In this chapter, we are going to look at what has changed in terms of working with data in .NET 4.5 and Visual Studio 2012. Most of the action is around Entity Framework, but there have also been some changes made to the SqlClient data provider around streaming and asynchronous programming. Also with this release we see the introduction of LocalDb.

**LocalDb**

With Visual Studio 2012 (and SQL Server 2012), there is a new version of SQL Server Express call SQL Server Express LocalDb, or LocalDb for short. LocalDb has been created specifically for developers providing the same T-SQL, programming surface, and client-side providers as SQL Server Express but without having to install and manage a full instance of SQL Server Express or SQL Server.

**Creating a Database with LocalDb**

From within Visual Studio 2012, there are a few different ways that a LocalDb database can be created depending on the job at hand. The thing to be aware of is that the location of the resulting .mdf file differs depending on which method you use.

**From the SQL Server Object Explorer**

Within Visual Studio, open the new SQL Server Object Explorer (Ctrl +\, Ctrl +s) and click on the Add SQL Server icon. When the Connect to Server dialog box displays, enter (localdb)\v11.0 as the server name and click Connect. Right-click on the localdb icon (see Figure 9-1) and select New Query.
The simplest command to create a database is the following:

Create database TestDb1

This will create a new .mdf file which will be located in c:\Users\user-name (type %userprofile% in the File Explorer address bar to get there). This is probably not the best place to store your database files, so the Microsoft recommendation when creating database files is to specify the location. Enter the following and click the Execute button:

Create database TestDb1 on (name='TestDb1', filename='c:\DbFiles\TestDb1.mdf')

While you are in the SQL Server Object Explorer, you can also create a new database by right-clicking on the Databases folder just below the localdb icon and select “Add New Database”. A new database gets created but this time, if you go looking for it, the .mdf and .ldf files will be located in the folder C:\Users\user-name\AppData\Local\Microsoft\Microsoft SQL Server Local DB\Instances\v11.0.

Creating a New Database Project

With the release of SQL Server 2012, a new set of database developer tools for Visual Studio was released, and these tools have been integrated into Visual Studio 2012. These tools make use of LocalDb to allow developers to do database development offline without having to have a full version of SQL Server installed.

When you create a new SQL Server database project, as part of the project, two things happen in relation to LocalDb:

- First, a new instance folder is created under C:\Users\user-name\AppData\Local\Microsoft\Microsoft SQL Server Local DB that will be named after the solution in which you have created the project. This folder will contain the system databases, logs, and so forth.