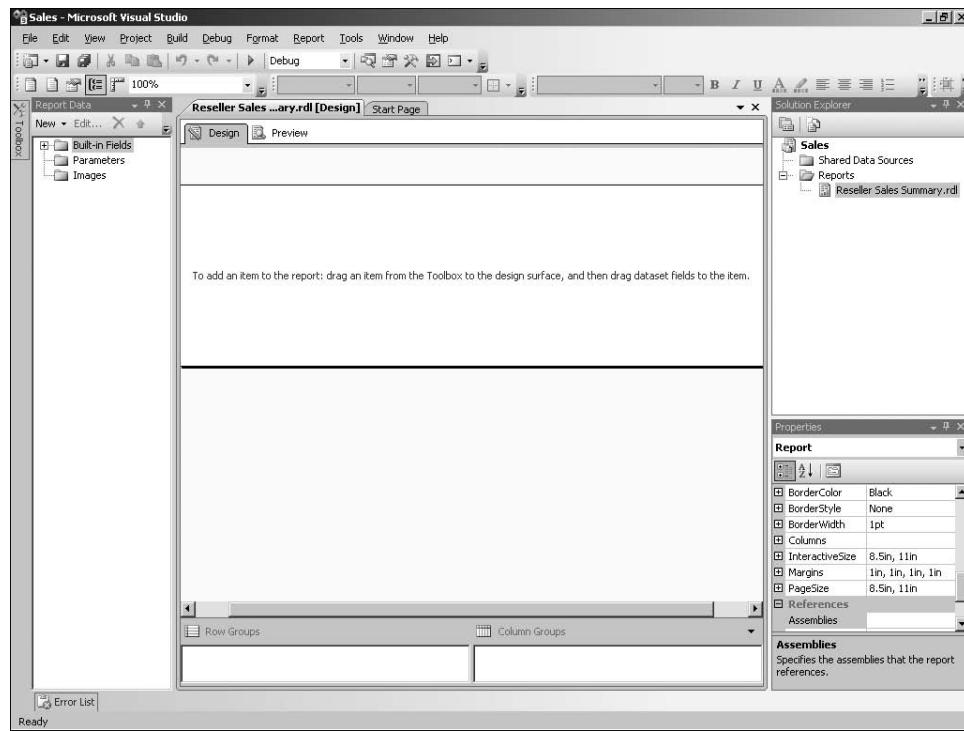
In addition to the Report template, the list of available templates includes the Report Project Wizard and Data Source templates. The Report Project Wizard template produces the same result as using the Add New Report command from the Reports context menu. Similarly, the Data Source template displays the same dialog box as the Add New Data Source command in the Shared Data Sources context menu.

3. In the Name box, type **Reseller Sales Summary.rdl**, and click Add.



Note You must provide the file extension .rdl for the file you are adding to the report server project.

After you click Add, the report appears in the solution and Report Designer displays in the document window.

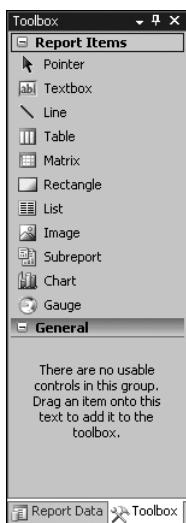


Before continuing to develop your report, take a few moments to become familiar with the layout of the design environment:

- **Toolbox** The Toolbox window is hidden by default when you first open a report and appears only as a tab on the left side of the window. The Toolbox window is similar to the Ribbon in Report Builder 2.0 introduced in Chapter 3. You use this window to add controls that define your report layout.
- **Report Data** The Report Data window displays to the left of the report layout. It contains three folders: Built-in Fields, Parameters, and Images. You use Built-in Fields to add commonly used expressions, such as *ReportName* or *PageNumber*, to your report. You learn how to work with the Parameters folder in Chapter 6, "Adding Interactivity." The Images folder stores images you use in the report, as you do later in this chapter. After you add a data source and a dataset to your report, these objects display in the Report Data window as well. Thus, the Report Data window organizes many of the key items you use within your report.
- **Report Designer** The Report Designer occupies the central window in the development environment and consists of two tabs. On the Design tab, you arrange the layout of data and graphical elements on your report. On the Preview tab, you can test the rendering of the report to different formats without first deploying your report to the report server. The Grouping pane appears at the bottom of the Report Designer window and displays a hierarchical view of groups defined for a selected data region.
- **Solution Explorer** This window appears to the right of Report Designer and displays the files associated with each project within your solution.
- **Properties** Each item you add to the report, as well as each area of the report (such as the body, page header, page footer, and even the report itself), has a set of properties to define its appearance and behavior. When you select an item or report area in Report Designer, you see its related properties in the Properties window, which displays to the right of Report Designer.

You can rearrange these windows while developing your report to give more space to Report Designer or to access items better in a window. For example, you can use the Auto Hide feature to minimize the Toolbox, Report Data, Solution Explorer, or Properties window. You can also undock a window from its default location and drag it to a new location.

4. Point to the Toolbox tab on the left side of the window, and then click the Auto Hide button (which looks like a pushpin and is displayed next to the Close button for the window) to open and lock the Toolbox window, shown here.



Notice that the Toolbox overlays the Report Data window to conserve the amount of space used on your screen. You use the tabs at the bottom of the current window to switch to the other window.

5. Click the Report Data tab to switch the visible window.

Instead of using the Auto Hide feature, you can close a window to maximize screen space for the Report Designer.

6. In the upper-right corner of the Report Data window, click the Close button (which appears as an X).

At any time, you can open a closed window by using the View menu.

7. On the View menu, click Report Data.

Creating a Data Source

A report requires a data source to identify where the data for the report is found and how the user is authenticated to determine whether permissions exist to retrieve the report data. You can choose to embed a data source within the report or to use a shared data source that is available to multiple reports. By using a shared data source, you can maintain connection and authentication information in a single location, which is generally the recommended approach. However, if you need to use a dynamic data source, such as when you need to use different servers for different users, then you must use an embedded data source.

In this procedure, you create a shared data source for the AdventureWorksDW2008 database.

Create a shared data source

1. In the Report Data window, click New, and then click Data Source.
2. In the Data Source Properties dialog box, in the Name text box, type **AdventureWorksDW2008**.



Note When you define a name for a data source, you cannot include spaces in the name and you must use a letter as the first character.

You can choose either to create an embedded connection or to use a shared data source reference. When you use an embedded connection, you can define an explicit connection string, as you did in Chapter 3, or you can click the Expression button (to the left of the Edit button) to build a dynamic connection string, which you learn how to do in Chapter 5, "Developing Expressions."

3. Select Use Shared Data Source Reference, and click New.



Note Because no shared data sources exist in the report server project, you must create a new data source before you can select a reference.

4. In the Shared Data Source Properties dialog box, in the Name text box, type **AdventureWorksDW2008**.
5. Open the Type drop-down list, review the available data providers, and select Microsoft SQL Server.

You can choose from the following data providers: Microsoft SQL Server, Object Linking and Embedding Database (OLE DB), Microsoft SQL Server Analysis Services, Oracle, Open Database Connectivity (ODBC), Extensible Markup Language (XML), Report Server Model, SAP NetWeaver BI, Hyperion Essbase, and Teradata. You must supply a connection string applicable to the selected data provider. If the Edit button is available after you select a data provider, you can use it to open the Connection Properties dialog box, which provides a graphical interface that prompts you for the properties required to construct the appropriate connection string.

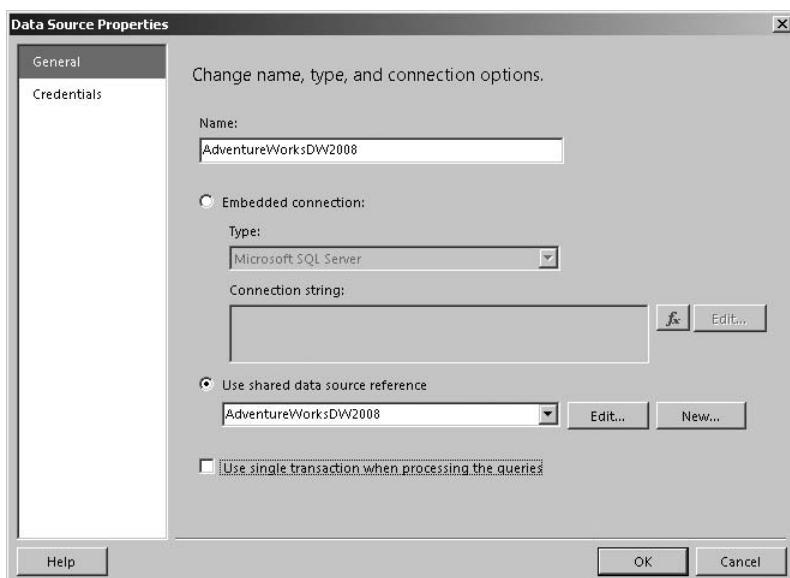
6. Click Edit.
7. In the Connection Properties dialog box, in the Server Name text box, type **localhost**.
8. In the Select Or Enter A Database Name drop-down list, select AdventureWorksDW2008, and click OK.
9. In the Shared Data Source Properties dialog box, click Credentials.

As you learned in Chapter 3, you must specify whether the report uses Windows authentication to pass through the current user's credentials, a hard-coded value for user name and password, a prompt at report execution to request the user to enter credentials, or no credentials at all. Unless the data source has no security defined, which is highly unusual, the credentials are used by the data source to authenticate the user before the query executes. Accordingly, the user account must have at least Read permissions on the data source.

10. Click OK to close the Shared Data Source Properties dialog box.

Notice that the AdventureWorksDW2008.rds file has been added to the Sales solution in the Shared Data Sources folder in the Solution Explorer window. AdventureWorksDW2008.rds is an XML file containing all the information required to connect to the data source. The shared data source deploys to the report server when you deploy the report, as you learn in Chapter 10, "Deploying Reports to a Server."

11. In the Data Source Properties dialog box, in the Use Shared Data Source Reference drop-down list, select AdventureWorksDW2008, as shown here.



Notice the Use Single Transaction When Processing The Queries check box at the bottom of the dialog box. You should select this check box when your report contains multiple datasets that reference the same shared data source and your data source cannot handle several parallel connections, or if you want the queries to execute as a single transaction. In other words, when this option is selected, if one query to the data source fails, then all queries to the same data source should also fail. If you leave this check box cleared, then the dataset queries execute in parallel.

12. Click OK to close the Data Source Properties dialog box.

Notice that the data source now appears in the Report Data window. This data source is actually a pointer to the data source file that you see in Solution Explorer. If you later change connection information in the shared data source file, you won't need to update the connection in your report because your report automatically uses the new connection information.

Creating a Dataset

As you learned in Chapter 3, a dataset defines a query for your report and contains the field list of data columns returned by the query. The Dataset Properties dialog box allows you to use a query designer for supported data sources, such as SQL Server or Analysis Services, to build the query text or to import the query text from a file saved on your computer or network. You can also test the query to be sure you're retrieving the right data before developing your report.

In this procedure, you add a dataset to return reseller sales amounts grouped by sales territory and by business type for the calendar year 2004.

Add a dataset

1. In the Report Data window, click New, and then click Dataset.
2. In the Dataset Properties dialog box, in the Name text box, type **ResellerSales**.

As with a data source, your dataset name cannot include spaces and must have a letter as the first character.

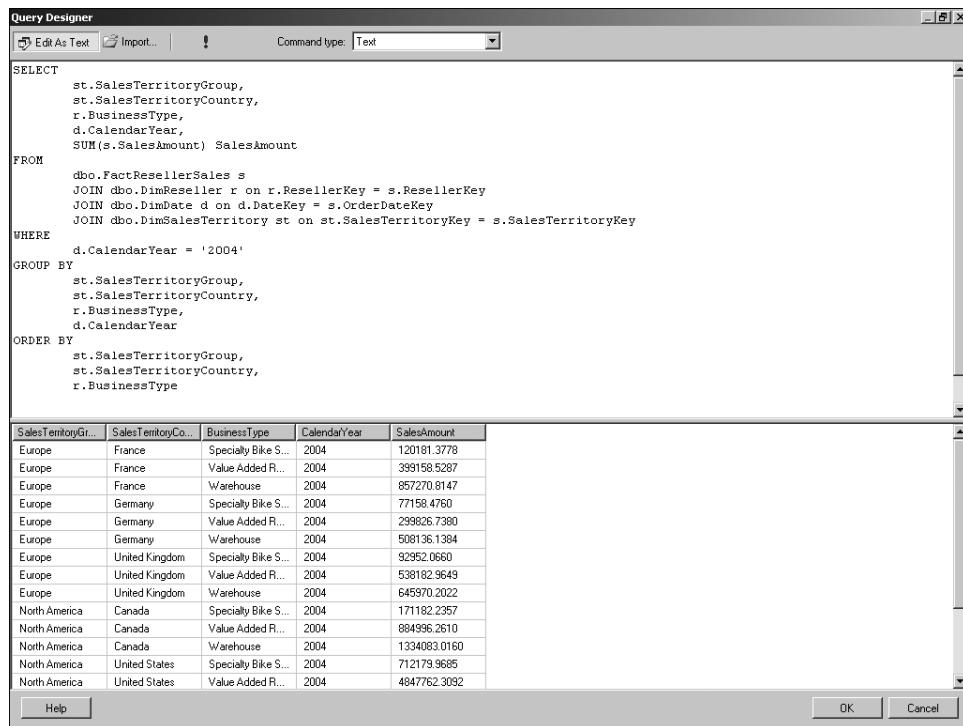
Notice that the data source is already selected. If you have multiple data sources defined in your report, then you must be sure to select the correct data source. You also have the option to create a new data source at this time if you skipped that step before attempting to create a dataset.

If you plan to write your own query, select Text as the query type, which is the default. Many database administrators prefer that reports use stored procedures to retrieve data from a database. When you select Stored Procedure as the query type, a list of available stored procedures displays in a drop-down list from which you make a selection. If you are using an OLE DB or ODBC data provider to connect to a SQL Server database, you can select Table as the query type to use the TableDirect feature of SQL Server to return all fields within a table.

Instead of providing static query text for a dataset, you can construct a query dynamically by specifying an expression. You learn how to do this in Chapter 5.

3. Click Query Designer.
4. On the toolbar, click Import.

5. In the Import Query dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap04 folder in your Documents folder, and double-click ResellerSalesSummary2004.sql. This query retrieves sales for each sales territory group, sales territory country, and reseller business type for the calendar year 2004.
6. On the toolbar, click the Run button (which displays as an exclamation point) to run the query, as shown here.



The screenshot shows the Microsoft Query Designer window. The top part contains a SQL query:

```

SELECT
    st.SalesTerritoryGroup,
    st.SalesTerritoryCountry,
    r.BusinessType,
    d.CalendarYear,
    SUM(s.SalesAmount) SalesAmount
FROM
    dbo.FactResellerSales s
JOIN dbo.DimReseller r on r.ResellerKey = s.ResellerKey
JOIN dbo.DimDate d on d.DateKey = s.OrderDateKey
JOIN dbo.DimSalesTerritory st on st.SalesTerritoryKey = s.SalesTerritoryKey
WHERE
    d.CalendarYear = '2004'
GROUP BY
    st.SalesTerritoryGroup,
    st.SalesTerritoryCountry,
    r.BusinessType,
    d.CalendarYear
ORDER BY
    st.SalesTerritoryGroup,
    st.SalesTerritoryCountry,
    r.BusinessType

```

The bottom part displays the results of the query as a table:

SalesTerritoryGr...	SalesTerritoryCo...	BusinessType	CalendarYear	SalesAmount
Europe	France	Specialty Bike S...	2004	120181.3778
Europe	France	Value Added R...	2004	399158.5287
Europe	France	Warehouse	2004	857270.8147
Europe	Germany	Specialty Bike S...	2004	77158.4760
Europe	Germany	Value Added R...	2004	299826.7380
Europe	Germany	Warehouse	2004	508136.1384
Europe	United Kingdom	Specialty Bike S...	2004	92952.0660
Europe	United Kingdom	Value Added R...	2004	538182.9649
Europe	United Kingdom	Warehouse	2004	645970.2022
North America	Canada	Specialty Bike S...	2004	171182.2357
North America	Canada	Value Added R...	2004	884996.2610
North America	Canada	Warehouse	2004	1334083.0160
North America	United States	Specialty Bike S...	2004	712179.9685
North America	United States	Value Added R...	2004	4847762.3092

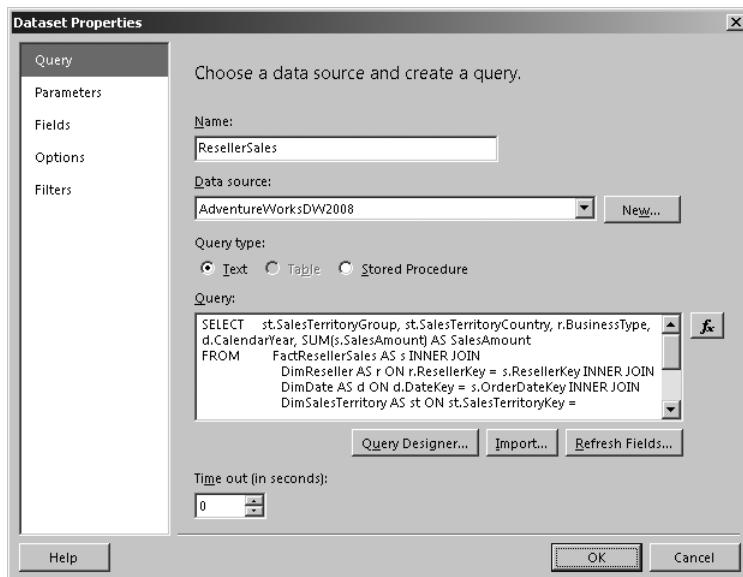
You can edit the query text if you need to make changes before saving the dataset query.

7. On the toolbar, click Edit As Text to disable the text editor and view the Query Designer.



Tip If you prefer a GUI, you can click Edit As Text to toggle to the Query Designer if it's supported by the selected data provider.

8. Click OK to close the Query Designer window and return to the Dataset Properties, as shown here.



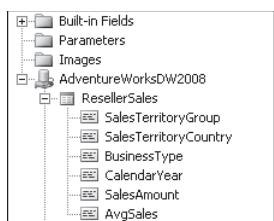
You can specify a time-out value in seconds to end execution if the query cannot execute within a fixed period of time. If you clear the value from the Time Out (In Seconds) box so that it's empty, the query never times out.

Notice also that the Dataset Properties dialog box has several other tabs, as follows:

- **Parameters** You can provide default values for query parameters if they are supported by the data source. These default values can alternatively be linked to report parameters, which you learn about in Chapter 6.
- **Fields** In addition to fields retrieved for the dataset by executing the query, you can define calculated fields, which you learn about in Chapter 5.
- **Options** You can specify options for your data, such as collation, case sensitivity, accent sensitivity, kanatype sensitivity, and width sensitivity. This page also includes an option for specifying whether subtotal rows in your dataset should be treated as detail rows in your report, which is explained in more detail in Chapter 7, "Using Analysis Services as a Data Source."
- **Filters** If you are unable to filter data at the data source by using a WHERE clause in your query, you can filter the data in the dataset by defining filter rules. You learn how to use filters in Chapter 6.

- Click OK to close the Dataset Properties dialog box.

The dataset appears in the Report Data window as a node of the AdventureWorksDW2008 data source. Notice the fields below the data set, as shown here. Each field is a column returned by the query for this dataset.



Designing the Report Structure

Now that you have completed the preparation for report development, you're ready to start designing the layout of data on the report. You use one or more data regions to present data in a structured or unstructured format in the report layout. As you work, you can switch to Preview mode to confirm you're achieving the desired results. Your report specifications might require you to define groupings and totals, add supporting elements such as a text box, line, or image, or even embed another report within the report you're currently developing.

Adding a Data Region

A data region is the primary report item that you use to display data in your report. Reporting Services provides four different data regions: tables, matrixes, lists, and charts. You link a data region to a single dataset and specify how fields in that dataset are positioned within the data region.

To start your first report, you use a table. A table has a fixed number of columns, and the number of detail rows depends on the number of rows returned by the dataset query. Much as a spreadsheet is a collection of cells, a Reporting Services table is a collection of text boxes organized as rows and columns. You can define a header row in a table for column labels or a footer row for aggregated values. To organize detail rows better, you can add groups and define subtotals for these groups.

In this procedure, you add a table to the report design.

Add a table

- In the Toolbox window, double-click Table to add it to the design surface, or you can drag the table from the Toolbox to the design surface.



Tip If you can't see the Toolbox window, click the Toolbox tab on the left if the window is currently configured to Auto Hide, or click the Toolbox tab at the bottom of the Report Data window if the window is currently configured as a tabbed document. If you still can't see the Toolbox window, use the View menu to open the Toolbox window.

When you double-click a control in the Toolbox window, the control is placed as near the upper-left corner of the design surface as possible. You can be more specific with the placement of the control if you drag it from the toolbox to the desired location.

The default table includes three columns. You can add or remove columns to meet your requirements.

2. Right-click the top row of the third column, and click Delete Columns.

Now your table has two columns that you can use to display Business Type and Sales Amount from the ResellerSales dataset.

Binding Data to a Data Region

A data region must be bound to a dataset so that you can position fields from that dataset within the data region. To associate a dataset with a data region, you can set the *DatasetName* property for the data region or you can drag a dataset field from the Report Data window to a text box in the data region. After you have bound a data region to a dataset, you cannot add fields from a different dataset to that data region.

In this procedure, you add fields to your table.

Add fields to a table

1. Open the Report Data window, and then drag the BusinessType field to the second row of the first column, as shown here.

	Business Type	Header
=	[BusinessType]	Data

When you add a field to a detail row in a table, Report Designer displays the field name in the column header automatically. You can change the text if you prefer a different label. If the field's data type is numeric, the text box automatically is right-justified.



Tip If you place data in a wrong field, or do anything you didn't intend, for that matter, click the Undo button on the toolbar to revert to the previous state of your report. This action undoes the last action that you performed, so you need to do it immediately after you recognize your error. You can undo up to your last five actions.

2. Point to the second row of the second column, click the Field List icon, and click SalesAmount.

You can either drag fields from the Report Data window or use the Field List to select a field from the dataset bound to the data region. By adding BusinessType to the table, you bound the ResellerSales dataset to the table.

3. In the Properties window, open the drop-down list at the top of the window, select Tablix1, and scroll to locate the *DataSetName* property in the General section to confirm the binding to the ResellerSales dataset.



Note You might be wondering why the data region is called a tablix here rather than a table, but first it's important to develop an understanding of data regions in general. You learn more about the tablix later in this chapter.

4. Click the Preview tab to view the report, as shown here.

Business Type	Sales Amount
Specialty Bike Shop	120181.3778
Value Added Reseller	399158.5287
Warehouse	857270.8147
Specialty Bike Shop	77158.4760
Value Added Reseller	299826.7380
Warehouse	508136.1384
Specialty Bike Shop	92952.0660
Value Added Reseller	538182.9649
Warehouse	645970.2022
Specialty Bike Shop	171182.2357

Notice the repetition of the business types: Specialty Bike Shop, Value Added Reseller, and Warehouse. Each row in the table is a detail row and reproduces the same sequence of rows that you saw when you executed the dataset query in a previous procedure in this chapter. In the dataset, these detail rows are grouped by sales territory group and country. You'll also add these groups to your table in the next procedure.

5. Close the Output window.

Each time you preview your report, the Output window appears. Any errors or warnings display in this window to alert you to problems to be corrected in your report. This window stays open even when you switch back to the Design tab, but you can close it at any time.

Previewing a Report in Report Designer

You can preview a report without first deploying it to a server to make sure it looks the way you intend for online viewing. You also can use the Print Layout button to see how the printed version of the report will look, which is an important step to remember. Commonly, new report developers focus on a report design that looks great online, but they forget to check the print version. A data region might render across multiple pages unintentionally or blank pages might appear—problems that become evident only when you print or export the report while in Preview mode.

The Preview toolbar includes several buttons to test your report. Use the Page Setup button to define page size, orientation, and margins, and then use the Print button to send your report to a printer. Be sure to test rendering to other formats by using the Export button to view the report in XML, Comma-Separated Value (CSV), Tagged Image File Format (TIFF), Portable Document Format (PDF), MIME Encapsulation of Aggregate HTML Documents (MHTML), Microsoft Office Excel, or Microsoft Office Word formats.

Grouping Data

You can use groups to combine detail rows into related sets, and you can include subtotal values as an aggregation of numeric fields in the detail rows. For a table, you define row groups only. You can right-click a text box in a data region to create a new group, and then select a dataset field to use for grouping, or alternatively define an expression.

You can see groups in the Grouping pane at the bottom of Report Designer. This Grouping pane makes it easier to see which groups are defined for the data region and, if multiple groups are defined, how the groups relate to one another hierarchically. Furthermore, in the Grouping pane, you can access properties for each group or add additional groups easily.

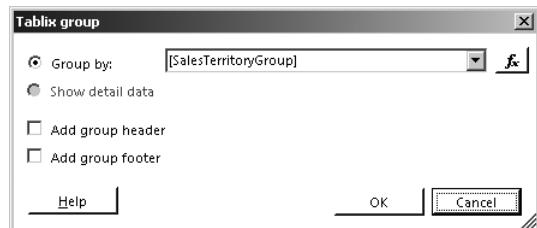
In this procedure, you add groups to your table.

Group data in a table

1. Click the Design tab.
2. Right-click the second row of the first column, select Add Group, and then, in the Row Group section, click Parent Group.

There are also options to add a column group or an adjacent group. You learn more about working with these other group types later in this chapter.

3. In the Tablix Group dialog box, in the Group By drop-down list, select [SalesTerritoryGroup], as shown here.



You have the option to add a header or footer for the group. When you choose these options, rows are added to the table above and below the details row. For this report, you are creating a more compact table and will not use header and footer rows for each group.

4. Click OK to close the Tablix Group dialog box.

Notice that the group appears in a new column to the left of the existing columns, as shown here. A default column label, Group1, also displays, which you can change, of course.

	Business Type	Sales Amount
(= [SalesTerritoryC] [BusinessType] [SalesAmount])		

5. Right-click the second row of the first column (containing [SalesTerritoryGroup]), select Add Group, and then, in the Row Group section, click Child Group.

When you add a group to a data region that already contains at least one group, you must decide how the groups will relate to each other. If the new group will contain the existing group or detail rows, you create a parent group. If the new group will be contained by the existing group, you create a child group, as you did here.

6. In the Tablix Group dialog box, in the Group By drop-down list, select [SalesTerritoryCountry], and click OK.

The labels for the groups default to Group1 and Group2, as shown here, which you can change by replacing the text in the table header row.

The screenshot shows a report design interface with a table structure. The table has four columns: Sales Territory, Sales Territory, Business Type, and Sales Amount. In the first column, the header cell contains '[=SalesTerritoryC]' and the detail cell contains '[SalesTerritoryC]'. In the second column, the header cell contains '[=BusinessType]' and the detail cell contains '[SalesAmount]'. The 'Row Groups' pane on the left shows 'Group1' and 'Group2' under '(Details)'. The 'Column Groups' pane at the bottom is empty.

7. Click in the first row of the first column, highlight Group1, and type **Group**.
8. Click in the first row of the second column, highlight Group2, and type **Country**.



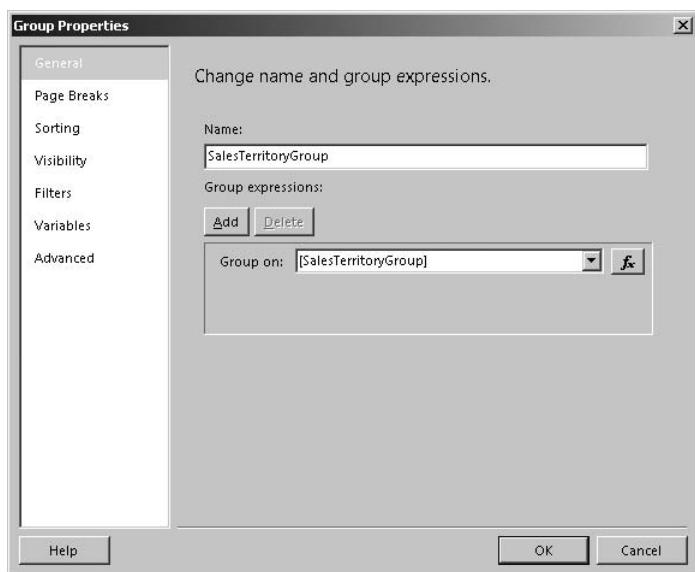
Note Changing the labels does not change the name of the groups in the Grouping pane. Instead, you must access the Group properties to change the group names to identify them more easily in the Grouping pane.



Tip Although you are not required to provide names for the groups yourself, you will find it helpful to use a more meaningful name than the default generic name when multiple groups display in the Grouping pane.

9. In the Grouping pane, right-click Group1, and click Group Properties.

10. In the Group Properties dialog box, in the Name text box, type **SalesTerritoryGroup**, as shown here.



Note Group names, like data source and dataset names, cannot contain spaces and must start with a letter.

Notice that you can define multiple group expressions for a single group by clicking Add and selecting a new field. Instead of using a dataset field as a group expression, you can construct a formula expression for grouping. You learn more about expressions in Chapter 5.

You can define many other types of properties for each group: Page Breaks, Sorting, Filters, Variables, and Advanced. You learn more about Page Breaks and Sorting later in this chapter. Defining a filter for a data region is similar to defining a filter for a dataset, except that the data region filter applies only to the data region. You learn more about group variables in Chapter 5 and about the options on the Advanced tab in Chapters 5 and 6.

11. Click OK to close the Group Properties dialog box.
12. In the Grouping pane, right-click Group2, and click Group Properties.
13. In the Group Properties dialog box, in the Name box, type **SalesTerritoryCountry**, and click OK.



Tip From time to time, it's a good idea to save your work. Notice the asterisk on the Report Designer tab. The asterisk lets you know that you have made changes to the report that you have not yet saved to disk, and it disappears when you save your report.

14. On the File menu, click Save, or click the Save Selected Items button on the toolbar.
15. Click the Preview tab to view the current state of your report, as shown here.

The screenshot shows a Microsoft Report Designer interface with a preview window. The table has four columns: Group, Country, Business Type, and Sales Amount. The data is grouped by SalesTerritory (Europe, North America) and then by Country (France, Germany, United Kingdom, Canada, United States). Within each country, there are three business types: Specialty Bike Shop, Value Added Reseller, and Warehouse. The Sales Amount is a sum of these three categories. The preview window includes standard toolbar icons and a status bar at the bottom.

Group	Country	Business Type	Sales Amount
Europe	France	Specialty Bike Shop	120181.3778
		Value Added Reseller	399158.5287
		Warehouse	857270.8147
	Germany	Specialty Bike Shop	77158.4760
		Value Added Reseller	299826.7380
		Warehouse	508136.1384
	United Kingdom	Specialty Bike Shop	92952.0660
		Value Added Reseller	538182.9649
		Warehouse	645970.2022
North America	Canada	Specialty Bike Shop	171182.2357
		Value Added Reseller	884996.2610
		Warehouse	1334083.0160
	United States	Specialty Bike Shop	712179.9685
		Value Added Reseller	4847762.3092

Adding a Total

When you use a table in your report, you can use the Add Total command to add a row to sum detail rows for a group, or for the entire table. By default, the Add Total command inserts an expression using the *Sum()* function, but you can change the expression to use an alternative aggregate function such as *Average()* or *Min()*. You learn more about aggregate functions in Chapter 5.

In this procedure, you add totals for each group in your table.

Add totals to row groups

1. Click the Design tab.
2. Right-click the text box containing *[SalesAmount]*, and click Add Total.

A new row appears as a group footer row for the *SalesTerritoryCountry* group.

3. Click the new text box containing *[Sum(SalesAmount)]*, as shown here.

The screenshot shows the Microsoft Report Designer interface with a table. A new row has been added at the bottom of the table, serving as a group footer for the SalesTerritoryCountry group. This new row contains four cells: Group, Country, Business Type, and Sales Amount. The Sales Amount cell contains the expression *[Sum(SalesAmount)]*, which is highlighted with a red box. The rest of the table structure remains the same, with data grouped by SalesTerritory and Country, and detailed by Business Type.

Group	Country	Business Type	Sales Amount
[SalesTerritoryC]	[SalesTerritoryC]	[BusinessType]	[SalesAmount]

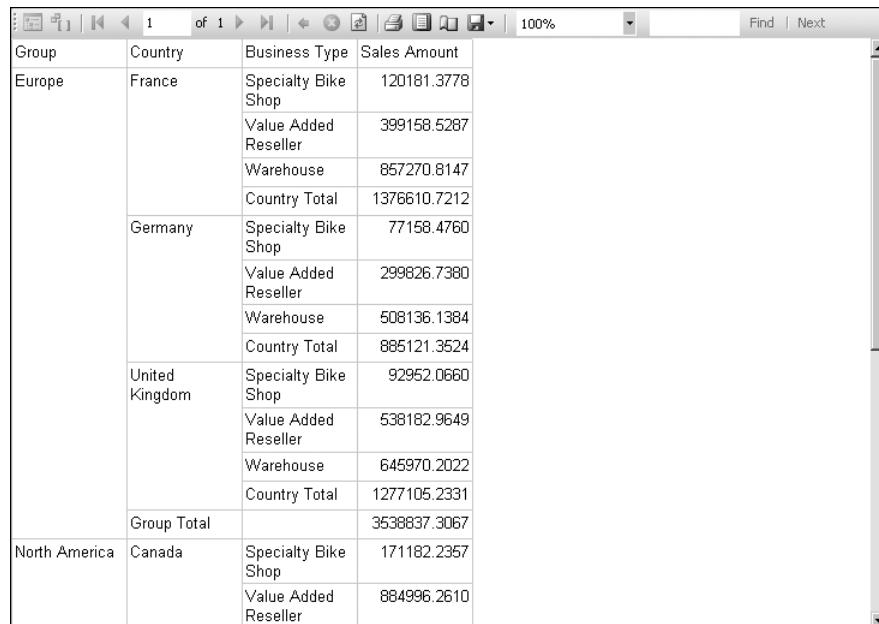
When you click a text box containing an aggregate function, an orange bar appears to the left of the row group to which the aggregate function applies. In this case, the sum of the Sales Amount column entries represents the sum of all sales amounts for the *SalesTerritoryCountry* group.

4. Right-click the text box containing *[Sum(SalesAmount)]*, and click Add Total.

When you apply the Add Total command to a group total, Report Designer adds another group footer row for the total of the parent group, which in this case is the *SalesTerritoryGroup*. Because *SalesTerritoryGroup* has no parent group, a label for Total displays in the new group footer row.

Notice also the icons in the row handles on the left side of the table. The set of three horizontal lines identifies the detail row. The line spanning the second and third rows of the table shows the scope of the innermost group, *SalesTerritoryCountry*, and the line spanning the second, third, and fourth rows of the table shows the scope of the *SalesTerritoryGroup* group. These visual cues are helpful when you add many groups and multiple rows per group to a table.

5. In the text box to the left of *[Sum(SalesAmount)]* in the group footer row of the *SalesTerritoryCountry* group (in the third row of the third column), type **Country Total**.
6. In the *SalesTerritoryGroup* group footer row, replace Total by typing **Group Total** in the text box.
7. Click Save Selected Items, and then click the Preview tab to view the report, as shown here.



The screenshot shows a Microsoft Report Designer window displaying a table with four columns: Group, Country, Business Type, and Sales Amount. The table is grouped by SalesTerritoryCountry, with a summary row for each country and a final summary row for the SalesTerritoryGroup. The 'Group Total' row is highlighted with an orange bar to its left. The table data is as follows:

Group	Country	Business Type	Sales Amount
Europe	France	Specialty Bike Shop	120181.3778
		Value Added Reseller	399158.5287
		Warehouse	857270.8147
		Country Total	1376610.7212
	Germany	Specialty Bike Shop	77158.4760
	Value Added Reseller	299826.7380	
	Warehouse	508136.1384	
	Country Total	885121.3524	
	United Kingdom	Specialty Bike Shop	92952.0860
		Value Added Reseller	538182.9649
		Warehouse	645970.2022
		Country Total	1277105.2331
	Group Total		3538837.3067
North America	Canada	Specialty Bike Shop	171182.2357
		Value Added Reseller	884996.2610

Reviewing the RDL File

The purpose of Report Designer is to provide a graphical interface for the construction of a Report Definition Language (RDL) file, which is an XML representation of your report using Report Definition Language, an open schema developed by Microsoft. Instead of reports stored in a proprietary format that can be used only within specific applications, Reporting Services allows you to create a report definition to describe the report's data query, fields, layout, properties, and so on. The report definition describes how to get the data required for the report and what the final report should look like, but not how to produce it.

You can view the RDL of your report at any time. In Solution Explorer, right-click the report, and click View Code. You can make edits to the RDL in Code view, but be careful. If you inadvertently remove a required tag, you can no longer work with the report in Report Designer. Be sure to make a copy of your report before modifying the RDL as a safeguard.

Using a Matrix

Another type of data region that you will find useful is a matrix. Whereas a table has a fixed number of columns and a dynamic number of rows, both the rows and columns of a matrix are dynamic. A matrix displays data in a structure much like a crosstab or pivot table, and can use groups on either rows or columns with optional subtotals.

In this procedure, you add a matrix to your report.

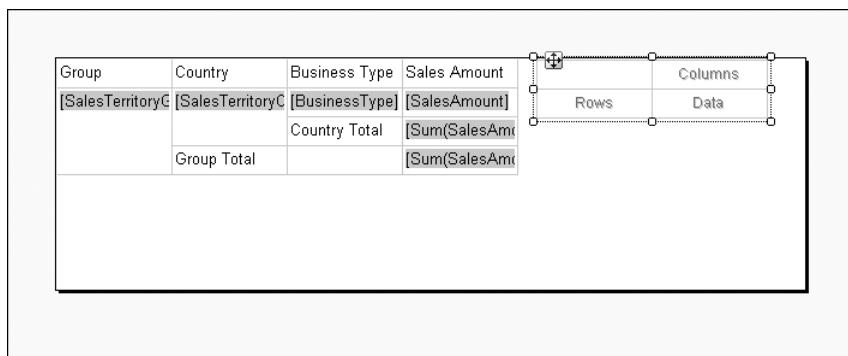
Add a matrix

1. Click the Design tab.

You can reuse the same dataset in multiple data regions on your report, or you can use separate datasets for each data region. In the current report, you add a new dataset to summarize reseller sales by sales territory group and by year.

2. Open the Report Data window, click New, and click Dataset.
3. In the Dataset Properties dialog box, in the Name box, type **ResellerSalesByTerritoryByYear**.
4. In the Dataset Properties dialog box, click Import.
5. In the Import Query dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap04 folder in your Documents folder, double-click ResellerSalesByTerritoryByYear.sql, and click OK.

6. Open the Toolbox window, and drag the Matrix control onto the design surface to the right of the table at the top of the report body, as shown here.



7. Point to the text box on the second row of the first column, click the Field List icon, point to AdventureWorksDW2008, point to ResellerSalesByTerritoryByYear, and click SalesTerritoryCountry.

When a dataset is not bound to a data region and multiple datasets exist, the first time you make a selection using the Field List, you must select the data source and data set before you can select a field. Of course, you can drag a field from the Report Data window and drop it into the text box instead of using the Field List.

Notice that the Grouping pane now shows only the group associated with the matrix. The rows and columns you add to a matrix are classified automatically as groups. There are no detail rows in a matrix, which is another characteristic differentiating a matrix from a table.

8. Point to the text box on the first row of the second column, click the Field List icon, and click CalendarYear.

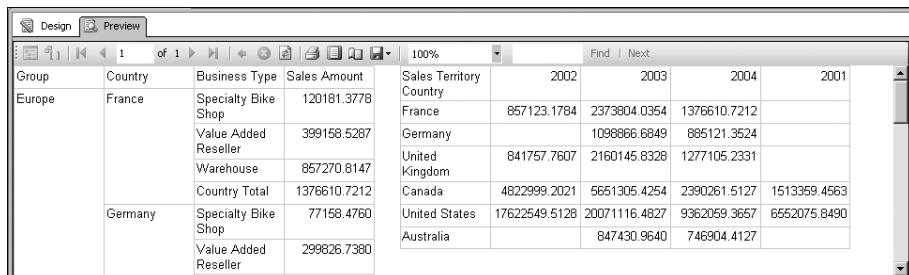
Notice that CalendarYear appears now as a column group in the Grouping pane. The Grouping pane displays only groups associated with the currently selected data region.

9. In the matrix, point to the text box on the second row of the second column, click the Field List icon, and click SalesAmount.

Because there are no detail rows in a matrix, all data field text boxes, appearing at the intersections of rows and columns, automatically use the *Sum* aggregate function, although you can replace it with a different aggregate function.

Notice also that when you click in the data field text box, an orange bar appears to the left of the row group and above the column group to show the group scope affecting the current text box.

10. Save and then preview the report, as shown here.



The screenshot shows a report preview in the 'Design' tab of the Report Designer. The report contains a matrix with three columns: 'Group', 'Country', and 'Business Type'. The 'Group' column has a single item, 'Europe'. The 'Country' column has two items, 'France' and 'Germany'. The 'Business Type' column has three items: 'Specialty Bike Shop', 'Value Added Reseller', and 'Warehouse'. The matrix displays sales amounts for each combination of group, country, and business type. To the right of the matrix, there is a separate table showing sales territory data for years 2002, 2003, 2004, and 2001. The table includes rows for France, Germany, United Kingdom, Canada, United States, and Australia, with corresponding sales values.

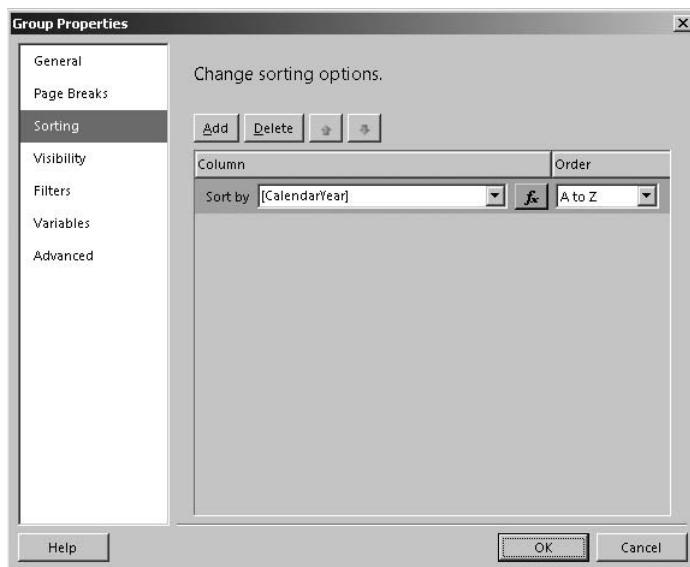
Group	Country	Business Type	Sales Amount	Sales Territory	2002	2003	2004	2001
Europe	France	Specialty Bike Shop	120181.3778	France	857123.1784	2373804.0354	1376610.7212	
		Value Added Reseller	399158.5287	Germany		1098866.6849	885121.3524	
		Warehouse	857270.8147	United Kingdom	841757.7607	2160145.8328	1277105.2331	
	Germany	Country Total	1376610.7212	Canada	4822999.2021	5651305.4254	2390261.5127	1513359.4563
		Specialty Bike Shop	77158.4760	United States	17622549.5128	20071116.4827	9362059.3657	6552075.8490
		Value Added Reseller	299826.7380	Australia		847430.9640	746904.4127	

The matrix renders to the right of the table. Notice that the years display out of sequence, however. The dataset query for the table includes an ORDER BY clause to display the table rows in the desired order without any further change required. If the dataset query does not include an ORDER BY clause, or if you want to override the ORDER BY clause, you can change the sorting property of the group.



Tip For better performance, you should let the database engine perform sort operations. Use report properties only when the database engine can't perform a required operation, such as certain types of calculations that you learn about in Chapter 5.

11. Click the Design tab, click the matrix, right-click the *CalendarYear* group in the Grouping pane, and click Group Properties.
12. In the Group Properties dialog box, in the left pane, click Sorting.
13. Click Add, and then, in the Sort By drop-down list, select [CalendarYear], as shown here.



The default sort order is ascending, which is designated by A to Z in the Order drop-down list. You can define a sort based on multiple fields, each with its own sort order. You use the up and down arrow buttons to control the sequence in which the sorts apply. Instead of using dataset fields to define a sort, you can click the Expression button to the right of the Sort By drop-down list to use a formula as a sort expression. You learn about expressions in Chapter 5.

14. Click OK to close the Group Properties dialog box.
15. Click the Preview tab to verify that the sort order is now correct.

Using a List

When you use a table or matrix, you present data in text boxes that are arranged in rows or columns, but a list can create a more flexible layout than the other two data regions. You can, for example, use nothing but text boxes for a completely free-form layout, or you can use a combination of text boxes and other data regions to present some data in free form and other data in a structured layout. Unlike the table and matrix data regions, the list supports only one level of grouping, but you can implement multiple levels of grouping by nesting lists within lists.

In this procedure, you create a copy of your report and then use a list to display a text box and a matrix in your report.

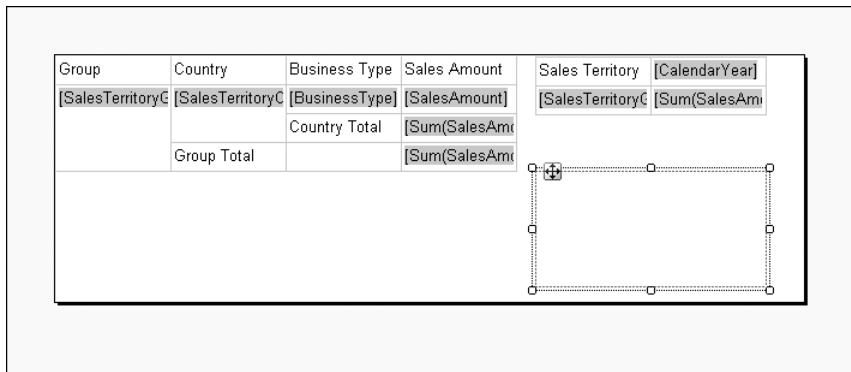
Display a text box and a matrix in a list

1. Click the Design tab, and then click the Save Selected Items button on the toolbar.
2. In Solution Explorer, right-click Reseller Sales Summary.rdl, and click Copy.
3. In Solution Explorer, click the Reports folder, and press CTRL+V.
4. Right-click the new report, Copy Of Reseller Sales Summary.rdl, click Rename, type **Reseller Sales Summary List.rdl**, and press Enter.
5. In Solution Explorer, double-click Reseller Sales Summary List.rdl to open the new report.



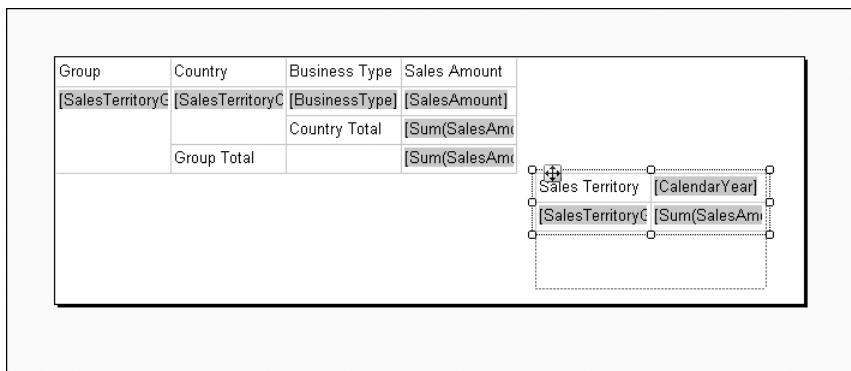
Tip After you make a copy of a report, it's very easy to start making design changes to the original report without realizing it. To ensure you're working on the new report copy, you can make sure only the current copy of the report is open by right-clicking the current report tab in the document workspace, and clicking Close All But This.

6. From the Toolbox window, drag the List control onto the design surface below the matrix, as shown here.



When you drag a new control onto the design surface near existing controls, you see blue snap lines appear to help you align the controls. In this report, you move the list later to a new position, so don't worry right now about getting the alignment perfect.

7. Right-click anywhere inside the matrix, point to Select, click Tablix2 to select the matrix (as indicated by the crosshair), and then, using the crosshair, drag the matrix into the list, as shown here.



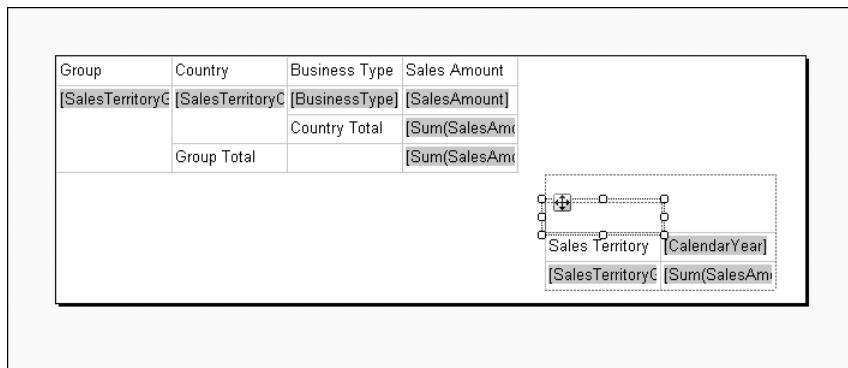
8. Right-click anywhere inside the list, point to Select, and click Tablix3 to select the list.
9. In the Properties window, in the DatasetName drop-down list, select ResellerSalesByTerritoryByYear.



Important The list and any data regions that you nest inside the list, such as the matrix in this example, must be bound to the same dataset.

10. In the Grouping pane, right-click the Details1 group, and click Group Properties.
The list differs from the table and matrix data regions because you define a group for the details row.
11. In the Group Properties dialog box, click Add.

12. In the Group On drop-down list, select [SalesTerritoryGroup], and click OK.
13. Right-click the matrix inside the list, point to Select, click Tablix2, and then drag the matrix down inside the list to make room for a text box above the matrix.
14. From the Toolbox window, drag a text box control into the list above the matrix, and position the text box at the left edge of the list just above the matrix, as shown here.



15. Point to the new text box, click the Field List icon, and click SalesTerritoryGroup. You can bind data to a freestanding text box, but you must use an aggregate function, such as *Sum* for a numeric field or *First* for a string field.
16. Right-click anywhere inside the list, point to Select, click Tablix3 to select the list, and then drag the list to the top edge of the report body just to the right of the table.
17. Save and then preview the report, as shown here.

The screenshot shows the preview of the report. The data is grouped by 'Group' (Europe, Germany, United Kingdom, North America), 'Country', and 'Business Type'. The 'Sales Amount' column shows numerical values for each category. To the right of the main table, there are three smaller tables representing 'Europe', 'North America', and 'Pacific' regions, each showing sales data for different years (2002, 2003, 2004).

Group	Country	Business Type	Sales Amount
Europe	France	Specialty Bike Shop	120181.3778
		Value Added Reseller	399158.5287
		Warehouse	857270.8147
		Country Total	1376610.7212
	Germany	Specialty Bike Shop	77158.4760
Value Added Reseller		299826.7380	
Warehouse		508136.1384	
		Country Total	885121.3524
United Kingdom	Specialty Bike Shop	92952.0660	
	Value Added Reseller	538182.9649	
	Warehouse	645970.2022	
		Country Total	1277105.2331
		Group Total	3538837.3067
North America	Canada	Specialty Bike Shop	171182.2357
		Value Added Reseller	884996.2610
		Warehouse	1334083.0160
		Country Total	2390261.5127

Europe		2002	2003	2004
Sales Territory				
Country				
France	857123.1784	2373804.0354	1376610.7212	
Germany		1098866.6849	885121.3524	
United Kingdom	841757.7607	2160145.8328	1277105.2331	

North America		2001	2002	2003	2004
Sales Territory					
Country					
Canada	1513359.4563	4822999.2021	5651305.4254	2390261.5127	
United States	6552075.8490	17622549.5128	20071116.4827	9362059.3657	

Pacific		2003	2004
Sales Territory			
Country			
Australia	847430.9640	746904.4127	

Introducing the Tablix

By completing the procedures up to this point in the chapter, you have developed experience with the table, matrix, and list data regions. To the report processing engine, these data regions are all treated as a *tablix*, which is a hybrid data region with a flexible grid layout that can be defined with fixed columns and dynamic rows like a table, or dynamic columns and dynamic rows like a matrix. Although you select a table control from the Toolbox window, the structure on the report design surface is really just a starting point. After starting to design a traditional table layout, if you decide you really need to add a column group or define dynamic columns, you can make the change easily without the need to discard your work and start development of a matrix instead. Similarly, you can add row or column groups to a list to convert it to a table or matrix structure. In addition, you can group data more flexibly. For example, you can nest groups in parent and child relationships, but you can also place groups adjacent to one another.

Defining Adjacent Groups

A traditional grouping structure in a table or matrix combines multiple groups into a hierarchical structure that refers to a containing group as a parent group and a contained group as a child group. A new feature in Reporting Services 2008 is the ability to create an adjacent group. One way you might use adjacent groups is to display data in a matrix that uses adjacent groups on columns. The data in each adjacent group represents all data from the dataset query. Each adjacent group provides different views of the same data.

In this procedure, you update an existing report by adding adjacent groups to a matrix.

Define adjacent groups

1. In Solution Explorer, right-click the Reports folder, point to Add, and click Existing Item. You can import a report definition file into your project instead of creating a report from scratch. When you do this, the report definition file is kept in its original location, and a copy of the file is added to the project folder. Any edits you make to the report affect only the file stored in the report server project.
2. In the Add Existing Item – Sales dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap04 folder in your Documents folder, and double-click Reseller Sales By Year By Product.rdl.
3. In Solution Explorer, double-click Reseller Sales By Year By Product.rdl to open the report in the document workspace.

This report currently contains a matrix similar to the one you created in the “Add a Matrix” procedure earlier in this chapter. You are now going to add a second column group to the matrix as an adjacent group.

4. Right-click the text box containing *[CalendarYear]*, point to Add Group, and select Adjacent Right.
 5. In the Tablix Group dialog box, in the Group By drop-down list, select Category, and click OK.
 6. Point to the text box below *[Category]*, click the Field List icon, and click SalesAmount.
- In this example, you are creating an adjacent group displaying the same value as the first group, *SalesAmount*. However, you could select any field value or use an expression to display an entirely different value in the adjacent group.
7. Save and then preview the report.
 8. To view the entire width of the matrix, as shown here, in the Zoom drop-down list in the center of the Preview toolbar, select 75%.

Sales Territory Group	2001	2002	2003	2004	Accessories	Bikes	Clothing	Components
Europe		120,12879,2292	366,15372,2568	246,90862,0667	308405,6472	732,1530,0915	257,00907,6880	399,88270,1260
North America	535,36179,1767	1689,15819,5194	1873,15606,3041	850,18037,8464	170,4058,6356	717,99716,3784	482,95388,7888	370,985579,0438
Pacific			50,42726,9736	50,04984,8156	33731,6680	356806,6696	96,15625,2816	41048,2800

Adding a Text Box

A text box is a report item that can exist independently of a data region. It can either contain static text or an expression that computes a value for the text box at the time of the report execution. You use freestanding text boxes for report titles and page numbers, for example.

In this procedure, you add a static title to your report.

Add a static report title

1. Click the Design tab.
2. On the Report menu, select Ruler.

A vertical ruler appears along the left side of the document workspace and a horizontal ruler appears across the top of the workspace. You can use these rulers to help align an object as you drag it across the design surface.

3. Right-click anywhere inside the matrix, point to Select, click Tablix1 to select the matrix, and then drag the matrix down on the design surface so that the top edge is approximately at the $\frac{1}{2}$ -inch mark on the vertical ruler.

4. From the Toolbox window, drag a text box onto the design surface and position it in the upper-left corner of the report body.
5. Click in the new text box, and type **Reseller Sales by Year and by Product**.
6. Click anywhere in the report outside the text box, click inside the text box to select it, and then drag the right edge of the text box to the 3-inch mark on the horizontal ruler.
7. Save and then preview the report, as shown here.

Reseller Sales by Year and by Product								
Sales Territory Group	2001	2002	2003	2004	Accessories	Bikes	Clothing	Components
Europe		12012879.2292	38615372.2568	24890862.0667	308405.6472	7321530.0915	25700907.6880	39938270.1260
North America	63536179.1767	188915819.5194	187315606.3041	85018037.9464	1704658.6356	71799716.3784	48296388.7888	370986579.0438
Pacific			5042726.9736	5004484.8156	33731.5680	356806.6696	9816625.2816	41048.2300

Adding a Line

You can use a line to add visual effects to a report. A line has properties that you can set to define its length, width, and color, among other properties. Although you can configure many property values to change at report execution, as you learn in Chapter 5, a line always has a fixed length that cannot be changed dynamically.

In this procedure, you add a line below the text box containing the report title.

Add a line

1. Click the Design tab.
2. In the Toolbox window, double-click the Line control.
3. Click the left end of the line and drag it below the report title text box.
4. Click the right end of the line and drag the end of the line to stretch the line to the same length as the title text box at the same vertical position as the left end of the line.

When the line length matches the text box width, you see a blue snap line connecting the two report items to indicate alignment. The snap line disappears when you release your mouse button. Your report layout now looks like this:

Reseller Sales by Year and by Product		
Sales Territory Group	[CalendarYear]	[Category]
[SalesTerritoryGroup]	[Sum(SalesAmount)]	[Sum(SalesAm]

A line does nothing more than add decoration to a report. Later in this chapter, you learn how to use properties to add more visual interest to the line.

Adding an Image

You can use an image as a freestanding logo or picture in your report, or you can have pictures associated with rows of data, such as details for a product catalog. You can also use an image as a background for a text box, a data region, or the body of a report.

You can add images to a report in a number of ways. The most straightforward way is to import an image into the report and store it as an embedded image. If you need to refer to the same image in many reports, such as a corporate logo, you can store the image on a network share or on a Web server and embed a reference to the image in your report. Then, if the image later changes, you can update the image in one location, and all reports then use the new image. Finally, for the display of separate images in detail, you can retrieve images from a database.

In this procedure, you add a logo to your report as an embedded image.

Add an embedded image

1. From the Toolbox window, drag the image to the top edge of the design surface at approximately the 4-inch mark of the horizontal ruler.
2. In the Image Properties dialog box, in the Name text box, type **logo**.
3. Open the Select The Image Source drop-down list to review the available options: External, Embedded, and Database.

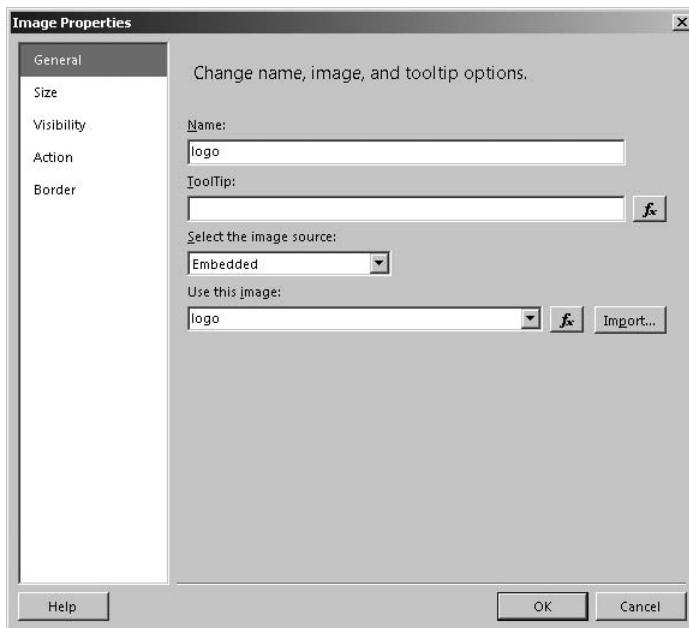
When you select an option, the dialog box changes to prompt you for the information required to support the selected option.

4. In the Select The Image Source drop-down list, select Embedded.

If you already have an embedded image in the report, you can select the image in the Use This Image drop-down list to use the same image in a new location. Because you have no images yet, you must import an image into the report.

5. Click Import.

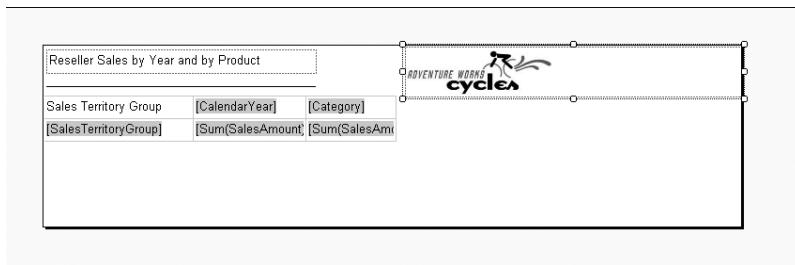
- In the Open dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap04 folder in your Documents folder, select BMP Files in the Files Of Type drop-down list, and double-click Logo.bmp. The Image Properties box now looks like this:



- In the left pane, click Size, select Original Size, and click OK.

The image height interferes with the expansion of the matrix, but you can resize it to fit the page better.

- Drag the bottom edge of the image approximately to the ½-inch mark on the vertical ruler to position it above the top edge of the matrix, as shown here.



The image resizes proportionally as you manually adjust the height or width.

- Save and then preview the report.

Linking Information with a Subreport

A subreport is a special report item that serves as a placeholder for another report that you want to embed in the report you are currently developing. You can build a report once and reuse it many times as a subreport. A popular way to use subreports is to combine many online reports into a single report for the purpose of producing a PDF document. You can pass parameter values from the report to the subreport to change the subreport's content dynamically, which you learn about in Chapter 6.



Note The page header and page footer sections of the subreport do not render in the parent report.

In this procedure, you add a subreport to your report.

Add a subreport

1. Click the Design tab.

First, to preview your report and subreport by using Report Designer, you should add the other report to your report server project if it's not already there. The subreport is not required to be stored in the same location as the parent report once deployed, but you need to provide the path to the report when you configure the subreport.

2. In Solution Explorer, right-click the Reports folder, point to Add, and click Existing Item.
3. In the Add Existing Item – Sales dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap04 folder in your Documents folder, and double-click Reseller Sales By Business Type.rdl.
4. In the Reseller Sales By Year By Product report, from the Toolbox window, drag Subreport to the design surface below the matrix.

A placeholder appears for the subreport. By default, this placeholder is three inches high and three inches wide, but you see when you preview the report that the subreport is not confined to these dimensions. You can resize the placeholder if you prefer.

5. Right-click the subreport, and select Subreport Properties.
6. In the Subreport Properties dialog box, in the Use This Report As A Subreport drop-down list, select Reseller Sales By Business Type, and click OK.

The name of the report displays inside the subreport placeholder to help you identify the report that will display in that location.

7. Save, and then preview the report, as shown here.

The screenshot shows a Microsoft Report Designer interface. At the top right is the company logo for "ADVENTURE WORKS cycles". Below it is a table titled "Reseller Sales by Year and by Product". The table has columns for Sales Territory Group, Year (2001, 2002, 2003, 2004), Product Categories (Accessories, Bikes, Clothing, Components), and various numerical values representing sales or counts. The data is grouped by continent (Europe, North America, Pacific) and then by country (France, Germany, United Kingdom, Canada, United States, Australia). Within each country, there's a breakdown by specialty bike shop, showing the value added and the number of resellers. The table uses a light blue background with white borders for readability.

Enhancing the Report Appearance

After you finalize the data layout, you can then improve your report by configuring properties to manage the location and size of report items, change the formatting of report items, or control the paging of the report. For large reports, you might add page breaks to separate the report into logical groupings. If your report contains multiple pages, you might add page headers and page footers to repeat information on each page such as the report title and page number.

Configuring the Placement and Size of a Report Item

You can use drag-and-drop to move a report item or a data region to a new location, and you can drag the edges of a report item to make it larger or smaller. However, using drag-and-drop to perform these tasks might not provide the precision you need for a pixel-perfect report. Instead, you can use the *Location* and *Size* properties to configure the placement and size of a report item to meet exact specifications.

In this procedure, you reposition and resize the logo image.

Change the value of the *Location* and *Size* properties

1. Click the Design tab, and then, on the design surface, click the image. Alternatively, in the Properties window, select Logo.

2. In the Properties window, scroll down to locate the Location and Size boxes in the Position category.

By default, properties are arranged by category. If you prefer, you can switch to an alphabetical arrangement by clicking the Alphabetical button on the Properties toolbar.

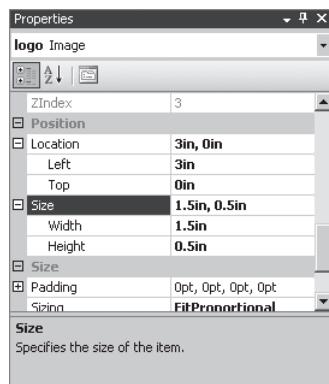
3. To the left of the Location box, click the plus sign (+) to expand the property.

There are actually two values you must provide for the *Location* property: Left and Top. These values provide the coordinate for the upper-left corner of the selected report item.

4. In the Left box, type **3in**, and in the Top box, type **0in** if it contains a different value.

5. To the left of the Size box, click the plus sign (+) to expand the property.

6. In the Width box, type **1.5in**, and in the Height box, type **0.5in**.



7. Review the report design surface to see the new placement and size of the image.

Changing the Appearance of a Report Item

Many properties are available for configuring the appearance of a report item. Most commonly, you define format strings, font sizes, styles, and colors of text, but you can also use properties related to borders, padding, and background colors, among others. A new feature in Reporting Services 2008 allows you to set different formatting properties for selected text within a text box.

In this procedure, you use the Properties window to set report item properties.

Set report item properties

1. Click inside the text box containing the report title and highlight the text.

Notice that the current report item in the Properties window is Selected Text. Rather than applying format properties to all the text in a text box (which was the only option

in previous versions of Reporting Services), you can apply properties to selected text within a text box.

2. On the toolbar above the document workspace, click the Bold button.



Note The Bold button, along with other buttons that define format properties, appears on the Report Formatting toolbar that displays by default in BI Dev Studio. If you don't see this toolbar, right-click any visible toolbar and select Report Formatting.

You can set a variety of properties for selected text, including *Indent*, *SpaceAfter*, *SpaceBefore*, *TextAlign*, *Color*, *Font*, or *LineHeight*. You can also define bulleted and numbered lists and list indentation.

3. In the text box, select Reseller Sales, and then, in the Font Size drop-down list on the Report Formatting toolbar, select 12pt.
4. With Reseller Sales selected, in the Properties window, in the Color box, select Blue.
5. Click the tablix, and then click the row handle of the first row to select the entire row.
You can apply formatting to all text boxes in a row or column by selecting the applicable handle in the data region.
6. On the Report Formatting toolbar, click the Bold button.
7. In the Properties window, in the BackgroundColor drop-down list, select Light Gray.
8. In the tablix, click the text box containing *[Category]*, and then, on the Report Formatting toolbar, click the Align Right button.
9. In the tablix, click the text box in the second column containing *[Sum(SalesAmount)]*, and then, while holding the Shift key, click the text box to its right.
10. In the Properties window, in the Format box, type **C0**.



Tip Recall from Chapter 3 that you can use any Microsoft Visual Basic .NET format string for this property.

11. Click the line below the report title, and then, in the Properties window, in the LineColor drop-down list, select Blue.
12. In the LineWidth box, type **5pt**.
13. In the Location/Left box, type **0in**, and in the Location/Top box, type **0.4in**.
14. In the Properties window, in the report item drop-down list, select Textbox3, and then, in the Location/Left box, type **0in**, and in the Location/Top box, type **0in**.

15. Click Save Selected Items, click the Preview tab, and in the Zoom drop-down list, select 100% to better view the report, as shown here.

Reseller Sales by Year and by Product						
Sales Territory Group		2001	2002	2003	2004	Accessories
Europe		\$12,012,879	\$36,615,372	\$24,690,862	\$308,406	\$7,321,530
North America		\$53,536,179	\$166,915,820	\$187,315,606	\$85,018,038	\$1,704,959
Pacific				\$5,042,727	\$5,004,485	\$33,732
						\$356,807
Group	Country	Specialty Bike Shop	Value Added Reseller	Warehouse		
Europe	France	\$120,181				
			\$399,159			
					\$857,271	
	Germany	\$77,158				
			\$299,827			
					\$508,136	
	United Kingdom	\$92,952				
			\$538,183			
					\$645,970	
	Group Total	\$290,292	\$1,237,168		\$2,011,377	
North America	Canada	\$171,182				
			\$884,996			
					\$1,334,083	
	United States	\$712,180				
						\$4,947,760

Setting Page Breaks

By default, the report processing engine will fit as much of a data region onto a page as it can before creating a page break. You can override this behavior by inserting page breaks relative to a data region, or when a group instance changes within a data region.

In this procedure, you add page breaks to your report.

Add page breaks

- Click the Design tab.
- In the Properties window, in the report item drop-down list, select Tablix1.
- In the PageBreak drop-down list, select End.

When the report renders the tablix, a page break forces the subreport to start on the next page. The *PageBreak* property allows you to set a page break before the data region renders, after the data region renders, or both before and after rendering.

- In Solution Explorer, double-click Reseller Sales By Business Type.rdl to open the report for editing.
- In the Grouping pane, right-click the SalesTerritoryGroup, and click Group Properties.
- In the Group Properties dialog box, click Page Breaks, select the Between Each Instance Of A Group check box, and click OK.
- Save and then preview the report.

The first page of the report now contains only the tablix displaying sales by sales territory on rows and by business type on columns. The first group instance, Europe, displays.



Note The question mark that appears to the right of the page number indicates that the report is not yet fully rendered and the total number of pages in the report is not yet available. When a report renders one page at a time, you experience better performance, especially when a report contains a lot of data.

8. On the Preview toolbar, click the Next Page button.

On the second page of the report, you see the North America group instance. Each group instance appears on a separate page. Notice, however, that the column labels are missing. You can configure the data region to repeat column labels on each page.

9. Click the Design tab.
10. In the Grouping pane, click the arrow that appears to the right of the Column Groups label, and click Advanced Mode to display all groups, as shown here.

The screenshot shows the Microsoft Report Designer interface. At the top, there are tabs for 'Design' and 'Preview'. Below the tabs is a report preview window containing a tablix. The tablix has three columns: 'Group', 'Country', and '[BusinessType]'. The 'Group' column contains '[SalesTerritory]' and '[SalesTerritoryCountry]'. The 'Country' column contains '[SalesTerritoryCountry]'. The '[BusinessType]' column contains '[SalesAmount]' and '[Sum(SalesAmount)]'. There are also 'Group Total' and 'Grand Total' rows. At the bottom of the screen is the 'Grouping pane'. It has two sections: 'Row Groups' and 'Column Groups'. In the 'Row Groups' section, there is a 'Static' group under 'SalesTerritory' and a 'Dynamic' group under 'SalesTerritoryCountry'. In the 'Column Groups' section, there is a 'Static' group under 'SalesAmount' and a 'Dynamic' group under '[Sum(SalesAmount)]'.

11. In the Row Groups section, click the first Static group, and then, in the Properties window, in the RepeatOnNewPage drop-down list, select True.
12. Save the report.

Adjusting the Report Size for Print-Ready Formats

Your report has properties, too. You might need to set page size and margin properties for reports that will be printed or exported to PDF format. You can also define background color or image properties, or add borders to your report. There is also a property to eliminate white space so that blank pages are not added to your report.

In this procedure, you change the *PageSize* property to change the report to a landscape format.

Use the *PageSize* property to define a landscape format

1. In Solution Explorer, double-click Reseller Sales By Year By Product.rdl.
2. In the Properties window, in the report item drop-down list, select Report.
3. Expand the *PageSize* box, type **11in** in the Width box, and type **8.5in** in the Height box.

The *PageSize* property applies only to a report rendered to a print-ready format such as PDF or TIFF. To adjust sizing of a report for online viewing, you use the *InteractiveSize* property.

Because the first tablix in the report is very wide, you must make some additional adjustments to fit the data region onto a single page even though you have defined a landscape format by setting a page size of 11 inches by 8.5 inches. Changing margin size is one type of adjustment you can make.

4. Expand the *Margins* text box, type **0.25in** in the Left box, and type **0.25in** in the Right box.

Even after making adjustments to margins and page size, a data region still might not fit on a page. In this case, you can adjust the font size and column spacing to reduce the overall space required by the data region.

5. Click anywhere in the first tablix, click the first column handle, and then, while pressing the CTRL key, click the second and third column handles.
6. On the Report Formatting toolbar, in the Font Size drop-down list, select 8pt.
7. Click the second column handle, and then, in the Properties window, expand the *Size* text box and type **1in** in the Width box.
8. Preview the report, click the Print Layout button on the Preview toolbar, and click the Next Page button on the Preview toolbar.

Although you have adjusted the report to fit the first tablix on a single page, the second page of the report is blank, which indicates that the body and margins of the report are too wide for the report page size.

9. Click the Design tab, and notice the amount of white space to the right of Tablix1.

The white space in the body of your report is preserved by default, which can extend the body size beyond the width of the report and cause blank pages to appear. You can disable this behavior by setting the *ConsumeWhiteSpace* property of the report.

10. In the Properties window, in the report item drop-down list, select Report, and then, in the *ConsumeContainerWhitespace* drop-down list, select True.

11. Preview the report, click the Print Layout button on the Preview toolbar, and click the Next Page button on the Preview toolbar.

The second page of the report now displays the first page of the subreport.

12. Continue paging through the report to observe the page break between group instances and the repeating column labels for each group instance.

Adding a Page Header and Page Footer

The page header and page footer sections of a report are optional and disabled by default. If you want to repeat information or images on all report pages, you can enable these report sections and then place a text box or image inside the desired section. You cannot add a dataset field to a text box in a page header or page footer, nor can you add a data region or subreport in these sections.

In this procedure, you add a report title to the page header that displays on all but the first page, and add page numbers to the page footer that display on all pages of the report.

Add a page header and a page footer

1. Click the Design tab.
2. On the Report menu, select Add Page Header.
3. In the Report Data window, expand the Built-in Fields folder, and drag Report Name to the page header, aligning the left edge of the text box with the left side of the report.
4. Drag the right edge of the text box to the same width as the report title text box in the body of the report.

You can prevent the display of the text box in the page header on the first page only by changing the *PrintOnFirstPage* property. By default, the report items in the page header display on each page of the report.



Important If you later decide to remove the page header, all report items contained in the page header will be deleted from the report.

5. Click anywhere in the page header to set it as the current report item in the Properties window, and then, in the PrintOnFirstPage drop-down list, select False.
6. Right-click in the area below the report body in the document workspace and click Add Page Footer.
7. From the Report Data window, drag Page Number to the left side of the page footer.

Because the page number is a numeric value, the page number aligns right when the report renders. If you position the page number on the left side of the page footer, you can change the text box to align left.

8. With the text box containing *[PageNumber]* selected, click the Align Left button on the Report Formatting toolbar.
9. Save and then preview the report. Page through the report to test the appearance of the page header and page footer.
10. On the File menu, select Close Project, and, if the Microsoft Visual Studio message box appears, click Yes to save the solution.

You've learned a lot about developing reports in this chapter, but there is still much more to learn. In the next chapter, you learn how to work with expressions to use calculations in your report and to change the content and appearance of your report dynamically.

Chapter 4 Quick Reference

To	Do This
Create a new report server project	Open Business Intelligence Development Studio; on the File menu, select New, Project, select Report Server Project in the Template list, and provide a name and location for the project.
Add a new report to your report server project	In Solution Explorer, right-click the Reports folder, select Add, click New Item, select Report in the Templates list, and provide a name for the report.
Create a shared data source	In the Report Data window, click New, click Data Source, provide a report data source name, click New, provide a shared data source name, select a provider type, specify a connection string, click Credentials, and select a report authentication method.
Create a dataset	In the Report Data window, click New, click Dataset, provide a dataset name, select a data source, and provide a query string.
Add a data region to the report lay out	In the Toolbox, double-click a table, matrix, or list control; <i>or</i> Drag a control from the Toolbox onto the Report Designer design surface.
Bind data to a data region	From the Report Data window, drag a field from a dataset into a text box in a data region; <i>or</i> Point to a text box in a data region, click the Field List icon, and click a dataset field.

To	Do This
Preview a report	Click the Preview tab.
Group data	Right-click a text box in a data region, select Add Group, and then, in the Row Group or Column Group section, select one of the following options: Parent Group, Child Group, Adjacent Above, Adjacent Below, Adjacent Left, or Adjacent Right. In the Tablix Group dialog box, select a field in the Group By drop-down list, and add a group header or group footer if you want.
Add a total	Right-click a text box containing a value to total, and click Add Total.
Sort group instances	In the Grouping pane, right-click a group, select Group Properties, Sorting, Add, and then, in the Sort By drop-down list, select a field. In the Sort By drop-down list, select a sort direction.
Add a static report title	From the Toolbox window, add a text box to the design surface. Click in the new text box, and type a string for the report title.
Add a line	From the Toolbox window, add a line to the design surface, drag the line endpoints to the desired position, and set applicable properties, such as <i>LineColor</i> or <i>LineWidth</i> , in the Properties window.
Add an embedded image	From the Toolbox window, add an image to the design surface. In the Image Properties dialog box, provide a name for the image, select Embedded in the Select The Image Source drop-down list, click Import, navigate to the image location, and double-click the image file.
Add a subreport	From the Toolbox window, add a subreport to the design surface. Right-click the subreport, select Subreport Properties, and select a report in the Use This Report As A Subreport drop-down list.
Change the placement and size of a report item	On the design surface, select the report item, and then, in the Properties window, change the values of the Location/Top and Location/Left boxes for placement and the Size Height and Size Width boxes for size of the report item.
Change the appearance of text in a text box	Click inside the text box, highlight all or part of the text within the text box, and use the buttons on the Report Formatting toolbar, such as Bold, or change values of properties, such as Color, in the Properties window.
Resize a report	In the Properties window, in the report item drop-down list, select Report, expand the PageSize box, and change the values of Width and Height.

To	Do This
Set page breaks	In the Properties window, in the report item drop-down list, select a tablix item, and select a value in the PageBreak drop-down list to control a page break relative to a report item; <i>or</i> In the Grouping pane, right-click a group, select Group Properties, Page Breaks, Between Each Instance Of A Group, and (if you want) Also At The Start Of A Group or Also At The End Of A Group.
Eliminate blank pages	In the Properties window, in the report item drop-down list, select Report, and select True in the ConsumeContainer-Whitespace drop-down list.
Add a page header or page footer	On the Report menu, click Add Page Header or Add Page Footer.

Chapter 10

Deploying Reports to a Server

After completing this chapter, you will be able to:

- Deploy reports to the report server.
- Organize content on the report server by using folders.
- Create a linked report on a native-mode report server.
- Override report parameter settings.
- Manage authentication in data sources.
- Control report execution.
- Create and store report snapshots in history.

The process of deploying reports includes a variety of tasks that are covered in this chapter. At minimum, you place report definition files on the report server to make reports available to users. Typically, you also configure data sources to associate reports with a different test or production database. You might create alternate versions of a base report by setting up linked reports or generating report copies. You can also configure report properties, such as report parameter default values, execution options, or history management properties, to control what data displays in a report, the amount of time before the user request that the data is retrieved for the report, and the amount of time a snapshot of a report is saved on the report server.



Important To complete the procedures in this chapter, you must be assigned to the Content Manager role on a native-mode report server or to the Owners role on an integrated-mode report server. If you are a local administrator on the server, you have the correct role assignment by default.

You learn more about assigning security permissions to control user activity on the report server in Chapter 11, "Securing Report Server Content."

Reviewing Deployment Options

The deployment process copies the report definition into the ReportServer database described in Chapter 1, "Introducing Reporting Services." A shared data source or a file that you want to store centrally for user access can also be deployed to the report server and is

similarly stored in the ReportServer database. Report developers typically deploy a report directly from Business Intelligence Development Studio (BI Dev Studio), while report server administrators often deploy a report manually by using Report Manager or programmatically by using the Rs utility (described more fully in Chapter 16, "Programming Reporting Services").

Deploying a Report Project

A solution in BI Dev Studio can contain one or more report projects, each of which can contain one or more reports. Each project has a set of properties to define the target location for the reports and data sources that it contains. After you define these properties, you can deploy all reports in all report projects in the solution, all reports in a single report project, a selected set of reports, or a specific report.

In this procedure, you use BI Dev Studio to deploy a report server project.

Deploy a report project to a report server

1. Click Start, select Microsoft SQL Server 2008, and then select SQL Server Business Intelligence Development Studio.
2. On the File menu, select Open, and then select Project/Solution.
3. In the Open Project dialog box, navigate to the Microsoft Press\Rs2008sbs\Chap10 folder in your documents folder, select Sales.sln, and click Open.



Important Although the reports in this project are similar to the reports that you created if you completed the previous chapters, you must use the report project in the Chap10 folder to complete all procedures in this chapter successfully.

4. In Solution Explorer, right-click Sales, and then select Properties.



Note Many of the remaining steps to follow in this procedure depend on whether your target report server is native mode or SharePoint integrated mode. Each step includes instructions for both architectures.

5. In the Sales Property Pages dialog box, in the TargetDataSourceFolder text box, provide the target location for the shared data source in the project. You can create a hierarchy of folders also by including each folder name in the TargetDataSourceFolder box and separating each folder name with a forward slash (/).
 - ❑ *Native mode:* Keep the default value, *Data Sources*. This folder will be created on the Home page of Report Manager if it doesn't already exist.

- ❑ *Integrated mode:* Type **http://<servername>/sites/ssrs/data connections**, replacing <servername> with the name of your server.



Note This URL for the integrated mode server assumes that you followed the instructions in Chapter 2, "Installing Reporting Services," to create a Report Center site called SSRS. Replace the example URL if you have an alternate site available.



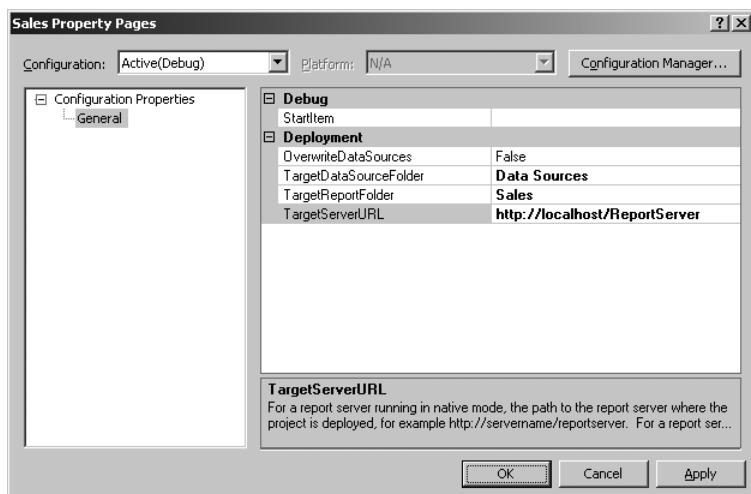
Important Even if you are deploying to your local computer, you must specify the server name in the URL rather than localhost. Otherwise, the deployment fails with the following error: Report Server has encountered a SharePoint error.

In a typical SharePoint integrated-mode configuration, you store data sources in a data connections library, but you can use any document library to which the report data source content type has been added.

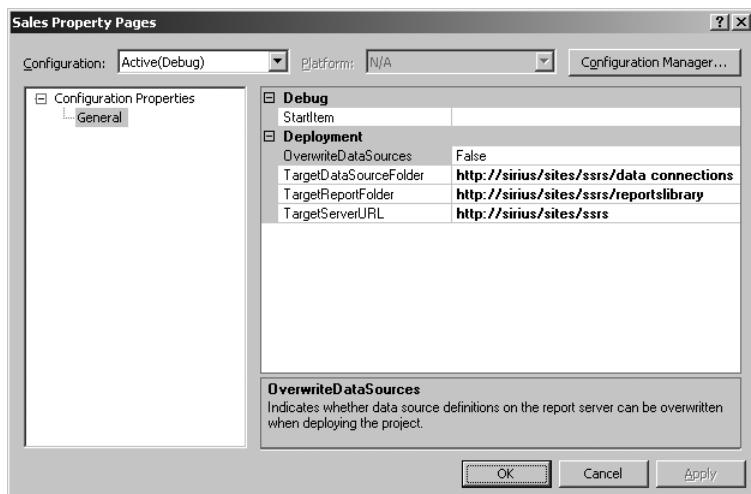
6. In the TargetReportFolder text box, provide the target location for the reports in the project.
 - ❑ *Native mode:* Keep the default value, *Sales*.
 - ❑ *Integrated mode:* Type **http://<servername>/sites/ssrs/ReportsLibrary**, replacing <servername> with the name of your server.The target report folder can be any document library to which the report content type has been added as described in Chapter 2.
7. In the TargetServerURL text box, provide the URL for the target report server.
 - ❑ *Native mode:* Type **http://localhost/ReportServer**, as shown here, and then click OK.



Note This procedure assumes that you followed the instructions in Chapter 2 to install Reporting Services on your local computer and to create a virtual directory called ReportServer for the Web service. Replace the server name or the virtual directory name in this URL as appropriate if your configuration differs from the environment described in Chapter 2.



- Integrated mode:* Type **http://<servername>/sites/ssrs**, replacing <servername> with the name of your server, as shown here.



Note In this example, and throughout this chapter, the server name in the URL is fictitious and is included for illustration purposes only.

Notice that the target server URL does not include a reference to the report server virtual directory as it does when deploying to a native-mode report server. In this case, you deploy to a SharePoint site that is configured for Reporting Services as described in Chapter 2.

8. In Solution Explorer, right-click Sales, and select Deploy.

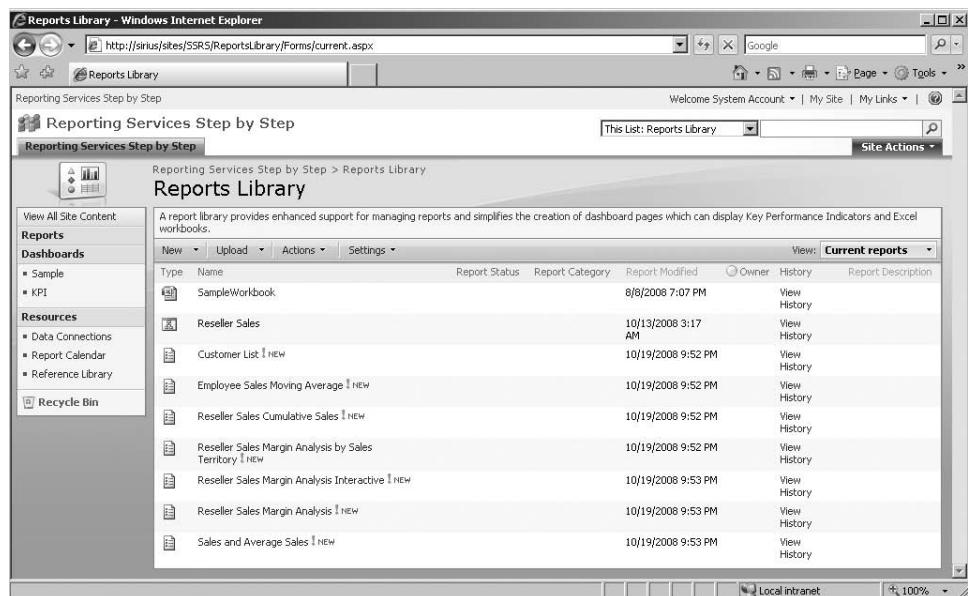


Tip In this procedure, you deploy all reports in the project. In some cases, you might prefer to deploy a specific report or set of reports. To limit deployment to a set of one or more reports, select each report to include in the set, right-click one of the reports in the set, and then select the Deploy command from the shortcut menu.

9. Review the output of the deployment process in the Output window, which displays at the bottom of your screen in the default layout. The Output window shown here is for deployment to a native-mode report server. An integrated-mode report server deployment looks very similar and displays the report's URL reference as each report deploys.

```
Output
Show output from: Build
-----
Build started: Project: Sales, Configuration: Debug -----
Build complete -- 0 errors, 0 warnings
-----
Deploy started: Project: Sales, Configuration: Debug -----
Deploying to http://localhost/ReportServer
Deploying data source '/Data Sources/AdventureWorksDW2008'.
Deploying report '/Sales/Customer List'.
Deploying report '/Sales/Employee Sales Moving Average'.
Deploying report '/Sales/Reseller Sales Cumulative Sales'.
Deploying report '/Sales/Reseller Sales Margin Analysis by Sales Territory'.
Deploying report '/Sales/Reseller Sales Margin Analysis Interactive'.
Deploying report '/Sales/Reseller Sales Margin Analysis'.
Deploying report '/Sales/Sales and Average Sales'.
Deploy complete -- 0 errors, 0 warnings
=====
Build: 1 succeeded or up-to-date, 0 failed, 0 skipped =====
Deploy: 1 succeeded, 0 failed, 0 skipped =====
```

10. When deployment completes, open Windows Internet Explorer and navigate to the Web application hosting Reporting Services.
 - ❑ *Native mode:* In the address bar, type **http://localhost/Reports** to open the Home page in Report Manager, and then click the Sales link to view the deployed reports, as shown here.
-
- The screenshot shows the Windows Internet Explorer browser displaying the Report Manager. The address bar shows the URL `http://localhost/Reports/Pages/Folder.aspx?ItemPath=%2fSales&ViewMode=List`. The page title is "Report Manager". The main content area shows a folder structure under "SQL Server Reporting Services": "Home > Sales". Below this, there are two tabs: "Contents" (selected) and "Properties". Under "Contents", there is a list of report items: "Customer List !NEW", "Employee Sales Moving Average !NEW", "Reseller Sales Cumulative Sales !NEW", "Reseller Sales Margin Analysis !NEW", and "Sales and Average Sales !NEW". The status bar at the bottom indicates "Local intranet" and "100%".
- ❑ *Integrated mode:* In the address bar, type **http://<servername>/sites/ssrs /ReportsLibrary** to open the Reports Library, replacing <servername> with the name of your server, as shown here.



The screenshot shows a Microsoft Internet Explorer window displaying the SharePoint Reports Library. The URL is <http://sirius/sites/SSRS/ReportsLibrary/Forms/current.aspx>. The page title is "Reporting Services Step by Step". The left navigation bar includes "View All Site Content", "Reports", "Dashboards", "Resources" (with "Data Connections", "Report Calendar", and "Reference Library"), and "Recycle Bin". The main content area is titled "Reports Library" and contains a table listing reports. The table columns are Type, Name, Report Status, Report Category, Report Modified, Owner, History, and Report Description. The table rows include:

Type	Name	Report Status	Report Category	Report Modified	Owner	History	Report Description
Excel Workbook	SampleWorkbook			8/8/2008 7:07 PM		View History	
Report	Reseller Sales			10/13/2008 3:17 AM		View History	
Report	Customer List [NEW]			10/19/2008 9:52 PM		View History	
Report	Employee Sales Moving Average [NEW]			10/19/2008 9:52 PM		View History	
Report	Reseller Sales Cumulative Sales [NEW]			10/19/2008 9:52 PM		View History	
Report	Reseller Sales Margin Analysis by Sales Territory [NEW]			10/19/2008 9:52 PM		View History	
Report	Reseller Sales Margin Analysis Interactive [NEW]			10/19/2008 9:53 PM		View History	
Report	Reseller Sales Margin Analysis [NEW]			10/19/2008 9:53 PM		View History	
Report	Sales and Average Sales [NEW]			10/19/2008 9:53 PM		View History	



Note The SampleWorkbook appearing in the Reports Library is a Microsoft Office Excel 2007 workbook added to the Reports Library automatically when you created the site collection. The Reseller Sales item is the report model that is deployed at the end of Chapter 9, "Developing Report Models."

All files are physically stored as binary files in the Catalog table in the ReportServer database. For a native-mode report server, Report Manager queries this table to retrieve a list of the items for the current folder, Sales, and displays the results in two columns in alphabetical order. An integrated-mode report server also stores the report definition files in the SharePoint content database and displays the list of report definition files as a single column of report titles.

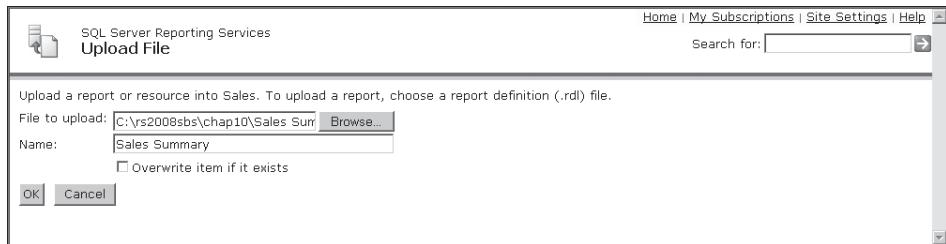
Uploading a Report

In some organizations, certain users might have permission to add content to the report server but might not be report developers and therefore won't have BI Dev Studio installed on their computers. These users can upload reports directly to the report server using the Web application interface.

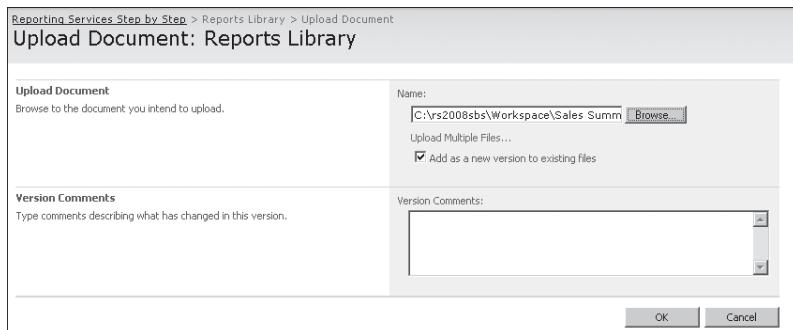
In this procedure, you upload a report to the report server.

Upload a report to a report server

1. In Internet Explorer, open the target report folder.
 - ❑ *Native mode:* If the Sales folder is not already open, in the address bar, type **http://localhost/Reports/Sales**.
 - ❑ *Integrated mode:* If the reports library is not already open, type **http://<servername>/sites/ssrs/ReportsLibrary**, replacing <servername> with the name of your server.
2. Upload the Sales Summary report definition file.
 - ❑ *Native mode:* On the Report Manager toolbar, click Upload File, click Browse, navigate to the Microsoft Press\Rs2008sbs\Chap10 folder in your documents folder, select Sales Summary.rdl, and click Open. In the Name text box, keep the default report name, as shown here, and click OK.

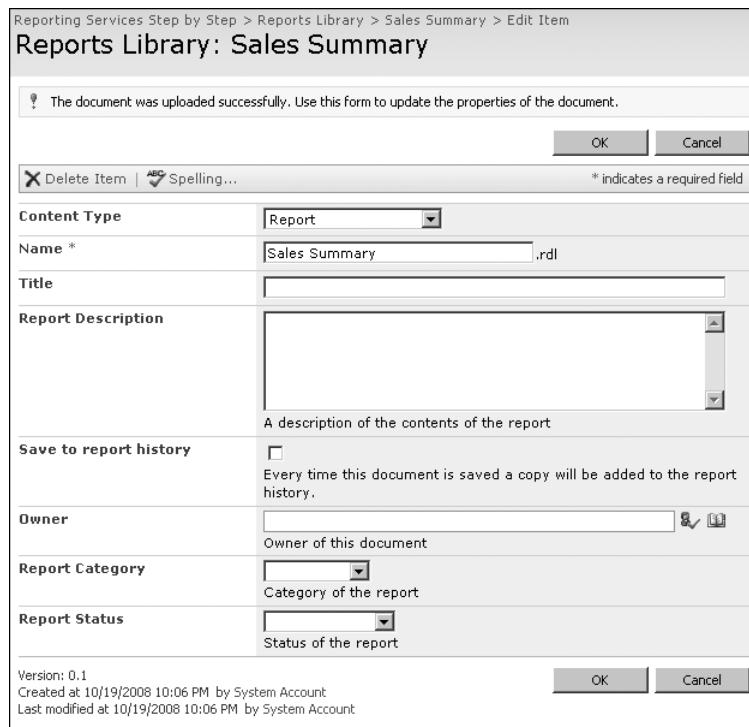


- ❑ *Integrated mode:* On the SharePoint toolbar, click the Upload button, click Browse, navigate to the Microsoft Press\Rs2008sbs\Chap10 folder in your documents folder, select Sales Summary.rdl, and click Open. On the Upload Document: Reports Library page, shown here, click OK.



Note By default, the uploaded document in SharePoint adds the report definition as new content to support the versioning feature in SharePoint. In-depth coverage of generic features of SharePoint such as this is beyond the scope of this book. However, you can learn more from the Help article "Introduction to Versioning," at <http://office.microsoft.com/en-us/help/HA100215761033.aspx?pid=CL100605171033>.

3. On a SharePoint integrated-mode report server, keep the default report name, as shown here, and then click OK.



Important The upload process to a report server in native mode or integrated mode does not associate the report definition file with a data source, which prevents you from viewing the report at this time. Later in this chapter, you learn how to correctly associate a report with its data source.

Using the Rs Utility

A report administrator can use script files to manage many activities on a native-mode report server, including report deployment. When you want an administrator to deploy reports in bulk, you develop a script file using Microsoft Visual Basic .NET and save the file as a Unicode or UTF-8 text with an .rss file name extension. Then you provide the administrator with the script file and report definition files to be uploaded. The report administrator can then use the script file as an input file for the Rs utility (described in more detail in Chapter 16).



Important The Rs utility is not supported for use with an integrated-mode report server.

In this procedure, you execute the Rs utility with the DeploySalesReports.rss script to deploy reports.

Deploy reports to a native-mode report server by using the Rs utility

1. On a native-mode report server, open a command prompt window.
2. Type the command to navigate to the folder containing the script file. For example, if you're running Windows XP or Windows Server 2003, type **cd C:\Documents and Settings\<username>\My Documents\Microsoft Press\Rs2008sbs\Chap10**. If you're running Windows Vista or Windows Server 2008, type **cd C:\Users\<username>\Documents\Rs2008sbs\Chap10**.
3. To run the Rs utility, type **rs -i DeploySalesReports.rss -s http://localhost/ReportServer**, and press Enter. The results of executing the utility display in the command prompt window.
4. To confirm the successful deployment of the reports, switch to Internet Explorer, navigate to *http://localhost/Reports*, and click the Sales And Order Quantity Analysis link in Report Manager and view the list of reports.

Managing Content

One way to manage content on a report server is to store every report in a single location, such as the Home page, but before long, you'll find that the number of reports becomes so large that it is difficult to manage security and to find content. You can use folders to simplify report management and usage. You can move content to a new folder later and, on a native-mode server, use a linked report to set up variations of a single report for applying different properties such as security or parameters.

Using Folders to Organize Content

Folders are useful for organizing content into logical groups by subject matter, target audience, security, or any combination of these. Folders can be nested into a hierarchical structure, and you can provide a description for a folder to provide users with more information about the folder contents. On a native-mode report server, you can also hide a folder name from the list view in Report Manager.

In this procedure, you add folders to store reports.

Add a folder to a report server

1. In Internet Explorer, open the home folder for Reporting Services.
 - ❑ *Native mode:* In the address bar, type **http://localhost/Reports** to open the Home folder in Report Manager or click the Home link at the top of the window.
 - ❑ *Integrated mode:* Type **http://<servername>/sites/ssrs/ReportsLibrary**, replacing <servername> with the name of your server, to open the Reports Library folder in SharePoint.
2. Add a new folder.
 - ❑ *Native mode:* On the Report Manager toolbar, click the New Folder button.
 - ❑ *Integrated mode:* On the Reports Library toolbar, click the arrow on the New button, and select Folder.
3. Provide a name for the folder.
 - ❑ *Native mode:* Replace the default name with **For Review**, and then, in the Description box, type **Reports in this folder are pending user review and acceptance**, as shown here. Click OK.



Note On a native-mode report server, you can hide a folder in the list view. Hiding a folder is not a security measure because the user can switch to detail view and see the folder. However, you can use a hidden folder to store reports that users don't normally access. For example, you can use a hidden folder to store subreports that users don't need to view as individual reports.

- ❑ *Integrated mode:* In the Name text box, type **For Review**, and click OK.

Moving Content

Getting the right folder structure established for reports might take some time. After reports are deployed to a report server, you can move them from one folder to another folder.

In this procedure, you move selected reports from the Sales folder to the For Review folder.

Move content

1. In Internet Explorer, open the folder containing the Reporting Services reports that you deployed earlier in this chapter.
 - ❑ *Native mode:* On the Home page of Report Manager, click the Sales link.
 - ❑ *Integrated mode:* If the Reports Library folder is not already open, in the address bar, type **http://<servername>/sites/ssrs/ReportsLibrary**, replacing <servername> with the name of your server.
2. Open the view that allows you to select the reports to move.
 - ❑ *Native mode:* On the Report Manager toolbar, click the Show Details button.

When you click the Show Details button, the contents of the folder display as a single list with a check box to the left of each item, as shown here. You can move or delete one or more items in the list by selecting each item's check box and then clicking the Move or Delete button on the toolbar, respectively.

Check Box	Type	Name	Description	Modified Date	Modified By	When Run
<input type="checkbox"/>	Report	Customer List !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Employee Sales Moving Average !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Reseller Sales Cumulative Sales !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Reseller Sales Margin Analysis !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Reseller Sales Margin Analysis by Sales Territory !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Reseller Sales Margin Analysis Interactive !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Sales and Average Sales !NEW		10/19/2008 9:09 PM	SIRIUS\Administrator	
<input type="checkbox"/>	Report	Sales Summary !NEW		10/19/2008 9:21 PM	SIRIUS\Administrator	

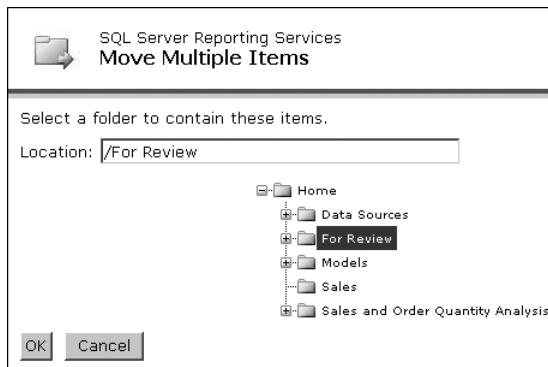
- ❑ *Integrated mode:* In the upper-right corner of the window, click Site Actions, select Manage Content And Structure, and then, in the tree view on the left, select Reports Library to view the library contents, as shown here.

3. Select all reports except the Reseller Sales Margin Analysis by Sales Territory report to move to the For Review folder.

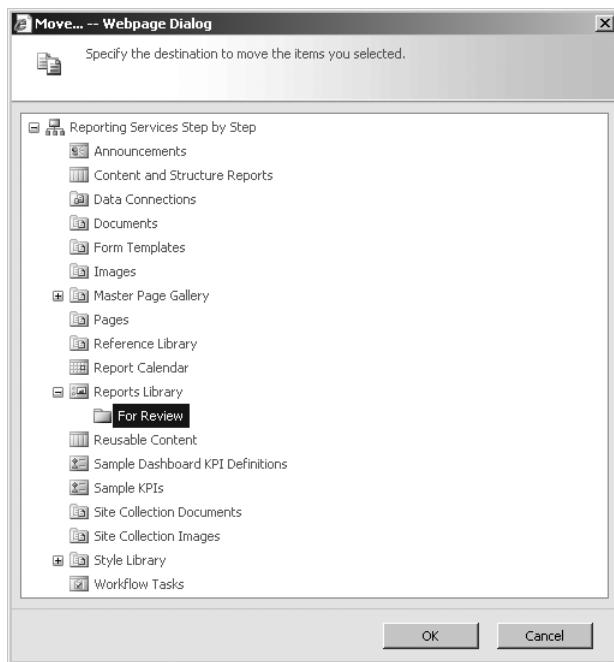
- Native mode:* Select the uppermost check box (to the left of Edit) to select all reports, clear the Reseller Sales Margin Analysis By Sales Territory check box, and then click Move.
- Integrated mode:* Select the uppermost check box (to the left of Type) to select all reports, clear the For Review, SampleWorkbook.xlsx, Sample Dashboard.aspx, Reseller Sales.smld, and Reseller Sales Margin Analysis By Sales Territory check boxes, click the arrow on the Actions button, and select Move.

4. Select the For Review folder as the target location for the reports.

- Native mode:* Select the For Review folder, as shown here, and then click OK.



- Integrated mode:* In the Move... Webpage Dialog box, expand Reports Library, select the For Review folder, as shown here, and then click OK.



5. Open the For Review folder to confirm that the seven reports have been moved successfully.
 - ❑ *Native mode:* In the upper-left corner of the browser window, click the Home link, and then, in the list view, click the For Review link.
 - ❑ *Integrated mode:* In the address bar, type **http://<servername>/sites/ssrs/ReportsLibrary/For Review**, replacing <servername> with the name of your server.



Important When you move reports to a new folder on an integrated-mode report server, the link between the data source and the report breaks. You must reset the link on each report manually before users can view the reports. In the sections “Configuring Report Parameters,” “Executing a Report on Demand,” and “Saving Report Snapshots in History,” later in this chapter, you perform the steps necessary to reset this link for three reports.

Creating a Linked Report

On a native-mode report server, you can create a variation of a report without the need to create and maintain multiple report definition files by creating a *linked report*. A linked report is a separate report item on the report server that uses a report definition file as a base but has separate execution, parameter, subscription, and security properties. A common reason to use a linked report is if you want to build a report that contains data for multiple departments

and includes a parameter to filter the report content by department. You can then deploy the report to a folder that none of the users can access, create one linked report per department, set the report parameter default to a specific department, and configure security such that users can access only the linked report for their department.

In this procedure, you create a linked report for the Reseller Sales Margin Analysis by Sales Territory report.

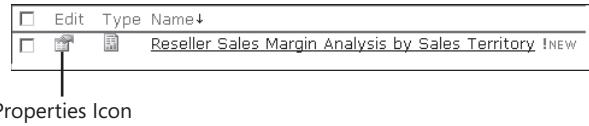
Create a linked report

1. In Internet Explorer, click the Home link at the top of the window, and then click the Sales link.

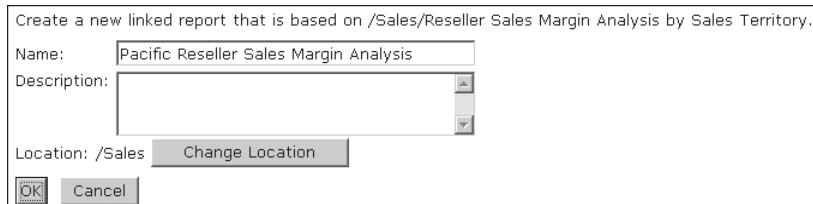


Note If you see the Hide Details button, then the list view is visible in Report Manager. You must be in list view to access the Properties page of a report directly, without viewing the report first. If Report Manager is not in list view, perform step 2 to switch modes. Otherwise, you can skip to step 3.

2. If necessary, click the Show Details button to switch the view to list view.
3. In the Edit column for the Reseller Sales Margin Analysis by Sales Territory report, click the Properties icon, as shown here.



4. Click Create Linked Report.
5. In the Name text box, type **Pacific Reseller Sales Margin Analysis**, as shown here.



Note that, as with the base report, you can add a description to the linked report. By default, the linked report is created in the same folder as the base report. You can click Change Location and select a target folder for the linked report.

6. Click OK.

The linked report displays in the browser window. You can now change the properties of the linked report. For example, to display only data for the Pacific sales territory in the report, you must change the parameter properties, which you do in the next procedure.

Copying a Report

Although you cannot create linked reports on an integrated-mode report server, you can create a copy of a report to achieve a similar result. That is, you can reproduce the same report definition as a separate file on the report server and set different execution, parameter, subscription, and security properties on the new file. However, any changes to the base report definition do not update the copy.

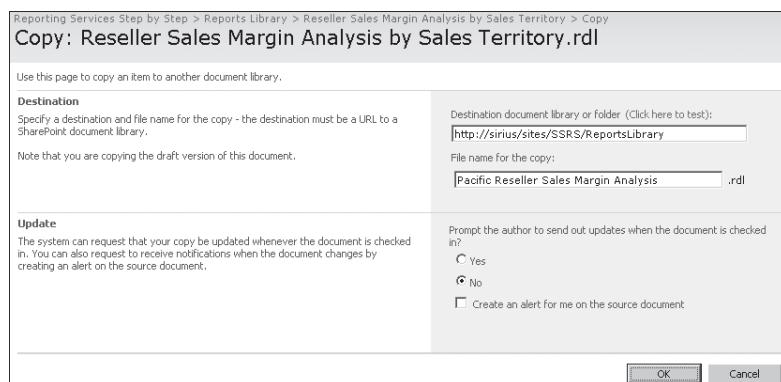


Important If you followed the steps in Chapter 2, you currently have a site collection at `http://<servername>/sites/ssrs`. To complete the following procedure successfully, you must also have a root site collection, `http://localhost`, on your SharePoint server. To create a root site collection, click Start, select All Programs, Administrative Tools, and SharePoint 3.0 Central Administration. Click the Application Management tab, and click the Create Site Collection link. In the Web Application drop-down list, select Change Web Application, and then select SharePoint – 80 in the list associated with the root URL, `http://<servername>`. On the Create Site Collection page, provide a title for the site, and then, in the Web Site Address section, make sure the URL looks like this: `http://<servername>/`, selecting / in the drop-down list to replace sites if necessary. Select a template of any type for the site. In the Primary Site Collection Administrator section, in the User Name box, type your login name, and click the Check Names icon to the right. Click OK to create the root site collection.

In this procedure, you create a copy of the Reseller Sales Margin Analysis by Sales Territory report on an integrated-mode server.

Create a report copy

1. In Internet Explorer, in the navigation bar on the left, click Reports.
2. Point to the Reseller Sales Margin Analysis by Sales Territory report, click the Edit button (which appears as an arrow to the right of the report title), point to Send To, and select Other Location.
3. On the Copy: Reseller Sales Margin Analysis By Sales Territory.rdl page, in the Destination Document Library Or Folder box, append **/ReportsLibrary** to the existing URL.
4. In the File Name For The Copy box, replace the default text by typing **Pacific Reseller Sales Margin Analysis**, as shown here.



Note Because the Reporting Services deployment process does not depend on checking items in and out, setting the Prompt The Author To Send Out Updates When The Document Is Checked In? option to Yes does not lead to an update of the report copy when the base report changes.

5. Click OK.
6. In the Copy Progress message box, click OK, and then, when the copy operation completes, click Done.
7. In the Copy Progress message box, click OK.

The report copy displays in the list of reports. You can now change properties for the report copy, which you do in the next procedure.

Configuring Report Parameters

Besides managing the location of reports on the report server, you can also manage the default values that are configured for the report parameters. In addition, you can remove the parameter prompt for a report so that a user cannot choose a different parameter value.

In this procedure, you configure the default value of a parameter in the Pacific Reseller Sales Margin Analysis report and remove the user prompt for the parameter.

Configure parameter properties

1. In Internet Explorer, open the parameter properties page of the Pacific Reseller Sales Margin Analysis report that you created earlier in this chapter.
 - ❑ *Native mode:* Open the report if necessary, click the Properties tab above the report, and then click the Parameters link.

- ❑ *Integrated mode:* Open the reports library folder for the report, if necessary, point to the report in the list, click the Edit button (which appears to the right of the report title), and select Manage Parameters.

2. Change the default value for the *SalesTerritoryGroup* parameter to *Pacific*.

- ❑ *Native mode:* On the SalesTerritoryGroup row, in the Default Value drop-down list, clear the rows containing Europe and North America, as shown here.

Select the parameters that all users can change, and choose a default value for each.							
Parameter Name	Data Type	Has Default	Default Value	Null	Hide	Prompt User	Display Text
CostBasis	String	<input checked="" type="checkbox"/>	Total	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cost Basis
Year	String	<input checked="" type="checkbox"/>	Query Based	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Year
Quarter	String	<input checked="" type="checkbox"/>	Query Based	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Quarter
SalesTerritoryGroup	String	<input checked="" type="checkbox"/>	Europe, North America	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SalesTerritoryGroup
<input type="button" value="Apply"/>							
<input type="button" value="Pacific"/>							

- ❑ *Integrated mode:* Click the SalesTerritoryGroup link, and then, in the Use This Value drop-down list, clear the check boxes for the rows containing Europe and North America.

3. Remove the user prompt for SalesTerritoryGroup.



Important When a default value is missing for a report parameter, the report cannot execute until the user provides a parameter value. For this reason, be sure not to remove the user prompt for a report parameter without also specifying a default value, or else the report can never execute.

- ❑ *Native mode:* On the SalesTerritoryGroup row, clear the Prompt User check box, and then click Apply.
- ❑ *Integrated mode:* Select the Hidden option, click OK, and then, on the Manage Parameters: Pacific Reseller Sales Margin Analysis page, click Close.



Note The Hidden option allows you to specify a default value for a report parameter without allowing the user to view or change the report parameter value. The Internal option also hides the parameters, but it requires an expression in the report definition to evaluate at run time.

4. View the report.

- ❑ *Native mode:* Above the parameter properties, click the View tab to render the report, as shown here.

The screenshot shows a report titled "Pacific Reseller Sales Margin Analysis". The report displays sales data for the Pacific region, categorized by Australia (Specialty Bike Shop, Value Added Reseller, Warehouse) and Country Total. The data is presented in a table with columns for Product, Sales Amount, Profit Margin, Profit Margin Pct, and Pct Contribution. The report is set to "Total" cost basis, covering the years 2001-2006 and quarters Q1-Q4. The total sales amount for the Pacific region is \$1,594,335.

Product	Sales Amount	Profit Margin	Profit Margin Pct	Pct Contribution
Pacific				
Australia				
<input checked="" type="checkbox"/> Specialty Bike Shop	\$327,172			◆
<input checked="" type="checkbox"/> Value Added Reseller	\$799,552			◆
<input checked="" type="checkbox"/> Warehouse	\$467,612			◆
Country Total	\$1,594,335			
Group Total	\$1,594,335			

1 of 1 Filters: Pacific - 2001,2002,2003,2004,2006 - Q1,Q2,Q3,Q4

Notice that the prompt for the sales territory selection does not appear in the parameter toolbar above the report and that the report displays data only for the Pacific sales territory.

- ❑ *Integrated mode:* In the Reports Library list, point to the Pacific Reseller Sales Margin Analysis report, click the Edit button (which appears to the right of the report title), and select Manage Data Sources. Click the AdventureWorksDW2008 link, and then click the ellipsis button to the right of the Data Source Link box. In the Select An Item dialog box, click Up, click the Data Connections link, select AdventureWorksDW2008, click OK twice, and click Close. Now that the data source information has been linked to the report, click the Pacific Reseller Sales Margin Analysis link to view the report, shown here.

The screenshot shows the Reporting Services Step by Step > Reports Library. The report titled "pacific reseller sales margin analysis.rdl" is displayed. The report interface includes a toolbar with actions like Find Next and a 100% zoom level. On the right side, there is a "Parameters" panel with dropdown menus for Cost Basis (set to "Total"), Year (set to "2001, 2002, 2003, 2004, 2006"), and Quarter (set to "Q1, Q2, Q3, Q4"). The "Apply" button is located at the bottom right of the parameters panel.

Enabling Personalized Folders

On a native-mode report server, you can enable My Reports to give each user a personal workspace in which the user can store reports created using one of the report development tools for personal use. A user with appropriate permissions can also create a linked report to personalize a report, such as setting a specific parameter value when the report opens. To enable My Reports using SQL Server Management Studio, connect to Reporting Services, right-click the server in Object Explorer, select Properties, and then select the Enable A My Reports Folder For Each User check box. The tasks that a user can perform in this folder are controlled by the role settings that are described in Chapter 11.

On an integrated-mode server, you can also provide a personal workspace for report storage, by creating a Shared Services Provider and configuring a My Site Location and personalization on the SharePoint server. (For more information, see the article “Create and Configure Shared Services Providers,” at <http://technet.microsoft.com/en-us/library/cc303421.aspx>.) A user with appropriate permissions can then click the My Site link at the top of the SharePoint site to create a personal site, and then use the Send To command (as described in the procedure entitled “Create a report copy” earlier in this chapter) to copy a report and personalize the parameter settings.

Configuring Data Source Properties

You will likely design and test reports in BI Dev Studio by using a local data source that contains a representative subset of production data. By limiting the data used for report development, you can avoid long waits for report execution. On the server, however, you want reports to retrieve data from the production data sources. You can maintain one data source for your development environment and another for your server environment. The *OverwriteDataSources* property for the project controls whether the data source in your project gets copied to the server. By default, deployment copies the data source file the first time, but subsequent deployments ignore the data source file, allowing you to change the properties on the server without affecting the data source on your development computer.

Prompting the User for Credentials

The simplest type of security to implement is Windows integrated security, which passes the user’s credentials to the data source, but you might have data sources that don’t use Microsoft Windows credentials for authentication. For these situations, you can prompt the user for credentials, which then pass to the data provider for authentication at the data source. You should use this authentication method only for reports that the user can access on demand because the report cannot execute without user input.

In this procedure, you create a report-specific data source to prompt the user for credentials before executing the report.

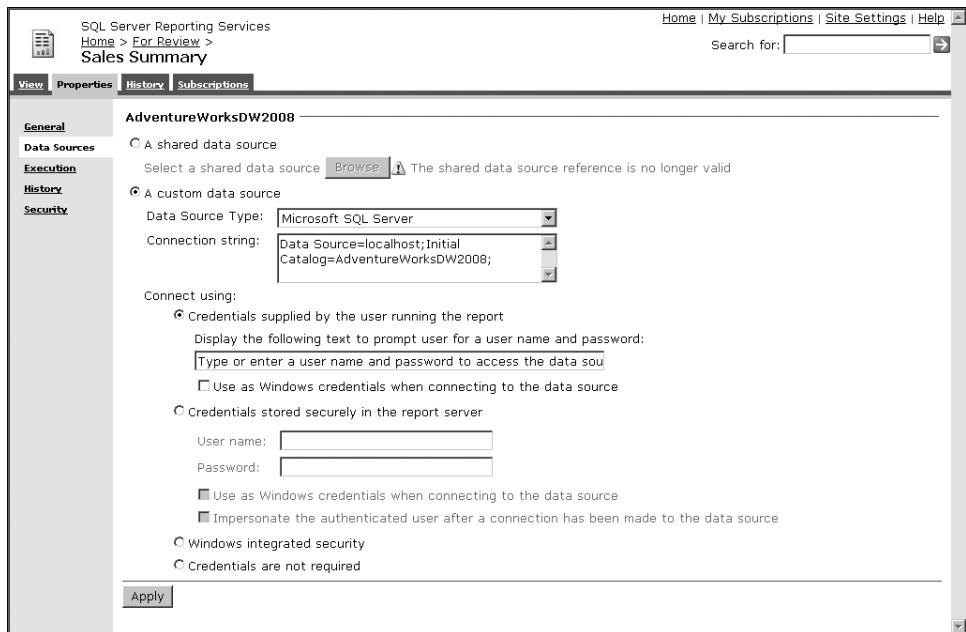
Configure prompted credentials

1. In Internet Explorer, open the Sales Summary report that you created earlier in this chapter.
 - ❑ *Native mode:* In Report Manager, click the Home link at the top of the window, click the For Review link, and then click the Sales Summary link.
 - ❑ *Integrated mode:* In the address bar, type **http://<servername>/sites/ssrs /ReportsLibrary/For Review** (replacing <servername> with the name of your server), or if viewing a report, click the Reports Library link at the top of the window and then click the Sales Summary link.

A message displays explaining that the current data source connection information has been deleted. Remember that this report was uploaded directly to the report server and independently of any shared data source described in the report definition. You must either associate the report with shared data sources on the report server, or configure a report-specific data source. In this procedure, you create a report-specific data source to learn the proper steps.

2. Open the data source properties page for the report.
 - ❑ *Native mode:* Above the report, click the Properties tab, and then click the Data Sources link. A message displays explaining that the data source reference is no longer valid.
 - ❑ *Integrated mode:* At the top of the window, click the For Review link, point to the Sales Summary report, and click the Edit button to the right of the report title, select Manage Data Sources, and click the AdventureWorksDW2008 link. A message displays explaining that the linked data source could not be found.
3. Create a report-specific data source to connect to the AdventureWorksDW2008 data source.
 - ❑ *Native mode:* Select A Custom Data Source, and then, in the Connection String text box, type **Data Source=localhost;Initial Catalog=AdventureWorksDW2008;**

The default authentication when creating a new data source on the report server is Credentials Supplied By The User Running The Report, as shown here.



- ❑ *Integrated mode:* Select Custom Data Source, and then, in the Connection String box, type **Data Source=localhost;Initial Catalog=AdventureWorksDW2008;**, and then select Prompt For Credentials.

Before the user can view the report, the user must enter a user name and password. You can change the prompt that is displayed to the user in the Display The Following Text To Prompt User For A User Name And Password text box in native mode, or in the Provide Instructions Or Example box in integrated mode.



Important If the user must supply a Windows user account, be sure to select the Use As Windows Credentials When Connecting To The Data Source check box in native mode, or select Use As Windows Credentials in integrated mode.

4. Apply the change to the data source properties.
 - ❑ *Native mode:* Click Apply.
 - ❑ *Integrated mode:* Click OK, and then click Close.
5. View the report.
 - ❑ *Native mode:* Above the data source properties, click the View tab. The prompt for credentials displays, as shown here. Type your user name and password, and then click View Report to display the report.

Type or enter a user name and password to access the data source:

Log In Name: Password:

- ❑ *Integrated mode:* Click the Sales Summary link. The prompt for credentials displays. Type your user name and password, and then click Apply to display the report.



Important If you have configured Windows authentication for your SQL Server database engine, which is the default, be sure to include the domain name with your user name in the Log In Name box, using the Domain\User format.

Using Stored Credentials

Several execution methods require the data source to use stored credentials when the report runs on a scheduled basis or produces a report snapshot. The stored credentials are stored in the ReportServer database using reversible encryption. The account used for stored credentials must be granted Read permission on the source database.

In this procedure, you configure a shared data source to use stored credentials.

Configure stored credentials

1. In Internet Explorer, open the AdventureWorksDW2008 data source that was deployed with your report project earlier in this chapter.



Important If you deployed the report model project in Chapter 9, you also see the Adventure Works DW2008 data source for the report model in the Data Sources folder. Be sure to select the correct data source.

- ❑ *Native mode:* In Report Manager, click the Home link at the top of the window, click the Data Sources link, and then click the AdventureWorksDW2008 link.
 - ❑ *Integrated mode:* Type **http://<servername>/sites/ssrs/data connections** (replacing <servername> with the name of your server), and then click the AdventureWorksDW2008 link.
2. Configure the stored credentials option.
 - ❑ *Native mode:* Select **Credentials Stored Securely In The Report Server**, type your user name and password in the applicable text boxes, select the **Use As Windows Credentials When Connecting To The Data Source** check box if you are using Windows authentication in your SQL Server database, and then click **Apply**. The updated properties page for the data source is shown here.

The screenshot shows the 'Properties' dialog box for a data source named 'AdventureWorksDW2008'. The 'General' tab is selected. The 'Name' field contains 'AdventureWorksDW2008'. The 'Description' field is empty. Under 'Connect using:', the radio button for 'Credentials stored securely in the report server' is selected. The 'User name' field contains 'SIRIUS\Administrator' and the 'Password' field contains '*****'. The 'Use as Windows credentials when connecting to the data source' checkbox is checked. The 'OK' button is visible at the bottom.



Note In this example, the server name in the User Name string is fictitious and is included for illustration purposes only.

- ❑ *Integrated mode:* Select Stored Credentials, type your user name and password in the applicable boxes, select the User As Windows Credentials check box if you are using Windows authentication in your SQL Server database, and click OK.



Important If you type an incorrect user name and password for a data source's stored credentials, no error message displays. You must test a report using this data source to confirm the user name and password are correct, which you do in the next procedure.

Configuring Report Execution Properties

Report execution transforms a report stored in the ReportServer database into a rendered report that the user views. As part of the execution process, the queries defined in the report's datasets execute and return data to the report server, which then uses the report definition file to determine how to construct the report with the retrieved data. At this point, the report is in an intermediate format that is sent to the applicable rendering extension to produce the final rendered report.

Report performance is determined largely by how much data is retrieved by the report and how much processing is required to produce the rendered report. If the users don't need the

most current data in the database each time the report executes, you should consider any execution option that generates the report's intermediate format in advance of the user viewing the report to achieve optimal performance. The following sections in this chapter explain the relationship between each execution option and generation of the intermediate format.

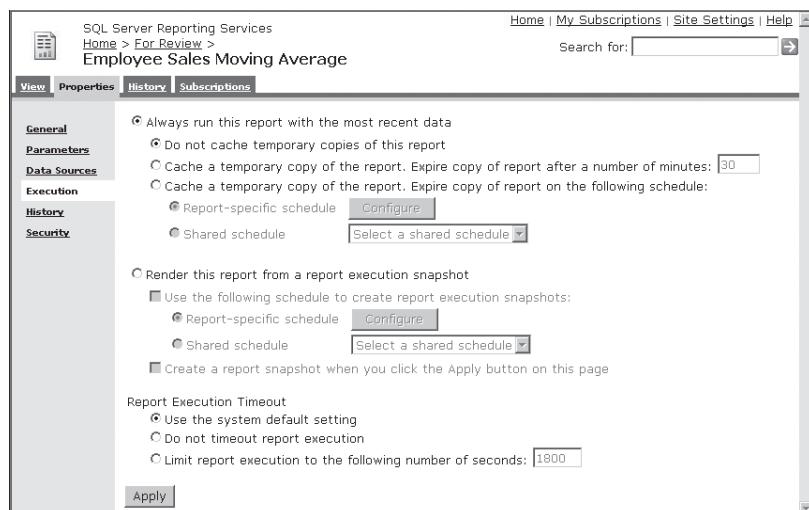
Executing a Report on Demand

When a user clicks the link for a report, the report executes on demand, returning the most current data to the report server which then produces an intermediate format. The intermediate format is stored in the ReportServerTempDB database in a session cache to speed up subsequent requests by the same user for the same report during the current session. For example, after the user views the report online, the user might export the report to an Excel format. By having the intermediate format in session cache, the online version and the Excel version of the report match. Furthermore, the Excel version renders very quickly from the intermediate format of the report because the report server does not need to wait for the query to execute again.

In this procedure, you configure the execution properties of the Employee Sales Moving Average report to execute on demand with a 60-second timeout.

Configure report execution on demand with a 60-second timeout

1. In Internet Explorer, open the execution properties page of the Employee Sales Moving Average Report.
 - ❑ *Native mode:* In Report Manager, click the Home link at the top of the window, click the For Review link, click the Employee Sales Moving Average link, click the Properties tab, and then click the Execution link to view the execution properties, as shown here.



- ❑ *Integrated mode:* In the navigation bar, click Reports, click the For Review link, point to Employee Sales Moving Average, click the Edit button appearing to the right of the report title, and select Manage Data Sources. Click the AdventureWorksDW2008 link, and then click the ellipsis button to the right of the Data Source Link box. In the Select An Item dialog box, click Up twice, click the Data Connections link, select AdventureWorksDW2008, click OK twice, and click Close. Now the link to the data source, which was broken when you moved the report to the For Review folder, is fixed, and you can proceed to set the execution properties. Point to Employee Sales Moving Average, click Edit, and then select Manage Processing Options.

The two execution properties for a report are the type of execution and the report execution timeout, as shown in the following table.

For This Property Type	On a Native-Mode Report Server, the Default Property Is	On an Integrated-Mode Report Server, the Default Property Is
Execution type	Do Not Cache Temporary Copies Of The Report	Use Live Data
Execution timeout	Use The System Default Setting	Use Site Default Setting

You learn how to configure the System/Site default setting in Chapter 12, "Performing Administrative Tasks," if you want to use a value other than the 1,800-second default for all reports. Alternatively, you can override this value, as shown in the next step.

2. Change the report execution timeout value to 60.
 - ❑ *Native mode:* In the Report Execution Timeout section, select Limit Report Execution To The Following Number Of Seconds, and then, in the text box to the right, type **60**, and click Apply.
 - ❑ *Integrated mode:* In the Processing Time-out section, select Limit Report Processing (In Seconds), and then, in the text box to the right, type **60**, and click OK.
3. View the report to confirm execution on demand.
 - ❑ *Native mode:* Click the View tab and note the date-time stamp below the chart.
 - ❑ *Integrated mode:* Click the Employee Sales Moving Average link and note the date-time stamp below the chart.
4. Above the report title, click the For Review link, click the Employee Sales Moving Average link, and then note the new date-time stamp below the chart.

Caching Reports

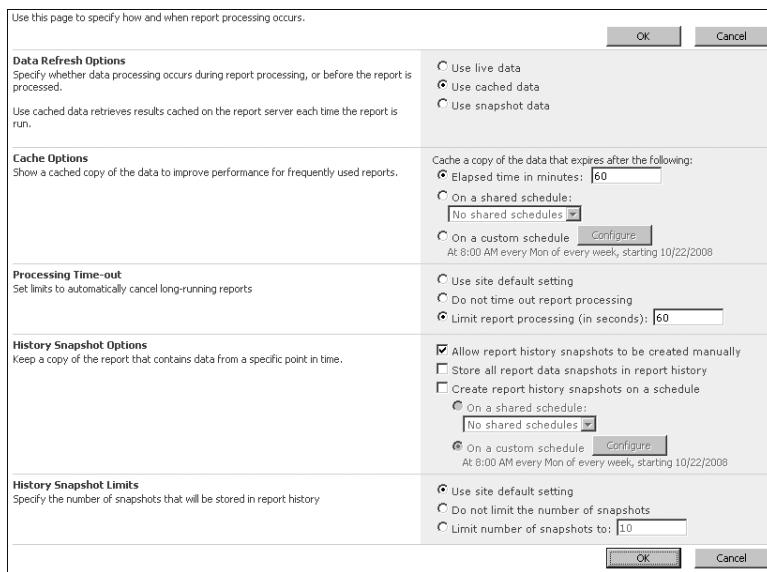
Caching a report is helpful when you want to strike a balance between having current data in the report and having faster access to the online report. The first time a user clicks the link for a report configured to cache, the report execution process is identical to the on-demand process. However, the intermediate format is flagged as a cached instance and stored in ReportServerTempDB until the time specified by the cache settings expires. Meanwhile, if any user requests the report during the time that it still resides in cache, then the report server retrieves the intermediate format and renders the report so long as the user requests the same combination of parameter values. This process is much faster than retrieving the data, producing the intermediate format, and then rendering the report.

If a user requests a different set of parameter values for a cached report, then the report processor treats the request as a new report executing on demand, but flags it as a second cached instance. If users are constantly looking at different parameter combinations and not reusing parameter values, then using cached reports is not helpful.

In this procedure, you configure the execution properties of the Employee Sales Moving Average report to cache the report and expire the cached instance after 60 minutes.

Configure caching with expiration after 60 minutes

1. In Internet Explorer, open the execution properties page of the Employee Sales Moving Average report.
 - ❑ *Native mode:* Open the report, if necessary, click the Properties tab, and then click the Execution link to view the execution properties.
 - ❑ *Integrated mode:* If the report is open, click the For Review link. Otherwise, type **http://<servername>/sites/ssrs/ReportsLibrary/For Review** (replacing <servername> with the name of your server), point to Employee Sales Moving Average, click the Edit button (located to the right of the report title), and then select Manage Processing Options.
2. Set the execution type to caching with an expiration after 60 minutes.
 - ❑ *Native mode:* Select Cache A Temporary Copy Of The Report, and then, in the Expire Copy Of The Report After A Number Of Minutes text box, type **60**. Click Apply.
 - ❑ *Integrated mode:* Select Use Cached Data, and then, in the Elapsed Time In Minutes text box, type **60**, as shown here, and click OK.



3. View the report to confirm execution.
 - ❑ *Native mode:* Click the View tab and note the date-time stamp below the chart.
 - ❑ *Integrated mode:* Click the Employee Sales Moving Average link.
4. Above the report title, click the For Review link, click the Employee Sales Moving Average Report link, and then note the date-time stamp below the chart has not changed to reflect the current time.
5. In the Employee drop-down list, select Campbell, David, click View Report or Apply (as applicable to your report server), and then note the new date-time stamp.
6. In the Employee drop-down list, select Pak, Jae, click View Report or Apply as applicable, and then note the date-time stamp for the first cached instance of the report.

Creating Report Snapshots

When users don't need up-to-the minute data from the data source, and also need fast report performance, you can use report snapshots. A report snapshot executes the query and produces the intermediate format in advance of the user's request to view the report. You can configure a report to generate a snapshot on demand, or you can set up a recurring schedule to replace a snapshot periodically with a more current version. The intermediate format of the report has no expiration time like a cached instance, and is stored in the ReportServer database as part of permanent storage. If you have limited disk space, you should monitor the growth in your ReportServer database, as described in Chapter 12.

If you decide to create a report snapshot on a recurring schedule, you can choose between a report-specific schedule and a shared schedule. The benefit of using a shared schedule is the ability to apply the schedule to several different activities, such as creating snapshot, expiring caches, or delivering subscriptions.

In this procedure, you configure the Sales and Average Sales report to execute as a report snapshot on a weekly schedule.

Configure a report as a scheduled snapshot

1. Click Start, select All Programs, Microsoft SQL Server 2008, Configuration Tools, and click SQL Server Configuration Manager. Then select SQL Server Services in the tree view on the left, right-click SQL Server Agent in the detail view on the right, and, if the state of the SQL Server Agent is stopped, select Start. Close SQL Server Configuration Manager.



Important The SQL Server Agent must be running to create and execute schedules. If you later stop or disable the SQL Server Agent, any schedules that were missed do not execute.

2. Switch to Internet Explorer, and open the execution properties page of the Sales and Average Sales report.
 - ❑ *Native mode:* In Report Manager, click the Home link at the top of the window, click the For Review link, click the Sales And Average Sales link, click the Properties tab, and then click the Execution link to view the execution properties.
 - ❑ *Integrated mode:* If the report is open, click the For Review link. Otherwise, type **http://<servername>/sites/ssrs/ReportsLibrary/For Review** (replacing <servername> with the name of your server), point to Employee Sales Moving Average, click the Edit button (located to the right of the report title), and then select Manage Processing Options.
3. Set the execution type to a report execution snapshot using a report-specific schedule.
 - ❑ *Native mode:* Select Render This Report From A Report Execution Snapshot, select the Use The Following Schedule To Create Report Execution Snapshots check box, and then click Configure.



Note If a shared schedule exists, you can select the Shared Schedule option, and select the shared schedule in the corresponding drop-down list. You can configure server-wide schedules by clicking the Site Settings link at the top of the window, clicking the Schedules link, and then clicking New Schedule. You then specify the schedule details on the Scheduling page, which looks very similar to the page that you configure in the next step.

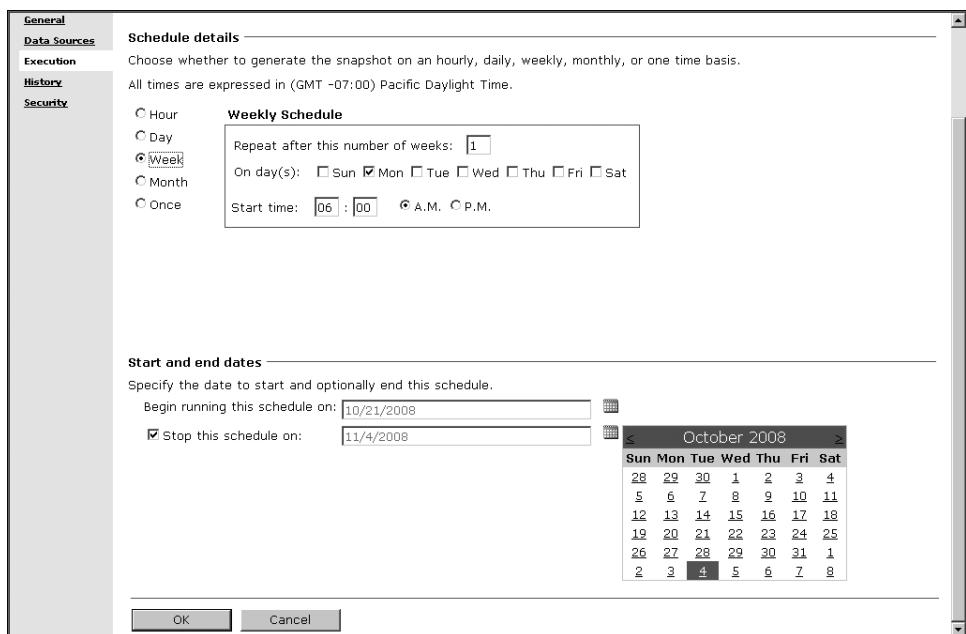
- ❑ *Integrated mode:* Select Use Snapshot Data, select the Schedule Data Processing check box, and then click Configure.



Note If a shared schedule exists, you can select the On A Shared Schedule option, and select the shared schedule in the corresponding drop-down list. You can configure server-wide schedules by clicking the Site Actions button at the top of the window. Click Site Settings, click Modify All Site Settings, click Manage Shared Schedules in the Reporting Services section, and click Add Schedule. You then specify the schedule details on the Scheduling page, which looks very similar to the page that you configure in the next step.

4. Configure a weekly schedule to create the snapshot each Monday at 6:00 AM, ending in two weeks.

- ❑ *Native mode:* Select Week, and then, in the first Start Time text box, replace the current value with **06**. Select the Stop This Schedule On check box, click the Calendar icon, and select a date two weeks into the future, as shown here. Click OK.



- ❑ *Integrated mode:* Select Week, and then, in the Start Time box, replace the current value with **6:00**. Select Stop Running This Schedule On, click the Calendar icon, select a date two weeks into the future, and click OK.



Note In this procedure, a specific end date for the schedule is specified to limit the number of times the report executes on a schedule. In a production system, you are more likely to omit specifying an end date for the schedule to keep creating the report snapshot on an ongoing basis.

5. Apply the new execution properties.

- ❑ *Native mode:* On the execution properties page, shown here, click **Apply**.

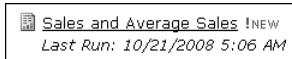
The screenshot shows the 'Properties' dialog box for a report named 'Sales and Average Sales'. The 'Execution' tab is active. Under the 'General' section, there are four radio button options: 'Always run this report with the most recent data' (unchecked), 'Do not cache temporary copies of this report' (unchecked), 'Cache a temporary copy of the report. Expire copy of report after a number of minutes:' (checked with a value of 30), and 'Cache a temporary copy of the report. Expire copy of report on the following schedule:' (unchecked). Under 'Report Execution Timeout', there are three radio button options: 'Use the system default setting' (checked), 'Do not timeout report execution' (unchecked), and 'Limit report execution to the following number of seconds:' (unchecked with a value of 1800). At the bottom right of the dialog box is an 'Apply' button.

- ❑ *Integrated mode:* On the Manage Processing Options: Employee Sales Moving Average page, click OK.

Notice that the Create A Report Snapshot When You Click The Apply Button On This Page check box is selected by default on this page on a native-mode report server. On an integrated-mode server, the equivalent option is the Create Or Update The Snapshot When This Page Is Saved check box. You can create a snapshot on demand without waiting for the scheduled snapshot by opening this page, selecting this check box, and saving the page by clicking **Apply** on a native-mode report server or by clicking **OK** on an integrated-mode report server.

6. View the report snapshot label in the For Review folder.

- ❑ *Native mode:* Above the execution properties, click the For Review link to view the snapshot label, shown here.



- ❑ *Integrated mode:* After you click OK in the previous step, the contents of the For Review folder displays. However, there is no indicator that the report is now a snapshot report. The Report Modified date-time stamp displays the execution time of the snapshot after you refresh the browser.

Each time you click the report link to view the report snapshot, the execution date-time reflects the execution time of the snapshot. Note that the user cannot change any report parameter that passes a value to a query parameter. The report parameter is visible in the toolbar, but it is disabled.

When a new snapshot is created according to the defined schedule, the former snapshot is removed. Only the most current snapshot is available for viewing unless you configure report history, which you learn how to do in the next procedure.

Saving Report Snapshots in Report History

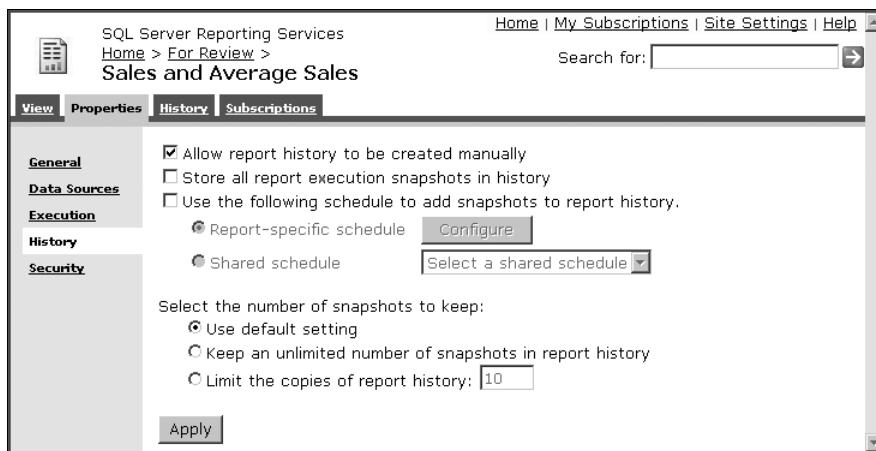
By default, a new report snapshot replaces the previous report snapshot. You can choose to accumulate report snapshots in report history to preserve a record of the report contents at specific points in time. To add a report snapshot to report history, you can click a button to add it manually, or you can add to report history each time a new report snapshot is created according to the defined schedule.

Because snapshots can require a lot of storage space, you might want to impose a serverwide limit to the number of snapshots that can accumulate for a report, or you can set a limit specific to each report.

In this procedure, you configure report history and manually add a report snapshot to report history.

Configure report history

1. Open the History page of the Sales and Average Sales report.
 - ❑ *Native mode:* In Report Manager, click the Sales And Average Sales link, click the Properties tab, and then click the History link to view the history properties, as shown here.



- ❑ *Integrated mode:* In the For Review folder of the Reports Library, point to the Sales And Average Sales report, click the Edit button (which appears to the right of the report title), and select Manage Data Sources. Click the AdventureWorksDW2008 link, and then click the ellipsis button to the right of the Data Source Link box. In the Select An Item dialog box, click Up twice, click the Data Connections link, select AdventureWorksDW2008, click OK twice, and click Close. Now, to view the history properties, select the Sales And Average Sales report, click Edit, and then click Manage Processing Options.

Select the Allow Report History To Be Created Manually check box to enable the user to create a report history snapshot on demand. The report history snapshot is different from the snapshot you created in the previous procedure because it is accessible only on the History tab of the report on a native-mode report server, and on the View History page on an integrated-mode server, where you can accumulate multiple snapshots in report history. The New Snapshot button appears on the History tab when this option is enabled.

As an alternative to creating report history manually, you can select the Use The Following Schedule To Add Snapshots To Report History check box on a native-mode report server. On an integrated-mode report server, select the Create Report History Snapshots On A Schedule check box.

2. Configure the option to store each report execution snapshot in report history.

- ❑ *Native mode:* Select the Store All Report Execution Snapshots In History check box, and click Apply.
- ❑ *Integrated mode:* Select the Store All Report Data Snapshots In Report History check box, and click OK.



Note Only report execution snapshots created after you enabled this option are stored in report history.

Because report history consumes storage space in the ReportServer database, you should carefully manage the number of snapshots that accumulate in report history. You learn more about how to change the server-wide defaults in Chapter 12. The options for applying a snapshot limit are described in the following table.

To Set This Type of Snapshot Limit	On a Native-Mode Report Server, Use This Option	On an Integrated-Mode Report Server, Use This Option
Default	Default Setting	Use Site Default Setting
Specific number	Limit The Copies Of Report History	Limit Number Of Snapshots To
No limit	Keep An Unlimited Number Of Snapshots In Report History	Do Not Limit the Number Of Snapshots

3. Create a report snapshot manually.

- ❑ *Native mode:* Click the History tab, and then click the New Snapshot button. The report snapshot appears in a list on the History tab.
- ❑ *Integrated mode:* Select the Sales And Average Sales report, click Edit, click View Report History, and click New Snapshot.

The list of report snapshots in history includes the date and time the report snapshot was created and the total size of the report. You can delete a report by selecting its check box, and clicking the Delete button on the toolbar.

Managing Change in the Reporting Life Cycle

When report modifications are required to fix issues during testing or to accommodate changing business requirements, you must edit the report definition file and then redeploy the report. You can redeploy the report using any of the methods described previously in this chapter. The deployment process replaces the original report definition in the ReportServer database with the new report definition. All existing report properties are preserved, so you won't need to change execution settings or security permissions when you redeploy a report, for example. However, be aware that because parameter properties are preserved, any changes you make to report parameters in the report definition are visible when you view the report on the report server after deployment. You must first delete the report from the report server and then deploy the report to enable access to report parameter settings in the report definition.

Chapter 10 Quick Reference

To	Do This
Set report server project properties	In Solution Explorer, right-click the project, select Properties, and then specify a target data sources folder, a target report folder, and the target report server URL.
Deploy a report server project	In Solution Explorer, right-click the project, and select Deploy.
Upload a report to the report server	<p><i>Native mode:</i> In Internet Explorer, open Report Manager, navigate to the folder in which to store the report, click the Upload File button on the Report Manager toolbar, click Browse, navigate to the report on the file system, and select the report definition file.</p> <p><i>Integrated mode:</i> In Internet Explorer, open the reports library on the SharePoint site, click the Upload button on the reports library toolbar, click Browse, navigate to the report on the file system, and select the report definition file.</p>
Deploy reports with the Rs utility on a native-mode report server	Create a script file that uses the <i>CreateFolder</i> and <i>CreateReport</i> methods, and provide the path to this script file as an input argument for the Rs utility by using the following syntax: rs -i inputfile -s http://<servername>/ReportServer.
Add a folder to a report server	<p><i>Native mode:</i> In Report Manager, navigate to an existing folder, and click the New Folder button on the Report Manager toolbar.</p> <p><i>Integrated mode:</i> In the SharePoint reports library, on the reports library toolbar, click the arrow on the New button, and select Folder.</p>
Move a report to a new folder	<p><i>Native mode:</i> In Report Manager, navigate to the report's parent folder, click the Show Details button on the Report Manager toolbar, select the report's check box, click the Move button, and select a target folder.</p> <p><i>Integrated mode:</i> In the upper-right corner of a page in the SharePoint site, click Site Actions, select Manage Content And Structure, select Reports Library in the tree view, select the report's check box, click the arrow on the Actions button, select Move, and select a target folder.</p>
Create a linked report on a native-mode report server	In Report Manager, open the base report, click the Properties tab, click Create Linked Report, provide a name for the linked report, and then, if you want, click Change Location and select a target location.
Create a report copy on an integrated-mode report server	In a SharePoint site, in the navigation bar, click Reports, point to a report in the library, click the Edit button appearing to the right of the report title, select Send To, click Other Location, type the name of a target document library or folder, and type a name for the report copy.

To	Do This
Configure report parameter properties	<p><i>Native mode:</i> In Report Manager, open the report, click the Properties tab, click the Parameters link, and, if you want, clear the Has Default check box, provide an alternate default value, select the Hide check box, clear the Prompt User check box, or change the Display Text for the report parameter prompt.</p> <p><i>Integrated mode:</i> In the SharePoint reports library, point to the report, click the Edit button appearing to the right of the report title, select Manage Parameters, click a parameter link, and, if you want, select a new default value, select Do Not Use A Default Value, change the Prompt text, or hide the parameter by selecting Hidden or Internal.</p>
Configure a data source	<p><i>Native mode:</i> In Report Manager, open the shared data source or open a report, click the Properties tab, click the Data Sources link, select A Custom Data Source, select a data source type, and provide a connection string. Select the applicable Connect Using option to configure one of the following authentication methods: prompted credentials, stored credentials (which requires supplying the login name and password), Windows integrated security, or no credentials.</p> <p><i>Integrated mode:</i> In SharePoint, open the Data Connections folder on the site, and select a data source link or, in a reports library, point to a report, click the Edit button appearing to the right of the report title, select Manage Data Source, click the data source link, and select Custom Data Source. Select a data source type, and provide a connection string. Select the applicable Credentials option and configure one of the following authentication methods: Windows integrated security, prompted credentials, stored credentials (which requires supplying the login name and password), or the unattended report processing account.</p>
Configure report execution properties	<p><i>Native mode:</i> In Report Manager, open the report, click the Properties tab, click the Execution link, and then specify an execution type (on demand, caching, or snapshot) and a report execution timeout setting.</p> <p><i>Integrated mode:</i> In SharePoint, open the reports library, point to a report, click the Edit button located to the right of the report title, select Manage Processing Options, and then specify an execution type (on demand, caching, or snapshot) and a report execution timeout setting.</p>
Enable report history	<p><i>Native mode:</i> In Report Manager, open the report, click the Properties tab, click the History link, and select a method for adding snapshots to report history and a limit to the number of snapshots to keep in report history.</p> <p><i>Integrated mode:</i> In SharePoint, open the reports library, point to a report, click the Edit button located to the right of the report title, select Manage Processing Options, and select a method for adding snapshots to the report history and a limit to the number of snapshots to keep in report history.</p>

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