
Introduction

What Is in This Book?

SQL Server 2005 is Microsoft's product for providing data management and analysis solutions for the enterprise. SQL Server 2005 is a trusted database platform that provides organizations a competitive advantage by allowing them to obtain faster results and make better business decisions. This is all achievable via a new management studio, deep integration with Visual Studio, and a comprehensive business intelligence platform. The product is modular and broken down into the following technologies: database engine, Analysis Services, Integration Services, replication, Reporting Services, Notification Services, service broker, and full-text search.

Because SQL Server has been released for almost two years, organizations are well versed in designing, installing, and implementing SQL Server 2005. However, database administrators are currently facing new challenges, such as how to manage, administer, and monitor their new SQL Server infrastructure based on industry best practices. This book improves the experience these professionals have working with SQL Server.

In addition, this book provides detailed guidance on management, administration, and monitoring. These areas remain challenges to database administrators who have SQL Server already deployed. Because this book assumes the reader has experience with installing SQL Server 2005, it goes far beyond the basic installation and setup information found in hundreds of other resources. Instead, it focuses on day-to-day administration, best practices, and industry case scenarios. All topics and examples covered in this book are based on the new features and functionality included with SQL Server 2005 Service Pack 2.

The topic of SQL Server 2005 administration and management is huge, and the size of this book reflects the size of the topic. To help orient you within the book, the following sections describe the various parts and chapters in the book. This book is focused on the administration and management of SQL Server 2005. Apropos to that, the content of the book does not cover the topics of planning, design and installation of the SQL Server 2005 platform. These are broad and deep topics, with books such as *Microsoft SQL Server 2005 Unleashed* (Sams Publishing, ISBN: 0672328240) dedicated to those topics alone.

However, to facilitate running the steps given throughout the book, the appendix lists the basic steps needed to set up a lab environment with the databases needed to test the procedures given in the book.

Part I: Administering SQL Server Components

The administration of the different components of the SQL Server 2005 platform is covered in this part. The administration encompasses the configuration of the various components, including initial setup and adjustments during normal operations.

The chapters in this part cover the administration of the main components of SQL Server 2005.

Chapter 1: Administering SQL Server 2005 Database Engine

This chapter focuses on configuring the Database Services component, managing the server, and configuring the database properties of the SQL Server Database Engine after the product has been installed. Managing server and database configuration settings such as memory, processor performance, auditing, database files, and auto growth is covered in depth.

Chapter 2: Administering SQL Server 2005 Analysis Services

This chapter focuses on configuring the Analysis Services component for OLAP and business intelligence. Administration topics on how to manage OLAP cubes, partitions, database processing, and storage models are covered.

Chapter 3: Administering SQL Server 2005 Reporting Services

Reporting Services is a set of technologies utilized to deliver enterprise web-enabled reporting functionality. This chapter focuses on configuring the Reporting Services component, including Internet Information Services (IIS), and managing the Reporting Services settings.

Chapter 4: Administering SQL Server 2005 Notification Services

This chapter focuses on configuring the Notification Services component and managing the notification engine for generating and sending notifications.

Chapter 5: Administering SQL Server 2005 Integration Services

Integration Services is Microsoft's extract, transform, and load (ETL) tool for data warehousing and is a platform for building high-performance data integration and workflow solutions. This chapter focuses on installing the Integration Services component, saving packages, and executing packages.

Chapter 6: Administering SQL Server Replication

SQL Server Replication is another way of distributing data from a source SQL Server to either one or more target SQL Servers. The chapter focuses on replication components and provides a prelude to the different types of replication scenarios a database administrator can manage, such as Snapshot, Merge, and Transactional Replication.

Step-by-step replication configurations including the new peer-to-peer replication scenario, a new form of high availability, are discussed.

Part II: Managing SQL Server 2005

This part of the book covers the management of the SQL Server 2005 platform. This discussion encompasses the routine tasks needed to ensure that the platform is operating properly and at optimal levels.

This part includes topics such as conducting health checks, performing maintenance tasks, and generating indexes to keep SQL Server 2005 operating efficiently.

Chapter 7: Conducting a SQL Server 2005 Health Check

On many occasions IT professionals inherit a SQL Server implementation when they join an organization or through consultants who design and implement the SQL solution at their organization. It is imperative these IT professionals manage the new SQL installation; however, they are often unaware of what to review.

This chapter focuses on how to conduct a SQL Server health check so the organization's implementation is fully optimized and adheres to industry best practices.

Chapter 8: SQL Server 2005 Maintenance Practices

This chapter focuses on managing and maintaining a SQL Server environment. This discussion includes creating maintenance plans to check database integrity, shrink databases, reorganize indexes, and update statistics. Additionally, this chapter provides recommendations on daily, weekly, monthly, and quarterly maintenance practices that should be conducted on SQL Servers. This also includes managing replication.

Chapter 9: Managing and Optimizing SQL Server 2005 Indexes

Similar to an index found in a book, an index in SQL Server is utilized for fast retrieval of data from tables. This chapter focuses on index concepts, ways to design the appropriate index strategy to maximize performance, and data retrieval. In addition, the chapter shares best practices on implementing, managing, and optimizing indexes.

Chapter 10: Managing Full-Text Catalogs

More and more of today's applications leverage full text-search capabilities of the back-end database. This chapter covers administration concepts associated with full-text search and step-by-step instructions for performing tasks such as enabling full-text indexing, removing full-text indexing, and best practices for managing full-text indexing.

Chapter 11: Creating Packages and Transferring Data

A common database administrator task is to transfer data or databases between source and target environments. This chapter focuses on importing, exporting, and transforming data and databases via SQL Server Management Studio and the newly created ETL tool, Integration Services. The chapter covers using packages to transfer data and to automate maintenance tasks.

Part III: Securing the SQL Server Implementation

In this part of the book, the important topic of security is addressed.

Chapter 12: Hardening a SQL Server 2005 Environment

It is imperative that database administrators secure both the SQL Server installation and the data residing in it. This chapter provides an overview on how to manage a secure SQL Server implementation based on industry best practices so that vulnerabilities and security breaches are minimized.

The following security topics are covered: reducing the attack surface, applying security to dimensions, and securing reports. This chapter goes above and

beyond the database engine and also focuses on the other SQL components such as Analysis Services, Reporting Services, and Internet Information Services.

Chapter 13: Administering SQL Server Security

This chapter focuses on how to administer SQL Server 2005 for role-based access and SQL authorization. This includes leveraging Active Directory to integrate the SQL Server 2005 security into the enterprise directory for single sign-on capabilities.

Chapter 14: Encrypting SQL Server Data and Communications

Securing SQL Server 2005 data while it is in databases and while it is being transmitted over the network is of paramount importance. In today's highly security conscious environment, it is critical that the database platform provide mechanisms to safeguard the integrity and confidentiality of the data no matter where it is.

This chapter covers the various options and methods of ensuring the confidentiality and integrity of the data both on the server and while on the network. The chapter also covers how to integrate with Public Key Infrastructure (PKI) to effectively use certificates in securing the data.

Note

The following sections can be found online. Go to www.informit.com/title/9780672329562 to register your book and download these chapters.

Part IV: SQL Server 2005 Overview

Chapter 15: SQL Server 2005 Technology Primer

This introductory chapter to SQL Server 2005 provides an overview of features, editions, and components. The Enterprise Edition is covered, as are the Database Services, Analysis Services, Reporting Services, Notification Services, and Integration Services.

Chapter 16: Tools of the Trade

This chapter covers the tools used to administer and manage SQL Server 2005. The platform encompasses a multitude of tools, so sometimes even finding the right tool is hard, even if you know the name of the tool.

This chapter gives you a complete overview of all the tools used to administer and manage SQL. This allows you to quickly access all the tools referred to in the book and provides a detailed understanding of the arsenal of SQL tools at your disposal.

Part V: Disaster Recovery and High Availability

Accidents happen, even in a perfect world. It is critical that the appropriate mechanism be put in place to ensure that SQL Server 2005 service can stay operational and recover from potential mishaps in the environment.

The chapters in this part address backup, recovery, and the various methods by which SQL Server 2005 can provide high availability.

Chapter 17: Backing Up and Restoring the SQL Server 2005

Environment

This chapter focuses on backing up and restoring the SQL Server 2005 environment, which includes the database engine, Analysis Services, Integration Services, and Reporting Services.

In addition, this chapter also focuses on recovery models, backup and restore best practices, and ways to correctly leverage technologies such as restoring a database to the point of failure, conducting online restores, and creating database snapshots.

Chapter 18: Administering and Managing Failover Clustering

How to configure and manage a single-instance and multiple-instance high-availability failover cluster is the main focus of this chapter. The chapter includes detailed step-by-step configurations on both single-instance and multiple-instance clusters, including building a Windows Server 2003 cluster. It also includes best practices from the field.

Chapter 19: Administering and Managing Database Mirroring

Most database administrators believe database mirroring is the top new feature of SQL Server 2005. This chapter focuses on configuring and managing database mirroring so that organizations can enhance the availability of their SQL Server systems, increase business continuity, and maintain a HOT standby of their database in another geographic location. The chapter includes detailed step-by-step configurations on all three database mirroring modes: high availability, high protection, and high performance.

This chapter also includes best practices from the field, case studies, and discussions of how to integrate database mirroring with other high-availability alternatives such as failover clustering and how to recover from a failed server.

Chapter 20: Administering and Managing Log Shipping

The focus of this chapter is on configuring and managing log shipping. The chapter includes step-by-step instructions on how to configure and maintain one or more “warm” standby databases typically referred to as *secondary databases*. Similar to the other chapters in this part, this chapter includes real-world examples and industry best practices.

Part VI: Monitoring and Troubleshooting SQL Server

When SQL Server 2005 is in operation, it is critical to monitor, tune, and troubleshoot the platform. Understanding what the platform is doing and resolving issues as they arise are key for the long-term health of the database environment.

Chapter 21: Monitoring SQL Server 2005

This chapter covers the native tools included with SQL Server for monitoring the SQL environment, including databases, performance, and auditing. Detailed explanations on how to utilize performance and optimization tools such as the Performance Monitor and SQL Server Profiler are included in this chapter. The chapter also covers using Operations Manager 2007 to monitor SQL Server 2005. This is Microsoft’s premier tool for monitoring the Windows operating system and applications such as SQL Server 2005.

Chapter 22: Performance Tuning and Troubleshooting SQL Server 2005

After the SQL Server 2005 platform is placed in operation and is being monitored, it is important to take action on the findings that are uncovered. It is often difficult to anticipate real-world loads during the development phase of application deployment; thus, it is critical to adjust the parameters of the SQL Server 2005 platform to optimize the performance after it is deployed. And frequently you need to troubleshoot the performance of SQL Server 2005 to address problems that are uncovered by the monitoring.

This chapter focuses on how to tune and troubleshoot the performance of the SQL Server 2005 platform and the specific components, including the use of the Database Engine Tuning Advisor. The chapter also covers industry best practices in tuning the SQL platform.

Appendix

The appendix, “SQL Server 2005 Management and Administration,” covers additional material that was not directly in line with the content of the book but that is potentially important to readers when using the examples given in the book.

The topics include the following:

- Basic installation of SQL Server 2005 including all components
- Installation of SQL Server 2005 Service Pack
- Configuration of the AdventureWorks OLTP sample database
- Configuration of the AdventureWorks OLAP sample database
- Basic installation of Certificate Service
- Basic installation of Operations Manger 2007

The appendix provides you with step-by-step instructions on how to conduct a basic installation of all the components that make up SQL Server 2005 and the supporting services such as certificate service. The installation is a prerequisite for following the examples in this book.