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Setting up OrCAD Capture CIS

This chapter describes the tasks necessary to set up OrCAD Component Information System (CIS), including:

■ "Creating a part database"

■ "Setting up the ODBC data source"

■ "Creating a configuration file"

■ "Editing a configuration file"

■ "Setting up the ICA to access external part data"

■ "Creating Crystal Reports templates"

Also included are procedures for setting the up the CIS work environment, including "Setting up the ICA to access external part data" and "Creating Crystal Reports templates" .

Creating a part database

The part database is the entity that contains all the relevant information for the parts you use in your designs. You can think of a part database as one or more tables, with each row in a table representing a part and each column representing a part property.

Apart from the tables containing part property data (henceforth referred to as primary tables), your part database may also include tables with relational data. For example, your parts database may contain a Vendors table to support handling of multiple vendor / manufacture part numbers per unique company part number.

Note: Capture CIS supports a one-to-many database relationship between the part information tables and related tables.

Before you create your part database, you need to choose whether to use a database or spreadsheet application. You can create a database from an existing Capture design.

Then, when you create your part database, you need to carefully setup its structure and organization, including:

■ Part property assignments. See "Determining part properties"

■ Field formats for properties. See "Setting the field format" .

■ Number of tables used in the database implementation. See "Using more than one table" .

Using ODBC, CIS interfaces directly with your ODBC compliant database or spreadsheet. This means you can use your preferred application to create and maintain your part database.

Note: You can create a database from an existing Capture design. For more information, see "Creating a part database from an existing design" . You can also extract information for your part database from an MRP database. For more information, see "Extracting ERP or MRP database part information" .

Note: OrCAD CIS connects to your preferred parts database via an ODBC connection. This means that CIS supports any underlying database application that you connect via your ODBC connection.

Choosing a database format

To take full advantage of the speed and power of CIS, you may want to use a database application rather than a spreadsheet application. As a general rule, you should use a database application for databases with more than 1,000 parts. Database applications offer the following advantages over spreadsheets:

- Comprehensive data management features
- Better performance for part searching
- Form-based entry for entering part information
- Safeguard against duplicate part numbers

The disadvantages of spreadsheets and delimited text files include:

Lack of structure

During data entry, spreadsheets allow you to configure every cell in a different format. This makes querying fields (columns) very difficult because CIS expects queried fields to be in a consistent format.

Lack of ANSI SQL compliance

Because databases are ANSI SQL compliant, their drivers do very little work in relaying SQL commands to connected data sources. In contrast, with non-SQL compliant spreadsheets, the ODBC driver is responsible for translating the SQL commands into functions that the spreadsheet can understand. This results in a dramatic increase in the time your queries can be processed. Query time increases are even more dramatic with text files because the driver must search for and compile a matching list entirely on its own. An optimized, SQL-compliant database format is several times faster than a spreadsheet with more than 100 parts or a text file of over 20 parts.

Lack of replication support

If you have users in more than one location accessing your database, you have either a single, central database or a replicated database. Replication is a method of storing a single database in more than one location. True databases support scheduled synchronization: they maintain data integrity by checking separate database transaction logs and replicating modifications on multiple systems. If you are using a spreadsheet or text program, you must check manually because your format does not support replication.

CIS Database Feature Support

CIS supports any underlying database application that you connect via your ODBC connection. However, when creating your parts database, keep in mind the following points when defining the fields and tables in the database.

1. **Use of SQL in CIS Databases**

CIS uses structured query language (SQL) to query, update, and manage the CIS relational databases.

2. **Supported Data types for the Part Name field**
   - ❑ CHAR
   - ❑ VARCHAR
   - ❑ LONGVARCHAR

Note: If a CIS table defines a part name field with an unsupported data type, CIS will throw an error during the CIS configuration procedure.

3. **Supported Data types for fields other than Part Name**

CIS supports the following data types for any field defined in the tables of the parts database
   - ❑ CHAR
   - ❑ NUMERIC
   - ❑ DECIMAL
   - ❑ INTEGER
   - ❑ SMALLINT
   - ❑ FLOAT
   - ❑ REAL
   - ❑ DOUBLE
   - ❑ DATETIME
   - ❑ VARCHAR

Note: If a CIS table defines any field with an unsupported data type, CIS will throw an error during the CIS configuration procedure.

Note: If a CIS table defines any field with a DATETIME data type, the CIS will not display any error during the CIS configuration procedure, but will display these fields as empty in the tables of parts database.

4. **Use of Double-quotes in table and field names**

CIS uses double quotes (") as the default field and table delimiter for database queries. This is the standard query delimiter supported in popular ODBC databases such as Microsoft Access, Oracle and SQL Server.

If your ODBC database does not support double quotes as the query delimiter, database queries will fail. For such databases, you can specify the default field and table delimiters by adding the following two options under the [Part Management] section in the CAPTURE.INI file:

```
[Part Management]
```

```
Field Qualifier = <field delimiter>

Table Qualifier = <table delimiter>
```

5. **Use of Uppercase function**

CIS uses the database uppercase function to convert string variables in queries to uppercase. If the uppercase function supported in your database is not supported by CIS, database queries may fail. You can specify the corresponding uppercase function supported in such databases, by adding the following option under the [Part Management] section in the Capture.ini file:

```
[Part Management]

Upper Case Function = <name of function>
```

Determining part properties

The first step in creating a part database is to determine the properties to include for each part. Typical properties in a part database include part number, part description, tolerance, rating, speed, timing parameters, PCB footprint, manufacturer, and cost. CIS supports an unlimited number of properties, so you can include as much information in your part database as you want.

There are no restrictions on database table property names. Also, the names you use in the database can be different than the property names you assign to the placed parts.

For example, you can name the Part Number property My Company Part Number. Also, you may call a property Tolerance in the database and Tol on the placed part.

Database property types and placed-part property names are defined during database configuration. For more information, see "Creating a configuration file" .

Note: Do not use the same property name more than once. For example, if you have two manufacturer columns in your database, call them Manufacturer 1 and Manufacturer 2.

When you transfer a property, that property is included in the schematic as an attribute of the placed part. Normally, you transfer properties that are required by CIS (such as Part Number and Schematic Part), used in the design process (such as Value, Tolerance, and Rating), or needed for use by other software products (such as PCB Footprint). Properties that aren't transferred can still be included in a bill of materials report.

Parts in your database must include all of the properties in Table 1-1, "Required part properties" . Any of the optional properties in Table 1-2, "Optional part properties" may also be added. Recommendations on whether to transfer properties to your design are included in both tables. Properties recommended for transfer to the design are either likely to be required for netlisting or are generally needed on printouts of the design.

Note: You may want to look at the sample part databases provided with CIS. The Access database, BENCH.MDB, is provided in the \TOOLS\CAPTURE\SAMPLES folder. As you read this section, refer to this sample to get a better understanding of how to set up your part database.

Note: Your database can also contain mechanical (non-electrical) parts. However, you must not allow users to add mechanical parts to the database whose schematic representations (symbols)

have pins. If mechanical parts with pins are placed in a design, they will invalidate netlists generated from that design. Capture CIS allows you to generate a BOM that lists all the mechanical parts and assemblies associated with an electrical part in your design. For more information, see "Including mechanical parts and assemblies in standard CIS BOM" .

Table 2-1 Required part properties

Property	Description	Transfer to design
Part Number	Required to identify the part in association with the CIS Part_Number property type. This property is required by the part manager and the bill of materials report. CIS lets you enter more than one database part with the same number in the database. However, you should use a unique part number for each part and have no duplicate part entries in your database.	Required
Part Type	Identifies the part type. The Part Database Explorer uses this property to define the part database folder hierarchy. Use this property to facilitate part searches. Typical contents are resistor, resistor\fixed, capacitor, capacitor\electrolytic, IC, IC\Memory\SRAM, connector, and so on. The levels of the hierarchy are defined using the backslash (\) character (or any character you define in the configuration). You can define any number of levels in the hierarchy. This property is also used by the Part Reference Associations option. (See "Defining part reference associations" . This property is case-sensitive. Make sure you use uppercase-lowercase conventions consistently when entering values for this property.	No
Schematic Part (Symbol)	The part name. This property is required to use the Place Database Part command. Only the part name is necessary if the part is stored in the same directory as the custom schematic part libraries (.OLB files) that you configure in Capture. (See the OrCAD Capture User's Guide for more information about configuring part libraries.) However, to make sure that you don't accidentally place an identically named part, you should include the library name, a backslash (\), and then the part name. Examples include: DISCRETE\CAP DISCRETE\DIODE OPAMP\CMP01 In addition, you can use the explicit path so CIS can locate an unconfigured library. For example:	Automatic

C:\MYLIB\DISCRETE\CAP

Caution

> **_Do not directly reference the schematic part libraries that are supplied with Capture CIS (resource libraries). Because the resource libraries in your installations of Capture CIS are often changed during upgrades to new software versions, the library names and paths in your database can be made invalid. Instead, create your own custom libraries by renaming the resource library files or copying individual parts from the resource libraries to your custom libraries._**

You can also assign multiple schematic part names to a single part. Use the same format as above for each name and separate each one with the multi-value delimiter (by default, a comma). For example:

DISCRETE\CAPACITOR NON-POL, DISCRETE\CAP NP, DISCRETE\SMALL CAP

Tip

> The default value of the multi-value delimiter is a comma. However, when setting administrative preferences during database configuration, you can change the character CIS recognizes as the delimiter to a colon, semi-colon, question mark, or vertical bar. For information, see "Setting administrative preferences" .

Then, when you update your design's part status, CIS can approve and make current a schematic part which has several acceptable names. Also, if a database part has several different valid schematic parts, you will be able to choose any one of them when you are placing parts from the database parts window. All the configured schematic parts for the database part will be available from a drop-down list under the Schematic Part property name.

CIS locates the Capture library using the following set of prioritized rules:

	1. Search the library at the explicit path, if provided. 2. Search the first library listed in Capture.ini that has a matching library filename. 3. Search all directories that contain configured libraries. If no libraries are included specifically in your Capture design, CIS searches the LIBRARY directory in your Capture installation directory.	
Value	The part value. Examples are 1.2K, 10.0uF, and 74ALS374. CIS supports the use of common magnitude identifiers (such as K and uF). The database query uses intelligent unit conversion to interpret common magnitude identifiers in part definitions, since entries in part databases are often inconsistent (for example, the Value for a 2.7K resistor can be 2.7K, 2,700, 2.70K, 2.700K, 2700.0, 0.0027M, etc.). Unit suffixes (such as F for farads or H for henries) are ignored in translation. The magnitude identifiers supported in CIS include: 	Identifier§	Represents§	Magnitude§
f	femto	10^{-15}
p	pico	10^{-12}
n	nano	10^{-9}
u	micro	10^{-6}
m	milli	10^{-3}
K	kilo	10^{3}
M	mega	10^{6}
G	giga	10^{9}
T	tera	10^{12}		Required

Table 2-2 Optional part properties

Property	Description	Transfer to design
Availability	Number of the parts in stock at your company.	Not recommended

Data Sheet	The name of the detailed datasheet for this part. Select the Browsable check box in the configuration for CIS to automatically launch the appropriate browser for this property. Examples include: 74ALS374.PDF, http://www.chipmaker.com/specs/74ALS374, and RES1K1/4W.DOC. You can browse any format you want. CIS uses the application assigned to that file extension in your Windows registry. (Extension assignments are managed in the Windows Explorer. See your MS Windows documentation for more information.) For example, a .DOC entry might cause CIS to launch Microsoft Word, and a URL entry might cause it to launch your default web browser. **Note:** CIS uses the PATH environment variable and the current working directory to find the specified document.	Not recommended
Description	A brief description of the part.	Not recommended
Distributor	Name of part distributor.	Not recommended
Distributor Part Number	Part number used to order from the distributor.	Not recommended
Manufacturer	Name of part manufacturer.	Not recommended
Manufacturer Part Number	Part number used to order from the manufacturer.	Not recommended
PCB Footprint	The PCB footprint name (from the footprint library) assigned to a part. **Note:** Unlike Schematic Part property names, you cannot use directory paths for libraries with PCB footprint names. If you use a path with a PCB footprint name, the footprint will not display in the CIS explorer's footprint window. You can assign multiple PCB footprints to a single part by entering them in the part's footprint field in your part database and separating each footprint name with the multi-value delimiter. Tip — The default value of the multi-value delimiter is a comma. However, when setting	Recommended

	administrative preferences during database configuration, you can change the character CIS recognizes as the delimiter to a colon, semi-colon, question mark, or vertical bar. For information, see <u>"Setting administrative preferences"</u> . Then, when you update your design's part status, CIS can approve and make current a schematic part which has several acceptable footprint names. Also, if a database part has several different valid PCB footprints, you will be able to choose any one of them when you are placing parts from the database parts window. All the configured PCB footprints for the database part will be available from a drop-down list under the PCB Footprint property name.	
Price	Part price. Use this information when selecting parts to design for cost. Include this property in reports to get a cost roll-up of your design.	Not recommended
Rating	The maximum rating for the part (for example, maximum voltage or power dissipation).	Optional
Tolerance	The percent tolerance specified for the part.	Optional
Tolerance	The percent tolerance specified for the part.	Optional

Setting the field format

CIS can work with database text and number format fields (known as the cell format in spreadsheets). As a general rule, set each database field (that is, each table column) to text format. CIS converts other database field formats, such as float, to text format when properties are transferred to placed parts.

Note: Use only ANSI SQL-92 compliant data types for your field formats. If you use non-compliant data types, CIS may misinterpret property values.
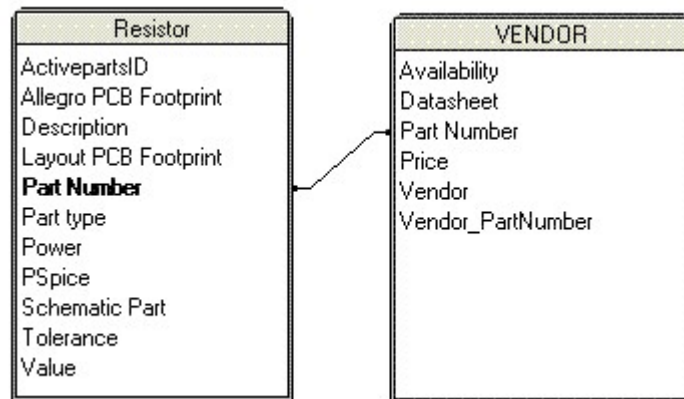
Using more than one table

CIS can reference more than one table or worksheet in your part database. For example, you can group your parts into several tables according to type. That is, you can place resistors in one table, ICs in another, capacitors in another, and the remaining parts in a fourth table. When you're viewing database parts with CIS, each table has a unique view. You can arrange the column settings for each table independently, allowing you to view different properties for each table.

Using related tables

CIS allows you to create and use relational tables in your parts database. These tables must

have a one-to-many relationship with your part information (primary) tables. For example, the database may contain a Vendor table with multiple vendor / manufacture part numbers for one company part number in your Resistor table. This structure allows you to query for data across the primary and relational tables.

Note: It is not necessary for the parts database to contain relational tables. You can create and run CIS queries for parts from a flat table

structure.

Creating a part database from an existing design

You can also create a part database by extracting part properties from an existing Capture design using the CIS Bill of Materials command.

If your designs are created in another schematic capture program that creates bills of materials for part properties, you can still create a part database from an existing design. Follow the instructions supplied with the program to create the appropriate bill of materials file from your design. Then, use the bill of materials file to create a part database based on that design.

You can obtain a wizard from the Cadence web site that automates this process. The wizard also automatically derives schematic part and source library information for the placed parts in your Capture schematic. If you use the manual procedure detailed here, you will have to manually reference your placed parts to your libraries. To download the CIS wizard, visit http://www.cadence.com\orcad.

Consider the example in the following illustration. The lists a typical set of properties to extract

from the design.

In the Output Format list, CIS lists a number of properties that will be extracted to the bill of materials. You can add to this list by selecting properties from the Select Properties list and clicking the Add button. You can remove properties from the Output Format list by selecting them and clicking the Remove button.

When you click OK in the Standard Bill of Materials dialog box, CIS creates a file with the property information for all the parts in the design. You can directly import this file into your database.

Note: Your database should have a unique part number for each part and no duplicate part

entries. Although some database applications will not import more than one occurrence of a keyed property, you may need to eliminate duplicate part entries manually. To do this, sort the database by part number, then delete duplicate entries using your database or spreadsheet program.

Extracting ERP or MRP database part information

You can also extract information from an existing enterprise or manufacturing resource planning (ERP or MRP) database, to create a part database. Save the ERP or MRP database as an ASCII file, then use that file as your part database file or as a source for a true part database file (for example, an MS Access format file).

Note: If your ERP database is ODBC compliant, you may not need to extract part information. Instead, you should be able to directly connect your preferred part database (PPD) to the ERP database-you should not have to set up and run regular batch routines to update the data in your PPD. For information about connecting these databases, see the product documentation for both database applications.

You may need to enhance the information in an ERP or MRP database, since it generally will not include everything required for schematic design. However, an ERP or MRP database usually contains a complete list of your company's parts, part numbers, part descriptions, costs, quantities in stock, lead times, manufacturers, and alternate manufacturers.

Often, the data in an ERP or MRP database exists in a format that does not lend itself to ease of use. For example, the part value may be merged with the description, such as:

```
RES 1K 5% 1/4W
```

This makes searching for parts more difficult. If you can, split this information out in the ERP or MRP database into separate database properties, such as Part Type, Value, Tolerance, and Rating.

You can also contact the Cadence Methodology Services group for assistance in converting your data into a more convenient format.

To take advantage of updated information in an ERP or MRP database, you need to set up a means of extracting data on a regular basis and using it to update your part database. That way, your part database will include information that changes frequently, such as quantity in stock and lead time.

Setting up the ODBC data source

Before you can set the CIS configuration, you must define the open database connectivity (ODBC) data source for your database. CIS interfaces to your part database using a defined ODBC data source name. A data source consists of a database filename and an associated ODBC driver with which to access it. If you are setting up a client-server database, the data source also references the database server. You define the data source name, assign the database file name, and specify the ODBC driver using the 32-bit ODBC Windows control panel.

Tip You must define the data source on each user's system. When you do so, use the same data source name. This allows users to share the same configuration file.

Note: If your workgroup is sharing a configuration file, make sure to write-protect the file.

To set the data source for the local database, do the following:

1. From the Windows Start Menu, choose *Control Panel*.

Note: If you are using the 64-bit Windows machine, run the `odbcad32.exe` application from the `C:\windows\syswow64` directory path, and follow the steps from [Step 3](#).

2. Choose *System and Security - Adminstrative Tools - Data Source (ODBC)*, if you have selected View by drop-down list box as Category.

Or

Choose *Adminstrative Tools - Data Source (ODBC),* if you have selected View by drop-down list box as Large icons or Small icons.

Note: If you are using the Windows XP operating system, choose *Performance and Maintenance - Administrative Tools - Data Sources (ODBC).*
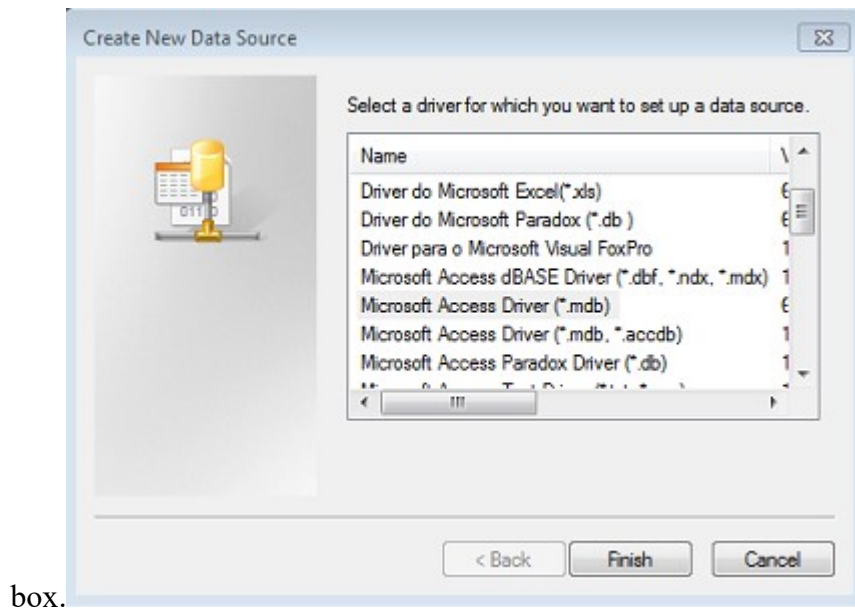
3. Click the ODBC Drivers tab and make sure the driver appropriate to your database or spreadsheet is installed on your system.

Note: If the driver for your application is not present, you must install it. Check the CIS installation disk or contact the database or spreadsheet program
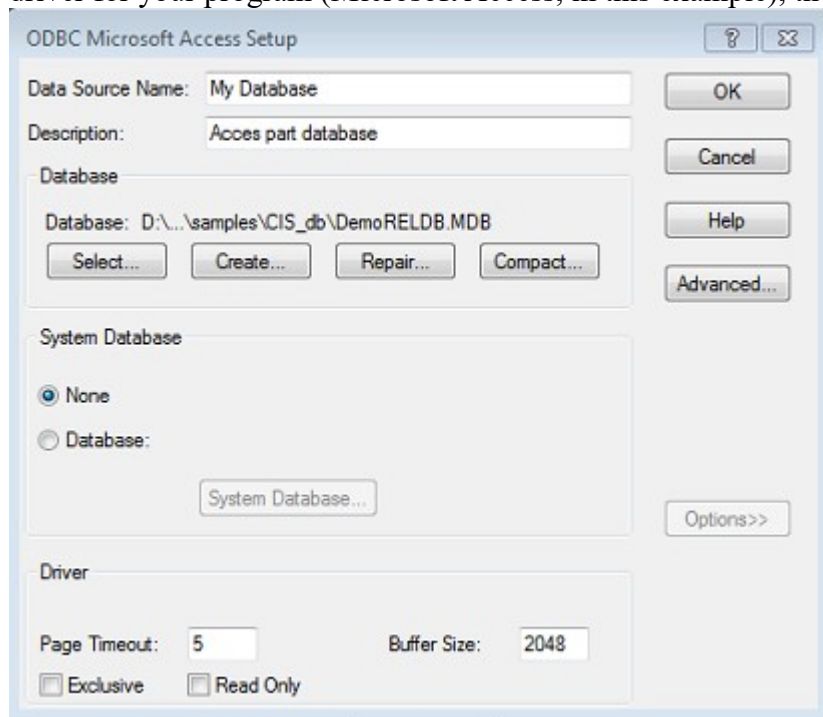

supplier.

4. Click the User DSN tab, and then choose the *Add* button. Windows displays the Create New Data Source dialog

box.

Note: If you are using Windows NT, you should click the System DSN tab to create new data sources. If you do not use the System DSN tab, users with different logins will not be able to use the ODBC source.

5. Choose the appropriate driver for your program (Microsoft Access, in this example), then

   click the *Finish* button..

6. Assign a name for the data source. If desired, enter a description for the data source name.

Note: may be different depending on the type of program you used to create your database.

7. Under Database, click the *Select* button, and locate the database.

8. Click the *Options* button, and clear the *Read Only* check box. By deselecting the *Read Only* check box, you can create new parts and add them to the database using CIS.

9. Click *OK* to set the data source.

Creating a configuration file

CIS requires a configuration (.DBC) file to make use of your part database. The configuration file:

- Identifies the ODBC data source to use as the part database and specifies the tables to use within that database.
- Identifies the part properties that are transferred to your design when you place or link a database part.
- Sets the visibility for each of the transferred properties.
- Contains the part type associations.

Note: Keep the configuration (.DBC) file in a read-only directory that is accessible to all CIS users. You should make the directory read-only to prevent users from inadvertently changing the configuration.

Note: If you use a CIS version 9.2.3 or earlier version configuration file with CIS 10.0, the file will be updated to the CIS 10.0 format. After CIS updates the file, you cannot use it again with CIS 9.2.3 or earlier versions.

When CIS 10.0 updates the configuration file to the new format, it creates a backup of the old configuration file with the extension `.DBCBAK`. You can use this file with CIS 9.2.3 or earlier versions.

Note: If you are using a configuration file from before CIS version 7.2, you must recreate the file because the configuration file format was changed in CIS version 7.2.

Note: If you use a CIS version 16.0 or earlier version configuration file with CIS 16.2, the file will be updated to the CIS 16.2 XML format. After CIS updates the file, you cannot use it again with CIS 16.0 or earlier versions.

When CIS 16.2 updates the configuration file to the new format, it creates a backup of the old configuration file with the extension .DBCBAK. You can use this file with CIS 16.0 or earlier versions.

When creating a configuration file, you should use the database configuration wizard. Completing the wizard guarantees that your part database can be used with most CIS features. For information about using the wizard, see ["Using the database configuration wizard"](#) .

However, if you need to use the manual method of creating a configuration file, you can reference ["Creating a configuration file manually"](#) .

Using the database configuration wizard

You can use the database configuration wizard each time you want to create a new database configuration file. The wizard is designed to make sure that you set at least the minimum table and property configuration that is required for CIS to work with your part database.

However, the wizard does not include all the options available to you, including options to optimize the performance of CIS and customize your CIS work environment. For this reason, when you have finished running the wizard, you should read through the last two parts of this

section, "Setting other part database options" and "Setting other configuration options" .
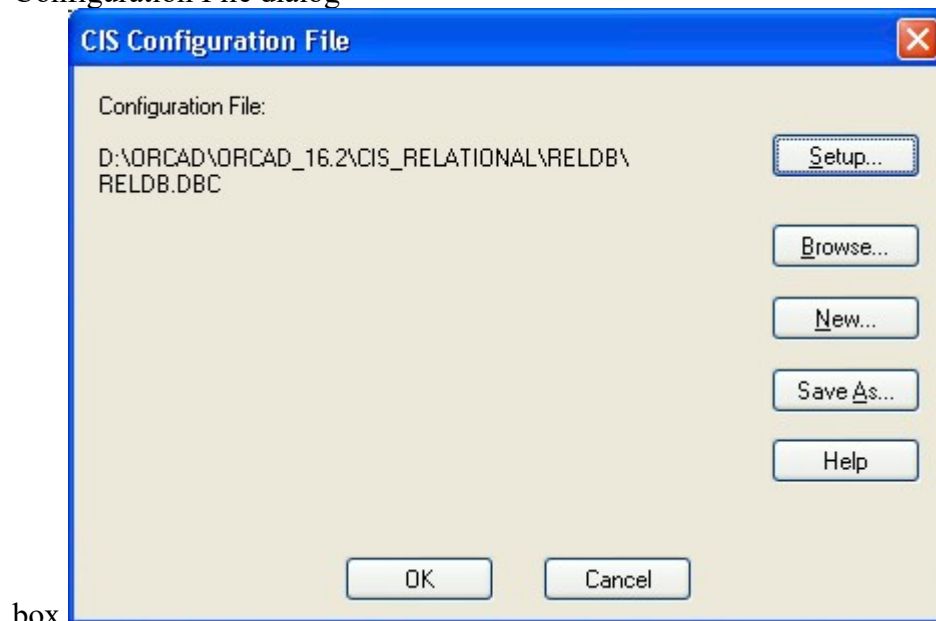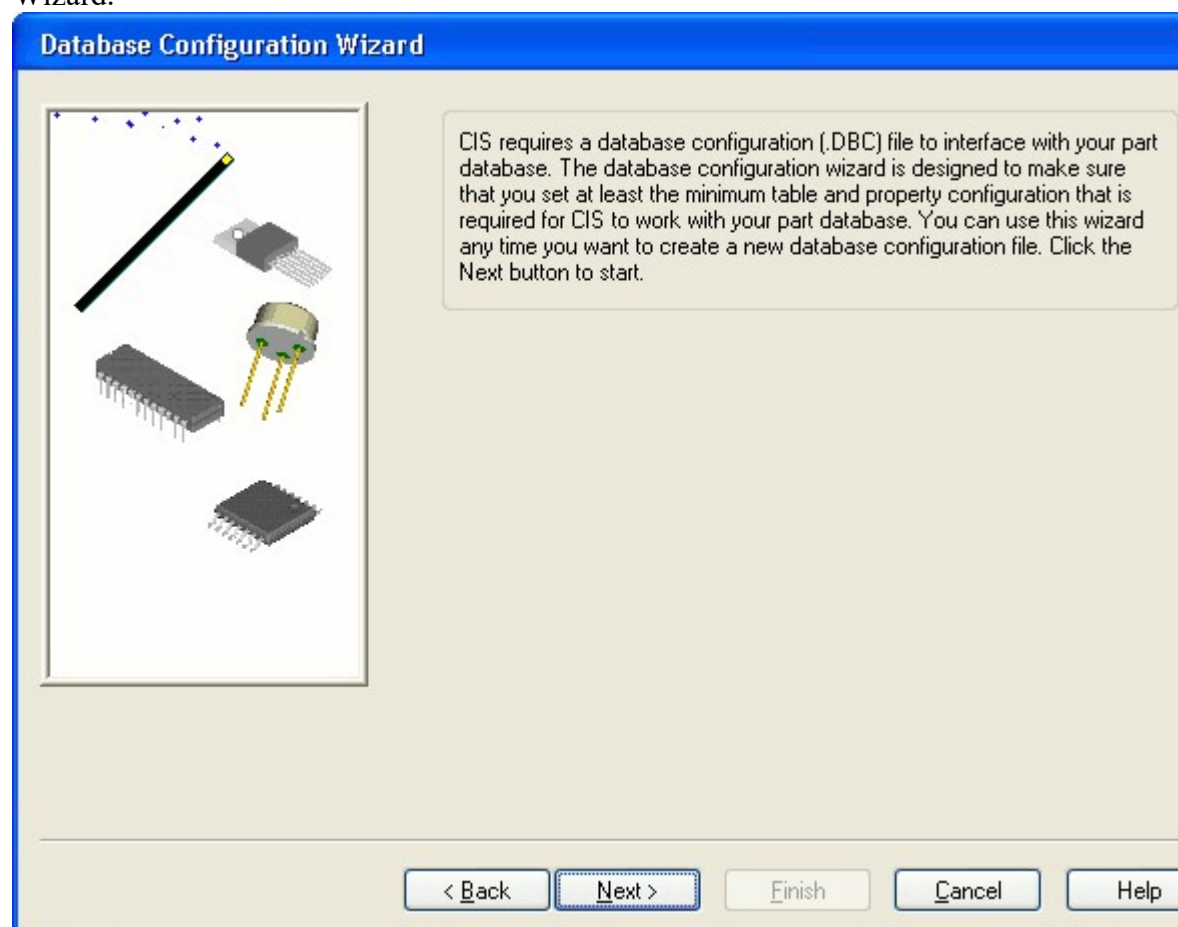
Note: You must set up a new ODBC data source before you can create a new configuration file. If you haven't set up a new ODBC data source for your database, see "Setting up the ODBC data source" .

Starting the database configuration wizard

You can start the database configuration wizard anytime you want to create a new database configuration file.

To start the database configuration wizard

1. From the Capture's Options menu, choose CIS Configuration. CIS displays the CIS Configuration File dialog

box.

2. Click the New button. CIS displays the Database Configuration

Wizard.

3. Follow the instructions in the wizard to create your database configuration file. If you need more information about any of the wizard steps, click the Help button.

4. Click the Finish button. CIS displays the Configure Database dialog box and the wizard is

complete.

Configure Database

Part Database | Part Reference Associations | Administrative Preferences | Relational Database

Data Source

CISRELDB   Browse ...

Tables :   Select Mapping Table:

☑ Capacitor
☑ IC
☑ MECHPART
☑ Misc

Temp part number table TMPPRTS   Exists

Configuration

	Table Property Name	Table Property Type	Property Type	Transfer To Design	OrCAD Property Name	ICA Property Name	Visibility
1	Part Number	VARCHAR	Part_Number	☑	Part		☑
2	Part Type	VARCHAR	Normal	☐			☑
3	Value	VARCHAR	Normal	☑	Value		☑
4	Description	VARCHAR	Normal	☐			☑
5	Voltage	VARCHAR	Normal	☐			☑
6	Tolerance	VARCHAR	Normal	☐			☑

Allowed Part Reference Prefixes :

OK   Cancel

5. If you want to set other part database options, complete the next section, "Setting other part database options" .

6. If you do not want to set any other part database or configuration options, click OK to save the new database configuration file.

Setting other part database options

You can set other part database options that are not available in the database configuration wizard, including:

■   The part properties to be checked against the part database when you update the part status of a design. CIS sets which properties are checked by default but, if you have a special situation that requires different properties to be checked, you are allowed to change the defaults.

■   The part tables that CIS will search when you are linking placed parts to database parts. This is useful when your database consists of several part tables that are organized by device type (for example, capacitors in one table, resistors in another, and so on). When you are linking database parts to placed parts, CIS uses allowed part reference prefixes to limit your search to the appropriate tables. The result is that your search takes less time.

The procedure below describes how to set these options.

To set other part database options

  1. In the Configure Database dialog box, select the Part Database

      tab.

Configure Database

Tabs: Part Database | Part Reference Associations | Administrative Preferences | Relational Database

Data Source

CISRELDB   [Browse ...]

Tables :

- ☑ Capacitor
- ☑ IC
- ☑ MECHPART
- ☑ Misc

Select Mapping Table:

Temp part number table TMPPRTS   Exists

Configuration

	Table Property Name	Table Property Type	Property Type	Transfer To Design	OrCAD Property Name	ICA Property Name	Visibility
1	Part Number	VARCHAR	Part_Number	☑	Part		☑
2	Part Type	VARCHAR	Normal	☐			☑
3	Value	VARCHAR	Normal	☑	Value		☑
4	Description	VARCHAR	Normal	☐			☑
5	Voltage	VARCHAR	Normal	☐			☑
6	Tolerance	VARCHAR	Normal	☐			☑

Allowed Part Reference Prefixes :

[OK]   [Cancel]

2. In the Tables list, select the database table for which you want to set options.

3. In Update Property column of the Configuration area, select the check box for each property that you want to be checked when you update the part status of your designs.

4. In the Allowed Part Reference Prefixes text box, type the part reference prefixes you want CIS to use to limit searches on the database table. For example, if a table contains only capacitors, you could enter C as the allowed part reference prefix. Then, when you choose the Link Database Part command, CIS searches that table only when the placed part you are linking has a part reference prefix of C.

Note: If a part reference prefix is specified in the Allowed Part Reference Prefixes text box for all the tables, the following message is prompted on the screen after you click OK:

```
INFO(ORCIS-6235): All parts might not be accounted for.    Do you want to
continue?
```

Note: Leave this box blank if you want the table to be searched regardless of the part reference prefix.

Note: If you have defined part reference prefixes and you link a placed part in your design to a database part with the Preserve Reference Designator check box checked in the CIS Extended

Linking dialog box, the reference designator of the placed part is retained and all the transferable properties of the database part are transferred to the placed part. Now, when you update the part status from the part manager (using Update All Part Status command), the part status column displays: Approved: Part not found. This is because CIS is unable to find the part (with matching part reference prefix and properties) in the database table. You may avoid this situation by changing the reference designator of the placed part to the one you defined in the Allowed Part Reference Prefix text box or delete the part reference prefix from the Allowed Part Reference Prefix text box.

5. Repeat this procedure on each database table for which you want to set these options.

6. If you do not want to set any other part database or configuration options, click OK to save the new database configuration file.

7. If you want to set other configuration options, go to the next section, "Setting other part database options" .

Setting other configuration options

You can set other options in the database configuration that customize how CIS interacts with your part database and how you use CIS in your work environment. These options include:
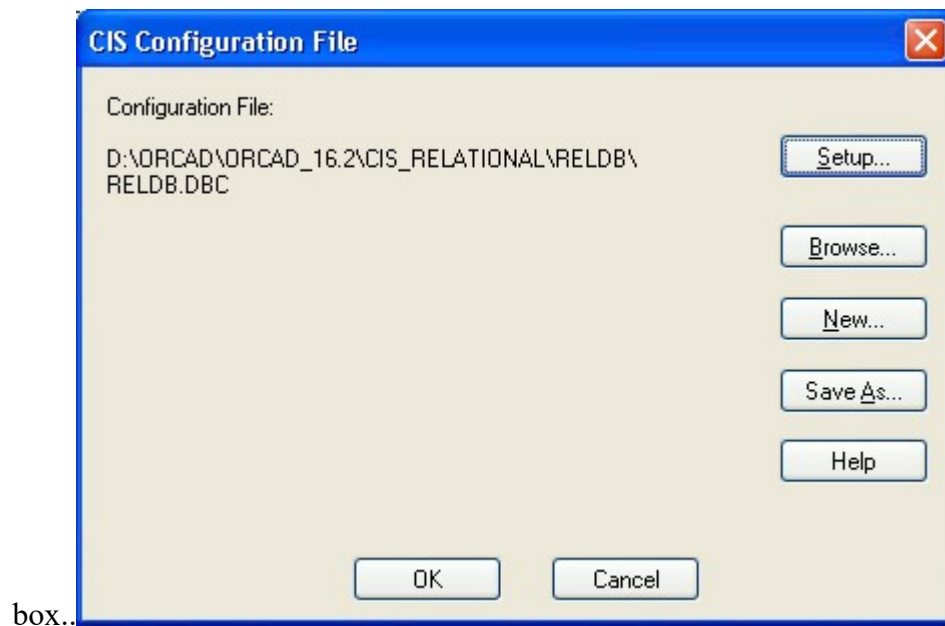
■ Defining part reference associations to improve the speed and accuracy of the search for database parts to link to placed parts. For more information, see "Defining part reference associations" .

■ Setting administrative preferences to customize some CIS features for your work environment. For more information, see "Setting administrative preferences" .

■ Setting relational database to set up the relational associations between the primary (part) tables and the relational table. For more information, see Setting Relational Database preferences .

Creating a configuration file manually

You can create a configuration file using the manual procedure below. When you are finished creating the file, you will need to set the options for the file so that CIS knows how to handle your database table part properties. For information about setting or editing configuration file options, see "Editing a configuration file" .

To create a configuration file manually

1. Open a new or existing schematic design in Capture CIS.

2. From the project manager's Options menu, choose CIS Configuration. CIS displays the CIS Configuration File dialog

box..

Note: You must set up a new ODBC data source before you can create a new configuration file. If you haven't set up a new ODBC data source for your database, see "Setting up the ODBC data source" .

3. Click the Setup button. CIS displays the Configure Database dialog box.

Configure Database

Part Database | Part Reference Associations | Administrative Preferences | Relational Database

Data Source

CISRELDB   Browse ...

Tables :

☑ IC
☑ MECHPART
☐ Misc
☐ Resistor

Select Mapping Table:

Temp part number table TMPPRTS   Exists

Configuration

	Table Property Name	Table Property Type	Property Type	Transfer To Design	OrCAD Property Name	ICA Property Name	Visibility
1	Part Number	VARCHAR	Normal	☐			☑
2	Part Type	VARCHAR	Normal	☐			☑
3	Value	VARCHAR	Normal	☐			☑
4	Description	VARCHAR	Normal	☐			☑
5	Rating	VARCHAR	Normal	☐			☑
6	Tolerance	VARCHAR	Normal	☐			☑

Allowed Part Reference Prefixes :

OK   Cancel

4. Click the Browse button. CIS displays the Browse Data Source

Browse Data Source

Data Sources

160demo_smps
BenchAccess1600
CISRELDB
dBASE Files
Excel Files
magdes1600
MS Access Database

OK   Cancel   Help

dialog box.

5. Select the data source name you defined for your ODBC driver, then click OK. The Config
   Database dialog box lists the tables found in your data

source.

6. Set the configuration file options as desired. For information about setting configuration file options, see "Editing a configuration file" .

Editing a configuration file

As you set up and work with CIS, you may discover performance issues or elements of the CIS work environment that are not optimal for your work group. This section describes in detail all the configuration options that are available and how to set them optimally for your situation. The five categories for these options include:

■ "Setting database table property options"

■ "Defining part reference associations" '

■ "Setting administrative preferences"

■ "Setting Relational Database preferences"
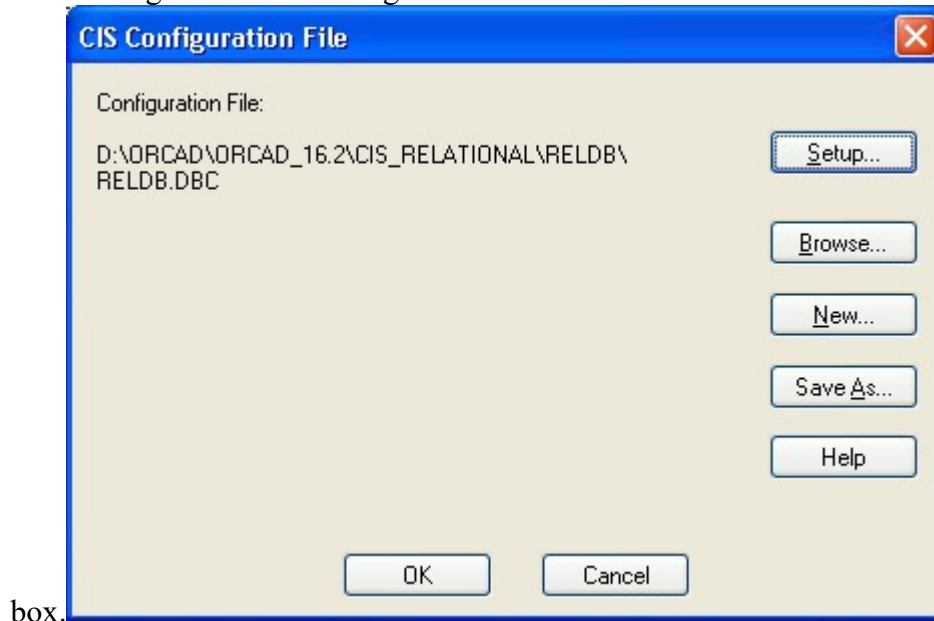
■ "Saving the configuration file"

Note: For information about creating a configuration file, see "Creating a configuration file" .

Setting database table property options

Once you have created a database configuration file, you need to set the options for the file so that CIS knows how to handle your database table part properties.

To set database table property options

1. Open a new or existing schematic design in Capture.

2. From the project manager's Options menu, choose CIS Configuration. CIS displays the CIS Configuration File dialog

box.

3. Choose a configuration file to edit by doing one of the following:

   ❑ To edit the current configuration file, click the Setup button.

   ❑ To edit a different configuration file, click the Browse button, locate and open the file, then click the Setup button.

CIS displays the Configure Database

dialog box.

Configure Database

Part Database | Part Reference Associations | Administrative Preferences | Relational Database

Data Source

CISRELDB   [Browse ...]

Tables :   Select Mapping Table:

☑ IC
☑ MECHPART
☐ Misc
☐ Resistor

Temp part number table TMPPRTS   Exists

Configuration

	Table Property Name	Table Property Type	Property Type	Transfer To Design	OrCAD Property Name	ICA Property Name	Visibility	
1	Part Number	VARCHAR	Normal	☐			☑	
2	Part Type	VARCHAR	Normal	☐			☑	
3	Value	VARCHAR	Normal	☐			☑	
4	Description	VARCHAR	Normal	☐			☑	
5	Rating	VARCHAR	Normal	☐			☑	
6	Tolerance	VARCHAR	Normal	☐			☑	

Allowed Part Reference Prefixes : [   ]

[OK]   [Cancel]   H

4. If you want to choose a new data source for your configuration, do the following:

Caution

If you choose a new data source name, all of the settings made with the previously selected data source will be lost for the current configuration (.DBC) file. If you want to keep the settings in the current .DBC file, use the database configuration wizard to create a new configuration file instead. For more information, see "Using the database configuration wizard" .

a. Click the Browse button. CIS displays the Browse Data Source

dialog box.

b. Select the data source name you defined for your ODBC driver, then click OK. The C
Database dialog box lists the tables found in your data

source.

Configure Database

Part Database | Part Reference Associations | Administrative Preferences | Relational Database

Data Source

CISRELDB   [Browse ...]

Tables :

- [ ] Capacitor
- [ ] IC
- [ ] MECHPART
- [ ] Misc

Select Mapping Table:

Temp part number table TMPPRTS   Exists

Configuration

	Table Property Name	Table Property Type	Property Type	Transfer To Design	OrCAD Property Name	ICA Property Name	Vi
1	Part Number	VARCHAR	Normal	☐			
2	Part type	VARCHAR	Normal	☐			
3	Value	VARCHAR	Normal	☐			
4	Description	VARCHAR	Normal	☐			
5	Power	VARCHAR	Normal	☐			
6	Tolerance	VARCHAR	Normal	☐			

Allowed Part Reference Prefixes :

[OK]   [Cancel]

5. If you want to configure table properties, select the table that contains the properties. In

Data Source

CISRELDB

Tables :

- [✓] Capacitor
- [ ] IC
- [ ] MECHPART
- [ ] Misc

the graphic below, the Capacitor table is selected.

When you select a table, the Configuration area lists the properties it contains. Each row represents a part property, and each property has the following characteristics:

Table Property Name

This is the name of the property as it is defined in the part database.
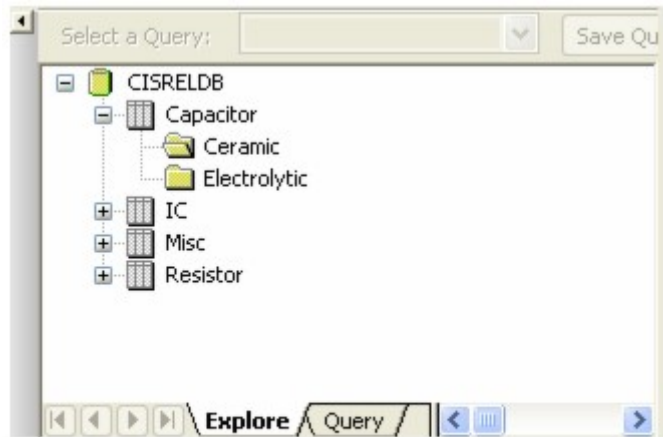
Table Property Type

This is the data type for the property. Most properties are type Text, but there may be other data types.

Property Type

The Property Type determines how CIS interprets the property. Your database must include a property of type Part_Number in every table.

Set the following property types:

■ The Part_Type type for the database property that defines the part type. (This defines the

Folder view in CIS explorer

field for folder view in CIS explorer.)

■ The Schematic_Part type for the database property that contains the schematic part (symbol) name.

■ The PCB_Footprint type for the database property that contains your Layout footprint name. If you want the database to include footprints not generated by OrCAD Layout, set the property type to Normal. This prevents the footprint viewer from trying to interpret them.

ICA Property Name

This maps property names on new parts created with the internet component assistant (ICA) to corresponding database property names.

Example: You can map the ICA property name Mfr to your database property name Manufacturer.

Visibility

This sets the default visibility of the property when it is copied to the placed part. There are four visibility modes:

Visibility mode	Description
✔	**Visible** CIS displays the property with the part on the schematic page.
☐	**Invisible** CIS does not display the property with the part on the schematic page.

No Change

CIS does not modify the property visibility. If the property does not exist, it is set to invisible. You can override the default visibility for specific parts when you place or link database parts. Cells that you cannot change are shown with a light gray background in this column.

Non-adjustable

CIS does not allow this property to be set as visible on schematic pages.

For more information about placing and linking database parts, see "Placing a database part on a schematic page" and "Linking a placed part to a database part" .

Key

This sets the property as a key during the initial part search. The key is used when you are linking a database part to a previously placed part. Normally, you set only the Value property as a key so that, when you want to link a part, CIS searches the part database for parts with a specific value. If you don't have a Value property in your database, do not set a key.

Browsable

This sets browse capability for the property. It allows you to put references to datasheets, drawings, and documents in your part database. For example, you can reference Adobe Acrobat (.PDF) files, Microsoft Word (.DOC) files, and even worldwide web addresses (URLs). You can then view these items online in CIS when browsing the part database. They are also browsable when you are viewing standard CIS bills of materials.

You can browse any file type, such as .PDF, .DOC, or .HTML, from the CIS explorer window when you have a browser installed on your system that can read the file and can be automatically launched. CIS automatically locates and reads all viewable files that are stored in the same directory as your .DBC file.

Note: You can set parameters for viewing a specified document in the CAPTURE.INI file. For more information, see the CIS online help.

Update Part Property

Select this if you want the value of this property for placed parts to be checked against the database part's value when you update the part status of your design.

1. (Optional) Type the part reference prefixes in the Allowed Part Reference Prefixes text box.

This is useful when your database consists of several part tables that are organized by device type (for example, capacitors in one table, resistors in another, and so on). When you are linking database parts to placed parts, CIS uses allowed part reference prefixes to limit your search to the appropriate tables. The result is that your search takes less time. For more information about linking database parts, see "Linking a placed part to a database part" .

For example, if a table contains only capacitors, you could enter C as the allowed part reference prefix. Then, when you choose the Link Database Part command, CIS searches that table only when the placed part you are linking has a part reference prefix of C.

Note: If a part reference prefix is specified in the Allowed Part Reference Prefixes text box for all the tables, the following message is prompted on the screen after you click OK:

```
INFO(ORCIS-6235): All parts might not be accounted for.   Do you want to
continue?
```

Note: Leave this box blank if you want the table to be searched regardless of the part reference prefix.

2. Repeat steps [Step 4](#) for each table in the database.

3. When you are finished configuring table properties, click OK or choose another tab to continue configuring your database.

Defining part reference associations

Part reference associations are used to improve the speed and accuracy of the search for database parts to link to placed parts. You create associations between a particular part type and the prefixes in the part database for that part type. For example, you can create a part reference association for resistors such that all resistors in the part database use the R prefix.

Note: Defining part reference associations only improves part search speeds for true databases (for example, Microsoft Access)--there is no speed improvement from setting up associations if you are using a spreadsheet or a text file for your database.

You must create a configuration file for your database before you can define its part reference associations. If you have not already created a configuration file for your database, see ["Setting database table property options"](#) .

Once you've defined part reference associations for your database, when you choose the Link Database Part command, CIS displays database parts of the appropriate type. Without defined part reference associations, CIS displays all parts in the database that match the keyed property value, regardless of the part type. By defining an appropriate reference association, you can limit the number of parts that CIS displays.

Note: Defining part reference associations is optional. You can define associations later if you need to improve the search performance during database part linking.

Example: If you select an inductor, L1, on the schematic page with a value of 100uH, then choose the Link Database Part command, CIS displays all parts in the database having a value of 100×10^{-6}. This may include capacitors, inductors, or other parts with a similar value.

By defining a reference association between inductors and the L prefix, you can limit the parts that CIS displays to inductors only.

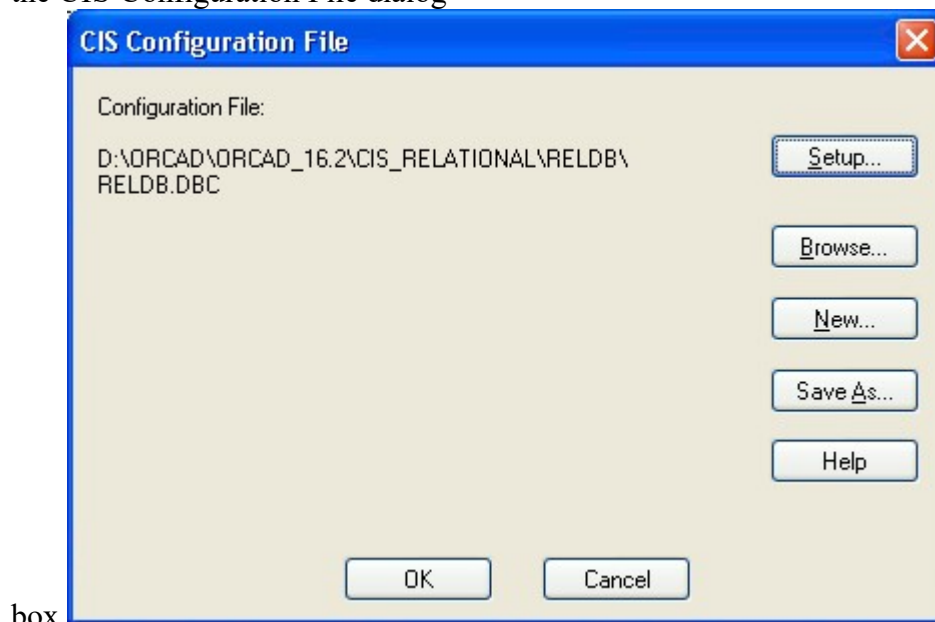When you define part reference associations for your part database, keep the following points in mind:

■   Part reference associations apply to all database tables.

■   The Part Type Property Contents value in the dialog box is case-sensitive.

■   You can associate one prefix with several different part types.

- An association applies to its level in the part type hierarchy and all lower levels.

- A part reference prefix without a defined part type association can be matched to any part type in the database.

- If a particular part in the database does not have its Part Type property contents defined, that part will be matched only to part reference prefixes with no defined part type associations.

Note: Example: An association between the part reference prefix C and the part type Capacitor applies to part types of Capacitor, Capacitor\Electrolytic, and Capacitor\Ceramic\Fixed. Note that a part reference prefix associated with the part type Capacitor\Ceramic does not apply to part types of Capacitor or Capacitor\Electrolytic.

To define part reference associations

1. In your local preferred parts database, make sure that the Part Type property field is indexed.

2. If you are not already in the Configure Database dialog box, do the following:

   a. Open a new or existing schematic design in Capture.

   b. From the project manager's Options menu, choose CIS Configuration. CIS displays the CIS Configuration File dialog

   box.

   c. If necessary, click Browse to locate the database configuration file you want to setup.

   d. Click Setup. CIS displays the Configure Database dialog box.

Note: You can add icons for custom part references that will automatically display in the Part Reference column of the part manager window. Add your custom icons to the standard icons used for the Part Reference column located in the directory: \TOOLS\CAPTURE\VENDOR
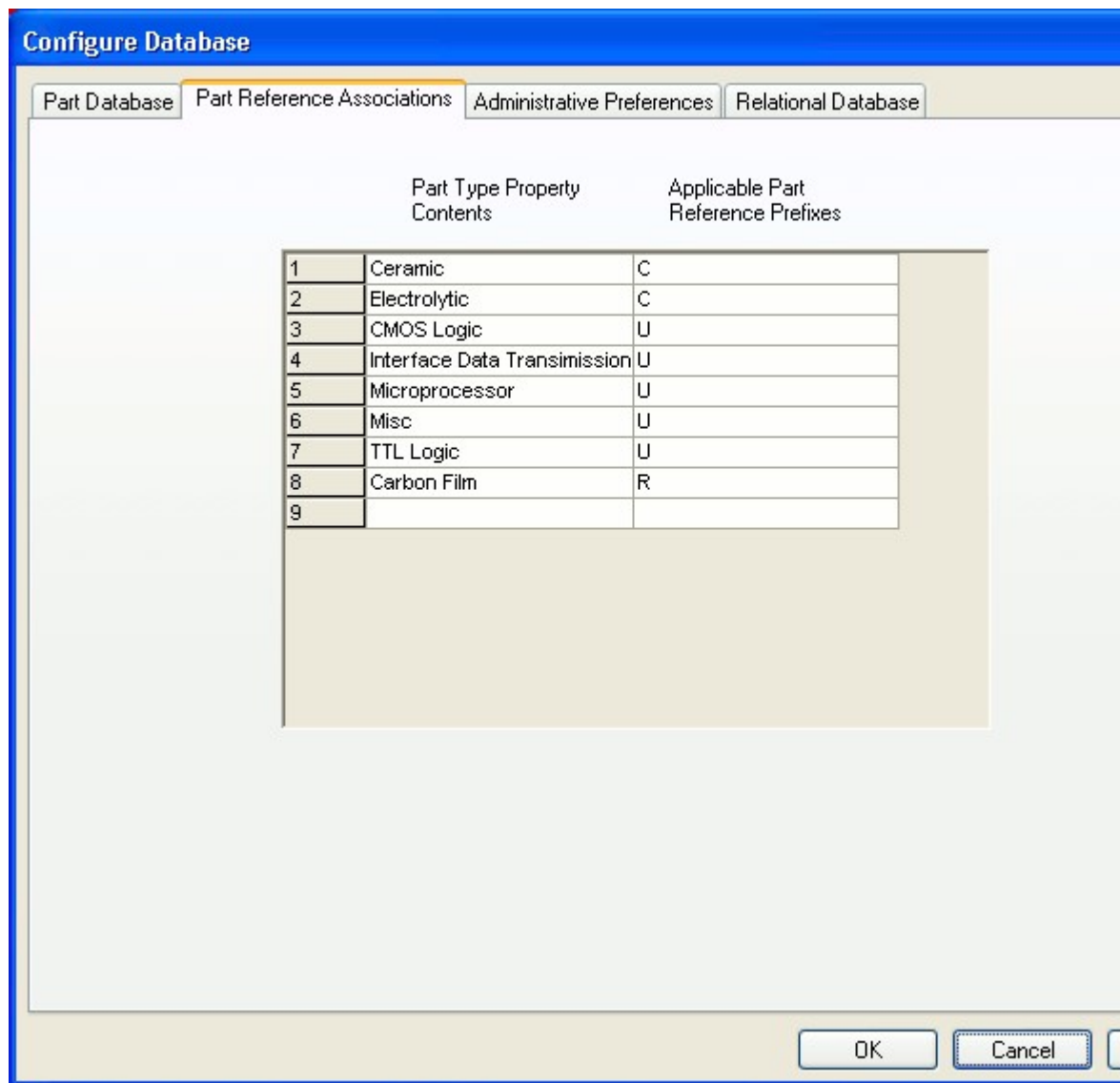
Note: Each icon's filename corresponds to a part reference prefix (for example, the icon for the part reference prefix R is stored in R.BMP).

Caution *You can use a bitmap editor (such as Microsoft Paint) to modify the bitmaps, but be careful not to change the image size.*

3. In the Configure Database dialog box, choose the Part Reference Associations

tab.

Configure Database

| | Part Database | Part Reference Associations | Administrative Preferences | Relational Database |

	Part Type Property Contents	Applicable Part Reference Prefixes
1	Ceramic	C
2	Electrolytic	C
3	CMOS Logic	U
4	Interface Data Transimission	U
5	Microprocessor	U
6	Misc	U
7	TTL Logic	U
8	Carbon Film	R
9		

OK   Cancel

4. Enter a part type in the Part Type Property Contents column and a corresponding part reference prefix (or set of prefixes) for that part type in the Applicable Part Reference Prefixes column. Separate prefix entries with commas.

Note: Part prefixes need not be unique to a particular part type. That is, you can make an association between one prefix and several different part types.

Note: Use the Delete keyboard key to delete a row containing the part type and the corresponding part reference prefix.

5. Click OK or choose another tab to continue configuring your database.

Setting administrative preferences

Administrative preferences allow you to customize some CIS features for your work environment.

To set administrative preferences

1. If you are not already in the Configure Database dialog box, do the following:

    a. Open a new or existing schematic design in Capture.

b. From the project manager's Options menu, choose CIS Configuration. CIS displays the CIS Configuration File dialog

box.

c. If necessary, click Browse to locate the database configuration file you want to setup.

d. Click Setup. CIS displays the Configure Database dialog box.

2. In the Configure Database dialog box, choose the Administrative Preferences

tab.

3. Select the Allow Duplicate Part Numbers check box to allow the same part number to appear more than once in the database.

Note: If you want a database part to work with two or more different layout footprints, you can enter multiple PCB footprint names in your part database.

4. In the Part Type Delimiter text box, type the character that indicates a hierarchical level within a path in the database. Normally, the delimiter is a backslash (\) character. For example, The database could have part types Capacitor\Electrolytic and Capacitor\Ceramic.

5. Select the Transfer Blank Properties check box to create a property on the placed part even if the database part property does not have a specific value. This is useful if all your database parts are in a single table since, in that case, you will have properties in the table which are not relevant to certain types of parts. For example: Speed Grade does not apply to resistors.

6. Select the Auto Symbol Refresh Checking check box to enable CIS to automatically detect if symbols or footprints were updated in the configured libraries. If any changes are detected, the Refresh Symbols from Lib command in the Update menu in CIS explorer and its corresponding icon on the toolbar are enabled. This indicates that you have to

refresh the symbol or footprint information in CIS explorer.

If you do not select this check box, the Refresh Symbols from Lib command in the Update menu in CIS explorer and its corresponding icon on the toolbar will always be enabled.

7. If you want to use a character other than a comma to separate multiple field values in your database, choose another character from the Delimiters for Multi-Values list. For information about entering multiple values for part properties in your part database, see the Schematic Part (Symbol) property description in the "Required part properties" (table).

8. Select the Assign Temporary Part Numbers Automatically check box so that CIS will create and track temporary part numbers for you. That way when you create a new part, CIS automatically assigns a temporary part number to that part and enters the part number into the part record in the database as well as in a special table named TMPPRTS.

 CIS automatically creates the TMPPRTS table. Do not remove, rename, or modify the structure of this table or temporary part number tracking will not operate properly. Also, never remove temporary part records, even after you have assigned them approved part numbers. If you do, designs that have not yet been updated with the new part numbers will have to be updated manually.

 To promote a temporary part to an approved part, do the following:

   a. Using your database application, enter the approved part number RELPRTNO field in the TMPPRTS table.

   b. Replace the temporary part number with the approved part number in the part table.

   c. Open Part Mmanger.

   d. From the Tools menu choose Update All Part Status.

All temporary parts will be promoted to approved parts. Also, the part numbers will be updated part number values from the RELPRTNO field in the TMPPRTS table.

9. In the Temporary Part Number Prefix text box, enter the prefix to use for temporary part numbers. CIS automatically increments the temporary part number each time you create a new part. The temporary part number is then appended to this supplied prefix. our workgroup is using a shared, read-only database configuration file, all users must use the same temporary part prefix.

10. In the Part Not Present Display Value text box, enter the text description that you want CIS to use for variant parts set to Not Present. The property is displayed in the following locations

   ❑ Part Number and Value fields in the part manager

   ❑ Design variant columns in variant reports

   ❑ Variant parts on schematic page previews and printouts.

Note: If your workgroup is using a shared, read-only database configuration file, all users must use the same temporary part prefix.

Note: The Part Not Present Display Value does not display in Capture's schematic page editor. This property also cannot be repositioned or edited in the schematic page editor. For this

reason, you will have to print preview or print a schematic page to make sure that the value you assign the property does not overlap another part or property display.

11. In the Crystal Reports Keying Preference section, choose to sort by part reference or by part number. The default is to sort by part reference

Note: When you install OrCAD Lite without administrative privileges, Crystal Reports 2008 Runtime is not installed on your system. As a result, you will not be able to use the Crystal Reports feature of CIS Lite. Installer, when run without administrative privileges, copies the Crystal Reports 2008 Runtime and Microsoft .NET Framework 2.0 install files at `<installation_directory>/tools/capture/crystal` directory. You can ask an administrator to install the files from this directory. On Windows XP, before installing Crystal Reports 2008 Runtime, you need to install Microsoft .NET Framework 2.0. This is not required for Windows Vista or later versions of the OS.

12. Click OK or choose another tab to continue configuring your database.

Setting Relational Database preferences

Capture CIS allows you to create and use relational databases. You can define the primary - foreign key relationship between the parts (primary) tables and related tables in the database.

In the Relational Database tab, you define the relationship between the part (primary) and relational tables in the database.

The Set Relational Data grid contains the following fields:

Primary Table Name:

Use this list to define the part (primary) tables in your relational database. This is the only read-only field in the grid.

Primary Key:

Use this list to define the primary key that you want to use to form the relationship with the relational table

Relational Table

Use this list to specify a relational table that has a primary - foreign key relationship with the selected primary table.

View Name:

Use this text Field to define a friendly name for the view that will display when a user selects the primary table to create a relational query.

To define the relational data

First, ensure you are in the Relational Database tab of the Configure Database dialog. Go to a row that contains a primary table (for example, Capacitor as displayed in the following

figure).

1. Select the Primary Key field drop down list.

This list displays all the fields in the primary key table.

Note: If the specified ODBC driver provides support for retrieving the primary key, this will be displayed by default in this field for the corresponding primary table.

2. Select the field to use in your relation.

3. Select the Relational Table field drop-down list.

This displays the list of tables in the database that have a primary - foreign key relationship with the corresponding primary table.

4. Select the table to form the relationship with the primary table.

5. In the View Name field, define a friendly name for the view that will display when a user selects the primary table to create a relational query.

Repeat Steps 1 through 4 for every table in Primary table list that is to be defined as a primary table in CIS and you want to create a relationship with a relational table.

6. Click OK or choose another tab to continue configuring your database.

Saving the configuration file

1. (Optional) In the CIS Configuration File dialog box, choose Save As to save the configuration for future use.

2. Choose OK to set the configuration for the current session and close the CIS Configuration File dialog box.

Setting up the ICA to access external part data

Note: Internet Explorer 4 or higher must be installed on your system for the internet component assistant (ICA) to run.

Setup of the internet component assistant (ICA) commences when you register to use a part database on the Internet.

Some ICA content providers require Internet Explorer 5.1 or higher to run ICA. This requirement may change at any time.

Creating Crystal Reports templates

Crystal Reports is a powerful, dynamic and widely-used report design software solution from SAP BusinessObjects

You can use Crystal Reports in conjunction with CIS to make customized report templates with more advanced features than the standard CIS bill of materials, including precision formatting and formulas that total, filter, and analyze data for highly specific results. When you create customized Crystal Reports templates, you can use all of the part properties included in your preferred parts database and your individual design projects.

If you want to make a standard CIS bill of materials template, see ["Creating a standard CIS bill of materials"](#) .

Note: You must have Crystal Reports Designer installed on your system with CIS to create Crystal Reports templates. If you do not [own a copy of Crystal Reports, visit the SAP BusinessObjects](#) web site for reseller information.

Once you have created Crystal Reports templates, any CIS user with access to them can generate, preview, print, and export reports with their design's database part information from within CIS. They will not need to have copies of Crystal Reports installed locally on their workstations to use these templates.

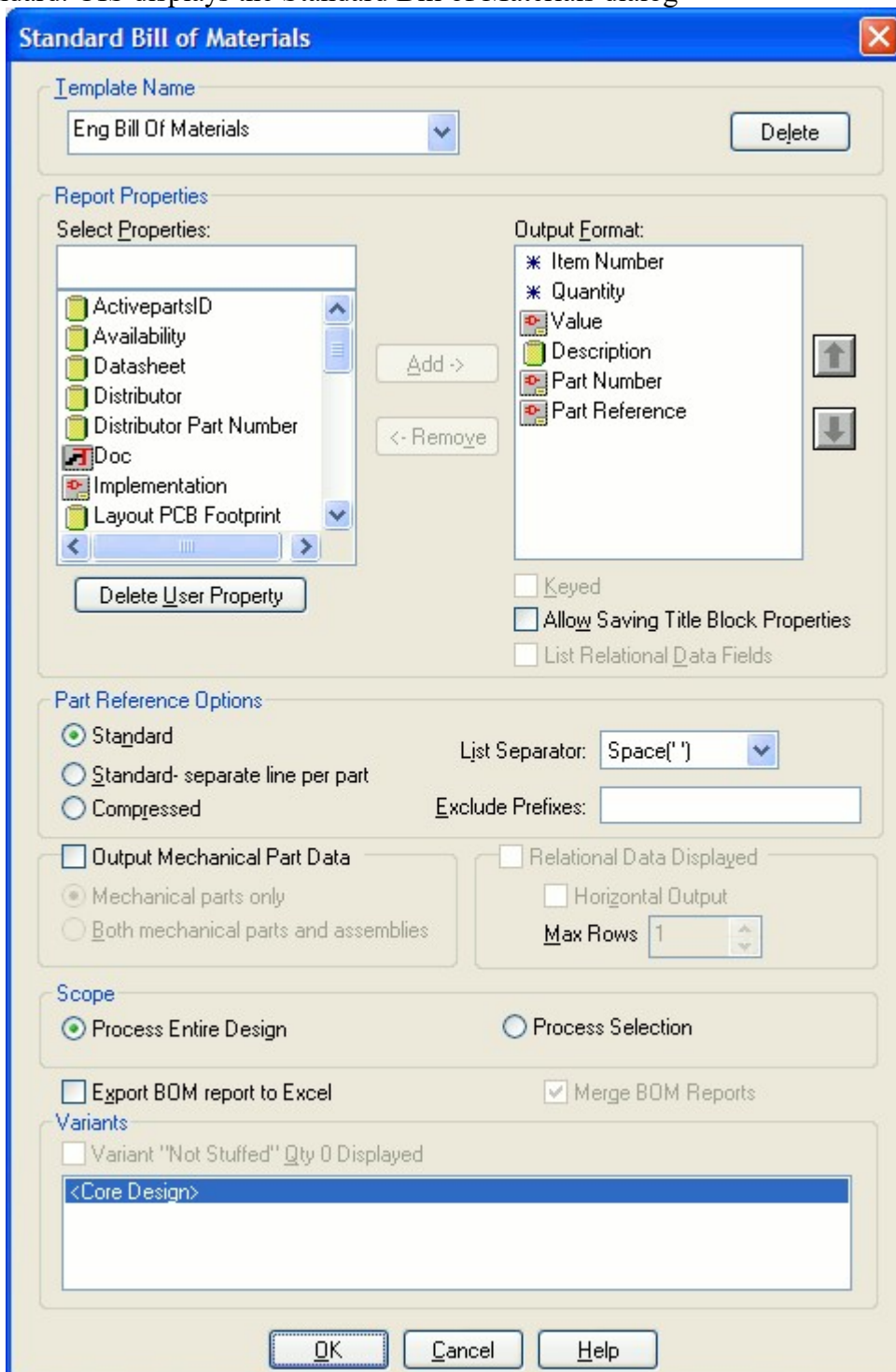This is the process you will complete to create your Crystal Reports templates:

1. Create an Access database bill of materials (.MDB) file using a standard CIS bill of materials.

2. Create report template (.RPT) files in Crystal Reports using the Access database file. You only need Crystal Reports software to create templates, not to use them. For this reason, you only need to purchase one copy of the software for your entire workgroup.

3. Store the Crystal Reports template files where CIS can use them.

To create an Access database (.MDB) file for use by Crystal Reports

1. Open a new or existing schematic design in Capture. You should use a schematic design

that has all the non-database part properties defined that you want to use when designing your Crystal Reports templates.

2. From the project manager's Reports menu, point to CIS Bill of Materials and choose Standard. CIS displays the Standard Bill of Materials dialog

box.

3. In the Template Name text box, type in a name for the report (for example, Report for Crystal Reports template).

4. In the Select Properties list on the left, double-click each of the part properties until all of them are moved to the Output Format list on the right.

Do not try to be selective about the part properties you include at this

Tip   time. Generating this report with all the properties in your database allows you to create a single database file with all the headings you might want to use to design your templates in Crystal Reports. This way, you will not have to repeat this procedure again unless the part properties used in your database change.

5. Click OK. The report may take several minutes to generate.
6. From the File menu, choose Save As. CIS displays the Save As dialog box.
7. In the Save As Type list, select Access format (*.MDB).
8. Specify the file name and location and click OK

To create a Crystal Reports template

→ Using Crystal Report Designer, create a custom report using the Access database bill of materials (.MDB) file as your data file.

To store a template file for use by CIS

1. Store your Crystal Reports template (.RPT) file where all users in your workgroup have access to it.

To avoid having to browse for your template, store the file in the same directory as your database configuration (.DBC) file. The template will automatically appear in the Crystal Reports Bill of Materials dialog box.

Note: You must have Crystal Reports Designer installed on your system with CIS to create Crystal Reports templates. If you do not own a copy of Crystal Reports, visit the SAP BusinessObjects web site for reseller information.

Note: You only need Crystal Reports software to create templates, not to use them. For this reason, you only need to buy one copy of the software for your entire workgroup.

Capture.ini File CIS configuration settings

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cadence