Linking Access to SQL Server

Why Link to SQL Server?

Whilst Microsoft Access is a powerful database program it has its limitations and is best suited to creating desktop applications for individual users or small workgroups. When a database requires many concurrent users or needs to store very large amounts of data it is more appropriate to use a *server database* program such as Microsoft SQL Server (other brands include Oracle, dBase and MySQL). The server database resides on the network server where it can make use of the larger computer's processing power and ability to handle requests from many users simultaneously. This document will use Microsoft SQL Server in its examples although the procedures described will be similar for other programs.

SQL Server is a complex and very powerful program but it does not possess the tools for easily creating Queries, Forms and Reports that are found in Access. For this reason Access is still an important resource when some or all of your data is hosted in a server database and Access is often used to create a *front-end* for SQL Server. This can be done in a number of ways:

Creating an Access Data Project: An *Access Data Project* uses the familiar Access database tools to create and work with data held on SQL Server. It allows you to benefit from SQL Server's processing power whilst retaining the familiar and user-friendly Access interface.

Upsizing an Access Database: If you already have a database built in Access you can use the *Upsizing Wizard* to convert it to a database in SQL Server. The Access database becomes an *Access Data Project* when the wizard migrates the data and queries to the server whilst preserving the modified forms and reports in Access. You continue using the database much as before.

Linking Tables: This is the simplest way of accessing data on SQL Server. A link is created directly to one or more tables residing in a server database using ODBC (*Open Database Connectivity*). Thereafter the linked tables appear in the Access Database Window and can be treated as if they were located in Access. Unlike an Access Data Project this method does not benefit from the increased processing power of the server as the data is processed locally.

This document describes how to link tables in a SQL Server database to an Access database.

Creating a New Data Source (DSN) File

You can work from an existing Access database or create a new one. Switch to the **Tables** section of the Database Window then go to **File > Get External Data > Link Tables**. This opens the *Link* dialog which is similar to the familiar *File Open* dialog. If you were linking to another type of data source such as another Access database, an Excel workbook or a text file you would locate it from here, but you need to connect to the server database so the procedure is slightly different.

Go to the **Files of type** list at the bottom of the dialog box and choose **ODBC Databases ()** (*Fig. 1*). This opens the *Select Data Source* dialog box (*Fig. 2*).
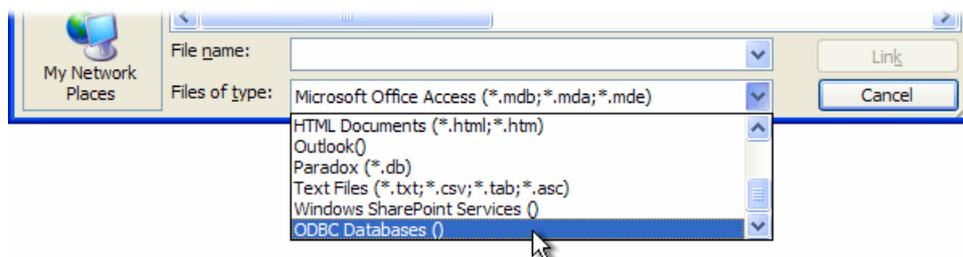

Fig. 1 Choose to link to an ODBC Database.

The dialog box displays DSN files. These files hold a description of a data source with all the information needed to locate and connect to it (known as the *connection string*). If you have already created one or more data sources they will probably be displayed here. The default location displayed is the *Data Sources* folder on your computer (usually *C:\Program Files\Common Files\ODBC\Data Sources*) but since a DSN file is merely the connection instructions and not the data source itself you can keep it anywhere you like.
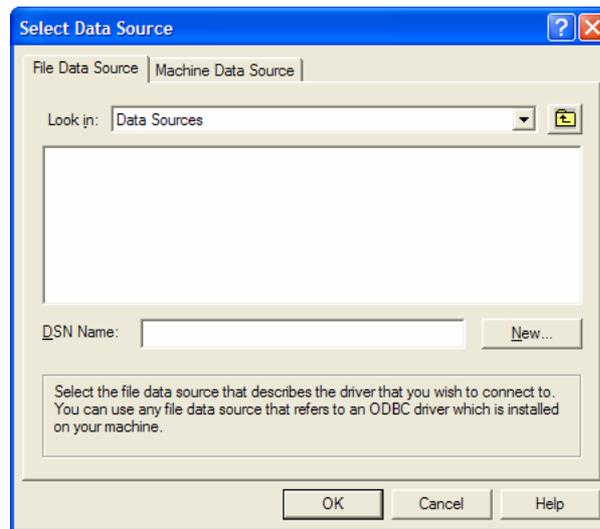
Fig. 2 The Select Data Source dialog box.

Since you are creating a link for the first time you will have to make a new DSN file. Click the button marked **New** to open the *Create New Data Source* dialog box then scroll down the list of drivers and select **SQL Server** (*Fig. 3*).
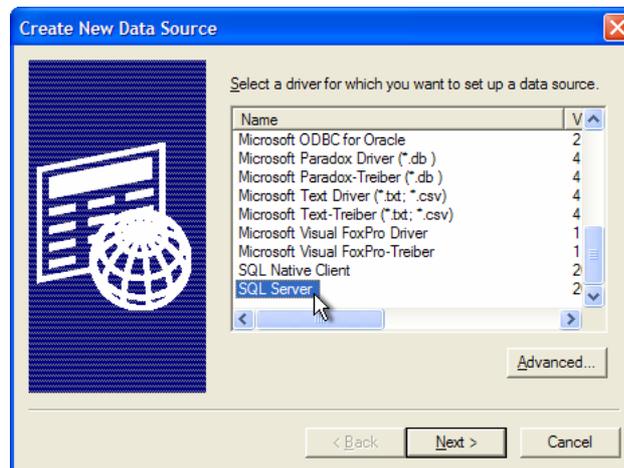

Fig. 3 Select the SQL Server driver.

If you know the name of the database (not the server name) to which you want to link you can specify it now by clicking the **Advanced** button on the *Create New Data Source* dialog box to open the *Advanced File DSN Creation Settings* dialog box. This already contains the first part of the connection string. Underneath it type *DATABASE=<DatabaseName>* replacing *<DatabaseName>* with the name of your chosen database (*Fig. 4*). In this example I am connecting to a table in the *Northwind* sample database on SQL Server.
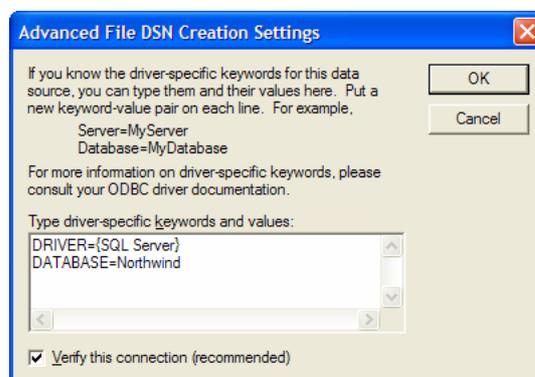

Fig. 4 Add the name of the database you want to connect to.

Click **OK** to return to the *Create New Data Source* dialog box then click **Next**. Now enter a name for your new DSN file (*Fig. 5*). It will normally be stored in the *Data Sources* folder but if you want

to keep it somewhere else click **Browse** and specify your chosen location. In this example I have given the DSN file the name *NorthwindLinkDemo*.
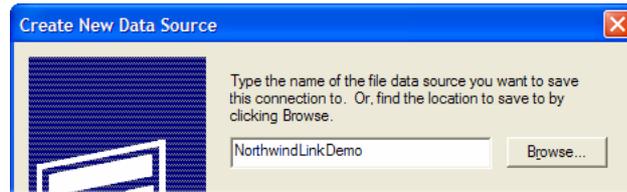

Fig. 5 Enter a name for the DSN file.

Click **Next** to display the last window of the dialog box. Here you will see all the information you have provided (*Fig. 6*). You can make changes here if you need to. If the driver requires more information to connect to the chosen data source it will prompt you at the time of connection. Check that the information is correct and click **Finish**.
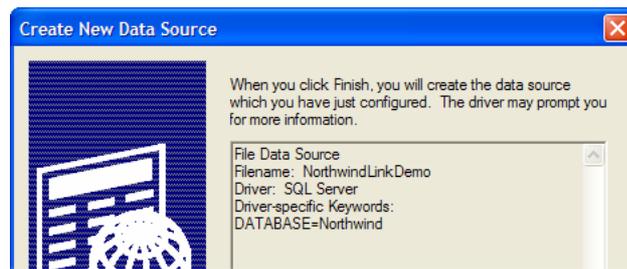

Fig. 6 A summary of the connection information is displayed.

At this point a new dialog box will open allowing you to specify more information about the link (*Fig. 7*). If you wish you can enter a description of the data source. Now open the list of available servers. There will be a short pause while the program searches for available servers (there may be several) before displaying a list of their names. Servers installed on the computer you are working on are also referred to as *(local)*. Choose the server on which your target database is located and click **Next**.
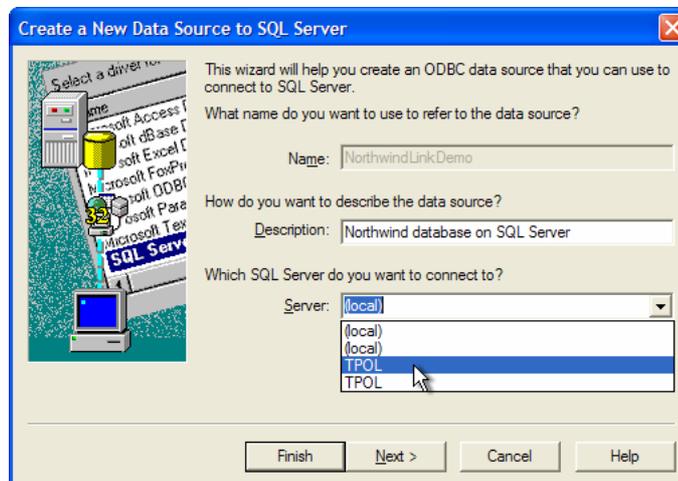

Fig. 7 Enter a description of the data source and choose a server.

In the next window you can specify how to log on to the server. You might need to seek advice from your SQL Server administrator before completing this stage. Server databases usually require a Login ID and password before you are granted access to their data. In this example (*Fig. 8*) I am choosing *Windows NT authentication* which uses my existing Windows login to log me on to the server. If your server requires a separate login you should choose the *SQL Server authentication* option. You can then optionally enter the required Login ID and password. If you don't enter them here the driver will prompt you for them each time it connects to the server.
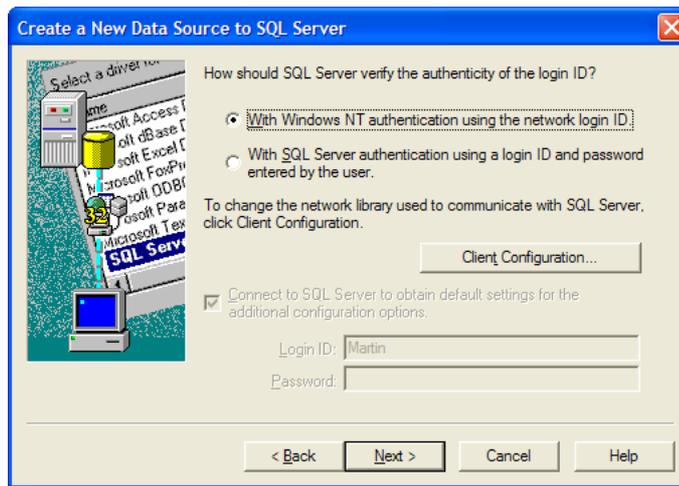
Fig. 8 Specify how you want to log on to the server.

Click **Next**. Since the server can host many different databases it is a good idea to specify at this stage which one you want to connect to. Place a tick in the box marked *Change the default database to:* and choose the name of your target database from the list (*Fig. 9*). Then click **Next**.
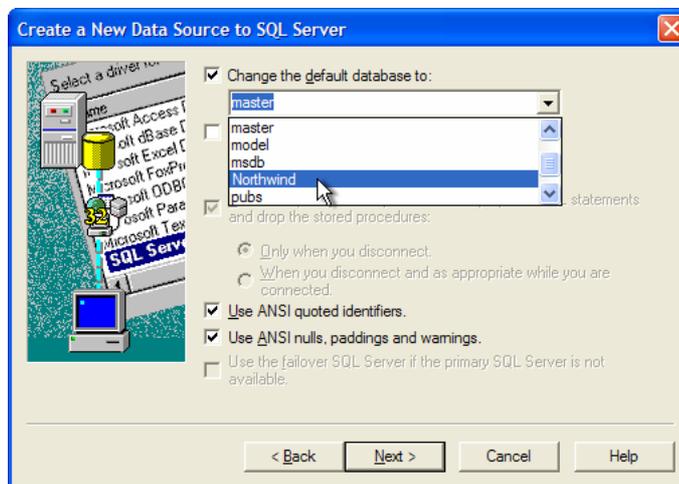

Fig. 9 Specify the name of the database to connect to.

The final window contains advanced options that I won't get involved with here. Click **Finish**. Access displays a summary window with the option to test the connection (*Fig. 10*). To do this click **Test Data Source**. If everything is satisfactory a confirmation message is displayed (*Fig. 11*).
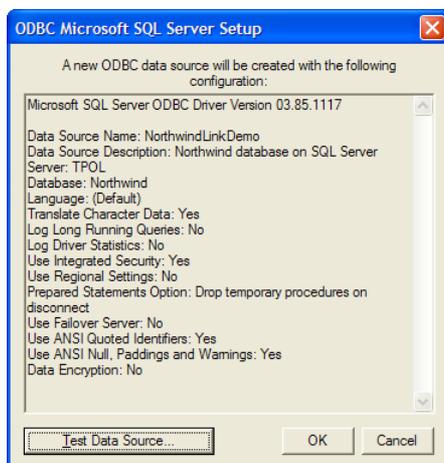

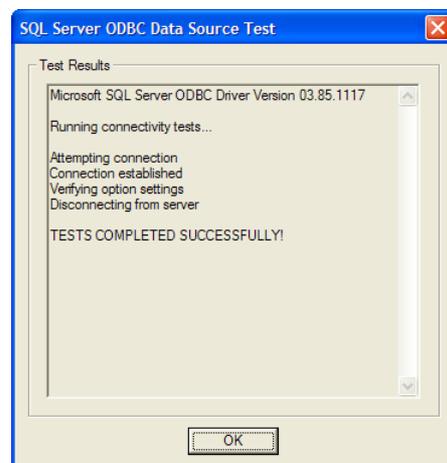*Fig. 10 A summary is displayed.*

Fig. 11 The test is successful.

Click the **OK** button on the *ODBC Microsoft SQL Server Setup* window to complete the process. You have now finished creating the DSN data source which will help you connect to your target database. In future, when you want to connect to the same database you can make use of the same DSN file. You will only have to create a new DSN file if you wish to connect to a different data source.

Creating a Link to a Table

You are now returned to the *Select Data Source* dialog that you left a while ago to create a new data source. But now your newly-created data source appears in the list (*Fig. 12*).
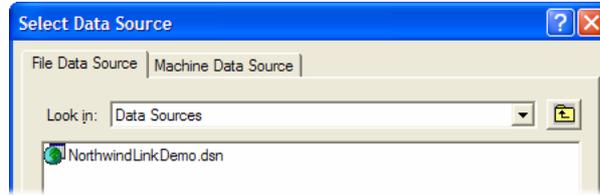

Fig. 12 The new data source is now listed.

Select the data source name then click **OK**. Now the driver will connect to the data source and retrieve a list of tables in the server database. Access displays this list in the *Link Tables* dialog (*Fig. 13*). Select the table you wish to link to (to save repeating the process you can select multiple tables if you wish) then click **OK**.
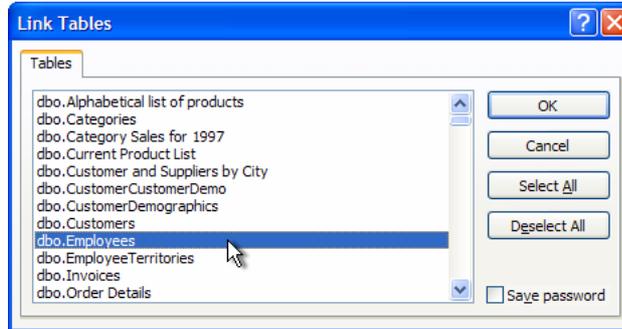

Fig. 13 Access displays a list of tables from the server database.

You new link is now displayed in the Tables section of the Access Database Window (Fig. 14) and can be treated like any other table. You can view and query its data (*Fig. 15*), build forms and reports based on it and enter or edit records (subject to any permissions set on the server).
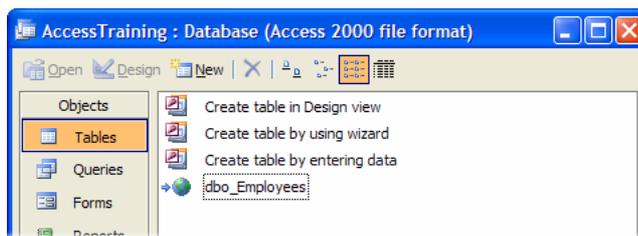

Fig. 14 The link to the table is shown in the Access Database Window.

EmployeeID	LastName	FirstName	Title	TitleOfCourtesy	BirthDate	HireDate	Address	City
3	Leverling	Janet	Sales Represer	Ms.	30/08/1963	01/04/1992	722 Moss Bay	Kirkland
4	Peacock	Margaret	Sales Represer	Mrs.	19/09/1937	03/05/1993	4110 Old Redm	Redmond
8	Callahan	Laura	Inside Sales Cc	Ms.	09/01/1958	05/03/1994	4726 - 11th Ave	Seattle
1	Davolio	Nancy	Sales Represer	Ms.	08/12/1948	01/05/1992	507 - 20th Ave.	Seattle
2	Fuller	Andrew	Vice President,	Dr.	19/02/1952	14/08/1992	908 W. Capital	Tacoma
6	Suyama	Michael	Sales Represer	Mr.	02/07/1963	17/10/1993	Coventry House	London
7	King	Robert	Sales Represer	Mr.	29/05/1960	02/01/1994	Edgeham Hollo	London
5	Buchanan	Steven	Sales Manager	Mr.	04/03/1955	17/10/1993	14 Garrett Hill	London
9	Dodsworth	Anne	Sales Represer	Ms.	27/01/1966	15/11/1994	7 Houndstooth	London
(AutoNumber)								

Fig. 15 The SQL Server linked table displayed in Access.