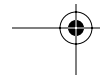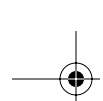# Part 1

Introducing SQL Server Express

- ◆ **Chapter 1: Introduction to SQL Server Express**
- ◆ **Chapter 2: Overview of Database Concepts**
- ◆ **Chapter 3: Overview of SQL Server**
- ◆ **Chapter 4: Database Design and Normalization**

Chapter 1

Introduction to SQL Server Express

Welcome to *Mastering Microsoft SQL Server 2005 Express Edition*. In this book, we'll help you learn the basics of SQL Server Express and advance to more complex skills. You won't learn *everything* about Microsoft's lightweight version of SQL Server 2005. However, we will show you how to get up and running quickly, and how to handle typical everyday tasks of keeping your data safe, secure, and available to your users.

SQL Server Express isn't an upgrade of SQL Server. It's supposed to be a new version of Microsoft Database Engine (MSDE), but it's really much more. It's an easy-to-use version of the full-blown SQL Server 2005—Microsoft's flagship database. Thanks to SQL Server Express, a powerful and flexible database is available to all of us, not just the computer geeks and gurus.

Before we dig deep into the details of SQL Server Express, we want to introduce you to the product. You may be a budding database administrator (DBA), anxious to manage a database for others to use; you may be a developer, ready to write code that will extract information from a server that someone else is maintaining; or you may be a regular user who just needs to see some data and doesn't have time to wait for the IT department to build an application.

Whoever you are, *Mastering Microsoft SQL Server 2005 Express Edition* has something for you. In this chapter, we'll talk briefly about the ways you'll likely work with SQL Server Express, whether you're a DBA, a developer, or a user. Users in particular should review these pages even if you don't expect to ever write a line of code or manage a database. By knowing what you could do with SQL Server Express, you'll be in a much better position to discuss with your IT people the sort of solutions and assistance you need. We can't highlight all the features in SQL Server Express in this short chapter, but we can show you enough to get you excited and ready to dig in.

Why SQL Server Express?

Unlike the full-blown version of SQL Server, which has five different editions, there's only one version of SQL Server Express. It's for anybody who needs to bring order to their data, from the small business owner to individuals just trying to get their work done.

SQL Server Express is a free, easy-to-use, simple-to-manage database without many of the features of the full-blown SQL Server such as Notification Services, Analysis Services, Integrations Services, and Reporting Services, to name only a few. SQL Server Express can function as the client database as well as a basic server database. SQL Server Express is a good option when all that's needed is a stripped-down version of SQL Server, typically among low-end server users such as small businesses, non-professional developers building web applications, and hobbyists building client applications.

MSDE first appeared with Office 2000. An updated version, known commonly as SQL Server Desktop Engine, came with Office XP. The latter was more popular than the original version, which went largely unnoticed. Both early versions were limited (Microsoft likes to call it *optimized*) to five concurrent processes. That really means you couldn't use MSDE or Desktop with more than a few users.

SQL Server Express fills a specific niche in the database world:

◆ This scaled-down version of SQL Server is perfect for the small business with limited funds and personnel.

◆ Small businesses with few users will find SQL Server Express a more powerful alternative than the average desktop database.

◆ SQL Server Express is a great training tool for the full-blown version. Trainers and students don't need access to the real thing to learn the basics.

◆ This version is ideal for building web applications. Combined with Visual Web Developer Express and Visual Basic Express, it forms a complete web application solution for individuals and small enterprises.

SQL Server Express uses the same database engine as SQL Server 2005. However, it's limited to one CPU, 1 GB RAM, and 4 GB in data files (that limit doesn't include log files). Unlike its predecessors, MSDE and Desktop, the engine isn't "optimized" (throttled); nor does it limit the number of active users.

SQL Server Express comes with simple and robust graphical user interface tools: Microsoft SQL Server Management Studio Express (Management Studio), SQL Server Configuration Manager, and SQL Server Surface Area Configuration. All three help to simplify basic database tasks and administration. Management Studio is free and available in a separate download. One of its most important goals is to be accessible and easy to use.

Administering SQL Server Express

If you had experience with MSDE or SQL Server Desktop, you're in for a big change. SQL Server Express no longer uses an Access project file (adp) graphic interface. Now you'll use Management Studio, which is similar to the new management tool in SQL Server 2005.

We'll take a few moments to look at how you use this interface to administer data and services as well as to keep track of what's happening on your server. This will be a short visit though. All of Chapter 9 is devoted to this important tool.

Opening Management Studio

To launch SQL Server Express, choose (All) Programs ➢ Microsoft SQL Server 2005 ➢ SQL Server Express Management Studio Express from the Windows Start menu. (Management Studio is available via a separate download.) After you launch Management Studio, it will ask you to connect to a SQL Server Express instance.

Inside Management Studio, you can expand a treeview to drill down from servers to databases to objects and inspect individual objects in a list view. Figure 1.1 shows how Management Studio might look after you drill down a few levels.

FIGURE 1.1
Microsoft SQL Server
Management Studio
Express
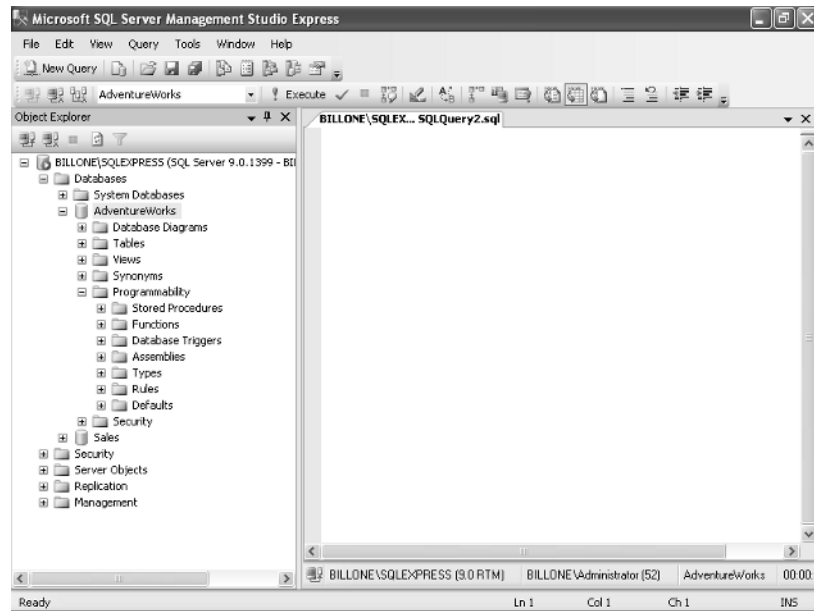
NOTE   The AdventureWorks database is a sample database that you can download. In many cases throughout the book, we'll use AdventureWorks as a generic example of a database. We'll also use the AdventureWorks sample database or create examples that you can emulate for your own database needs.

Even if you don't know anything about Management Studio, you'll appreciate the wide list of objects that can be manipulated using this interface:

Databases	Remote servers
Database diagrams	Backups
Tables	Database maintenance plans
Views	SQL Server Express logs
Stored procedures	Replication
Users	Logins
Roles	Server roles
Defaults	Performance Analyzer
User-defined datatypes	User-defined functions
Linked servers	

And that's just a sample! You'll learn about most of these objects in coming chapters.

Creating a Login

If you're a DBA, one of your main tasks is to manage security in SQL Server Express. We'll discuss security in much more detail in Chapter 17, but for now, let's look at one part of the picture: creating a login. A SQL Server Express login is a necessary part of making your SQL Server Express data available to a Windows user on your network.

There are several ways to create a new login. The easiest way is to use the Logins folder under the Security folder in Management Studio. Open Object Explorer, expand the server instance, and then expand the Security Folder. Right-click the Login folder and select New Login. The New Login property window opens (see Figure 1.2).

In the top part of the pane, you select the authentication mode. SQL Server Express can use two methods to verify that a user is who they claim to be:

◆ Windows Authentication compares the user with their credentials in the Windows 2000/2003 user database.

◆ SQL Server Authentication prompts the user for a password that's evaluated by SQL Server Express.

In most cases, you should choose Windows Authentication—your users won't have to supply a separate password for SQL Server Express, and you won't have two sets of passwords to audit and coordinate. You may want SQL Server Express accounts, though, for operations such as accessing a database over the Internet. Also, be aware that Windows Authentication is available only if SQL Server Express is running on Windows 2000 or Windows 2003.

FIGURE 1.2
The New Login window's
General page
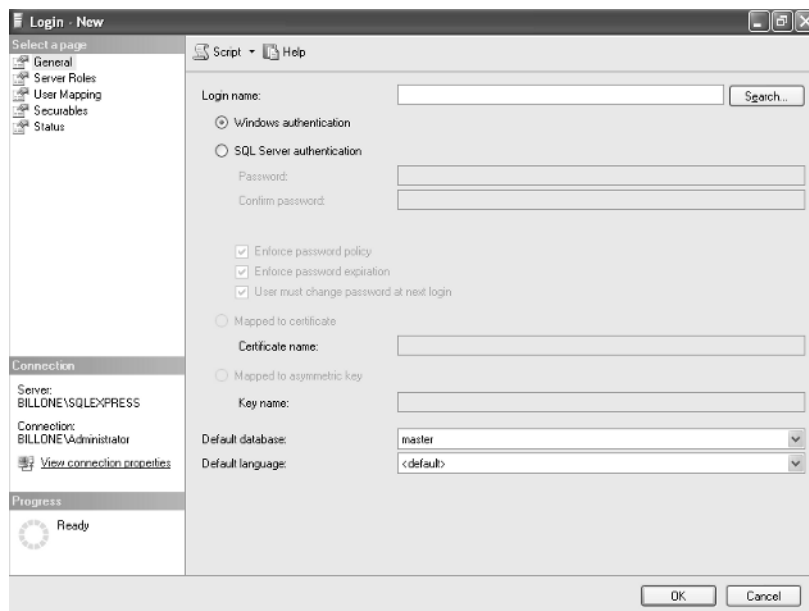
In the Login Name text box, you specify the Windows user for whom you want to create a login (assuming that you chose Windows Authentication mode). You can type in the domain and user-name manually or search for the user by clicking the Search button.

In the server access section, you can either grant a user access to your server or deny a user all access to your server. As a general rule, you should deny access to everyone who doesn't explicitly need to get to the data on your server. There's no point in having idle hands riffling through your database.

Now, click Server Roles in the left pane to open the Server Roles page shown in Figure 1.3. Here you can select which server-wide security privileges this user should have.

FIGURE 1.3
The New Login window's
Server Roles page
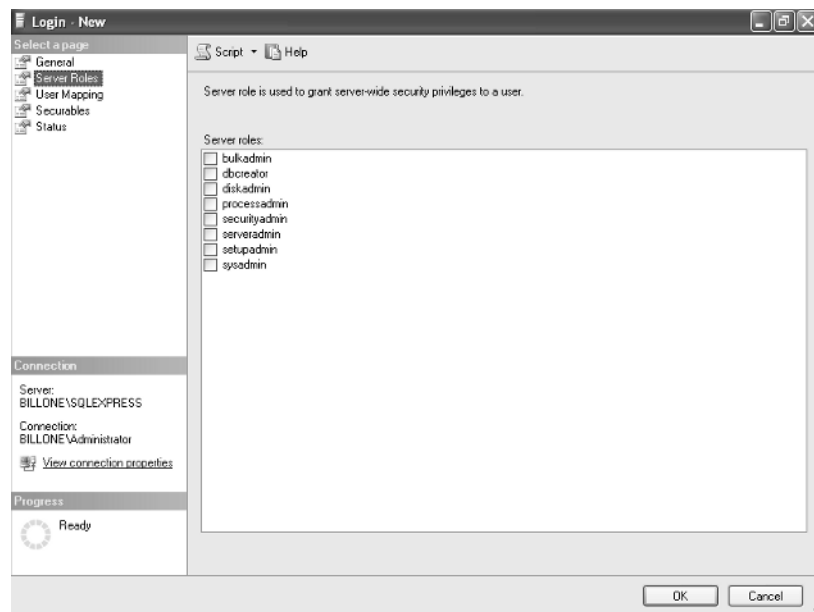
Using the Configuration Manager

You may also be called on to change the way a SQL Server Express instance starts or to make an adjustment to the SQL Server Express configuration.

To do these sorts of tasks, you use a different server tool: the SQL Server Configuration Manager. To launch the Configuration Manager, click Windows Start ➢ (All) Programs ➢ Microsoft SQL Server 2005 ➢ Configuration Tools ➢ SQL Server Configuration Manager. The Configuration Manager opens as a Microsoft Management Console snap-in, as shown in Figure 1.4.

Let's use Configuration Manager to set SQL Server Express to start automatically:

1. Select SQL Server 2005 Services.

2. In the details pane, right-click the name of the SQL Server Express instance you want to start automatically—SQL Server (SQLEXPRESS)—and then click Properties.

3. In the SQL Server (SQLEXPRESS) Properties dialog box, click the Service tab. Set Start Mode to Automatic, as shown in Figure 1.5 (because this is the default value, the value should already be Automatic).

4. Click OK, and then close SQL Server Configuration Manager.

FIGURE 1.4
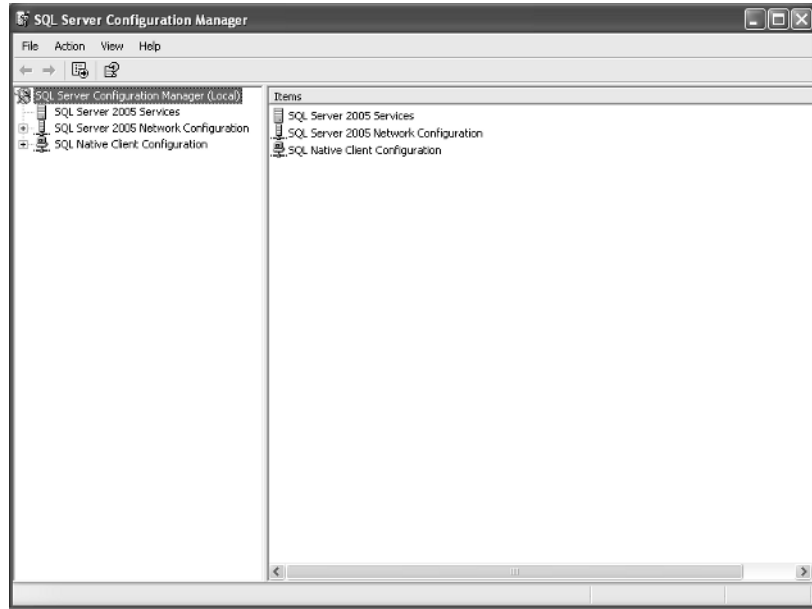SQL Server
Configuration
Manager

FIGURE 1.5
Setting Start Mode
to Automatic

Viewing Current Activity

At times, you may want to know what's going on in your database. You can get a quick overview through Management Studio by selecting the Activity Monitor. Right-click and select View Processes to open the Activity Monitor Process Info page. Figure 1.6 shows typical activity on a lightly loaded server.

You may find a process running here that you don't recognize. If so, double-clicking the process lets you see the last set of T-SQL commands submitted by that process.

FIGURE 1.6
Viewing current activity
in the Activity Monitor
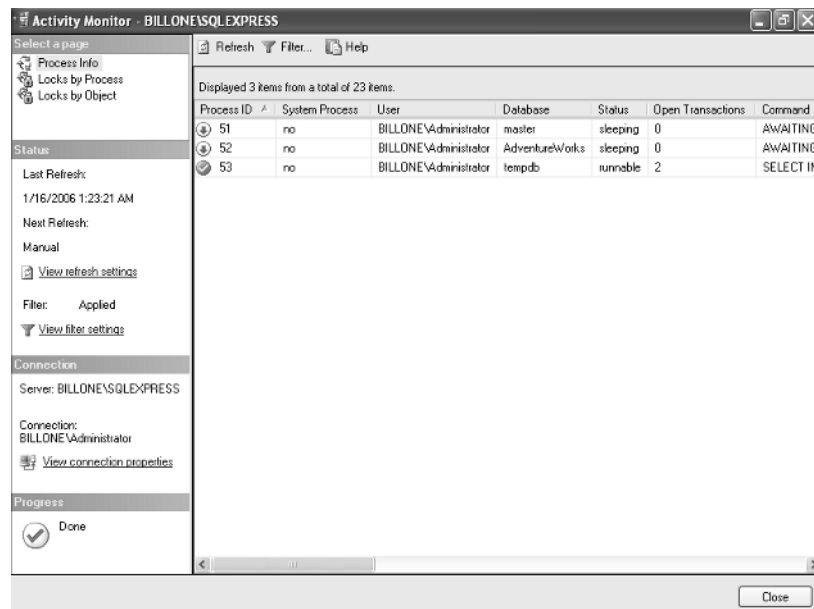
New and Improved

The depth and flexibility of SQL Server Express should convince you that learning SQL Server Express will take some time. The good news is, it's easy and quick to implement—you don't need to know everything. The following features and enhancements are those you're likely to see most in the components you'll probably use often:

◆ Data access: SQL Server Express supports the same native and managed providers as SQL Server 2005. That means your SQL Server Express applications will work with other editions of SQL Server.

◆ Security: Networking protocols and SQL Brower are turned off by default. You'll use the SQL Server Configuration Manager to manipulate both.

◆ Replication: Replication allows your users to maintain copies of a database at multiple sites. SQL Server Express supports replication subscriptions. You can use Replication Management Objects (RMO) or Windows Sync Manager to schedule subscriptions.

◆ SQL Server Broker (SSB): SQL Server Express introduces a completely new technology called Service Broker. The role of Service Broker is to aid in the building of database-intensive distributed applications that are secure, reliable, and scalable. This feature works only in combination with other SQL Server 2005 editions.

◆ User instances: User Instances let you treat databases like files. For example, you can move, copy, or e-mail a local database.

Summary

SQL Server Express isn't everything to everybody, but in the current release, it has something for almost every computer user.

In the rest of this book, you'll learn about various aspects of SQL Server Express:

◆ Part 1 will teach you basic SQL Server Express and database concepts.

◆ Part 2 will teach you Transact-SQL.

◆ Part 3 examines the basic SQL Server Express objects and Management Studio.

◆ Part 4 covers administrative tasks.

◆ Part 5 reviews the developer tools you'll use with SQL Server Express.

◆ Part 6 introduces some advanced topics and new technologies.

We hope that what you've read in this chapter has whetted your appetite for more! The next chapter will introduce basic database concepts.