

Introduction

It has been just over six years since SQL Server 2000 was released and just over five years since we published the first edition of *SQL Server 2000 Unleashed*. In that time, SQL Server has established itself as a robust and reliable database platform whose performance and scalability meet the implementation needs of businesses and corporations from simple desktop applications on up to enterprise-wide systems. A number of significant changes and enhancements in SQL Server 2005 further solidify its position in the marketplace as a robust enterprise-wide database system that can compete on the same level as the other major enterprise-wide database products, shifting firmly to providing a database engine foundation that can be highly available 7 days a week, 365 days a year.

One of the biggest challenges we faced when we wrote *SQL Server 2000 Unleashed* six years ago was providing comprehensive, in-depth, all-inclusive coverage of all the features of SQL Server 2000 within a single book. Doing the same for SQL Server 2005 was even more of a challenge. SQL Server 2005 was in development at Microsoft for more than 5 years and represents a major upgrade to SQL Server 2000. Many features of SQL Server 2000 have been replaced completely in SQL Server 2005 (for example, SQL Enterprise Manager and SQL Query Analyzer have been replaced by SQL Server Management Studio), while some have been completely re-architected (for example, Analysis Services), and most others have undergone significant improvements and enhancements. In addition, the number of SQL Server features and components has increased, and many of these features and components (for example, SQL Server Integration Services, Reporting Services, and .NET Framework integration) provide enough material to warrant their own separate titles. After nearly all of the chapters for this book had been completed, we realized we had significantly more information than could reasonably fit into a single book and we had to make some hard decisions as to what to include in print.

We decided that the main focus for the book is for it to provide detailed coverage of the core database server product and the day-to-day administrative and management aspects and tools of SQL Server 2005. We also wanted to be sure to provide extensive coverage of the new features of the SQL Server 2005 database engine, while also providing sufficient coverage of the new components of SQL Server, such as SQL Server Integration Services, Reporting Services, Web Services, and integration with the .NET Framework. We wanted to be sure to provide enough of the necessary information, tips, and guidelines to get you started in making use of these features. However, at the same time, there was a wealth of useful information on various SQL Server 2005 topics and features that had already been written that we didn't want to just simply discard, so we decided that we would include a bonus CD with this book that would contain these additional "bonus" chapters. The chapters included on the bonus CD are described later in this Introduction. Also, as in the past, all of our example scripts, databases, and other material are provided on the bonus CD as well. These, by themselves, offer much value and provide practical guidance on exactly how to create and manage complex SQL Server 2005 solutions.

Our other main goal when writing this book was for it to be more than just a syntax reference. SQL Server Books Online is a fine resource as a syntax reference. This book attempts to pick up where Books Online leaves off, by providing, in addition to syntax where necessary, valuable insight, tips, guidelines, and useful examples derived from our many years of experience working with SQL Server. Although we do provide the core, and sometimes advanced, syntax elements for the SQL commands discussed, SQL Server Books Online provides a much more extensive syntax reference than would make sense to try to duplicate here. As a matter of fact, at times, we may even direct you to Books Online for more detail on some of the more esoteric syntax options available for certain commands.

We hope that we have succeeded in meeting the goals we set out for this book and that it becomes an essential reference and source of expert information for you as you work with SQL Server 2005.

Who This Book Is For

This *Unleashed* book is intended for intermediate- to advanced-level users: for SQL Server administrators who want to understand SQL Server more completely to be able to effectively manage and administer their SQL Server environments, and for developers who want a more thorough understanding of SQL Server to help them write better Transact-SQL (T-SQL) code and develop more robust SQL Server applications. If you are responsible for analysis, design, implementation, support, administration, or troubleshooting of SQL Server 2005, this book provides an excellent source of experiential information for you. You can think of this as a book of applied technology. The emphasis is on the more complex aspects of the product, including using the new tools and features, server administration, query analysis and optimization, data warehousing, management of very large databases, ensuring high availability, and performance tuning.

This book is for both developers and SQL Server administrators who are new to SQL Server 2005 as well as those who are already familiar with SQL Server 2000. At the beginning of each chapter is a brief summary of the major changes or new features or capabilities of SQL Server 2005 related to that topic. If you are already familiar with SQL Server 2000, you can use this information to focus on the information in the chapters that covers the new features and capabilities in more detail.

This book is intended to provide a behind-the-scenes look into SQL Server, showing you what goes on behind the various wizards and GUI-based tools so you can learn what the underlying SQL commands are. Although the GUI tools can make your average day-to-day operations much simpler, every database administrator should learn the underlying commands to the tools and wizards to fully unlock the power and capabilities of SQL Server. Besides, you never know when you may have to manage a server through a telnet session with only a command-line query tool available.

What This Book Covers

The book is divided into the following sections:

- ▶ **Part I, “Welcome to Microsoft SQL Server”**—This section introduces you to the Microsoft SQL Server 2005 environment, the various editions of SQL Server that are available, and the capabilities of each edition in the various Windows environments. In addition, it provides an overview of and introduction to the new features found in SQL Server 2005, which are covered in more detail throughout rest of the book.
- ▶ **Part II, “SQL Server Tools and Utilities”**—This section covers the tools and utility programs that SQL Server 2005 provides for you to administer and manage your SQL Server environments. You’ll find information on the various management tools you use on a daily basis, such as SQL Server Management Studio and the new SQLCMD command-line query tool, along with information on SQL Server Profiler. If you are not familiar with these tools, you should read this part of the book early on because these tools are often used and referenced throughout many of the other chapters in the book.
- ▶ **Part III, “SQL Server Administration”**—This section discusses topics related to the administration of SQL Server at the server level. It begins with an overview of what is involved in administering a SQL Server environment and then goes on to cover the tasks related to setting up and managing the overall SQL Server environment, including installing and upgrading to SQL Server 2005 as well as installing SQL Server 2005 clients. This section also includes coverage of security and user administration, database backup and restore, replication, and using the new Database Mail facility. Chapters on SQL Server clustering and SQL Server high availability provide some expert advice in these areas. Database mirroring and task scheduling and notification using SQL Server Agent are also discussed in this section.

- ▶ **Part IV, “SQL Server Database Administration”**—This section dives into the administrative tasks associated with creating and managing a SQL Server 2005 database, including the creation and management of database objects, such as tables, indexes, views, stored procedures, functions, and triggers. It also provides coverage of the new Database Snapshot feature of SQL Server 2005 as well as an overview of database maintenance.
- ▶ **Part V, “SQL Server Performance and Optimization”**—This section provides information to help you get the best performance out of SQL Server. It begins with a discussion on indexes and performance, one of the key items to understand to help ensure good database performance. It then builds on that information with chapters on query optimization and analysis, locking, database design and performance, and monitoring and optimization of SQL Server performance.
- ▶ **Part VI, “SQL Server Application Development”**—This section includes a comprehensive overview of what’s new in T-SQL in SQL Server 2005. In addition, chapters in this section provide an overview for developing SQL Server applications within the .NET Framework, working with XML in SQL Server 2005, and SQL Server 2005’s built-in Web Services capabilities.
- ▶ **Part VII, “SQL Server Business Intelligence Features”**—This section includes a comprehensive overview of SQL Server 2005’s built-in business intelligence features: Analysis Services, Integration Services, and Reporting Services.
- ▶ **Bonus Chapters on the CD**—In order to be able to provide comprehensive coverage of the new features of SQL Server 2005 and still fit everything in a single book that doesn’t require a wheelbarrow to transport, some information had to be omitted from the printed product. However, we have included this information as bonus chapters on the enclosed CD. Most of these bonus chapters cover additional SQL Server components that are not part of the core database engine such as Notification Services, Service Broker, and Full-Text Search. There are also chapters for which there just wasn’t room enough to include in the book itself. These chapters provide expert advice and information on remote and linked server management, SQL Server configuration, tuning and optimization, administering very large SQL Server databases, SQL Server Disaster Recovery Planning, and T-SQL programming guidelines, tips, and tricks. In addition, please visit the web page for this book on www.sampublishing.com periodically for any updated or additional bonus material as it becomes available.
- ▶ **Book Materials on the CD**—Also included on the CD are many of the code samples, scripts, databases, and other materials that supplement various chapters. This has always been one of the most valuable reasons to buy the *Unleashed* series books. It is our goal to not just discuss a SQL technique or solution, but to also provide working samples and examples that actually do it. Learning by seeing is essential for understanding.

Conventions Used in This Book

Names of commands and stored procedures are presented in a special monospaced computer typeface. We have tried to be consistent in our use of uppercase and lowercase for keywords and object names. However, because the default installation of SQL Server doesn't make a distinction between upper- and lowercase for SQL keywords or object names and data, you might find some of the examples presented in either upper- or lowercase.

Code and output examples are presented separately from regular paragraphs and are also in a monospaced computer typeface. The following is an example:

```
select object_id, name, type_desc
from sys.objects
where type = 'SQ'
```

```
object_id  name                                     type_desc
-----
1977058079 QueryNotificationErrorsQueue           SERVICE_QUEUE
2009058193 EventNotificationErrorsQueue           SERVICE_QUEUE
2041058307 ServiceBrokerQueue                     SERVICE_QUEUE
```

When syntax is provided for a command, we have followed these conventions:

Syntax Element	Definition
command	These are command names, options, and other keywords.
<i>placeholder</i>	Monospaced italic indicates values you provide.
{ }	You must choose at least one of the enclosed options.
[]	The enclosed value/keyword is optional.
()	Parentheses are part of the command.
	You can select only one of the options listed.
,	You can select any of the options listed.
[...]	The previous option can be repeated.

Consider the following syntax example:

```
grant {all | permission_list} on object [(column_list)]
to {public | user_or_group_name [, [...]]}
```

In this case, *object* is required, but *column_list* is optional. Note also that items shown in plain computer type, such as `grant`, `public`, and `all`, should be entered literally, as shown. Placeholders are presented in *italic*, such as *permission_list* and *user_or_group_name*. A *placeholder* is a generic term for which you must supply a specific value or values. The ellipsis ([...]) in the square brackets following *user_or_group_name* indicates

that multiple user or group names can be specified, separated by commas. You can specify either the keyword `public` or one or more user or group names, but not both.

Some of the examples presented in this book make use of the AdventureWorks database, which is included with SQL Server 2005 (our old friends the pubs and Northwinds databases are no longer provided with SQL Server). However, for many of the examples presented in Part V, larger tables than what are available in the Adventureworks database were needed to demonstrate many of the concepts with more meaningful examples. For many of the chapters in this section, the examples come from the `bigpubs2005` database. This database has the same structure as the old pubs database, but it contains significantly more data. A copy of the database, along with an Entity-Relationship (ER) diagram and table descriptions, is also on the CD.

To install the `bigpubs2005` database on your system so you can try out the various examples, do the following:

1. Copy the `bigpubs2005.mdf` file into the SQL Server data folder where you want it to reside.
2. After the file has been copied to the destination folder, ensure that the Read-Only property of the `bigpubs2005.mdf` file is not enabled (this can happen when the file is copied from the CD). Right-click the file in Windows Explorer and select Properties to bring up the Properties dialog. Click the Read-Only check box to remove the check mark. Click OK to save the changes to the file attributes.
3. Attach the `bigpubs2005` database by using a command similar to the following:

```
sp_attach_single_file_db 'bigpubs2005',  
    N'D:\MSSQL\DATA\MSSQL.1\MSSQL\Data\bigpubs2005.mdf
```

Note that you might need to edit the path to match the location where you copied the `bigpubs2005.mdf` file.

Alternatively, you can attach the database by using SQL Server Management Studio. You right-click the Databases node in the Object Explorer and select Attach. When the Attach Databases dialog appears, click the Add button, locate the `bigpubs2005.mdf` file, and click OK. In the bottom window pane, click the transaction log file entry (it should say Not Found in the message column) and click the Remove button. Next, click the OK button to attach the database. A new transaction log file is automatically created in the same folder as the `bigpubs2005.mdf` file. For more information on attaching database files, see Chapters 11, “Database Backup and Restore,” and 18, “Creating and Managing Databases.”

NOTE

In addition to the `bigpubs2005` database, the `mdf` file for the database that is used for examples in Chapter 39, “SQL Server Analysis Services,” (`CompSales`) is also provided. To install the `CompSales` database, do the following:

1. Copy the `CompSales.mdf` file into the SQL Server data folder where you want it to reside.
2. Ensure that the `Read-Only` property of the `CompSales.mdf` file is not enabled.
3. Attach the `CompSales` database by using a command similar to the following (edit the path to match the location of the `CompSales.mdf` file on your system):

```
sp_attach_single_file_db 'CompSales',  
    N'D:\MSSQL\DATA\MSSQL.1\MSSQL\Data\CompSales.mdf
```

Good Luck!

If you have purchased this book, you are on your way to getting the most from SQL Server 2005. You have already chosen a fine platform for building database applications, one that can provide outstanding performance and rock-solid reliability and availability at a reasonable cost. With this book, you now have the information you need to make the best of it.

Many of us who worked on this book have been using SQL Server for more than a decade. Writing about this new version challenged us to reassess many of our preconceived notions about SQL Server and the way it works. It was an interesting and enjoyable process, and we learned a lot. We hope you get as much enjoyment and knowledge from reading this book as we have from writing it.