

Chapter 1

Getting Familiar with Reporting Services

In This Chapter

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Corporate data is growing at an extremely fast clip, meaning that more data is collected about business events and business transactions than ever before. It has been noted that data storage capacity of every company of every type doubles every 12 months. This data is stored in a great variety of formats — databases, spreadsheets, files, and documents. And as a direct consequence of this infinite variety, there's never very much uniformity to the data, so it often just sits in locations, never to be examined with any real efficiency.

The challenge in business today is to tap into this data that's just sitting around idle in an organization and then transform it into information and eventually into the kind of knowledge that can result in a competitive advantage. This transformation needs to evolve in baby steps. The first step is to identify what kind of data exists and where it resides. The next step is to create reports from this information.

A *report* is basically a simple document that can present numbers, text, and/or graphical information. Reports are necessary to combine information from various data sources and present that information in a coherent manner to business people. This information enables us to understand what is happening in some aspect of the business and can even (hopefully) enable us to make decisions based on this information.

In this chapter, I provide an overview of reporting in the business world so that you have some perspective. I then show how Microsoft Reporting Services meets the challenges and provides a great way of doing reports. You'll be surprised what capabilities Microsoft has packed into this extension of SQL Server 2005.

Dealing with Reporting Challenges

A good reporting tool must address many challenges, based on the need for versatility, accessibility, and automation. Versatility is important because of the great diversity of applications in business today that require reports in many forms. Accessibility is important because information is more frequently utilized in a business process if you can get to it easily. Finally, automation is important because access to key reports on demand at a moment's notice can greatly speed business processes that are dependent on the information.

The first challenge is versatility. For a reporting tool to do just the basics for you, it needs to wear a lot of different hats. The reporting tool must be able to handle both standard reports (regular weekly reports that are core to your business) as well as ad hoc (where you construct a report on the fly to answer a new question) reporting and analysis. The reporting tool also needs to span a multitude of data sources and data formats in a variety of database management systems (DBMSes for short). Today, companies focus on driving the business as it is today, as opposed to investigating historical information, so being able to put key performance indicators on a dashboard that allows for drilling down into more detail enables this forward-looking ability. Finally, the ability to be able to develop a generalized report with dynamic filtering can serve multiple purposes and thereby reduce the total number of reports required to support the enterprise reporting needs.

The next challenge for reporting tools is accessibility. Today, information technology (IT) departments respond to requests from various business groups. IT typically experiences large backlogs and might have some dissatisfied users as a result. Also, some reporting tools are used to distribute information predominantly on paper. Providing self-service and Web-based reporting capabilities, in which business users can go to a Web site to get the information they need, does two things:

- ✓ **Information is delivered when it is needed (if the data is available).**
- ✓ **IT is freed to do more value-added activities.** Report information can also be provided on an extranet site to service partners and suppliers.



Having access to historical information via the Web provides perspective to the information so that trends can be identified. Even beyond this, you can mine the historical information for predictive modeling purposes to help see into the future, based upon assumptions related to the key factors or drivers of the business.

The next challenge for reporting tools is automation. Reporting capabilities have traditionally been defined by the IT department. IT is constantly challenged with having to retrieve information from multiple data sources and delivering reports with a variety of tools. Being able to automate the integration of data sources and the production of reports so that information is pushed to business people in the form of reports and alerts enables knowledge workers to be more proactive. Alerting reports can also be produced when key operational metrics look to be out of whack, indicating that a situation needs attention — again, a proactive, enabling capability.

You'll get a chance to see how Microsoft SQL Server 2005 Reporting Services rises to these challenges and provides some excellent reporting capabilities. The great feature about Reporting Services is that it is an extension of the SQL Server database management system. As such, if you have an SQL Server license, you have Reporting Services.

Mastering Reporting Principles

Have you ever wondered why some reports are immediately understood while others lead to blank looks and questions about your competency? Reports that resonate with others generally satisfy the key principles of reporting. In this section, you get the chance to explore the key principles to follow to create good reports.

Presenting the right information

The first “good reporting” principle is presenting the “right” information. The right information can be current or historical, subtotal amounts by category, running totals by reporting group, trend lines sales over time, or just vertical bars showing how your product sales ended last quarter. The right information depends on the nature of the business question that you're trying to answer.

In order to be right, the information should be timely for the question being asked, as accurate as the business process allows, as relevant to the business question as possible, and also consistent with information from multiple functional areas (such as finance, sales, and operations) in the company. The report should also provide some additional insight into the situation.

Another benefit of reporting the right information is that the report should be *actionable*. That is, the best reports show the type of information that you (or anybody else equally intelligent) would use to make an immediate decision. This could take the form of an exception report that shows business events that require immediate attention. Or it could be a chart illustrating that the inventory levels of a certain raw material — compared with component sales — indicate that a reorder needs to take place immediately. Whether a decision can be made based on the information presented in a report is an important criteria in the value of that report. It also is a guiding principle when determining what information belongs on a report.

Microsoft Reporting Services allows you to report information from nearly every type of data source you can find — from a legacy system to a spreadsheet to relational databases and even OLAP (online analytical processing) databases. Within a report, Reporting Services allows you to report from multiple data sources in order to provide the right information in the report. It provides access to the data sources essential to presenting the right information.

Using the right medium

“The medium is the message,” advertisers tell me. The messages or information that you deliver in a report should be versatile enough to allow viewing from virtually any media. The choice of media appropriate to the report depends mostly on the type of action that the report should evoke. For example, if the report needs to be easily accessible and represents a key variable of the business, the report needs to be shared in many contexts. This type of report should be available on the Web and available to all relevant business users for collaboration. If the report is part of a regular briefing, is reviewed with many other such reports, and might need to be referenced intermittently, it might be best to print the report to include in a book of reports for review. If the report needs to be sent to a person in the field for immediate action, it should be available on a PDA in electronic form. If the report will be subject to further analysis by a financial person, creating the report in an Excel spreadsheet might be best.

Guess what? Reporting Services provides you with the capability to produce reports on the Web and to export them into a number of formats such as PDF and Excel. Reporting Services also allows you to print the report as well as to distribute reports via e-mail or even integrate your reports within your company intranet. You can also embed Web-based reports within business applications or information portals, such as a corporate intranet. You should know the context for a given report and make it accessible in the best manner to enhance the productivity of the business consumer of that report.

Presenting to the right audience

If you're like me, you need to create reports and share them with other people in the company so that they understand something about the data — and then hopefully have them interpret or explain the business context to everyone else. Depending on the functional role of the person with whom you'll be sharing the results, the style of the report is sure to be different. Some people react better to a pure numbers presentation. Others respond better to a graphical view of the information, perhaps showing a trend over time or a comparative chart of performance compared with other like aspects.



Reporting Services allows you to customize your information to suit the preferences of a wide variety of consumers of information. Reporting Services allows you to create traditional reports as well as free-form reports. It also allows you to create interactive reports that can drill into more detail by linking directly to another report. If you're making a presentation to the board of directors or perhaps creating a list of To Do's for yourself, knowing your audience helps you define the best style and format for your report.

Offering the right content and design

When somebody walks up to me at the copy machine and asks me, "What is this report that Accounting sent me last week supposed to be telling me?", I usually wonder about two things. First, is this guy testing me with something that I'm supposed to be able to pick up quickly? Then, after rapidly scanning the information and concluding that it is not a test, I'm usually shocked by how poorly organized the information in the report actually is. Finally, I have to shrug my shoulders and confess that I am just as confused as he is.

The moral of this story is that many bad reports are out there! Reporting can be improved by taking advantage of features that present the right information clearly so that you have no question about the right interpretation. A report with the right content and design is easy to understand by ordinary people like you and me.

Designing a report so that the content is easy to figure out can be a challenge. For example, it's difficult right off the bat to interview a business professional and puzzle out from the interview all of his or her reporting needs. Even if the interview session goes well, determining what reports are best for his or her purposes and perspectives is difficult. To do a great job at this, you need to have an understanding of all the information coming from the key data sources within the organization. Therefore, good information content in a report requires that you have a holistic understanding of a great many aspects about the business and its operational data assets.

By using Reporting Services, you have many content design approaches that you can put to use because of the many elements in the report toolbox that you can use in any report. In addition, you might want to provide for ad hoc query and analysis. The ad hoc nature of asking questions, getting answers, and integrating these answers together to gain an understanding of what's really going on is what most business analysts and their managers need to do. They need the capability to ask a variety of questions and filter the report dynamically or drill down to see more detail within the underlying data. Perhaps they want to be able to jump from one view to another, with a parameter passed to the second report that shows a different view for that aspect of the initial report. Reporting Services was designed to provide these kinds of capabilities.

The design surface or user interface used to create reports for Reporting Services includes a wide variety of tools that can provide just the right content to clarify the information so it's clear to your audience. For example, tabular or list reporting might be appropriate for financial analysis, but subreports could provide other views that clarify the meaning of the information reported. Charts provide for graphical views that allow the user to easily visualize trends and anomalies. Free-form reporting tools such as lists and rectangles (containers used for placing other controls that allow more free-form reporting) allow much more flexibility than ordinary banded-style (columnar reporting with little flexibility to change column spacing and subtotaling formats) reporting tools most of us have had to settle with.

Providing the right security

Information provided to the wrong people can lead to some huge problems. For example, if personal information from Human Resources (like your employees' Social Security numbers) was available to everyone in your company as well as to your customers and prospects, this could lead to an identity theft situation and some disgruntled employees. If you provide access to information that is not appropriate for some class of business users, you could open up your company to unwanted lawsuits and other nuisance issues that could result in your own trip to your HR department.

Reporting Services allows you to properly secure the information by requiring users to submit both a user ID and a password if they want to access key information sources. Proper credentials must be provided to the server for any user to gain access to any major feature of the product. Reporting Services can also limit the access and distribution based on the access group defined in Windows-based security by your network administrators. Reports with sensitive information won't appear to users who don't have proper permission.

Investigating Business Data

Many company managers and analysts today are preoccupied with investigating business data. For companies that still have legacy systems — systems installed in the 1980s or 90s that were developed on mainframe platforms or other platforms that new systems no longer use — accessing the data for reporting and analysis can prove a challenge. Many business people have turned to spreadsheets for rekeying legacy data and creating some analysis based on the data. Databases such as Microsoft SQL Server and Oracle are becoming the information storage system of choice. Databases allow for easy access to information in tables that can be queried with reporting tools. Applying good reporting principles to the information in these databases can provide valuable insight into business operations.

Being able to drill down into information for more detail or charting information to see trends in the information is *business intelligence*. Business intelligence (BI) solutions integrate information from multiple data sources and realign the data into structures that are ideal for reporting, drilling down, and trending. These hybrid data models provide greater value for users, including more insightful information content in reports. Smart users who know the tools can then explore information effectively to gain insight into the underlying information.

In a well-executed BI solution, users have self-service access to reporting tools like Reporting Services. Self-service reporting for everyone is a nirvana state of business intelligence. Business people need to be able to freely explore appropriate information with interactive reports or view relevant performance data through dashboards. Dashboards are a common user interface for executives who typically have little training or knowledge in computers and therefore require very intuitive controls for interacting with the information. These varied reports become a truly analytical support system that can provide the perspectives necessary to increase the agility of your organization. Reporting Services is one tool that can be leveraged to provide this type of analytical framework.

Uncovering the Major Features of Reporting Services

Earlier sections in this chapter spell out in general the many principles related to creating, distributing, and managing those reports supported by Reporting Services. Now it's time to do a bit of our own "drilling down" by examining in greater detail the basic capabilities of Reporting Services proper. Hopefully,

a few simple illustrations of Reporting Services features and capabilities will provide you with a perspective on how to work with the tool. Don't worry if you don't catch on during the first reading of this section. I'll backtrack and cover all these areas in greater detail in subsequent chapters of the book. This tour will enable you to appreciate the power at your fingertips with this new reporting service.

It's a Web service

Reporting Services gets its name from the fact that the report server is a Web service. A *Web service* is a software component that runs independently on a server and can be accessed by other applications running on the World Wide Web. The Web service runs on the report server. The Web-based reporting functionality of the reporting service provides a single platform for producing Web-based reports for all types of data. The reporting service enables you to embed reports within any Web application and make them available to users with any Web interface. It also allows you to save or view report information in a number of different formats, ranging from images to Excel workbooks.



Any application that can make use of Web services can present information through Reporting Services. One particularly useful set of applications enables you to manage many aspects of report processing as part of the report service — retrieving data, transforming the report layout into a device-specific format (*rendering*), delivering reports to specific formats, and securing the access to reports, to name just a few.

Working with the design surface

The design surface is the user interface used to create reports for Reporting Services. The primary design interface provided by Microsoft for creating reports is Visual Studio. Visual Studio hosts *Report Designer*, which is the application that allows the user to select a data source, build a query, lay out the report elements, preview it with sample data, and finally publish the report to the report server. Report Designer is a powerful tool for developing flexible and complex reports. It offers maximum programmability of the report to provide reports that are structured or free-form, static or interactive, parameter-based or hyperlinked, graphical, tabular, or matrix. It saves developers from the hassle of having to know the gory details of Structured Query Language (SQL) or eXtensible Markup Language (XML) — or Multidimensional eXpressions (MDX) if you're accessing *data cubes*, the OLAP data stores that allow fast reporting of summary information. When you use Visual Studio to develop your reports, they are actually built within a *Report Project*. Project *properties* let you control where the reports are saved and where they are viewable when the report is published.



Third-party tools from Microsoft partners are also available for creating reports using Reporting Services. See Chapter 23 for a list of supported third-party products.

Continuing the tour of Reporting Services features and/or terminology brings us to the *Report Manager*, an ASP.NET application built into the Web service to enable you to manage the reports that you create. This tool organizes reports into easily maintained folders of reports, data sources, and report resources. It allows an administrator to control access, security, and extended usage and also provides an interface for end users to access and view reports easily. Report Manager has features that allow you to create Report History snapshots for point-in-time information. You can also define subscriptions that allow reports to be delivered to users via e-mail or through Web sites. Report Manager also controls server functionality, such as the report cache, and other features that influence overall report distribution performance. I'll be saying lots more about the Report Manager in later sections, where I concentrate on managing, securing, and distributing reports.

Another tool available from the Report Manager is *Report Builder*, which is a report authoring tool that complements Report Designer. It is a “click once” Windows application and is run from a full Windows application running on the report server. Whereas Report Designer can create very flexible and complex reports, Report Builder is designed for the business end user who needs to create an ad hoc report. Business users can drag and drop key information elements without having to know anything about the databases they come from. As such, Report Builder supports a more intuitive style of building reports.



When I talk about Report Builder, I'm talking about a *thin* application — meaning that it is a small separate application that starts up quickly and runs within Reporting Services — that is downloaded to your machine when you access it. It provides a rich development environment displaying more information about all the relationships and hierarchies (such as models) in the data sources that you use to create the report. A Model Builder utility for maintaining these relationships and hierarchies is accessible through Visual Studio.

Connecting to a data source

In order to create reports, you must first connect to a source of data. Reporting Services allows access to any data source with an ODBC (Open Database Connectivity) driver. It also supports OLE DB (Object Linking and Embedding database) connectivity to a wide variety of data sources, including some legacy data sources and most other relational databases such as Oracle, DB2, and Informix. You can also access flat-file data sources (text files) and hierarchical data sources if an ODBC driver supports it. This provides flexibility in sourcing the information for further data processing and any resulting analyses. Applications can be written to connect to SQL and even OLAP data sources as well as OLE DB-compliant data sources.



One key feature of Reporting Services is that it allows multiple data sources to be used within a single report, a unique capability that allows for truly robust reports.

Creating the layout

Regardless of the design surface (Visual Studio or Report Builder) that you use, you have many report items in the toolbox of report controls available to you for building reports. Some of these items are independent items — meaning that they’re not associated with a particular data source. Examples of these report controls include the Textbox, Line, Rectangle, and Image report items. Rectangles can be used to group other report items or to add page breaks.

Other report controls organize data for presentation and are known as *data regions*. Examples of these report controls include the List, Table, Matrix, Chart, and Subreport controls. Tables are used for tabular displays; matrix report items are excellent at creating cross tab reports; subreports act as containers for other reports; and charts create graphical content. You can also add headers and footers at the report, page table, or group level within a report. The heart of creating reports is knowing the ins and outs of working with the various report items as objects in your reports. I talk about these capabilities more in several chapters of this book, beginning in Chapter 3.

Using expressions and formulas

Inserting expressions into reports can sometimes be tricky, so it’s good to know that Reporting Services has a robust Expression Editor to help in this task. You can create custom fields from columns you return from your data source and then create expressions in a textbox for descriptive text based on elements from your data sources for the report. When it comes to formulas, you can make use of aggregating functions such as SUM and AVG or COUNT and even set up conditional formatting so that various intersections of your report stand out because of distinctive back color, fonts, or other properties. Finally, you can create your own functions and utilize them with a report.

Filtering, sorting, and grouping

Think of *filtering* your report data as a way of providing an appropriate amount of data to meet what is known in the business as your “information delivery requirements.” Not everybody needs every bit of information, so go ahead and set up parameters in your query to reduce the amount of data returned. (See more on parameters in the next section.) Alternatively, you can add fields

to a report item with a basic drag-and-drop maneuver. Then, groupings of report items can be created with an Insert Group command on a table report item. Expressions can be used for the Group On value and Sort value. A report table can be sorted on any field in the table. This allows for robust control over your reports so that a single report with parameters the user can specify could replace a whole book of reports, which are hard-coded or preprogrammed for only certain combinations of parameters.

You can create reports with interactive sorting capabilities, which enables the user to sort the data within the report. Reporting Services supports group sorts and various techniques to control the scope of the sort. The Interactive Sort control appears in the Report view as a control that shows the direction of the current sort and highlights which columns can be sorted interactively. The advantage of using this technique is that it interacts with the data that has already been retrieved from the server into the report. All the sorting is performed on the client application without having to query the server again. This provides another option for controlling the overall reporting solution performance.

Defining parameters

Parameters are variables that determine the filtering for the data presented in reports. You can use parameters in queries to specify report content. All you do is specify your parameter values in a report prompt within the report; they are then passed through to your query to generate the specified report. Parameter values can also be provided by another report so that reports can be linked to create a guided analysis across multiple reports. Report parameters are passed into the report, either through a parameter prompt or directly from another report. Query parameters are specified in the query of the data source that generates corresponding report parameters. You can select one or multiple values in the parameter value list to determine what parameter values are reported for a parameter-based report.

Navigating and fact-seeking

Being able to find something quickly in a long report can be a real plus, as anyone who's scrolled through pages of reports looking for an elusive fact can testify. You can use Reporting Services to control whether your report displays with a *Document Map*; it also lets you control what aspect of the report a Document Map is based on. Document Map allows the user to click a control in the report to jump to the bookmark represented by that value of the report variable. If you set up your Document Map wisely, you can then use the feature to quickly find the info you want.



Document Map is a great idea for documents that work like catalogs. You can also specify whether clicking a cell will jump to another report or to a URL location on the Internet. Using this capability can produce some interesting drill-down analysis capabilities or hyperlinking to get more information from another Web service or Web page about a particular subject.

You can also control the *visibility* of each component of the report so that it can be initially visible (or not) but turn invisible (or visible) based on another report item, an action, or a conditional function. This feature allows for interesting drill-down effects within a single report, where you can initially hide a detail section and toggle between showing or hiding that section with a control that appears on the report.

Formatting the content

Reporting Services provides you with a variety of devices to control simple text formatting. They include toolbar controls for font and style of your text, menu controls which allow you to change foreground or background color, and text properties that allow you to adjust the format of numbers or general text for display.

Text and numbers are sure to make up the greater part of your reports, but you're sure to face situations in which you'll want to add images to your reports. Maybe you want to provide some concrete visual information, or you just want to spice things up a bit. With Reporting Services, you can add images to your report as part of the header, display a picture of a catalog item, or even add a background image to every page of your report. And when it comes to how images get attached to your report, you have the option of embedding images directly in the report, referencing an image on the Web via its Web address (or URL), or storing the image as a field in a database. (Talk about flexibility!)

You can set project properties to control the location of the report server as well as the name of the folder that the report will be created in when saved and deployed. Report properties can reference *custom assemblies* or code that can be run to handle special display formats for numbers in a field. You can also control XML data output options. Many charting types are supported (22 to be exact) with smoothing and 3-D effects that can be added.

You can also make use of templates and styles to create interesting reports. This works similar to how you use templates in Excel or Word, where many aspects of the formats are available as predefined settings to save you time in getting to your final destination layout format.

Saving a report

In Reporting Services, you save any report you create by using Report Definition Language (RDL). RDL, an XML-based schema for report content that allows report definitions to be exchanged between different systems or different reporting tools, is an open specification that Microsoft has published. Some leading reporting tool vendors have announced that they will support this standard. This is a great development because it ensures that in the near future, you'll be able to move reports between different reporting tools without losing formatting or data.



The properties of the project dictate where you save the report when the project is actually built and deployed. For example, you can build the report and deploy it to a folder in the Report Server. This enhances your ability to navigate to the report you need when you need it.

Displaying a report

You can preview your report layout in the Preview window of whichever design tool — Report Builder, Report Designer, or some third-party (non-Microsoft) tool — you choose to work with. After you're happy with the layout, you can print from the Design tool. This is one way to see the results of your work. After you save your report to the server, you can use the Report Manager to access and view the report.



Another way to access your report is to use a technique called *URL access*, which allows you to type in a URL directly in a standard Web browser to render the report in your browser. With this method, you have the option of displaying the report without the headers and other toolbar and control features that the Report Manager provides. I discuss this further in Chapter 9.

After you actually produce a report, you can render it in a variety of formats, including TIFF, JPEG, PDF, HTML, XML, Excel, and Word. You can also use Open API (application program interface) formats, which can be utilized to render in many more output formats. Third-party vendors have also developed rendering extensions for Word, Excel, and even bar codes. With these rendering approaches, Reporting Services can serve information to a variety of devices such as PDAs, Web sites, wireless desktops, and any computer on a corporate intranet.

Managing reports

Remember that managed reports are reports stored on the report server, where they can be stored in folders within the Report Manager. You can add reports to folders, move reports between folders, create new folders, rename old ones, and create folders within other folders, much the same way you'd work with folders for your computer's file system in something like Windows Explorer.

You publish your data sources to the report server when you deploy your report project; these data sources can be shared among many reports. You control access to such data by using data source connection properties to set the access permissions of a data source. Within Report Manager, you can move shared data sources into their own folder if you so desire. You can also save images used in your reports as resources in your folders, thus providing for easy access and maintenance. Report Manager also allows the administrator to control which users have access to which specific folders.

Report Manager also provides access to various *report properties* that govern how reports will execute (such as scheduled runs or execution frequency), how reports should use the memory cache (cache temporary copy when run, when to expire the cache), how parameters are used (default parameter values, parameter interactivity), report-delivery techniques, and how users will be able to interact with the report content. You can use Report Manager to create snapshots of the report, and you can save report histories so that you can review how the data has changed over a period of time. All these properties provide great control over your managed reporting environment. I describe the capabilities in more detail in Chapter 9.

Securing a report

Reporting Services has a robust security model. It makes use of a role-based, user-based, and task-based security model to ensure proper permissions are established for access to critical business information. The security model can also be extended, and Microsoft will provide the bits for security model extensions to support proprietary authentication schemes. A role is a way to categorize users into groups based on the way they need to interact with the system and its resources. Users can belong to many roles like content manager, publisher, or browser (of information). User-based security is specific to a specific user in unique aspects of how they interact with the system. Tasks are different functions that a given user can perform.

Distributing a report

The most popular way to distribute a report is to print it. The printed report is then copied for all report consumers and distributed at an appointed time. Footers usually record the time the report was run as well as the time the data source was last refreshed.

Many years ago, environmentalists took the bull by the horns and recommended to corporate America that Business (with a capital B) should consider how many trees were being chopped down in the name of printed report distribution. Deforestation worries intensified the environmentalists' resolve. Even recycling experts could not make a decisive argument against the environmentalists, so corporate America began to embrace the online report distribution best practice. The ubiquitous Internet came along and further popularized this trend, which means that reporting in the modern age is becoming increasingly paperless.

To accomplish paperless reporting, Web services like Reporting Services are required. Using Reporting Services, you can author a report and then publish it to a folder to be accessed by Report Manager. *On-demand* reports are reports that do not cache temporary copies of reports when they are run. *Subscriptions* can be defined to “push” reports to users: Subscriptions can be scheduled to execute regularly to deliver rendered reports to end users.



One delivery option for subscriptions is to have the subscription send an e-mail containing a hyperlink, a notification, or a rendered report attachment. Another delivery option is to have the subscription execute a file delivery to send the report to a file location that an intranet can access easily.

Accessing and Looking at Reports

Now you can catch your breath after that rapid tour of Reporting Service capabilities. The following chapters of this book dive much more deeply into each of these subject areas.

One of the very first things that you might want to do with this new tool is to see how you can get to a report and view it. Consider this dipping your toes into the vast ocean of Reporting Services. You can follow this road with me if you have access to the sample reports provided in the Reporting Service installation software. (You'll find the sample reports in the file system folders that you name during the installation process.)

Printed reports versus online reports

Reading a printed report doesn't require any technical sophistication. And with a printed report, you get a paper copy of key information that you can refer to. Paper reports, however, do not offer any interactivity where you might click on some hyperlink to further explore the underlying details of some information on the report. It is helpful to display the date and time when the report was run, as well as the time when the data was last refreshed. This allows you to budget the currency and relevance of the information displayed in the report. But there are a few limitations in having access *only* to a printed report:

- ✔ **The report is not connected to a live data source.** With a live connection to the data source, you can get information since the latest refresh of the database. For daily cumulative reporting, it is best to work with live data source connections if you really want to understand the current dynamics of the business.
- ✔ **Graphical information has a single “shade of gray” display.** This can present some difficulties when you review a bar chart with a multitude of different categories, but your printer produces only black and white. Using colors — yes, that includes shades of gray — improves the visibility of the dynamics of your business as viewed through the reports.
- ✔ **You have no drill-down capability.** With a live database connection on a report with drill-down capabilities, you can easily navigate to see a more detailed perspective of the information presented from a summary report. You also have a choice on what areas you want to drill down into detail. This need might change from period to period, so a live report with dynamic drill-down capability in several report variables clearly provides a much better analysis.
- ✔ **You cannot take hyperlinks that jump from one view to another view.** With hyperlinks, you can set up jumping within the report to link to a section grouping of the report, or you can set jumping outside the report to go to another report entirely or to a hyperlink on the Internet. Without the ability to hyperlink, you might have to flip through lots of reports trying to locate the data that you're trying to analyze.

Viewing a report

Viewing a report with Reporting Services requires that your computer at least have a connection to the server that's running the report server. If you've installed the sample reports from the Reporting Services installation CD, you should be able to view a sample report by following these steps:

1. **Connect to the Report Manager by pointing your favorite Web browser to `http://localhost/reports`.**

The Report Manager home page appears, as shown in Figure 1-1. You'll see a folder for Sample Reports as well as any other folders defined on your report server. You'll also see the menu options related to site settings and subscriptions. The view in the figure shows how it looks after you click the Show Details button, which then toggles to a Hide Details button (shown in the upper-right of Figure 1-1). You can see who created the folders and when they were last modified.

2. **Select the folder that you want to view and click it.**

Report Manager displays the contents of the Sample Reports folder, as shown in Figure 1-2. The folder consists of reports, resources, and (possibly) other folders defined on the report server. Each report in the Sample Reports folder can have a description (if provided) as well as a listing of the last date modified and who modified it. It might also show the last date run if configured in this way. You can click the column headings to sort all contents in that column in either an ascending or descending order. You can edit report properties by clicking the Edit symbol — the tiny-hand-over-the-report-page icon. You can also move or delete reports by marking the check box in the far-left column and clicking the Delete or Move button.

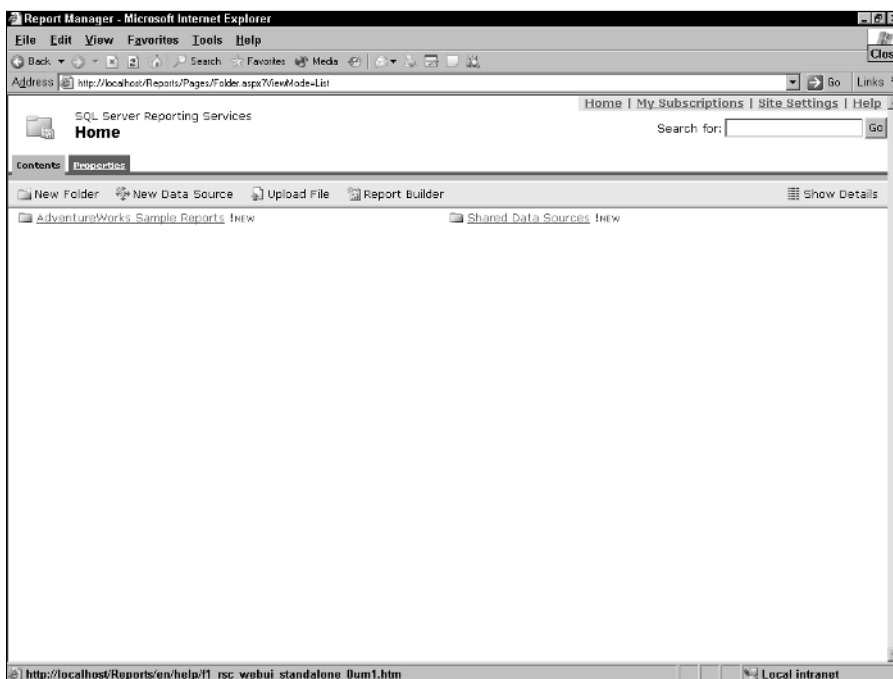
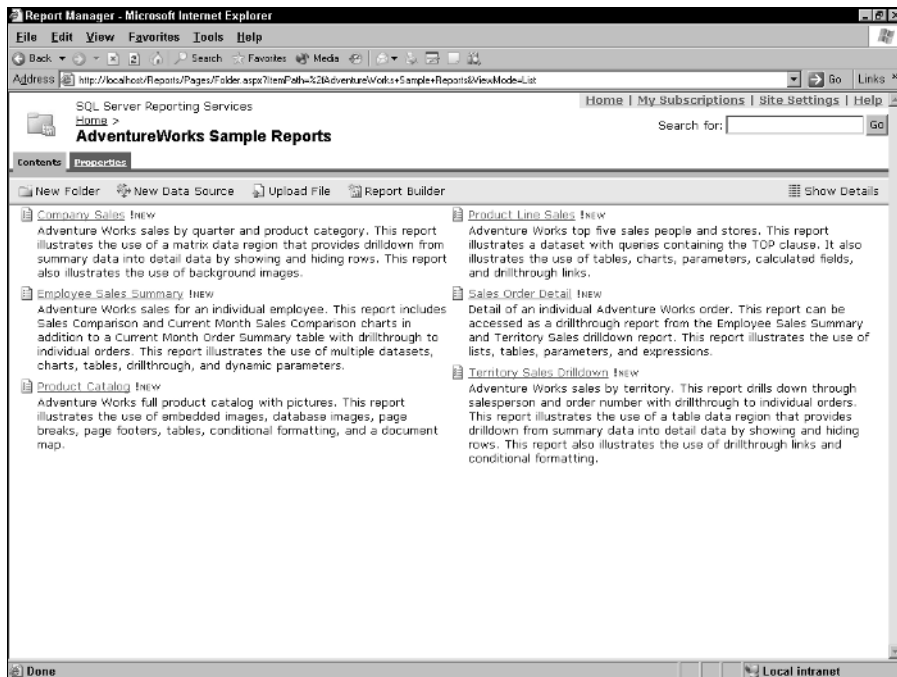


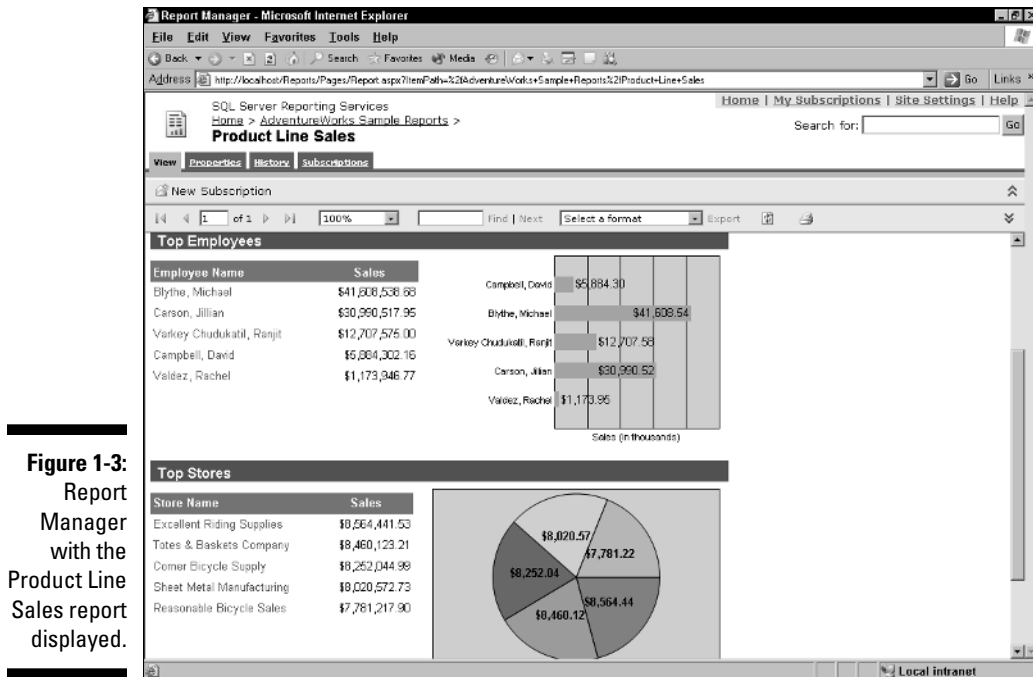
Figure 1-1:
The Report Manager home page is the entry point for viewing reports.

Figure 1-2:
Report
Manager
Sample
Reports
folder with
specific
reports
available
for viewing.



3. Select the report that you want to view and click it.

Report Manager displays the report, as shown in Figure 1-3. Notice that the report shows all the information based on any parameter value sent as well as on the security enforced on the report server. If this is an interactive report, you might see rows highlighted, indicating that a hyperlink exists to another report or a bookmark within the same report. Reporting Services reports can be developed to include graphics like bar and pie charts that are linked to the data shown in the same report. You can also design parameters in the report so that the user can change the parameter value and rerun the same report and see an entirely different slice of the data in the report. For example, you can select different product categories or different time ranges to see a different slice of the information. Note that there is an option on the toolbar to export to a different format. This is a way to change the reported information into a spreadsheet or a PDF for sharing and collaborating with others.



4. Click the Back button when you finish viewing the report.

Alternatively, you can link back to the original report folder by clicking the link on the breadcrumb trail in the top-left of the Report Manager window.

