

Pro SQL Server 2008 Reporting Services



Rodney Landrum, Shawn McGehee,
and Walter J. Voytek III

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ISBN-13 (pbk): 978-1-59059-992-1

ISBN-10 (pbk): 1-59059-992-6

ISBN-13 (electronic): 978-1-4302-0652-1

Printed and bound in the United States of America 9 8 7 6 5 4 3 2 1

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Distributed to the book trade worldwide by Springer-Verlag New York, Inc., 233 Spring Street, 6th Floor, New York, NY 10013. Phone 1-800-SPRINGER, fax 201-348-4505, e-mail orders-ny@springer-sbm.com, or visit <http://www.springeronline.com>.

For information on translations, please contact Apress directly at 2855 Telegraph Avenue, Suite 600, Berkeley, CA 94705. Phone 510-549-5930, fax 510-549-5939, e-mail info@apress.com, or visit <http://www.apress.com>.

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This book is dedicated to the memory of John Baumann

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Acknowledgments

Of the many people I would like to thank for their encouragement and patience during the writing of this third edition of *Pro SQL Server 2008 Reporting Services*, foremost is Karla Kay, my fiancée, my angel, my FP, my love, who has been there throughout, and I can never thank her enough. I would like to also thank all of my youngins, Brendan, Ethan, Megan, and Taylor, for their love and understanding and for stealing me away to see a movie or catch pin fish when I should have been writing. I must mention my parents, of course, Faye and Gene, whose pride and expectation of a novel will be rewarded. I love you both. Thanks go also to Jim (Walter) Voytek for his technical support, friendship, and raised glasses of cold beer. Finally, I would like to thank Shawn McGehee for taking on the coding and writing challenges for his part of this edition.

Rodney Landrum

Iwould like to thank my coauthor and SQL mentor, Rodney Landrum, first and foremost. Without his guidance over the past few years, I would not have been granted the opportunity to work on this book with him, an experience I would not trade for anything in this world. He is always a pleasure to work with and has taught me more in the time we have spent together than I would have ever thought possible. After this experience, I don't just consider him my mentor, but gladly call him my friend.

I would also like to give an enormous thank you to my family. When I was growing up, my career goal had always been concrete in my mind: I was going to be a doctor. As long as I could remember, my dream of being a doctor never strayed from my thoughts. This plan, however, fell through as soon as my father, Harold, and mother, Barbara, brought home our first family computer. From the second I began tinkering and playing with the old IBM desktop, I knew that my future had changed. And, even though my mother didn't want her 10-year-old installing the optional 300 baud modem, she and my father fully supported my zeal for technology from the start. Without my family I would be lost. I love you all immensely.

To all my friends who at times I feel I have abandoned during this process: thank you for understanding that chapter deadlines and conference calls have to come before spending a weekend out of town.

A big thank you goes to all of the staff at Apress who have pushed and prodded us through this book. Thank you for understanding as we sat in "hurry up and wait" mode, anxiously awaiting the latest version of the product to be released. Thank you for pushing us through the deadlines and long nights to get the book finished on time. The road was a rough one, but made a lot smoother by all of the great people at Apress.

Shawn McGehee

I would like to thank Rodney, my coauthor on the first two editions, because without him I would not have been involved with this book at all. We have been colleagues for many years, and it has been a pleasure working with him. Having already written another book with Rodney and knowing the quality of his writing, doing this book with him was an easy choice.

I would also like to thank my father, who introduced me to the world of electronics when I was still very young. His interest in digital electronics would prove to be the spark that set me on my path to a career in information technology. I remember so clearly the day he brought a book home called *Digital Computers Made Simple*. I read it and thought to myself how exciting it was that a machine could be built and programmed to do so many different things. I could see so many possibilities, and at that point I knew I was hooked.

My first exposure to computer technology started about the time the Intel 8008 became available. With my father's help, I was able to procure one of these early microprocessors, and it became the basis for the first microcomputer I ever built. Using these early technologies, I built and entered several computer systems in science-fair projects throughout my high-school years, eventually competing at the international level.

My corporate career began early when I started my first company while still in high school. Today I am the CEO of HealthWare Corporation, a company that provides information technology to the health-care field. I am also partners in several other businesses with interests ranging from technology to real estate.

I would like to thank my wife, Kathi, who has put up with the long hours that it took to write the book. She is a wonderful companion who understands me well and always provides support and encouragement for any endeavor I undertake.

I would also like to thank my mother, who encouraged me all those years in school when I was participating in science fairs. Thanks to my sister, who always tells me she gave up her computer technology genes so I could have them. And to the rest of my family, friends, and colleagues who supported me and my wife, Kathi, throughout the process of writing this book.

A very big thank you goes to HealthWare Corporation and all of its employees and customers. They have been instrumental in my career and have provided inspiration for writing the book.

Thanks also go to Apress and the wonderful people involved with this project for their important roles in getting this book to print: lead editor Jonathan Gennick; project manager Sofia Marchant; technical reviewer Fabio Claudio Ferracchiati; copy editor Ami Knox; production editors Laura Cheu and Kelly Gunther; indexer Kevin Broccoli; proofreader Liz Welch; compositor Susan Glinert Stevens; and any others involved with their important roles in getting this book to print.

Special thanks go to Tom Rizzo, the SQL Server product manager at Microsoft, for answering many questions for us during the course of our writing and for putting us in contact with other resources within Microsoft when needed.

Walter J. Voytek III

Introduction

At its core, the process of designing reports hasn't changed substantially in the past 15 years. The report designer lays out report objects, which contain data from a known data source, in a design application such as Business Objects Reports or Microsoft Access. He or she then tests report execution, verifies the accuracy of the results, and distributes the report to the target audience.

Sure, there are enough differences between design applications to mean that the designer must become familiar with each particular environment. However, there's enough crossover functionality to make this learning curve small. For example, the SUM function is the same in Business Objects Reports as it is in Microsoft Access as it is in Structured Query Language (SQL).

With Microsoft SQL Server 2005 Reporting Services (referred to as SSRS throughout the book), there is, again, only a marginal difference in the way reports are designed from one graphical report design application to another. So, if you do have previous reporting experience, your learning curve for SSRS should be relatively shallow. This is especially true if you come from a .NET environment, because the report designer application for SSRS is Visual Studio 2008 or the application included with SQL Server 2008, Business Intelligence Development Studio (BIDS).

Having said all this, several differences set SSRS apart from other reporting solutions:

- It provides a standard reporting platform based on Report Definition Language (RDL), which is the XML schema that dictates the common structure of all SSRS reports. This allows for report creation from any third-party application that supports the RDL schema.
- SSRS is an integral part of the SQL Server 2008 release.
- SSRS offers features out of the box that in other products would be expensive additions to a basic deployment. These features include subscription services, report caching, report history, and scheduling of report execution.
- SSRS, being a Web-based solution, can be deployed across a variety of platforms.

This book was written in parallel with a real SSRS deployment for a health-care application, so it covers almost every design and deployment consideration for SSRS, always from the standpoint of how to get the job done effectively. You'll find step-by-step guides, practical tips, and best practices, along with code samples that you'll be able to modify and use in your own SSRS applications.

What This Book Covers

From designing reports and stored procedures in Chapters 2–4, to deployment, management, and security processes in Chapters 6–9, the book uses a standard real-world theme to show how we chose to work with SSRS. Throughout, you’ll find tips and tricks that we discovered while working closely with SSRS. The book also covers extending SSRS functionality with custom code in Chapter 5. In addition, we will demonstrate almost all the enhancements that are included with the SQL Server 2008 version of SSRS, including Tablix properties, rich text support with HTML tags, and an entire chapter devoted to ad hoc or user-developed reporting with Report Builder 1.0 and Report Builder 2.0. In addition, we will cover SharePoint integration with SSRS, not just with SharePoint Report Viewer Web Parts, but also with a full-blown SharePoint deployment.

The following is a chapter-by-chapter breakdown to give you a feel for what the book covers:

Chapter 1, “Introducing the Reporting Services Architecture”: This chapter introduces SSRS and discusses some of the driving forces behind our company’s adoption of this technology. We then take a detailed look at the component pieces of the SSRS architecture, including Report Manager, BIDS, and the SSRS report server and databases. We describe how these work together to provide an effective reporting solution. We also highlight all the new features and enhancements to the latest version of SSRS for SQL Server 2008. We finish with installation and configuration instructions.

Chapter 2, “Report Authoring: Designing Efficient Queries”: The foundation of any report is the SQL query that defines the report data. In this chapter, we examine the query development process and show how to build and test high-performance queries for business reports. We also show how to encapsulate such queries in parameterized stored procedures to benefit from precompilation and reuse.

Chapter 3, “Introduction to Reporting Services Design”: This chapter explores BIDS in detail, demonstrating the use of all the major embedded elements of SSRS within that environment. It shows how to create data sources; explains how to add report parameters, filters, and expressions; and provides an in-depth look at the layout section for report design.

Chapter 4, “Building Reports”: Having covered query and report design basics, we now walk you through the process of building a full business report, including interactive features such as document maps, hyperlinks, and bookmarks.

Chapter 5, “Using Custom .NET Code with Reports”: This chapter shows you how to customize your reports using .NET code, either by embedding Visual Basic .NET code directly in your report or by using a custom .NET assembly. We discuss and demonstrate each technique and its pros and cons.

Chapter 6, “Rendering Reports from .NET Applications”: This chapter shows how to control the rendering of your reports programmatically in a variety of supported formats, either via URL access or by using the Web services API.

Chapter 7, “Deploying Reports”: SSRS provides several means of deploying reports: using the Report Manager interface, using VS .NET, using the rs command-line utility, or writing code using the Web services API. This chapter demonstrates and explains each of these techniques.

Chapter 8, “Managing Reports”: This chapter examines the many facets of SSRS report management, including content management, performance monitoring, report execution auditing, and control. It shows how to perform each of these tasks effectively, using built-in tools such as Report Manager, the new Report Server Configuration Manager, and command-line utilities, as well as using custom .NET management tools.

Chapter 9, “Securing Reports”: This chapter introduces several important components of SSRS security, namely, data encryption, authentication and user access, and report auditing. This chapter also shows how to use each of these components in a secure SSRS deployment.

Chapter 10, “Delivering Business Intelligence with SSRS”: In our work, we found that by integrating SSRS with many of the other components of the business intelligence (BI) platform, we were able to provide all the necessary information to our employees wherever they were and whenever they needed it, thus dramatically improving our overall business strategy. In this chapter, we demonstrate how we set about integrating SSRS with BI components, Microsoft Office SharePoint Services (MOSS), and Analysis Services.

Chapter 11, “Creating Reports Using Report Builder 1.0 and 2.0”: In the final chapter, we demonstrate the much anticipated Report Builder 2.0 application, a report development application for end users that has the same look and feel of Microsoft Office. We also demonstrate Report Builder 1.0, originally released with SQL Server 2005. This ad hoc report design tool uses report models, which we also show how to create and deploy.

In each chapter, we’ve tried to touch on every aspect of SSRS in enough detail to allow you to translate the concepts into your own applications. Our intention was to provide truly practical, useful information on every page and not to parrot material that’s adequately covered in Books Online (BOL). To that end, concepts such as cascading parameters and designing reports with hierarchical data using the LEVEL function aren’t covered, because you can find adequate explanations and working examples in BOL.

We believe this book will serve as both an introduction and a step-by-step guide through many common tasks associated with SSRS, while also offering concepts and solutions that we’ve been developing ourselves for our own applications.

Who This Book Is For

We coauthored the book with the intention of demonstrating how to use SSRS from multiple vantage points. As a data analyst and engineer, Rodney goes through the report design and deployment processes using standard SSRS tools such as Report Designer in BIDS and Report Manager. As a .NET developer, Shawn takes on the role of showing how other developers can extend SSRS by creating custom Windows and Web Forms applications, as he explains the SSRS programming model.

Source Code

In this book, we use a subset of a real database designed for a health-care application that we developed. You can find that prepopulated database (which we named Pro_SSRS, for the book), the data mart database and cube file used in Chapter 10, the completed RDL files, queries, stored procedures, and .NET application projects, as well as full installation instructions, in the Source Code/Download section of the Apress Web site (<http://www.apress.com>).