Migrating a Microsoft Access CIS Database to Microsoft SQL Server

Some users may find that there are restrictions when using a Microsoft Access database with OrCAD Capture CIS that can be avoided by moving away from a file-based database to a server-based database, like Microsoft SQL Server. Microsoft provide the Microsoft SQL Server Migration Assistant for Access, a free download, to migrate the database and provide Microsoft SQL Server Express, a restricted capability version of Microsoft SQL Server and a free download, for users who don't need the capacity of a purchased Microsoft SQL Server installation. The restricted capabilities of Microsoft SQL Server Express are very unlikely to pose any capacity, or performance, issues with OrCAD Capture CIS users.

The Microsoft SQL Server Migration Assistant for Access provides a wizard for migrating the Access database, but this cannot be used to migrate Microsoft Access databases used with OrCAD Capture CIS as the default data types for the migration are not compatible with the requirements of a database used by OrCAD Capture CIS.

If the Migration Assistant Wizard has been used previously

If the wizard has been used previously to migrate the Microsoft Access database, the target database in the Microsoft SQL Server will need to be removed since the Microsoft SQL Server Migration Assistant for Access won't change the structure of an existing Database. Start the Microsoft SQL Server Management Studio and locate the target database, open the Databases collection and right-click>Delete on the target database entry.
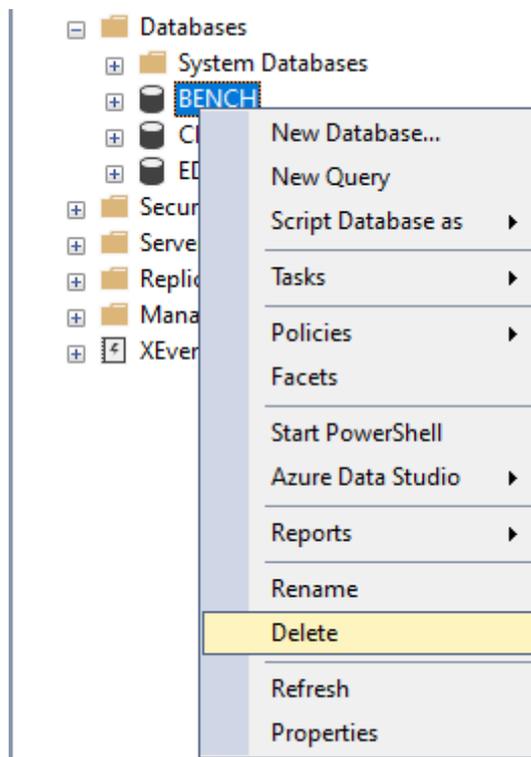
Left-click>OK on the Delete Object form that appears to remove the database – note that there is no undo / confirmation for this action.

Close the Microsoft SQL Server Management Studio for now.

Migrating the database

Start the Microsoft SQL Server Migration Assistant for Access, Close the wizard if it starts since this doesn't allow the required settings to be changed.

From the main menu, File>New Project, give the migration project a name and location to store the settings, and set the version of SQL Server for the target SQL Server, then left-click>OK. (Overwrite the project if a migration project of the same name already exists)

Use the Add Databases toolbar button to add the source Access database file. Expand the tree view to see the database name and enable the tables of interest.

(In this example, the provided OrCAD Capture sample Bench database is being migrated and all of the tables are relevant)
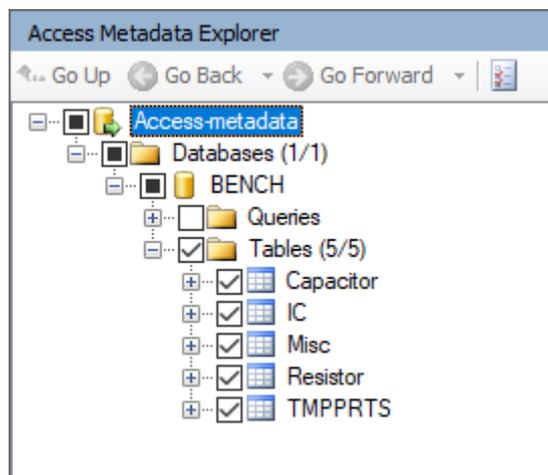
Left-click the database name entry in the tree view, BENCH in this case, and, on the upper right, the database details will be shown. Left-click on the Type Mapping tab to view the mapping between Access and SQL Server datatypes. Double-click on the Text [*..*] Source Type and change the mapping to Varchar (length), also unset the Length / Replace with option of 1.
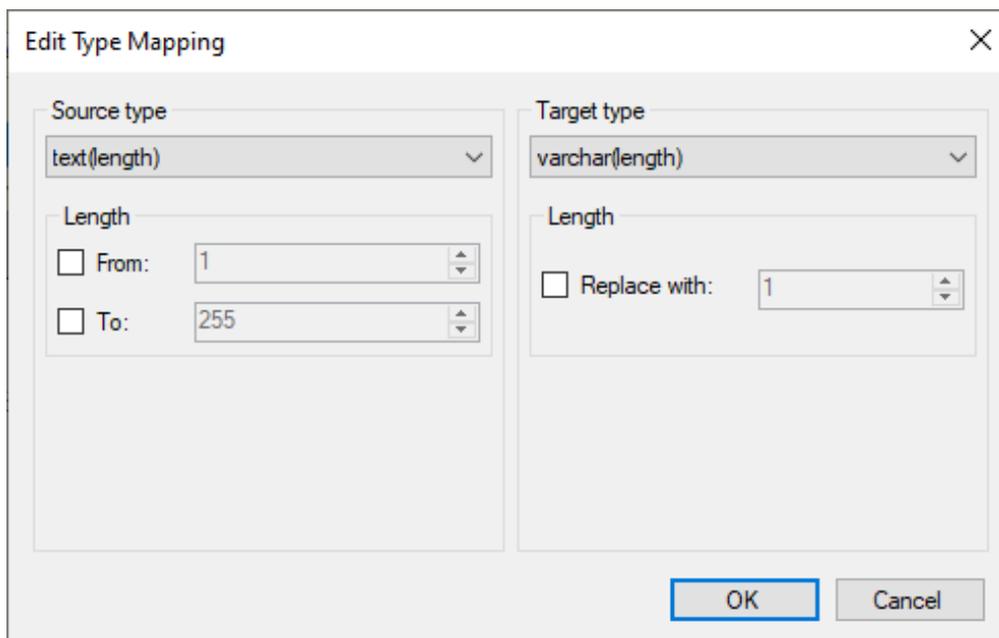
Left-click>OK to close the Edit Type Mapping form.

Left-click the Apply button for "There is unsaved data on this page" message to save the change.

Then left-click on the Connect to SQL Server button on the toolbar and check that the required SQL Server is the target and specify a name for the migrated database, Bench in this case.
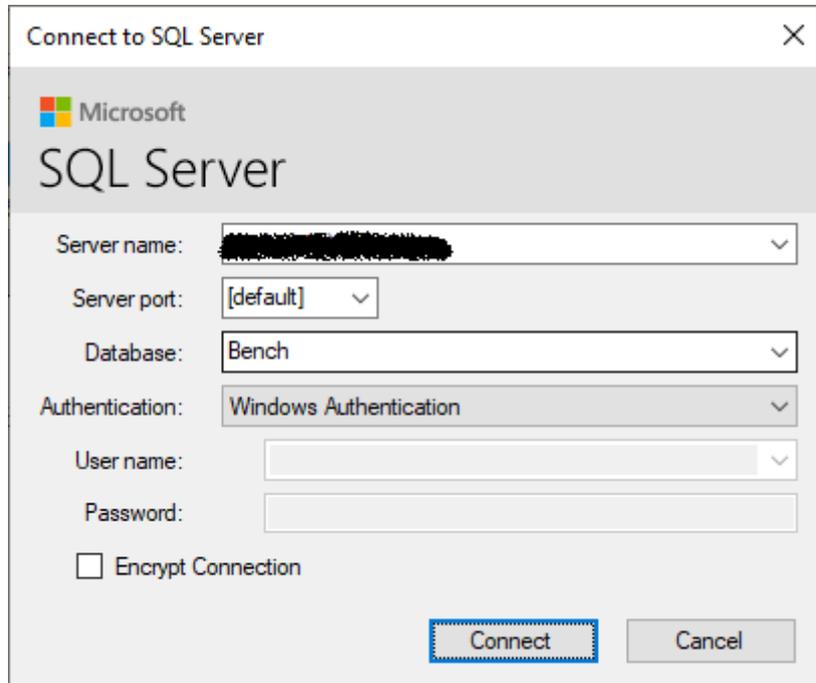
Left-click>Connect
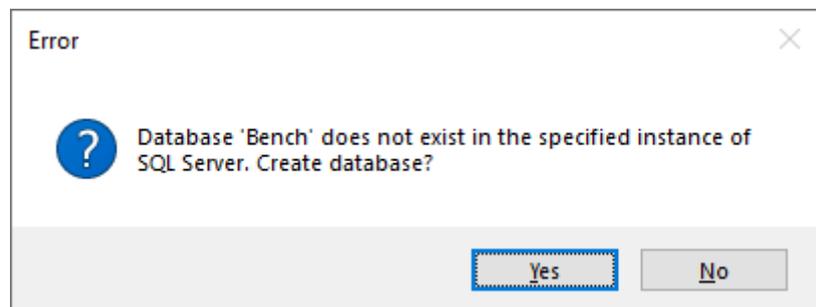
Left-click>Yes to create the database

Once the SQL Server is connected with the database created, left-click the Convert Load and Migrate toolbar button.

Left-click>OK on the Synchronize with Database form to accept the conversion phase.

The data will be migrated with to the SQL Server target database. Use the Reports buttons and the Output window to view the migration actions and messages. Note that some Table and Field Names that are supported in Microsoft Access are not permitted in SQL Server so check the reports for any changes that have been made.

Left-click>Close on the Convert, Load and Migrate form

Use File>Exit to leave the Microsoft SQL Server Migration Assistant for Access, save the Migration Project and Metadata, if required.

Configure a User Account for the SQL Server database

Windows Authentication can be used to access the database but, whilst secure, this isn't especially convenient since each User Account wanting to use the database will need to be added to the allowed logins and database security list. Using an SQL Server Authentication account allows the User Name and Password to be set for the login and configured when the ODBC datasource is set up for CIS for each machine. (See Appendix if SQL Server Authentication isn't enabled, which would be the case if SQL Server wasn't installed with the "Mixed Mode" option)

Start the Microsoft SQL Server Management Studio and locate the target database, open the Security collection and right-click>New Login on the Logins entry.
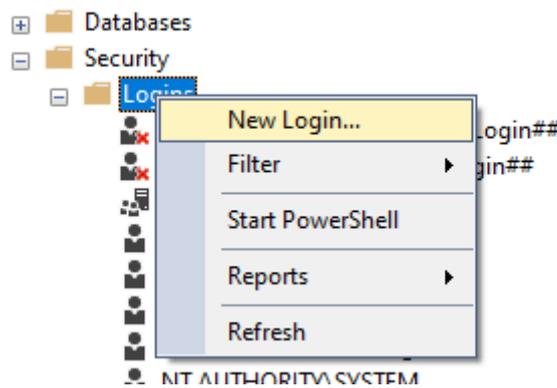
Specify a Login Name for the User account, check the SQL Server Authentication option, set and confirm the Password, uncheck the Enforce Password Policy option since options like password expiry wouldn't be too useful in this case.
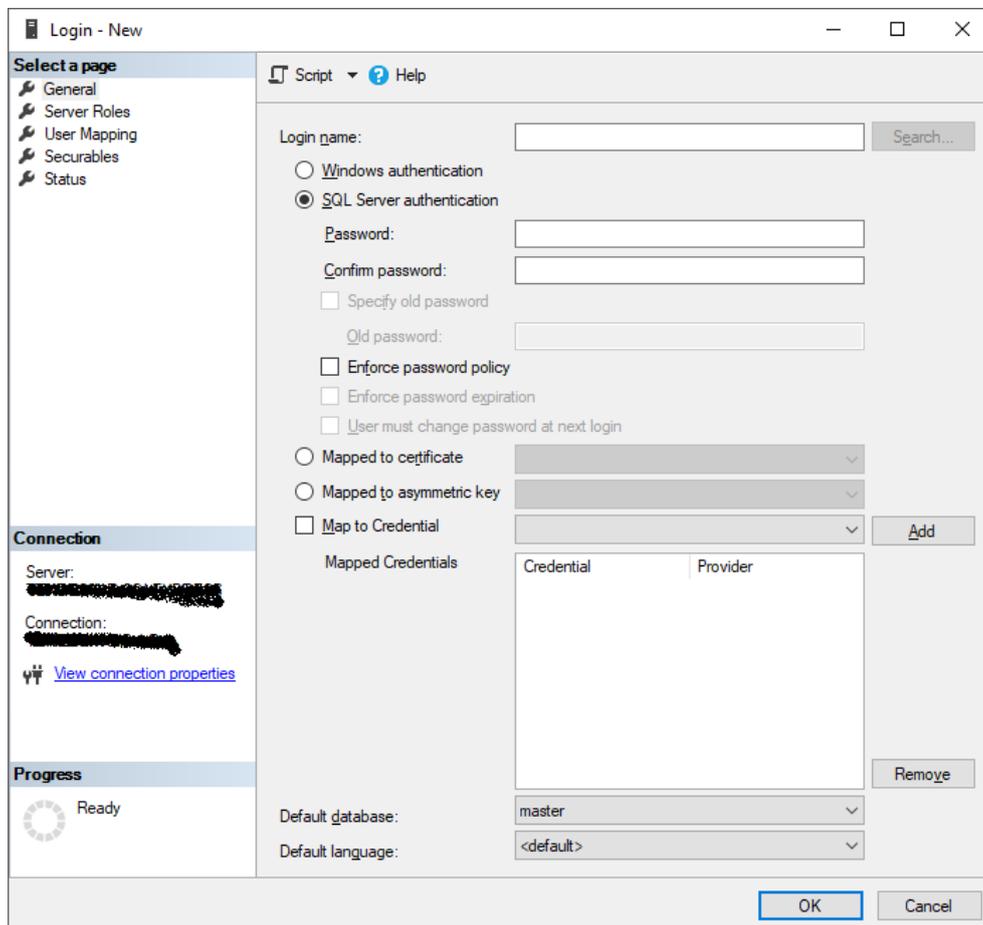
Under Select a Page, left-click>User Mapping
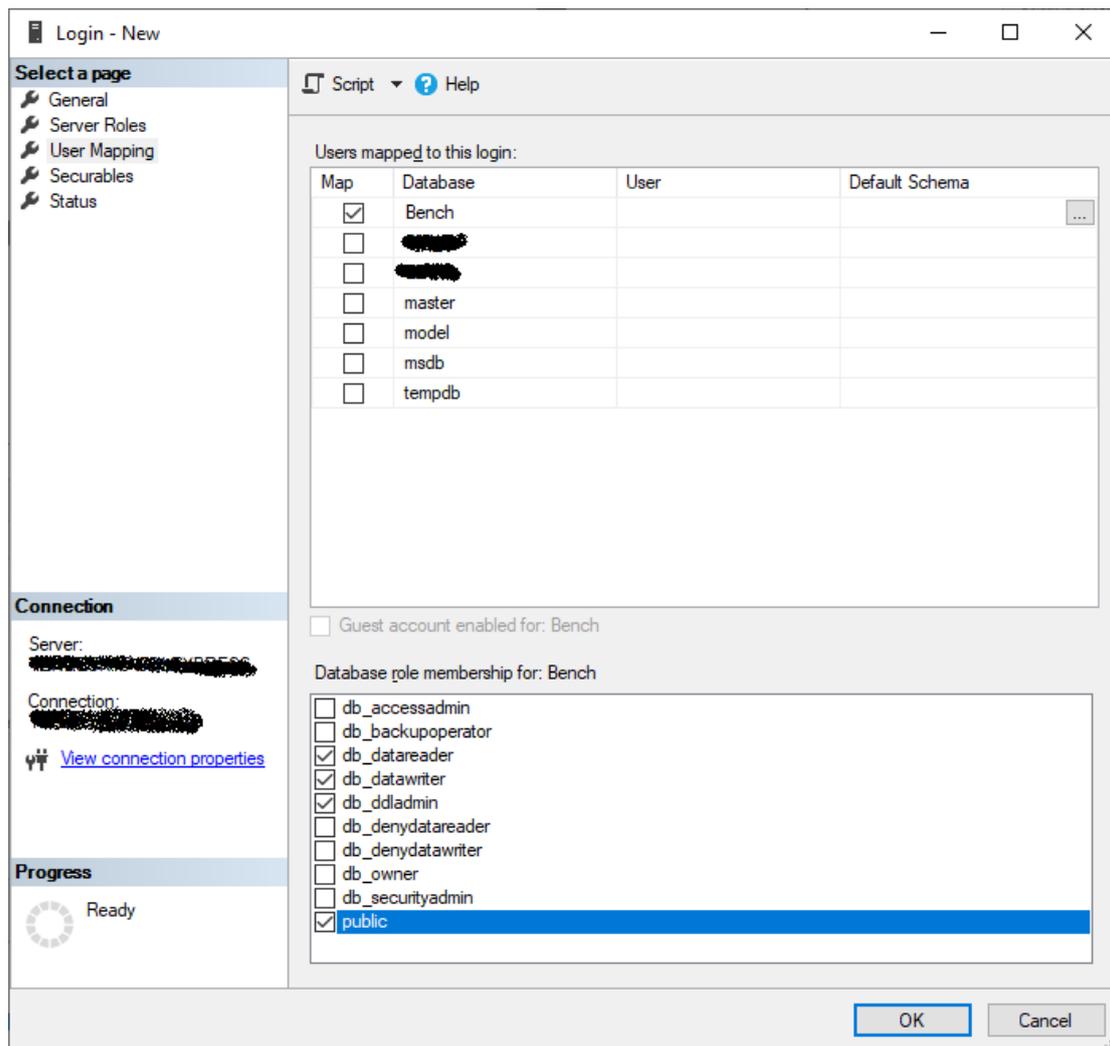
Enable the option for the migrated database and set the Database Role Membership.

(Typical Role Membership settings shown, you will need to check that these meet your requirements)

Left-click>OK to add the new Login with these options.

Close the Microsoft SQL Server Management Studio.

Configuring the ODBC Datasource

Go to Start Menu, Windows System, Control Panel, select an Icon View, navigate to Administrative Tools and then ODBC Data Sources (64-bit).

Select the System DSN tab and use the Add button to add a new Data Source. Select the SQL Server driver entry with a left-click and left-click Finish.

In the Create a New Data Source to SQL Server form, give the Data Source a Name, a Description (if required) and Specify the Server Name that the target database is running on.
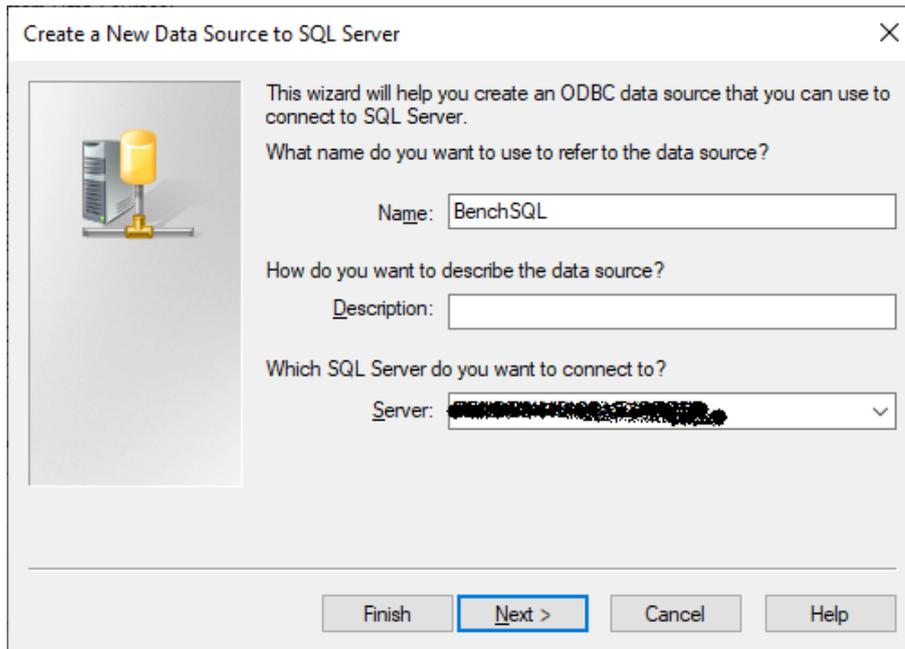
Left-click>Next

Select "With SQL Server Authentication" and enter the User Name and Password for the Login that was created in Microsoft SQL Server Management Studio, if that is being used.
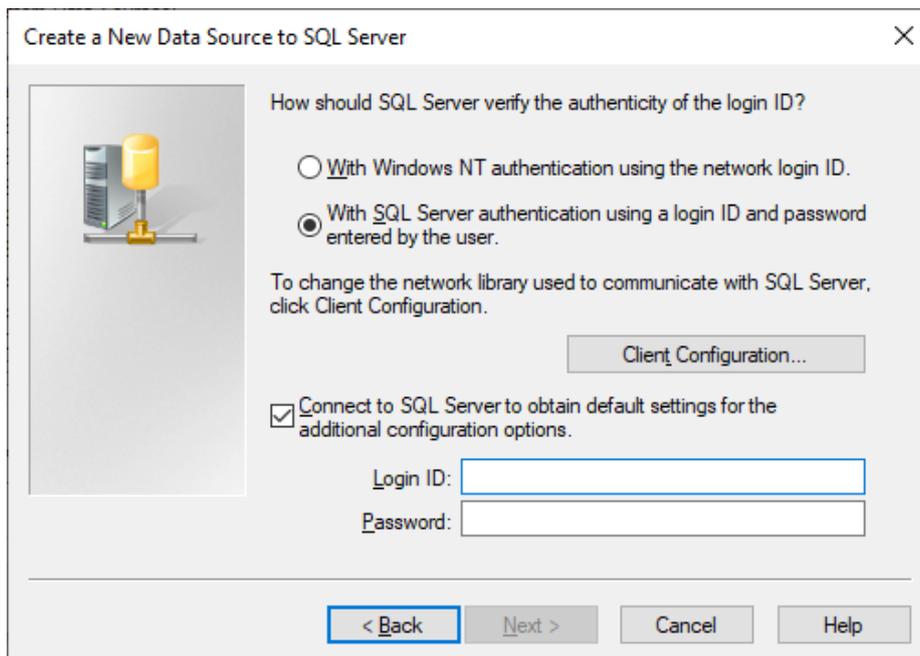
Left-click>Next, enabled when the Login ID and Password are entered, this will cause the database to be contacted.

Set the box for "Change the default database" and pick the required database from the list, Bench in this case. Leave the other default settings and left-click>Next
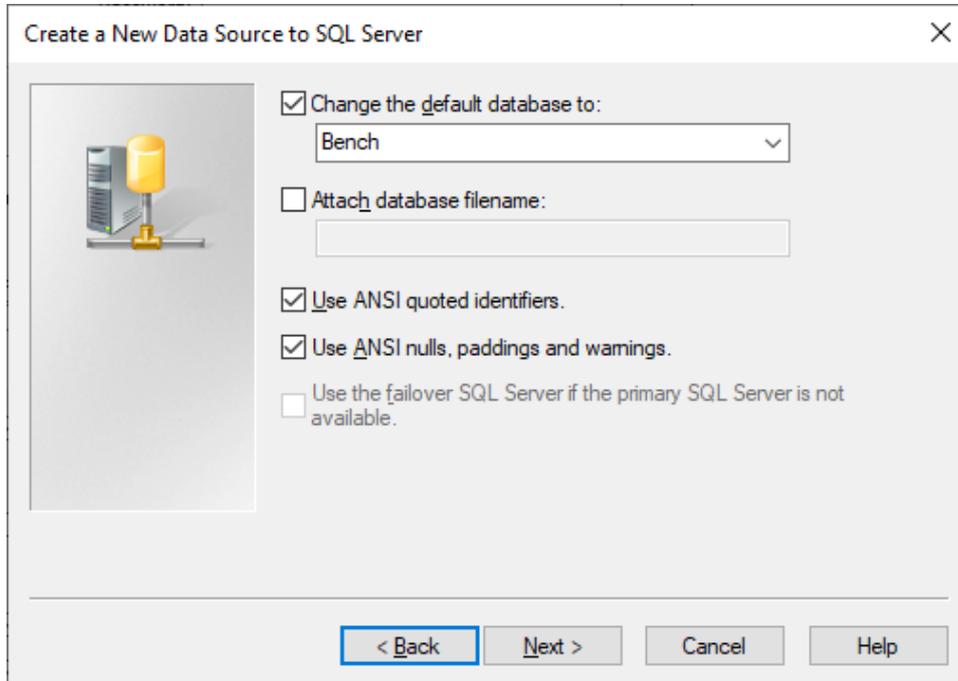
Left-click>Finish

Left-click>Test Data Source to confirm the connection settings.

Left-click>OK twice to close the forms related to the connection test and the ODBC setup.

Left-click>OK to close the ODBC Data Source Administrator (64-bit) form.

The ODBC Data Source is now configured.

Configuring OrCAD Capture CIS to use the ODBC Data Source

Start OrCAD Capture CIS and open a design.

Go to Options>CIS Configuration and left-click>New to start the Configuration wizard.

Left-click>Next to start the Database setup.

Left-click on the Data Source name configured in the previous section from the list.
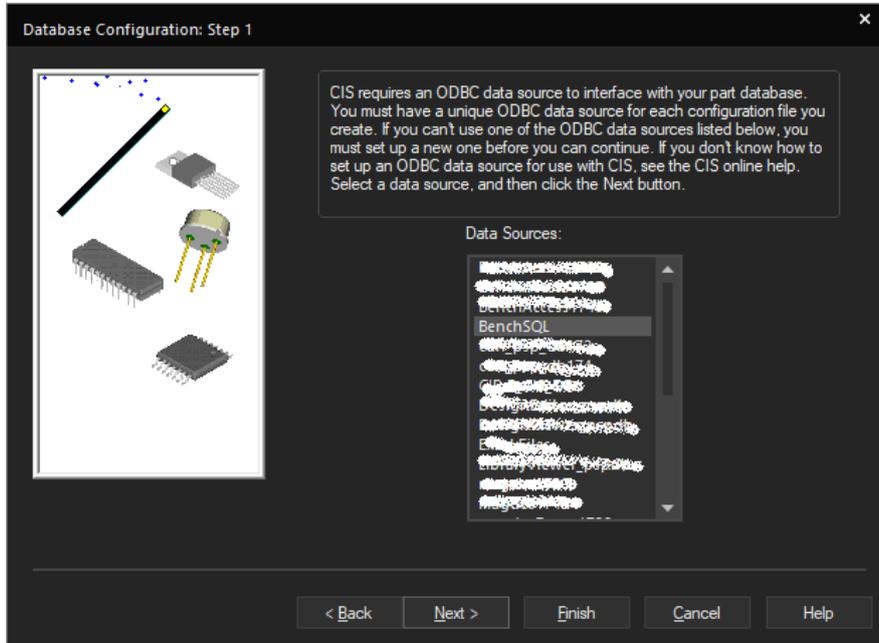
Left-click>Next once the ODBC Data Source name has been selected.

You may be prompted for the password for the SQL user.
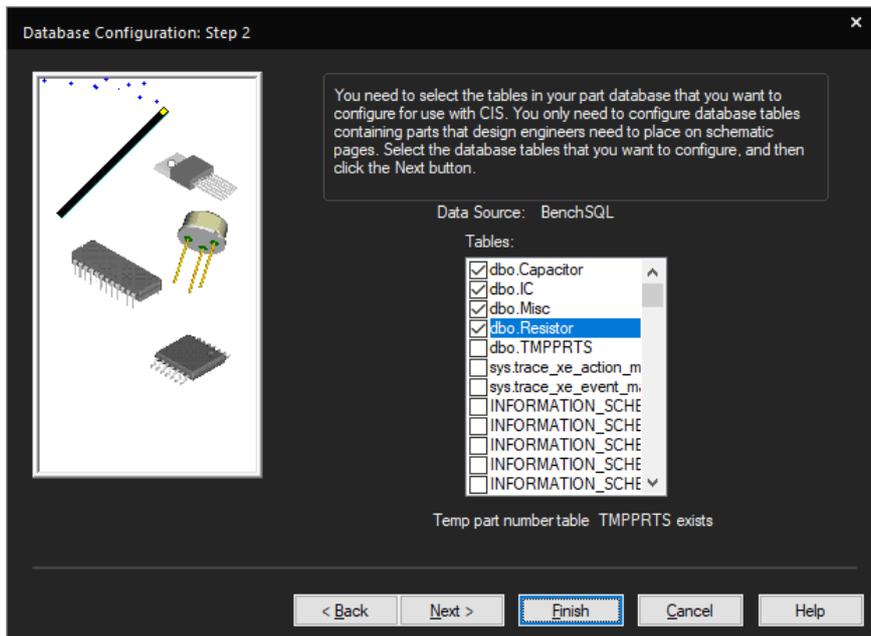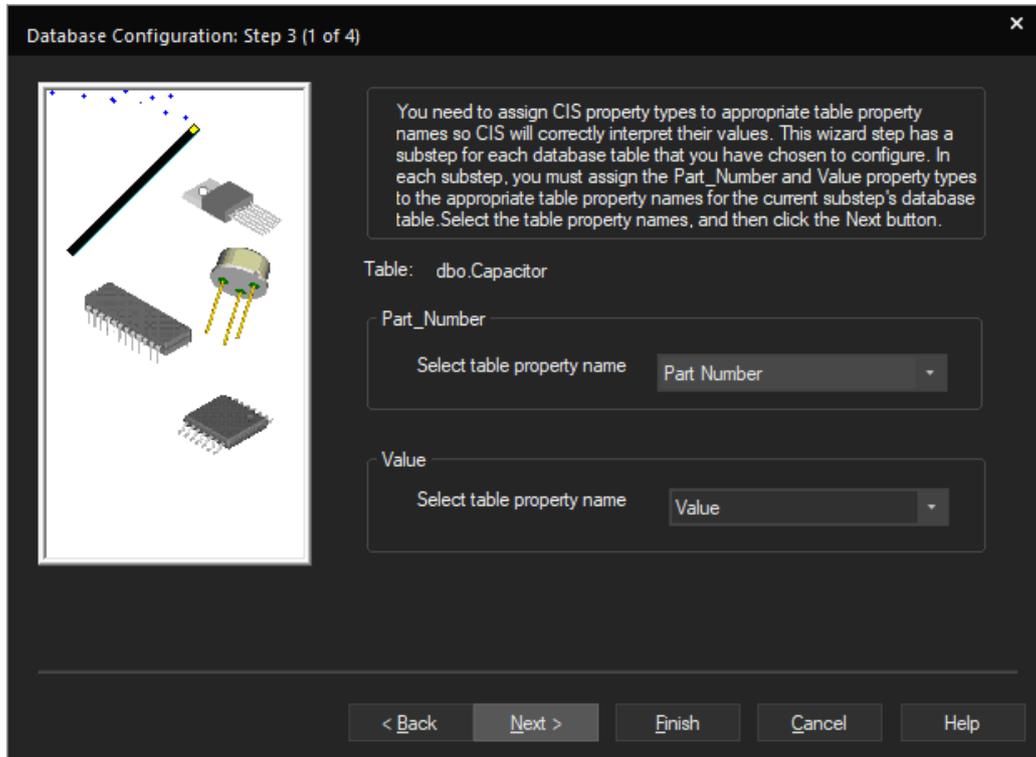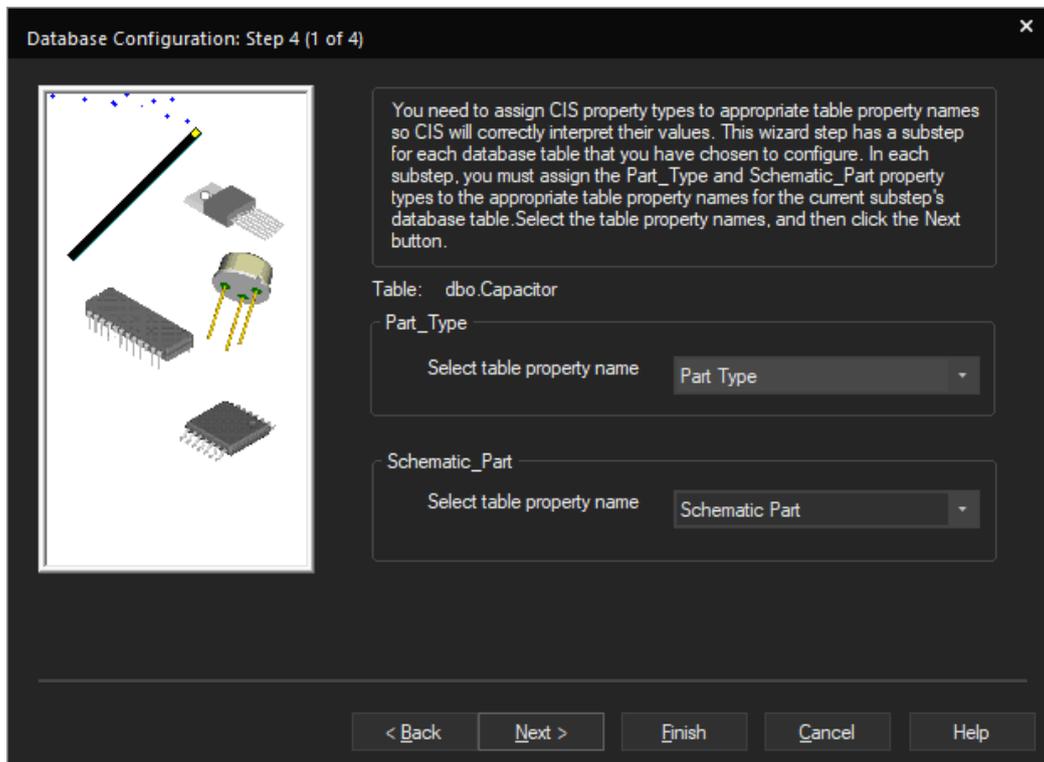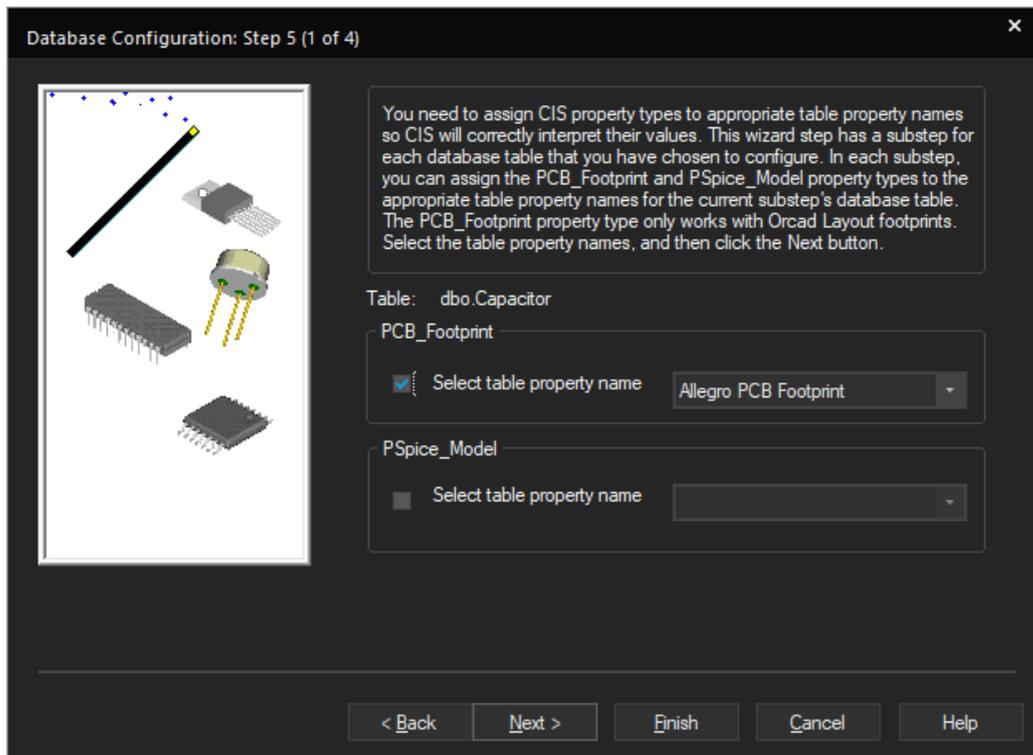
Select the Tables to use from the list. (dbo.<Table Name> for each of the tables except TMPPRTS)

(Note that the Table and Field Names will probably differ in your database)

Left-click>Next

Select the database fields to be mapped to the OrCAD Capture Part Number and Value properties.

Left-click>Next to use the same properties for each of the remaining Tables to configure in Step 3.

The Part Type and Schematic Part field names match the expected database field names.

Left-click>Next to use the properties for each of Tables for Step 4

In Step 5, check the box for the PCB Footprint and accept the default Allegro PCB Footprint value for the database field to use and left-click>Next to use the PCB Footprint Property form each of the tables.

Left-click>Next to accept the defaults for Step 6. (The transferred properties can be edited at any time from the CIS Configuration Setup)

In Step 7, enable any Browsable Properties. (For example, if you have a Datasheet field that might be a candidate but, again, the Browsable properties can be edited at any time from the CIS Configuration Setup)

Left-Click>Next

In Step 8, left-click>Next

Accept the defaults in Step 9 with left-click>Finish

The Configure Database form appears, the settings can be checked for each Table, left-click>OK to close the form, then Name and Save the DBC file that stores the database mapping.

Left-click>OK to close the CIS Mapping form.

OrCAD Capture CIS is now configured to use the database.

Appendix: Getting the required downloads

The required downloads are sourced from Microsoft resources so providing direct links is unlikely to be reliable. Perform a search for "Microsoft SQL Server Express download". On the search results, the Microsoft SQL Server Downloads page has downloads for Microsoft SQL Server Express and for Tools: SQL Server Management Studio (SSMS), to manage the SQL Server; and Data Migration Assistant, to migrate the data.

Appendix: Moving the database from a test migration to a shared Microsoft SQL Server

It's quite likely that the migration from Microsoft Access to Microsoft SQL Server would be carried out in a test environment and then moved to a "live", or production, Microsoft SQL Server instance. Using the SQL Server Management Studio, the Database can be backed up to a file on the test machine and then restored on the "live" machine.

Refer to this note: https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/create-a-full-database-backup-sql-server?view=sql-server-ver15 on creating a full backup of the database.

Once the backup has been created, copy the "bak" file to the "live" machine and refer to this note: https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/restore-a-database-backup-using-ssms?view=sql-server-ver15 for a comprehensive description of the process and steps to take

Appendix: Enabling SQL Server Mixed Mode

If SQL Server Mixed Mode wasn't selected during the SQL Server installation process, SQL Server Mixed Mode, which enables User Name and Password account access, rather than Windows Authentication, can be enabled as follows:

Start the Microsoft SQL Server Management Studio.

Right-click>Properties on the Server Name entry at the top of the Object Explorer on the left hand side. Select Security in the Server Properties form. Enable the Option for SQL Server and Windows Authentication Mode.

Left-click>OK to accept the settings.