

mEnable[®]

Version 3

SYWARE[®]
Inc.

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Introduction

Overview of mEnable

Welcome to SYWARE mEnable. Whether you are a SYWARE Visual CE/Report CE developer or user, a third-party mobile software developer, a technical operations manager, or simply a mobile professional who wants to share data efficiently and easily with an office PC, you will find that mEnable technology can help you realize the full potential of mobile devices that use Microsoft operating systems.

mEnable is simple to install and use, and works with available hardware and infrastructure.

What Does mEnable Do?

mEnable makes possible real-time, interactive wireless connectivity between handhelds in the field and an enterprise server in the central office. Communication takes place over any wireless connection that uses TCP/IP, including the Internet.

mEnable has four main applications: interactive wireless data exchange, remote configuration of enterprise handhelds, wireless file/folder synchronization, and wipe. You can take advantage of any or all:

■ **Interactive wireless data exchange**

mEnable makes it possible for applications running on mobile devices to wirelessly read from and write to database records on a central server, seamlessly and in real time. There is no need to bring devices back to the office for cradle-to-PC data synchronization. Instead, mobile applications work in real-time with information in the central office database, and vice versa. If wireless access goes down for any reason, handheld users can continue to work with table data in the local Windows CE datastore, then perform a full synchronization when the wireless connection is restored.

Client applications that can share data with database servers via mEnable include SYWARE Visual CE and Report CE. Databases include any ODBC-enabled datasource, such as Microsoft SQL Server, Oracle, Microsoft Access, and Sybase.

In addition, application developers can incorporate the power of mEnable in their own programs. The mEnable software architecture makes it possible for applications written in C/C++, eMbedded Visual

Basic, or Visual Basic .NET to wirelessly read from or write to any ODBC-enabled data source.

- **Remote configuration of enterprise handhelds.**

mEnable Manager is the wireless administrative component of mEnable. With mEnable Manager, system administrators at a central site can configure or update any handheld that can communicate with the server via a standard TCP/IP network connection. The administrator can install programs, make directory structures, download files, create tables and initialize them with data, and configure table data synchronization settings for each handheld in the enterprise – all without physically touching the devices. This feature is especially useful for remotely installing, updating, and managing Visual CE applications and Report CE reports. It is even possible to remotely modify the structure of existing Windows CE tables used by Visual CE forms (indexes, number of columns, column names, etc.).

- **Wireless file and folder synchronization.**

mEnable Manager can be used to wirelessly synchronize handheld and server files of *any* kind. That means mobile users can have the up-to-the minute information they need no matter what type, including photographs, drawings, and charts. *And*, files from the field can be automatically collected and uploaded to the central office on a timely basis. Using the mEnable Manager Scheduler, you can have each handheld automatically contact the server at a given time. For example, you could set it up so that handhelds with cameras automatically upload new photographs to the office server every hour, or that the latest company bulletins in pdf format are automatically distributed to all handhelds in the field every week.

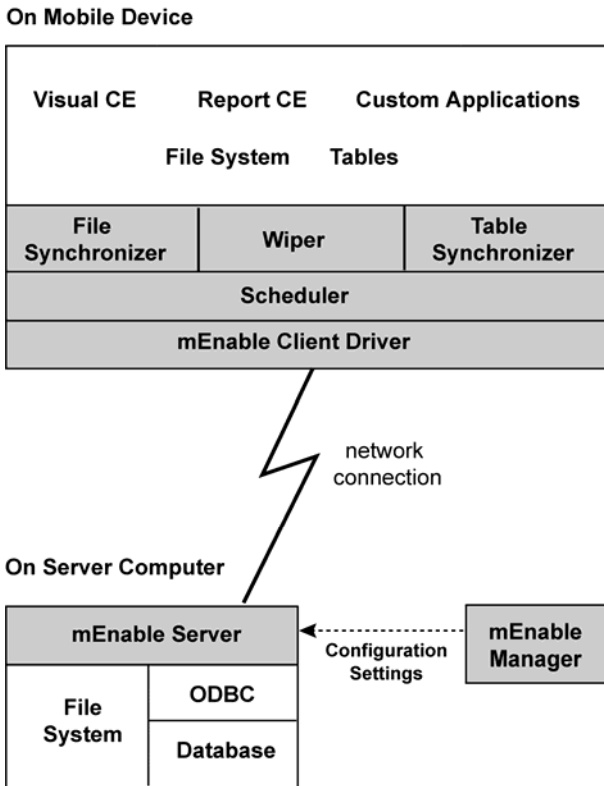
- **Wirelessly wipe a lost handheld.**

If a handheld is lost or stolen, you can use mEnable Manager to remove mEnable-controlled tables, settings, files and folders from the handheld the next time it attempts to connect with the server.

What Components are Included with mEnable?

mEnable consists of a set of software components that you can utilize in ways that best suit your needs (Figure 1):

Figure 1. mEnable Components



mEnable Server: The mEnable Server software is the core of the system. It runs continuously on the server, passively listening for requests from the mEnable clients, and – when it receives one – responds accordingly.

The mEnable Server software is installed on the host server (PC or laptop), usually as a service. mEnable Server software *must* be installed and running for *any* mEnable communication to occur.

mEnable Client: The mEnable Client software communicates with the mEnable server. It must be installed on each handheld that uses mEnable in any way. Its subcomponents – File Synchronizer, Table Synchronizer, and Wiper – are included in the installation automatically.

mEnable Manager: mEnable Manager is the tool that makes it possible to configure file, folder, table structure synchronization, and wipe. Working at the server computer, the administrator uses the mEnable Manager panel to create synchronization folders and settings for each handheld in the enterprise.

Note About mEnable Manager and Visual CE, Report CE and Custom Applications:

If you want to use mEnable connectivity strictly for wireless data exchange between handheld applications and a database on the server, you do not need to use mEnable Manager. The mechanism for controlling table data synchronization is built into the Visual CE form or Report CE report. (Refer to the Visual CE and Report CE chapters later in this guide.)

However, if you a developer or administrator responsible for installing and updating Visual CE or Report CE applications on remote handhelds, you will find mEnable Manager extraordinarily useful. As previously explained, you can use mEnable Manager to install new Visual CE forms or Report CE reports, download supporting files, modify table structures in the Windows CE datastore, and supply new Visual CE table data synchronization settings – to any handheld that can communicate with your server via a standard TCP/IP network connection.

mEnable SDK: Also included with the mEnable package is the mEnable Software Developers Kit. The kit includes header and library files that developers can incorporate in their own applications to enable wireless access to server data via the mEnable Server and Client software.

Licensing Information

Please note that applications utilizing mEnable require one mEnable runtime license per device as well as one on the server. mEnable licenses are not distributable royalty free and must be purchased separately. Please see your Software License Agreement for details.

About this Document

Who this Document is For

This document is for four audiences:

- Visual CE developers and users who want to build and use Visual CE forms that wirelessly read from and write to a central server database.
- Report CE developers and users who want to build and use Report CE layouts that wirelessly read data from a central server database and generate up-to-the-second reports.
- Administrators who want to use mEnable Manager to setup, configure, and wipe handhelds remotely, or to simply set up file synchronization.
- C/C++ and Visual Basic developers who want to access server databases with their own applications.

How to Use this Document



If you are a Visual CE developer or user: Follow the installation instructions beginning on page 14 to set up mEnable on your client and server computers. Then, go to the instructions for creating (page 24) and using (page 37) Visual CE applications with mEnable.



If you are a Report CE developer or user: Follow the installation instructions beginning on page 14. Then, go to the instructions for creating (page 42) and using (page 43) report layouts with mEnable.



If you are an mEnable Manager administrator: Follow the installation instructions beginning on page 14. Then, go to the instructions for using mEnable Manager starting on page 48.



If you are a C/C++ or Visual Basic developer: Install the mEnable SDK and mEnable software according to the installation instructions beginning on page 14. Then go to the section, “Application Development and mEnable,” on page 66.

Technical Support

For mEnable technical support, go to <http://www.syware.com/support>.

PART 1: Installation and Server Startup

Installing mEnable



This section is intended for administrators and developers.

Hardware/Software Requirements

Client Requirements

- Computer/operating system (any of the following):
 - Pocket PC or other handheld device with Windows CE 2.0 or greater or Windows Mobile.
 - Laptop or desktop PC with Windows 9x, Windows ME, Windows XP, Windows 2000, Windows NT, or Windows Vista
- Network connection (see "Network Requirements," next page)

Server Requirements

- Operating system: Windows 9x, Windows ME, Windows XP, Windows 2000, Windows NT, Windows Vista
- Network connection (see "Network Requirements," next page)
- Windows Remote Access Service (required only if the client will dial into the server – refer to the section, "Notes for Setting Up RAS," on page 85 for more information)
- Database (optional): any ODBC-enabled data source such as Microsoft Access, SQL Server, FoxPro, Oracle, or Sybase; and ODBC driver for the data source type (available from the database vendor)

Network Requirements

The network can be any wired or wireless connection that uses the TCP/IP protocol—including a Local Area Network, Wide Area Network, dialup (RAS) connection, or the Internet.

Because the possibilities for network types and configurations are virtually endless, the process of connecting to a network is beyond the scope of this document (although some tips for troubleshooting one possible scenario--an RAS dial-up connection--are provided in the "Notes for Setting Up RAS" on page 85). Otherwise, this document assumes that the network or dialup connection is installed and functioning properly on both the client and server.

Important note about firewalls

If your server has a firewall, you must punch a hole for the mEnable port. Refer to the instructions on page 16.

How to Install the mEnable Software

This topic explains how to install the mEnable Server software on the server machine (PC or laptop), the mEnable Software Developers' Kit (SDK) on the PC or laptop, as well as the client software on a connected handheld.

Notes

- It is recommended that you restart your computer before installation.
- The installation must be performed through a PC. If you wish to install the mEnable Client software on a handheld, the device must be attached to the PC. (Typically, you will use this method to install the software on development handhelds. Instructions for installing the client software on remote devices in production mode are provided later in this section.)

To install mEnable:

- 1 Insert the mEnable CD into your CD drive on the PC. Or, if you have downloaded the software, run the setup program on the PC.

The installation program starts. Follow the instructions on the screen.

- 2 The wizard eventually asks you to choose between **Complete** and **Custom** setup. If you choose Custom, the installation program will ask you to select the components you want to install. You can check any or all options:
 - **mEnable client on a handheld:** The installation program installs the mEnable Client software on the connected handheld. This software automatically includes the mEnable client driver, Scheduler, File Synchronizer, Table Synchronizer, and Wiper.
 - **mEnable client on the desktop/laptop:** The installation program installs the mEnable Client driver on the desktop/laptop on which you are currently working.
 - **mEnable server:** Choose this option if the computer on which you are installing software will be utilized as the mEnable server. The installation program installs the mEnable Server application and the mEnable Manager application. Note: The mEnable Server is usually installed as a Service.

- **mEnable handheld software development kit:** *For Visual Basic and C/C++ developers creating applications to be run on Windows Mobile/Windows CE/Pocket PC devices.* Choose this option to install the mEnable SDK on the PC.
- 3 Verify that mEnable Server has been installed as a service. (Occasionally, the firewall or anti-virus software prevents this.) On Windows XP, select **Start – Control Panel – Administrative Tools – Services**. On Vista, **Start – Control Panel – System and Maintenance – Administrative Tools – Services**. Verify that there is an entry for “SYWARE mEnable.” If not, all you have to do is select **Start – Programs – SYWARE mEnable – Install Service**.

Punch a Hole in the Server Firewall

By default, the mEnable Server listens for client requests on **port 20225**. If your server has a firewall, you must punch a hole for this port.

For example, on Windows XP at the time of this writing, select **Start – Control Panel – Windows Firewall**. Open the **Exceptions** tab, and click **Add a Port**. On Windows Vista, select **Start – Control Panel – Network and Internet – Windows Firewall – Allow a Program through Windows Firewall – Add a Port**.

In the **Name** field, enter **SYWAREmEnable**. For **Port number**, enter **20225**. Select **TCP**. Click OK to close each window.

How to Change the Server Port

In rare circumstances, you may be unable to use the default port 20225, perhaps because it is already in use by another application. You can configure mEnable to use a different port by following these instructions:

1 Create a text file containing the following lines:

```
[Server]
Port=port_number
```

where *port_number* is the desired number.

2 Name the file `MENABLE.INI`, and place it in the Windows folder on the mEnable Server computer.

Note: The mEnable clients, by default connect to port 20225. If you change the port that the server is listening on, the setting in the mEnable connection dialog for the handheld must be explicitly changed as well. (You can supply connection settings as part of a Visual CE form, as explained on page 35. Or, you can have the user supply them as part of the mEnable logon process, as described on pages 39 and 63).

Starting the mEnable Server

How to Start the mEnable Server Software

The mEnable Server software **must** be running while mEnable clients are communicating with the server.

- Because mEnable Server is a Service on most machines, it initiates automatically at system startup as a service. If you need to start mEnable Server, restart the computer.
- On Windows machines that do not support services, select **Start – Programs – SYWARE mEnable – SYWARE mEnable**.

How to Hide the mEnable Server Dialog Box

If you are not running the mEnable Server as a service, you can hide the mEnable dialog box to save space on your desktop. Simply create an MENABLE.INI in the Windows folder with the following text:

```
[Server]  
Hide=1
```

Installing the mEnable Client Software Remotely

How to Install mEnable on a Handheld without Using a Direct Connection

There are two methods for putting the mEnable Client software on “clean” handhelds without using an ActiveSync connection: you can email each user a CAB file that installs mEnable on the handheld, or you can email each user an executable file that they launch every time they want to run an mEnable Manager session.

If mEnable will be used for wireless data exchange between handheld applications and a server database, use option 1. If you want to use mEnable Manager for file, folder, and table structure synchronization, either option is acceptable.

■ Option 1, Install mEnable client

You can email a SYWARE-supplied mEnable.CAB as an email attachment to each handheld user. (CAB files are self-contained, self-extracting setup files that automatically install software applications on the handheld.) The SYWARE-supplied mEnable.CAB files are typically located in C:\Program Files\SYWARE mEnable and named mEnable.<processor_type>.CAB.

Which file to send is determined by the handheld's processor and operating system, as shown in “Table 1: Determining the Right mEnable.CAB File” on page 19.

Tip

To determine the handheld's processor type, select on the handheld **Start – Settings – System – About**.

Table 1: Determining the Right mEnable.CAB File

File	Processor	OS
mEnable.ARM.CAB	ARM	Windows CE 3.x or 4.x
mEnable.ARM_5.CAB	ARM	Windows CE 5 or 6 (a.k.a. Windows Mobile 5 or 6), except on Smartphones*
mEnable.ARM_SP.CAB	ARM	Windows Mobile 5 or 6 for Smartphones*
mEnable.MIP.CAB	MIPS	Windows CE 3.x or later
mEnable.SH3.CAB	SH3	Windows CE 3.x or later
**"Smartphones" are Windows Mobile devices without touch screens		

The recipient double-clicks the .CAB file attachment to install mEnable.

Once the software has been installed, the user can select **Start – Programs – mEnable Manager** to start an mEnable Manager session.

Tip

Once mEnable Client is installed, you can use mEnable Manager file synchronization instead of email to distribute updates (see pg 46).

■ Option 2, Run mEnable Manager without installing it

You can email a SYWARE-supplied ManageCE.EXE as an email attachment to each handheld user. The SYWARE-supplied .exe files are typically located in C:\Program Files\SYWARE mEnable and named ManageCE.<processor_type>.exe.

Which file to send is determined by the handheld's processor and operating system, as shown in "Table 2: Determining the Right ManageCE.EXE File" on page 20.

To determine the handheld's processor type, select on the handheld **Start – Settings – System – About**.

Table 2: Determining the Right ManageCE.EXE File

File	Processor	OS
ManageCE.ARM.exe	ARM	Windows CE 3.x or 4.x
ManageCE.ARM_5.exe	ARM	Windows CE 5 or 6 (a.k.a. Windows Mobile 5 or 6), except on Smartphones*
ManageCE.ARM_SP.exe	ARM	Windows Mobile 5 or 6 for Smartphones*
ManageCE.MIP.exe	MIPS	Windows CE 3.x or later
ManageCE.SH3.exe	SH3	Windows CE 3.x or later
**"Smartphones" are Windows Mobile devices without touch screens		

The recipient double-clicks the .exe file attachment to start an mEnable Manager session.

Important!

- The mEnable Server software **must** be running on the server machine in order for clients to communicate with the server. Refer to the topic, “How to Start the mEnable Server Software” on page 17.
- The system date/time and time zone settings must be accurate on each client device. See the topic, “Verify Time Zone Settings on the Server and Client Devices” on page 21.

Verify Time Zone Settings on the Server and Client Devices

Because mEnable file synchronization automatically adjusts for time zone differences, it is very important that the system date/time and time zone settings are accurate on each handheld.

Say the server is in Boston, for example. One client is local, and another client is in Denver. If the Boston user changes a file at 9:00 am Eastern time and the Denver user changes the same file at 8:00 am Mountain time, the server has to compensate for the fact that the 8:00 am change was actually made an hour after the 9:00 am change.

So, in order for file synchronization to work properly, the system date/time and time zone settings must be correct on each computer and handheld in the enterprise. (Frequently, users leave the default time zone in place, which is usually Pacific.)

On handheld devices, you can typically update the settings at: **Start – Settings – System – Clock**. On a desktop/laptop with Windows XP, you can go typically to: **Start – Control Panel – Date & Time**. With Windows Vista, you can go typically to: **Start – Control Panel – Clock, Languages & Region – Date & Time – Set the Time and Date**.

About HOSTS File on Windows CE Devices

Without a local BSD Sockets-compatible HOSTS file, CE WinSock relies entirely on DNS or WINS for name resolution (notice that sockets-compatible SERVICES and PROTOCOL files are also missing, as are their respective APIs). However, the registry `\HKLM\Comm\Tcpip\Hosts\<hostname>` keys act as an equivalent to entry in a HOSTS file if the `ExpireTime` key is removed, so the other keys (`ipaddr` and `aliases`) persist.

Visit http://www.sockets.com/ws_wince.htm for details.

PART 2: Visual CE and mEnable

Creating a Visual CE Application that Uses mEnable



This section is intended for Visual CE developers.

Getting Started

Note

The Visual CE Lite Edition does not support mEnable.

Development and Production Computers

In order to create a Visual CE application for use with mEnable, you must work on a PC with a client device attached. In the following instructions, we will refer to these devices as the "development PC" and the "development client." The development PC may be the one you will also use as the mEnable server in production, but it need not be. If the development and production servers are different, there are a few extra steps, as noted in the following pages.

Two Modes: Occasionally Connected, Always Connected

Before building your Visual CE application, you must decide whether it will work with mEnable in Occasionally Connected or Always Connected mode:

- **mEnable Occasionally Connected:** In this mode, a Visual CE form on the client device writes data to and from the local table(s). Records are synchronized with the database server either continuously in the background, periodically on user command, or when automatically prompted by the Scheduler. The advantage is that if the connection to the server is lost during an mEnable session, the user can continue to work on the local table without interruption, then use mEnable to run a full synchronization when the connection is re-established.
- **mEnable Always Connected:** In this mode, a Visual CE form on the client device works directly with data on the server. No data is stored on the client. Users always work with the most current data; but they cannot work if the connection to the server goes down.

The procedures for building applications for the two modes are distinctly different. Instructions for Occasionally Connected starts on the following page; Always Connected, on page 32.

Creating a Visual CE App for Occasionally Connected Mode

The following pages provide comprehensive, step-by-step instructions — from start to finish — for creating a Visual CE application that works with mEnable in Occasionally Connected mode.

To create an application for Occasionally Connected mode:

1 Create the Server Database:

Using an ODBC-enabled desktop PC application such as Microsoft Access, Microsoft SQL Server, or Oracle, create the table(s) that will comprise the server database.

The first column of each table in the desktop PC database must be an OID column with the following specifications:

- **Field Name:** OID
- **Datatype:** Number
- **Indexed:** No

For all records in each table, set the value in this column to 0 (zero) or blank (null).

Important: All desktop PC tables that will be accessed via mEnable by any given handheld must be in one database. For example, say you have two tables, Customer and Order. If you want to use mEnable to access both tables, both must be in the same desktop PC database, say "Inventory.mdb."

2 Create a System DSN (*not* a User DSN) for the database on the development PC:

Working on the development PC, open the ODBC Driver Manager. On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **System DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **System DSN**.

With the exception of user name and password, this System DSN must contain all of the information required to establish a connection to the database on the development computer. For example, if your System

DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the System DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

Notes

- If the development PC is not the same computer as the production mEnable server, you will have to create a System DSN for this data source on the mEnable server as well. This is explained later.
- A System DSN is required, instead of a User DSN, because mEnable running as a service cannot see a User DSN.
- For a Visual CE application that will use mEnable in Occasionally Connected mode, there is no need to create a File DSN and/or put a File DSN on the development client device.

3 Using Visual CE, download the desktop PC tables to the development client device:

Working on the development PC with the development client device connected to it, start Visual CE. From the Visual CE menu, select **File - Download Table**.

When Visual CE asks if you want to keep the tables synchronized, respond **Yes**.

The Download Table dialog opens. There are three possible scenarios for downloading tables:

- **If first download:** If this is the first time you are using Visual CE to download tables, Visual CE asks you to select the Data Source and Database for the desktop PC database that contains the tables you wish to download. Select the data source name and database you created earlier in this procedure, and click **OK**. The Select Table dialog box appears. Go to Step 3d.
- **If you have previously used Visual CE to download tables and want to download tables from the same database:** Visual CE assumes the same data source name and database you have used before. If the new tables are in fact in the database specified in the Download Table dialog box, click **OK**. The Select Table dialog box appears. Go to Step 3d.

- **Otherwise (proceed with care):** As noted in Step 1, Visual CE synchronizes one, and only one, desktop PC database with tables on the handheld. If you now chose to associate a new desktop PC database with a given handheld using the instructions in the following paragraph, Visual CE will synchronize the existing tables on the handheld with the newly selected desktop PC database. *This can cause severe synchronization problems for tables that are already marked for synchronization.*

To specify a database other than the one listed in the Download Table dialog box, click **Cancel**. Then select **File - Synchronize**. The "Visual CE - Synchronize" dialog box opens. For all tables in the **Handheld Table** list box, turn off synchronization (select each table and click the **Off** radio button). For **Desktop Data Source** and **Desktop Database**, select the data source and database name that together identify the connection to the desktop PC database that contains the tables you wish to download. Click **Close**. Then, select **File - Download Table**, and respond **Yes** to the question about synchronization. The Download Table dialog box appears. Confirm that the entries in the dialog box match the database containing the table you wish to download, and click **OK**. The Select Table dialog box appears.

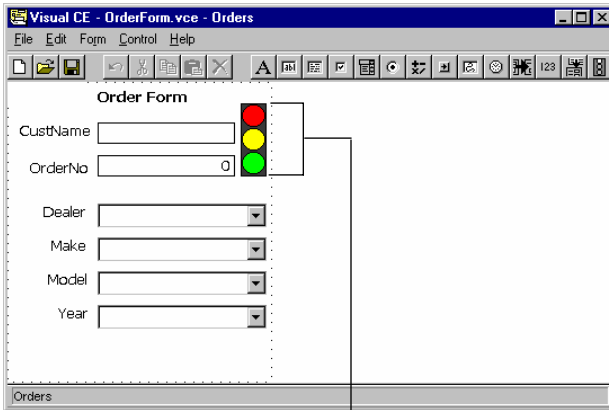
From the Select Table dialog box, highlight the table you wish to download to the client device, and click **OK**. Visual CE asks if you intend to synchronize the table with more than one handheld. Respond as desired. Visual CE downloads the table along with any records it contains.

- 4 Visual CE asks if you would like Visual CE to create a form for this table. Respond **Yes** if you want Visual CE to create a default version of the form, with one field for each column in the table. Respond **No** if you prefer to build the form from scratch. It is recommended that you select **Yes**, then customize the form according to your specific needs. (Refer to the *Visual CE User's Guide* for complete instructions about customizing forms.)
- 5 If you responded Yes in Step 4, Visual CE asks if you would like to download the form to the client. Select **No**, since you must at least add an mEnable control to the form before downloading it to the client.
- 6 Add an mEnable control to the form:


An mEnable control starts the connection and enables users to monitor

and control the synchronization of table data. There are two basic types of mEnable Controls: Stoplight and Command buttons:

- **mEnable stoplight control.** Gives users the most control over the data synchronization process and provides a concise, visual cue to its state. Users can tap each light to control synchronization: *Red*, disconnect from database; *Yellow*, connect and execute full synchronization between all eligible local tables and the server database, *Green*, connect and continuously synchronize individual records as they are read from or written to the local table with the server database and vice versa. In addition, the stoplight indicates the strength of the WI-FI signal: blinking yellow means approaching the outskirts of acceptable range, while blinking red means out-of-range (lost connection).




mEnable Stoplight Control

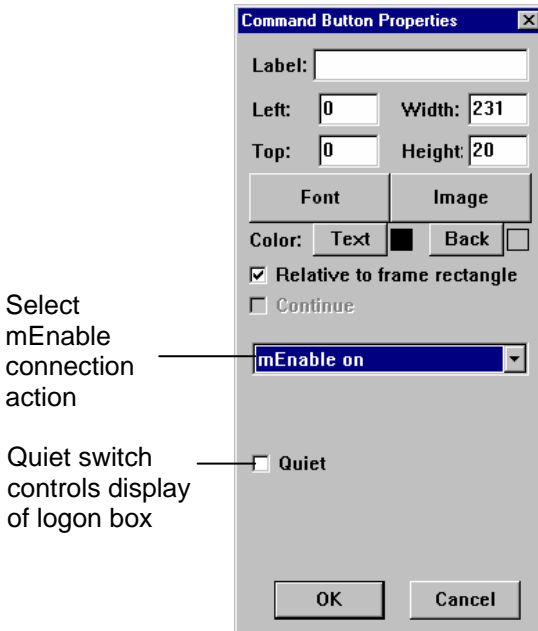
To add an mEnable stoplight control to the form, select **Control - mEnable** or click the mEnable button . Refer to the *Visual CE User's Guide* for instructions on sizing and placing individual controls.

- **mEnable connection command buttons.** Command buttons are preferable to stoplight controls in two instances: 1) You want users to do one type of data synchronization but not the other; for example, full but not continuous; 2) You want to suppress the log on dialog box that normally appears when the user starts an mEnable session.

There are three mEnable connection command buttons available: *mEnable off*, disconnect from database; *mEnable synchronize*, connect and execute full synchronization between all eligible local tables and the server database; and *mEnable on*, connect and continuously synchronize individual records as they are read from or written to the local table with the server database and vice versa.

To add an mEnable connection command button to the form, select

Control - Command button or click the Command button . The Command Button Properties dialog box opens. Select the desired mEnable connection action (mEnable synchronize, mEnable on, or mEnable off).



Quiet checkbox. If you selected either an "mEnable on" or "mEnable synchronize" command button, the Command Button Properties dialog box includes an optional **Quiet** checkbox. Select this checkbox to suppress the logon box that would otherwise appear when a user starts an mEnable session. (This logon box is shown on page 39.) To allow the user to supply the connection settings, the logon box will always appear when the user initiates the first mEnable session on the client device. If the Quiet switch is

selected, mEnable will use those user-supplied settings and the logon box will not appear in subsequent sessions.

Refer to the *Visual CE User's Guide* for complete instructions on creating command buttons.

- 7 Once you have created all of the controls on the form, download the form to the client device:
 - a. Select **File - Download Form**. The Save dialog box appears.
 - b. Navigate to the folder on the handheld where you want to store the form. Click **OK**.
- 8 *Optional*: Specify custom synchronization settings:

When you download a table from an ODBC-enabled desktop PC database to the client device and specify you want synchronization (as you did in Step 3 on page 26), Visual CE automatically sets up two-way synchronization -- all changes to records in the table on the client device are applied to those in server database, and vice versa. If desired, you can customize the synchronization settings. For example, you could specify that every record uploaded to the server is automatically deleted from the table on the handheld.

To specify custom settings, select **File - Synchronize** from the Visual CE menu on the development PC. The "Visual CE - Synchronize" dialog box opens. Refer to the topics, "Selecting Table Synchronization Options" and "Custom Synchronization Option," in the *Visual CE User's Guide* for detailed instructions.

- 9 Using an ActiveSync connection (without mEnable), synchronize the table(s) on the desktop PC database with those on client:
 - a. If the "Visual CE - Synchronize" dialog box is not already open, select **File - Synchronize** from the Visual CE menu on the development PC.
 - b. Click **Go** to perform synchronization.

Note

You need to perform synchronization via ActiveSync just once. The purpose is two-fold: to test the synchronization settings, and to enable Visual CE to create the internal structures it needs on the server to perform synchronization via mEnable.

- 10 Once you have thoroughly tested your Visual CE application, use Visual CE's **File – Create Distribution Files** option to create an installer for your application.
- 11 Use that installer to install your application on the production computers, or use mEnable Manager to do this (see page 56).

If the development desktop PC and the mEnable server are different computers:

- a. If the mEnable server and the computer you just used to create the Visual CE application are **not** the same, copy the **WCEODBC.INI** file from the Windows folder on the Visual CE development computer to the Windows folder on the mEnable server. This file stores the table definitions and synchronization settings for the Visual CE applications.
- b. You must also create a System DSN on the mEnable server with the same data source name that you used for the System DSN on the development computer:

Working on the server, open the ODBC Driver Manager. On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **System DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **System DSN**.

With the exception of user name and password, this System DSN must contain all of the information required to establish a connection to the database. For example, if your System DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the System DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

Creating a Visual CE App for Always Connected Mode

The following pages provide comprehensive, step-by-step instructions — from start to finish — for creating a Visual CE application that works with mEnable in Always Connected mode.

To create an application for Always Connected mode:

1 Create the Server Database:

Using an ODBC-enabled desktop PC application such as Microsoft Access, Microsoft SQL Server, or Oracle, create the table(s) that will comprise the server database.

The first column of each table in the desktop PC database must be an OID column with the following specifications:

- **Field Name:** OID
- **Datatype:** Number
- **Indexed:** No

For all records in each table, set the value in this column to 0 (zero) or blank (null).

Important: All desktop PC tables that will be accessed via mEnable by any given client device must be in one database. For example, say you have two tables, Customer and Order. If you want to use mEnable to access both tables, both must be in the same desktop PC database, say "Inventory.mdb."

2 Create a File DSN for the database on the development PC:

On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**.

With the exception of username and password, this File DSN must contain all of the information required to establish a connection to the database on the development computer. For example, if your File DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

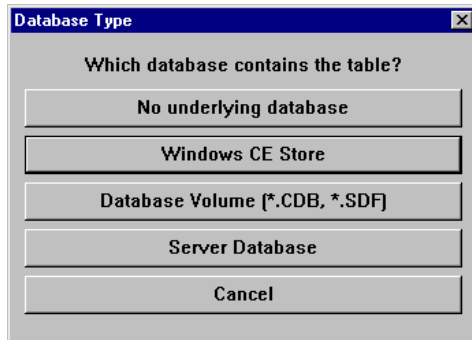
Important: When creating the File DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.

Notes

- If the development PC is not the same computer as the production mEnable server, you will eventually have to create a File DSN for this data source on the mEnable server, and copy it to the client device as well. This is explained later.
- For a Visual CE application that will use mEnable in Always Connected mode, there is no need to create a System DSN.

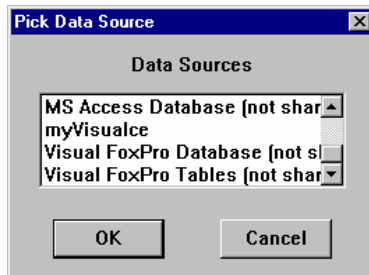
3 Create the Visual CE form:

- Working on the development PC with the development client device connected to it, start Visual CE. From the Visual CE menu, select **File - New Form**. The Database Type dialog appears.



- Select **Server Database**.

- Respond **Yes** to the prompt. The Pick Data Source dialog box appears.



- d. Select the Data Source that you created in Step 2 on the previous page. The Login Dialog box appears.



- e. Enter the username and password for the database, if needed. Click OK. The Select Table dialog box appears.
- f. Select the table you want to connect with the Visual CE form on the handheld.
- g. Visual CE asks if you would like the wizard to create a form for this table. Respond **Yes** if you want Visual CE to create a default version of the form, with one field for each column in the table. Respond **No** if you prefer to build the form from scratch. (Refer to the *Visual CE User's Guide* for complete instructions about customizing forms.)
- h. If you responded Yes in the previous step, Visual CE asks if you would like to download the form to the client. Select **No**, so you can specify the connection settings and (optionally) add a stoplight control before downloading the form to the client.
- 4 Specify the connection settings as part of the form. You have a great deal of flexibility; for example, you can supply all values so that the user never sees the logon box, or you can supply some default values which users can apply or change.
- a. Select **Form - Password**. The Password dialog box appears.

The image shows a standard Windows-style dialog box titled "Password". It features a title bar with a close button (X). The dialog contains the following elements from top to bottom:

- A text label "Password:" followed by an empty text input field.
- A text label "Confirm:" followed by an empty text input field.
- A text label "Database:" followed by an empty text input field.
- A text label "Host:" followed by an empty text input field.
- A text label "Port:" followed by an empty text input field.
- A text label "Username" followed by an empty text input field.
- A text label "Password:" followed by an empty text input field.
- A checkbox with the label "Prompt for password".
- Two buttons at the bottom: "OK" and "Cancel".

b. Complete the Password dialog box as follows:

- **Password:** *Optional.* Password for the Visual CE application (not the database). This password is unrelated to mEnable.
- **Confirm:** Reenter the password for the application just as you entered it in the Password field.

Database:


- **Host:** IP address of the mEnable server (for example, 204.10.68.133).
- **Port:** *Leave blank* (mEnable uses the default value 20225). Or, if you changed the server port number using the instructions on page 16, you must supply that value here.
- **Username and Password:** *Optional.* If required for the database connection.

□ **Prompt for password:**

If you check this box, the Visual CE application on the handheld will display the logon box (shown on page 39) whenever the user starts the form. The Database values you supplied will be filled in as defaults.

If you leave this box unchecked, Visual CE will use the values you supplied, and the user will never see the logon box.

5 If desired, add an mEnable stoplight control to the form. In Always Connected mode, the stoplight indicates WI-FI signal strength. (A blinking yellow light means approaching the outskirts of acceptable

range; while blinking red means the signal has been lost.) To add an mEnable stoplight control to the form, select **Control - mEnable** or click the mEnable button . Refer to the *Visual CE User's Guide* for instructions on sizing and placing individual controls.

- 6 Once you have created all of the controls on the form, download the form to the client device:
 - a. Select **File - Download Form**. The Save dialog box appears.
 - b. Navigate to the folder on the handheld where you want to store the form. Click **OK**.
- 7 Once you have thoroughly tested your Visual CE application, use Visual CE's **File - Create Distribution Files** option to create an installer for your application.
- 8 Use that installer to install your application on the production computers, or use mEnable Manager to do this (see page 56).

Notes:

- If the mEnable server and the computer you just used to create the Visual CE application are **not** the same, you must create a File DSN on the mEnable server with the same data source name that you used for the File DSN on the development computer. Refer to Step 2 on page 32.
- Install the File DSN on the client device in the same folder as the .vce file. (If you use **File - Download Form**, Visual CE does this for you automatically.)

Using a Visual CE Application with mEnable



This topic is intended for Visual CE users.

Depending upon how it was designed, your Visual CE application works with mEnable in either Occasionally Connected or Always Connected Mode:

- **Occasionally Connected:** When you use a Visual CE application with mEnable in Occasionally Connected mode, the application actually works with data in the local table, while mEnable works in the background to synchronize each record that the application reads or writes with the database on the server. If the connection with the server is broken, either intentionally or accidentally, you can continue to work with data on the handheld. Later, you can run a full data synchronization to bring the local table and/or server database up to date.
- **Always Connected:** In this mode, you are always working with the most-up-to-date records on the server. No data is stored locally. If the connection with the server is broken, you must wait until it is restored.


Notes

- In order to use Visual CE with mEnable, mEnable must be installed on both the handheld and the server computer (refer to the mEnable installation instructions on page 14).
- While you are using Visual CE with an mEnable connection, the mEnable Server software must be running on the server computer. See the topic, “Starting the mEnable Server,” on page 17 for instructions.

For forms that work in Occasionally Connected mode, the form designer may have supplied either a stoplight control or customized command buttons that you can use to start and control the mEnable connection.

About Stoplight Controls

In either *Occasionally or Always Connected Mode*, the stoplight control on the Visual CE form indicates the strength of the WI-FI status (similar to the bars on a telephone). A **blinking yellow light** means you are nearly out of range and should move to an area with a stronger connection if possible. You can continue to work but the transfer may be slower than normal. A **blinking red light** means you are out of range and have lost connection.



Orders (2 records) 6:20p

Order Form

CustName Hoover Ebert

OrderNo 2

Dealer CarMania

Make Ford

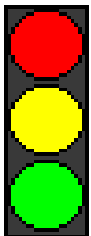
Model Mustang

Year 1996

mEnable Stoplight Control

Record Edit Option

Occasionally Connected mode only. Use the mEnable stoplight control to turn the mEnable communication off/on and to monitor its status. Simply click one of the lights to select the desired connection mode:



- | | |
|--------|--|
| Red | Disconnect from the server database (work on local data only). |
| Yellow | Execute full synchronization between the local table and the server database. You must wait while the light is yellow. |
| Green | Establish an mEnable connection to the server database (every time the client reads or writes a record from/to the local table, that record is synchronized with the server database). |

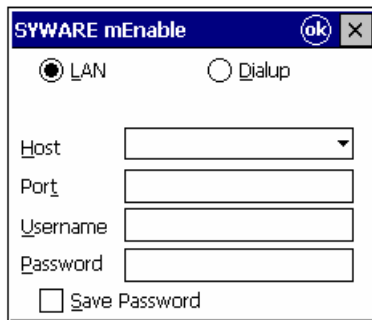
About Command Buttons

Occasionally Connected mode only. If the form designer provided custom command buttons instead of a stoplight control, refer to the form designer for instructions.

To start an mEnable Data session (either mode):

1 If your form works in Occasionally Connected mode, click the yellow or green stoplight (or select the mEnable command button provided by the form designer) to start the mEnable Data session. If your form works in Always Connected mode, an mEnable Data session starts automatically when you open the form.

Depending upon how the form designer set up the application, mEnable may display the logon dialog box.



The image shows a dialog box titled "SYWARE mEnable". It has a blue title bar with "ok" and "x" buttons. Below the title bar, there are two radio buttons: "LAN" (which is selected) and "Dialup". Underneath, there are four text input fields labeled "Host", "Port", "Username", and "Password". At the bottom of the dialog, there is a checkbox labeled "Save Password".

Note

Depending upon the form design, the logon box may appear the first time you start an mEnable Data session, so that you can specify the connection settings. From then on, mEnable may use those settings and the logon box will no longer appear.

It is also possible that the form designer supplied all values for you, so that you never see the logon box.

2 Specify the connection to the server in the logon box:

- **LAN or Dialup:** Select your network connection type -- LAN for local area network, or Dialup for an RAS dialup connection.
- **Host:** The IP address of the mEnable server (for example, 204.10.68.133).

- **Port:** *Leave blank unless otherwise instructed by your Administrator* (unless you supply a value, mEnable uses the default value 20225).
- **Username** and **Password:** Enter the values required for your database connection.
- Click **OK**.

3 *For users with Occasionally Connected mode:* If you had selected the yellow stoplight or an "mEnable synchronize" command button (full synchronization) in Step 1, mEnable synchronizes the records on the handheld with those on the server, and vice versa. This can take some time; you must wait while the stoplight is yellow. If you had selected the green stoplight or an "mEnable on" command button, mEnable asks if you want to perform full synchronization. In most cases, it is recommended that you respond **Yes**. If you know that the databases are already synchronized, or if you want to synchronize only the records you modify in this session, select **No**.

To close an mEnable Data session

If your form works in Occasionally Connected mode, click the red stoplight or the "mEnable off" command button. If your form works in Always Connected mode, the mEnable Data session closes automatically when you close the Visual CE application.

PART 3: Report CE and mEnable

Creating a Report CE Layout that Uses mEnable



This topic is intended for Report CE developers.

The process of creating a Report CE layout (.rce file) that will be run from a remote client against tables in a database on a server is the same as creating any other .rce file, with only a few differences:

- You must create a File DSN for the database on the server machine:
On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**.

With the exception of username and password, this File DSN must contain all of the information required to establish a connection to the database on the server. For example, if your File DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the File DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

- When creating the layout in Report CE's development window (**File – New**), select **mEnable database** and select the File DSN.

Once you have thoroughly tested your Report CE layout, use Report CE's **File – Create Distribution Files** option to create an installer for your layout. Use that installer to install your layout on the production computers, or use mEnable Manager to do this (see page 56)

Note to developers creating Report CE layouts for distribution

When creating your Runtime disk, be sure to include the File DSN. Install the File DSN on the client device in the same folder as the .rce file. (If you use **File - Download**, Report CE does this for you automatically.)

Using a Report CE Layout with mEnable



This topic is intended for Report CE users.

In order to use Report CE with mEnable, mEnable must be installed on both the client device and the server computer.

While you are using Report CE with an mEnable connection, the mEnable Server software must be running on the server machine. See the topic, "Starting the mEnable Server," on page 17 for instructions.

Otherwise, every aspect of running a Report CE report with an mEnable connection is the same as running it without. Refer to the *Report CE User's Guide* for details.

To start an mEnable Data session for Report CE:

1 When using Report CE with mEnable, an mEnable Data session starts automatically when you open the report layout.

mEnable displays the logon dialog box.

A screenshot of a Windows-style dialog box titled "SYWARE mEnable". It has "ok" and "x" buttons in the top right corner. The dialog contains two radio buttons: "LAN" (selected) and "Dialup". Below these are four text input fields: "Host" (with a dropdown arrow), "Port", "Username", and "Password". At the bottom, there is a checkbox labeled "Save Password".

2 Specify the connection to the server in the logon box:

- **LAN or Dialup:** Select your network connection type -- LAN for local area network, or Dialup for an RAS dialup connection.
- **Host:** The IP address of the mEnable server (for example, 204.10.68.133).
- **Port:** Leave blank unless otherwise instructed by your Administrator (unless you supply a value, mEnable uses the default value 20225).

- **Username** and **Password**: Enter the values required for your database connection.
- Click **OK**.

To close an mEnable Data session for Report CE:

The mEnable Data session closes automatically when you close the Report CE report.

PART 4: mEnable Manager

Overview of mEnable Manager



This section is intended for mEnable administrators who want to use the mEnable Manager software to configure and update handhelds over a wireless or other network connection.

mEnable Manager is an administrative tool that works with the mEnable Server and Client software. Using mEnable Manager, it is possible to initialize, configure and synchronize applications, files, folders, table structures, and data on any number of handhelds in the field – all from a central location without ever having to bring the handhelds to that central location. It is also possible to wipe the mEnable-managed contents of a lost handheld.

mEnable Manager was designed primarily as a tool to configure and update all aspects of Visual CE applications and Report CE reports on any number of handhelds without the need for a direct ActiveSync connection. For example, you can use mEnable Manager to install new Visual CE forms or Report CE reports, download supporting files such as logos or other embedded or linked graphics, modify table structures in the Windows CE datastore, and supply new Visual CE table data synchronization settings – to any handheld that can communicate with your server via a standard TCP/IP network connection.

In addition, you can use mEnable Manager to synchronize files of *any* type. This is especially useful for collecting or distributing enterprise information on a timely basis. For example, using the mEnable Scheduler, you can have handhelds automatically initiate an mEnable Manager session at a pre-defined time and upload all files in a specified folder – say all photographs taken that day.

How Does It Work?

Working on the server computer, the administrator uses the mEnable Manager panel to specify the settings that control how each mEnable client makes requests of the mEnable Server. For each mobile device in the enterprise, you can use mEnable Manager to set up any or all of the following options:

- **Synchronize Table Structure and Data:** Create, modify, or delete the structure of Windows CE tables (including columns and indexes) and synchronize data in those tables on any or all handhelds in the enterprise.

- **Synchronize Files and Folders:** For each handheld, mEnable Manager creates a folder on the server, with the same name as the device. (The device named “Fred” gets a synchronization folder on the server named “Fred.”) You can load this folder with subfolders and files of any type, including Visual CE forms (.vce files), graphics (.bmp, .jpg, etc.), databases (.cdb and .sdf files), executables (.exe files), and installers (.cab or .lod files). When the handheld connects to the server, the contents of its local mEnable synchronization folder are automatically synchronized to the contents of its server folder according to settings you supply (copy, move, one-way, bidirectional, etc.).
- **Wipe Handheld:** If a mobile device is lost or stolen, you can have mEnable Manager delete the contents of its synchronization folder and database tables when the device attempts a connection.
- **Scheduler:** You can configure the client device to “check in” with the server at regular intervals. In that way, the other activities you have specified (file synchronization, etc.) can occur automatically according to a predetermined schedule, without the handheld user having to explicitly initiate further mEnable Manager sessions. (At least one session is required to install the settings.)

Using mEnable Manager to Configure Synchronization

Using the mEnable Manager Panel to Specify Settings for Each Handheld

This topic explains how to use the mEnable Manager panel to specify all of the settings that determine how and when mEnable Manager synchronization occurs between the mEnable Server and the handhelds.

mEnable Manager synchronization applies to files, folders, table structures, and/or data synchronization settings.

Note

If you want to use mEnable for only wireless data connectivity between a Visual CE form, Report CE or custom developed application and a database according to existing Visual CE data synchronization settings, it is not necessary to use mEnable Manager.

If you are configuring mEnable Manager synchronization for a number of handhelds, you may wish to first set up synchronization for the handheld that has the most features common to all others in the enterprise – the “prototype” device. That way, you can simply clone and then “tweak” the settings and content for the remaining handhelds.

Alternatively, you can repeat the following steps for each handheld in the enterprise.

To set up a synchronization folder and settings on the server for one remote handheld:

- 1 Determine (or have the user set) the name of the handheld. On most handheld devices, the name can be found by selecting **Start – Settings – System – About – Device ID**. The name is displayed in the **Device name** field.
- 2 Working on the mEnable Server computer, open mEnable Manager by selecting **Start – Programs – SYWARE mEnable – mEnable Manager**.

The mEnable Manager panel opens (Figure 2).

Figure 2: mEnable Manager panel

SYWARE mEnable Manager 3.0 [X]

Handheld:
all others... [v] [Add]

Synchronize Table Structure and Data
 Yes
 No

Synchronize File and Folders
 Off
 ←x Move to desktop
 ← Copy to desktop
 → Copy to handheld
 ↔ Bi-directional

Handheld Folder (and children):
[] [...]

Install CAB / LOD Verbose log

Password: []

Wipe handheld
 No
 Pending
 Unsuccessful [will try again]
 Completed

Repeat: [] (0 = forever)
 Minutes

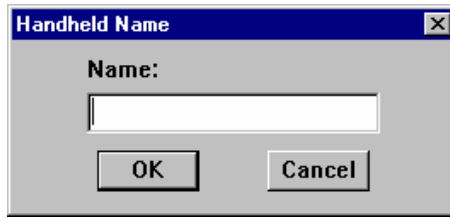
Interval: [] Hours
 Days

[Close]

3 Click **Add**.

The Handheld Name dialog box opens (Figure 3).

Figure 3: Handheld Name dialog box



4 Enter the name of the handheld exactly as it appears in the Device Name field in the device's Settings (as explained in Step 1), and click **OK**.

5 If you want mEnable to synchronize table definitions and data synchronization settings on the handheld with those on the server, select **Yes** under **Synchronize Table Structures and Data**. Some points to keep in mind:

- **About Table Structure Synchronization:** This feature is available for Windows CE tables that were created or modified with Visual CE's **File – Create Table**, **File – Download Table**, or **File – Modify Table** options. In addition, when you create or modify tables this way, Visual CE automatically stores the table definitions in a file called WCEODBC.ini in the Windows folder on the desktop PC. If the desktop PC you used for Visual CE development and the mEnable Server computer are two different machines, you must copy that WCEODBC.ini file from the development PC into the Windows folder on the mEnable Server computer.

Important: When an mEnable Manager session takes place, mEnable will create and update the tables structures in the Windows CE data store on the client device to *exactly match* the table definitions in the WCEODBC.ini file. That is, all tables defined in the WCEODBC.ini file will be created on the client device. Any table in the Windows CE data store on the client device that is not listed in the WCEODBC.ini file will be deleted. If you modify a table definition via Visual CE (e.g., change its columns or indexes), those modifications captured in the WCEODBC.ini file will be applied to the client tables as well.

- **About Table Data Synchronization Settings:** Similarly, when you use Visual CE's **File – Synchronization** to specify how records in tables on the handheld are to be synchronized with records in the desktop datasource, those settings are also saved in the WCEODBC.ini file. So, to repeat, if the Visual CE development computer and the mEnable server are two different machines, you must copy the WCEODBC.ini file into the Windows folder on the computer hosting the mEnable Server software.
 - And finally, if the mEnable Server and Visual CE development machine are two different computers, you must also create a System DSN for the database on the server. (This is explained in more detail on page 31.)
- 6 Turn on the “Synchronize File and Folders” option if you want to use mEnable to automatically upload/download files of any type from the mEnable server and the client.

Under **Synchronize Files and Folders**, select the option that describes how you want the contents of the file synchronization folder on the mEnable server applied to the corresponding synchronization folder on the handheld, and vice versa, when an mEnable Manager session takes place. This feature applies to files of *any* type, including Visual CE forms (.vce files), graphics (.bmp, .jpg, etc.), databases (.cdb and .sdf files), executables (.exe files), and installers (.cab or .lod files).

- **Off:** No synchronization performed.
- **Move to desktop:** Copy new or modified files and subfolders in the synchronization folder on the handheld to the mEnable server, then delete them from the handheld.
- **Copy to desktop:** Copy new or modified files and subfolders in the synchronization folder on the handheld to the mEnable server. Changes in files or folders on the mEnable server are not applied to the handheld.
- **Copy to handheld:** Copy new or modified files and subfolders in the synchronization folder on the mEnable server to the handheld. Changes in files or folders on the handheld are not applied to the server.
- **Bidirectional:** Apply all changes to files and folders in the synchronization folder on the handheld to the synchronization folder on the mEnable server, and vice versa.

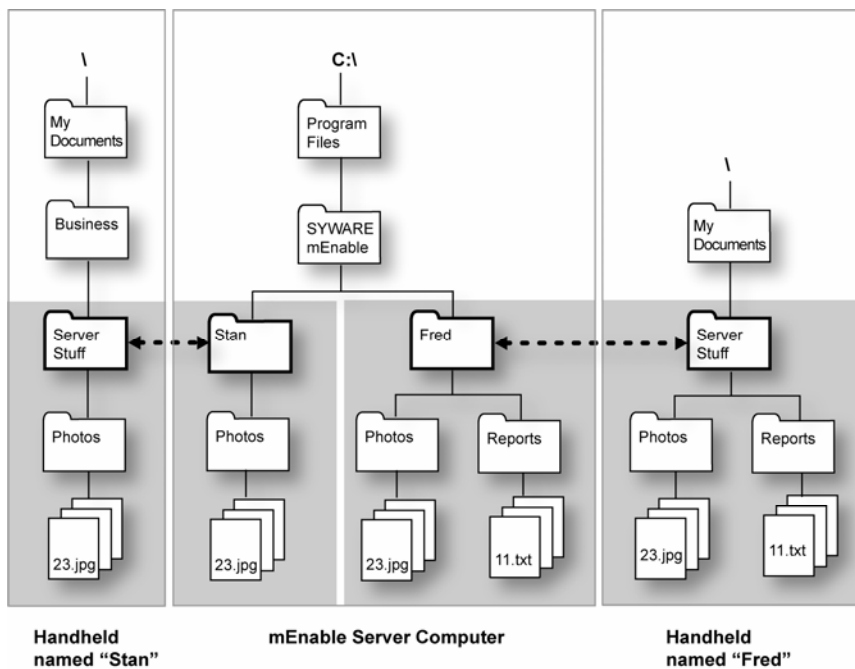
7 In the **Handheld Folder (and children)** field, specify the name and location of the synchronization folder on the handheld. This folder need not exist on the handheld (mEnable will create it when the first connection occurs if it doesn't already exist). You can either:

- Type the path in the field; for example:
`\My Documents\Server Stuff`
- If a development handheld is attached to the computer on which you are working, and the folder exists on that handheld with the same name and position in the file structure as you want it to be created on the target handheld, click the Browse button [...] and select the desired folder.

About file synchronization folders:

mEnable automatically creates the synchronization folders on both machines, unless they already exist. It automatically puts the server-side folder inside the "SYWARE mEnable" folder and gives it the name of the handheld (Figure 4). It creates the corresponding client-side folder according to the instructions you just supplied. Later, when an administrator adds files or sub-folders to the server-side synchronization folder, the additions are automatically reflected on the client-side side, and vice-versa (assuming you selected the "Bidirectional" option above).

Figure 4. File Synchronization Folders



8 If you want mEnable to install applications from CAB or LOD files on the handheld as part of the mEnable session, select **Install CAB/LOD**.

Tip: CAB files are self-contained, self-extracting setup files that automatically install software applications on the handheld. As explained on page 56, SYWARE has supplied CAB files you can use to install the mEnable Client during the first mEnable Manager session, as well as others to install Visual CE. LOD files are custom Visual CE application installation files created using Visual CE's "File – Create Distribution Files" command.

9 The mEnable Client automatically keeps track of each mEnable Manager session in a log file on the handheld. (You can find more information about this in the topic, "Viewing the mEnable.log" on page 64. Typically, the messages in this log are brief to conserve space on the handheld. Alternatively, you can select the **Verbose log** option to record more detailed messages that may be helpful for

troubleshooting, and to record synchronization activity (what got moved, for example).

- 10 The **Password** option is relevant only if you are *not* using Table Synchronization for this device. If you enter a value here, the user will be prompted for the password when he/she initiates an mEnable Manager session. (If Table Synchronization is set, the password protection mechanism of the database is used for authentication.)
- 11 Leave the **Wipe handheld** option set to **No**.
- 12 You can use the **Repeat** and **Interval** options to set the Scheduler for this handheld. The Scheduler prompts the handheld to “check in” with the mEnable Server for synchronization at defined intervals, so that the mEnable Server can execute all of the activities you specified above (table synchronization, file synchronization, etc.). Use the following settings to configure the Scheduler:
 - **Repeat:** Specify the number of times the handheld checks in with the server per mEnable Manager session.
 - **Interval:** Specify the time between check-ins.

Here are some sample settings:

- **Repeat: 3 Interval: 1 Hours.**

(This scenario is unlikely, but provided for illustrative purposes.) The mEnable Client will check in three times. If the user initiates the first mEnable Manager session at 9:00 am, the mEnable Client will check in at 9:00 am, 10am, and 11am, and then stop. It will not check in again until the user explicitly initiates another mEnable Manager session, at which time the three hourly check-ins will be triggered again.
- **Repeat: 0 Interval: 1 Hours.**

(This scenario is more typical.) 0 means endless repetitions. If the user initiates the mEnable Manager session at 9:15 am, the mEnable Client will check in every hour, at quarter past the hour, forever, or until a soft reset of the handheld. If a soft reset of the handheld does occur, the user can reacquire the settings by explicitly running an mEnable Manager session.
- **Repeat: 1 Interval: 1 Minute.**

In this scenario, also typical, the mEnable Client checks in just once per mEnable Manager session. In other words, the user must

explicitly start an mEnable Manager session for synchronization to occur. In this case, the interval setting is irrelevant.

13 Click **Close** to close the panel.

You have now set up mEnable for one handheld. If you open the mEnable folder on the server (typically, **C:\Program Files\SYWARE mEnable**), you will see that mEnable Manager has automatically created a file synchronization folder for that handheld.

When the user of that handheld initiates the first mEnable Manager session, mEnable Manager will update the Table Synchronizer, File Synchronizer, and Scheduler on the handheld with the settings you just supplied. Those settings will remain in effect on the handheld until:

- a. You change the settings in the mEnable Manager panel and an mEnable Manager session occurs, so new settings are applied.
- b. A soft reset is performed on the handheld.

Of course, you should put content in the file synchronization folder if you enabled “Synchronize Files and Folders.” This is explained in the next topic.

Adding Content to the File Synchronization Folders on the Server

The previous topic explained how to create a file synchronization folder and settings on the mEnable server for a designated handheld. At any time, you can manually load contents into that folder, including Visual CE forms (.vce files), graphics (.bmp, .jpg, etc.), databases (.cdb and .sdf files) executables (.exe files), and installers (.cab and .lod files), and any other type of file you wish. Similarly, the mobile user can add files and subfolders to the synchronization folder on the handheld.

Whenever the handheld initiates mEnable Manager session, the contents of the file synchronization folder on the handheld will be updated with the contents of the file synchronization folder on the server, and vice versa, according to the settings you supplied in the mEnable Manager panel (Figure 2 on page 49).

About LOD and CAB Installers for Visual CE, Report CE, and mEnable

CAB files are self-contained, self-extracting setup files that automatically install software applications on the handheld. LOD files are Visual CE installation files created using the Visual CE development environment “File – Create Distribution Files” option. If you enabled the “Install CAB/LOD” option in the mEnable Manager panel, you can place any of these files in the handheld’s synchronization folder to install software on the handheld.

- **vicert.*.cab** - installs the Visual CE runtime system on the handheld. These files are usually found in C:\Program Files\Windows CE Services\SYWARE Visual CE on the mEnable server.
- **rcert.*.cab** - installs the Report CE runtime system on the handheld. These files are usually found in C:\Program Files\Windows CE Services\SYWARE Report CE on the mEnable server
- **menable.*.cab** –installs the mEnable client. These files are usually found in C:\Program files\SYWARE mEnable on the mEnable server.

Where * is the name of the processor, using the same conventions described in the table on page 19.

- **.lod** - if you supply a .lod file, be sure to include not only the .lod file but all of the other files from the original distribution folder.

Note

While vicert.*.cab and rcert.*.cab files are redistributable, vce.*.cab and vce.*.cab files are *not*. Redistributing vce.*.cab or rce.*.cab files is a violation of the licensing agreement.

Tip

Just as you can clone a client device's mEnable Manager settings, you can clone the contents of its file synchronization folder on the server. Cloning is explained in the next section.

To add contents to the file synchronization folder on the server:

- 1 Open the mEnable folder on the server. It is typically located at C:\Program Files\SYWARE mEnable. For each handheld you have set up using the mEnable Manager panel, you will see a folder with the same name.
- 2 Create subfolders and copy files of any type into the folder as desired.

Setting Up Additional Handhelds by Cloning

You can easily set up additional handhelds by cloning the settings for one you have already set up.

To create synchronization settings and content by cloning:

- 1 From the drop-down list in the **Handheld** field near the top of the mEnable Manager panel (Figure 2 on page 49), select the name of the handheld whose settings and file synchronization content you wish to clone.
- 2 Click **Clone**.
The Handheld Name dialog box opens.
- 3 Enter the name of the new handheld.
- 4 Modify the synchronization settings for the new handheld if desired.

Note

When you clone the settings for a handheld, mEnable Manager copies the contents of the file synchronization folder for the first handheld into a folder for the new handheld. You can of course manually add or modify these contents for the second handheld if desired.

Using mEnable to Wipe a Handheld

Wiping the Handheld's Contents

If a handheld is lost or stolen, you can use mEnable Manager to remotely delete all contents on the handheld that are administered by mEnable – including all tables in the Windows CE data store, as well as the files and folders in the synchronization folder. This action takes place automatically when the handheld attempts to connect with the mEnable server; a successful logon is not necessary.

To configure mEnable Manager to wipe the contents of a handheld:

- 1 Working on the mEnable server machine, open mEnable by selecting **Start – Programs – SYWARE mEnable – mEnable Manager**.

The mEnable Manager panel opens (Figure 2 on page 49).

- 2 From the **Handheld** drop-down list, select the name of the handheld whose contents you wish to wipe.
- 3 Set **Synchronize Table Structure and Data** to **No**.
- 4 Leave the **Handheld Folder (and children)** setting as is and set **Synchronize File and Folders** to **Off**.
- 5 Set **Wipe handheld** to **Pending**.
- 6 mEnable Manager displays a warning message asking you to confirm that you want to delete all of the files in the synchronization folder on the handheld and all of the tables on the handheld. If so, click **Yes**.
- 7 Click **Close** to close the panel.

To check the status of the handheld:

The next time the handheld attempts to connect to the server, mEnable Manager will wipe its contents. You can view the status of the wipe action by periodically selecting the handheld in the mEnable Manager panel. (Figure 2 on page 49) The following radio buttons indicate current status of the wipe:

- **Pending**. The handheld has not tried to connect; the wipe has not yet occurred.

- **Unsuccessful (will try again).** The handheld attempted to connect, but mEnable Manager was only able to partially wipe the handheld, possibly because a file was in use.
- **Completed.** The tables, files, and folders were successfully deleted.

Tip: After the wipe has completed successfully, you may wish to remove the handheld's settings and folders from the server. Refer to the instructions in the following topic.

Deleting Synchronization Settings and Content from the Server

If a handheld is retired, you can quickly delete its settings and synchronization folder from the server.

Tip

Before removing the information from the server, you may wish to wipe the mEnable synchronization folder from the handheld. Refer to the previous topic, "Wiping the Handheld's Contents".

Important

If you do intend to wipe the handheld contents, DO NOT delete its synchronization settings from mEnable server until after the wipe has successfully completed.

To remove a handheld from mEnable Manager synchronization:

- 1 From the **Handheld** field near the top of the mEnable Manager panel (Figure 2 on page 49), select the name of the handheld whose settings and file synchronization content you wish to remove from the server.
- 2 Click **Remove**.

When mEnable asks you to confirm this action, click **Yes**.

Running an mEnable Manager Session on a Handheld



This section is intended for mEnable Client users

Configuring/Updating Your Handheld

Configuring or updating your handheld in the field is quick and easy using mEnable Manager. When your mEnable Administrator notifies you that it is time to perform an update, simply follow the steps below.

Note

You may need to perform the following steps just once. After that, your handheld may get updates automatically, depending upon how your administrator has set up your handheld to work with mEnable. Contact your administrator for details.

Reminder

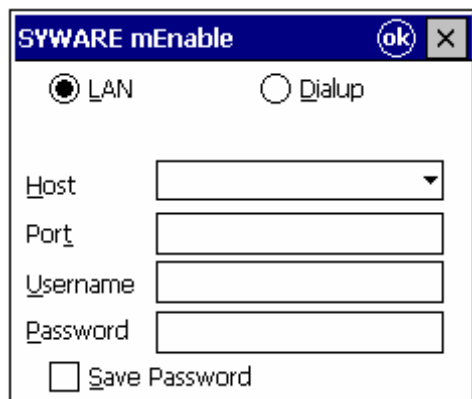
In order for file synchronization to work properly, the system date/time and time zone settings on your handheld must be correct. (Frequently, users leave the default time zone in place, which is usually Pacific.)

On handheld devices, you can typically update the settings at: **Start – Settings – System – Clock**.

To configure/update your handheld by running mEnable Manager:

- 1 Start an mEnable Manager session. Two methods are available, depending upon whether or not mEnable is installed on your handheld.
 - **If mEnable is not installed.** Typically, the Administrator will supply an mEnable.<processor-type>.exe file as an email attachment. Simply click the file.
 - **If mEnable is installed.** When the Administrator asks you to update your handheld, select **Start – Programs – mEnable Manager**.
- 2 If this is the first time the handheld has connected to the mEnable server, the following logon dialog box appears.

Figure 5: mEnable Logon Dialog box



3 Specify the connection to the server in the logon box:

- **LAN or Dialup:** Select your network connection type -- LAN for local area network, or Dialup for an RAS dialup connection.
- **Host:** The IP address of the mEnable server (for example, 204.10.68.133).
- **Port:** *Leave blank unless otherwise instructed by your Administrator* (unless you supply a value, mEnable uses the default value 20225).
- **Username and Password:** Enter the values required for your database connection (if any).
- Click **OK**.

Note: You need only supply these settings for the first connection.

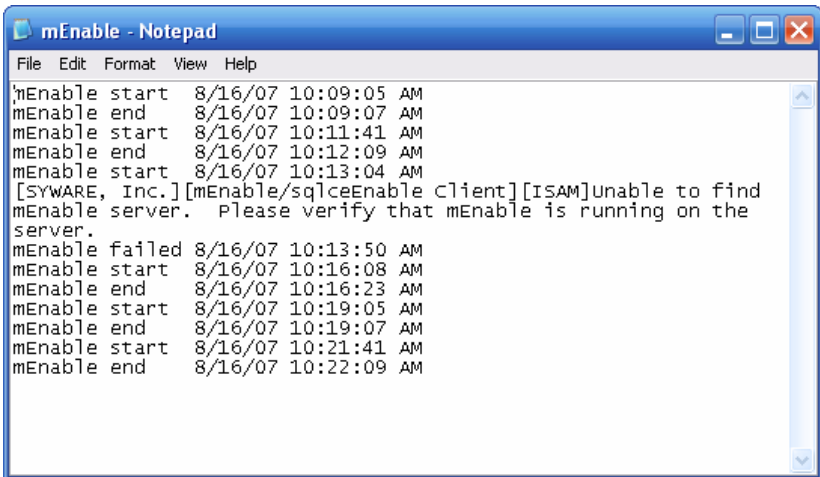
4 The synchronization should take place without notice. If mEnable encounters a problem (such as a table could not be updated since it was in use), it will alert you by displaying an error message. Otherwise, you can assume that the synchronization was successful.

If there was an error, you can view the mEnable log for details (refer to the next topic).

Viewing the mEnable.log

If there is a problem, you can get more details from the mEnable.log file which is automatically updated for every mEnable Manager session. You can find this log in the root directory of the handheld. The easiest way to view the file's contents is to drag the file onto the desktop PC via ActiveSync, then open it in Notepad or WordPad. If you cannot determine the nature of the problem and its solution from the log file, you may wish to email the log to your mEnable Administrator, along with a description of what you were doing just before the error message appeared.

Figure 6: Sample mEnable.log



```
mEnable start 8/16/07 10:09:05 AM
mEnable end 8/16/07 10:09:07 AM
mEnable start 8/16/07 10:11:41 AM
mEnable end 8/16/07 10:12:09 AM
mEnable start 8/16/07 10:13:04 AM
[SYWARE, Inc.][mEnable/sqlceEnable client][ISAM]unable to find
mEnable server. Please verify that mEnable is running on the
server.
mEnable failed 8/16/07 10:13:50 AM
mEnable start 8/16/07 10:16:08 AM
mEnable end 8/16/07 10:16:23 AM
mEnable start 8/16/07 10:19:05 AM
mEnable end 8/16/07 10:19:07 AM
mEnable start 8/16/07 10:21:41 AM
mEnable end 8/16/07 10:22:09 AM
```

PART 5: Application Development and mEnable

mEnable and Applications Written in C/C++ or Visual Basic



This topic is intended for C/C++ developers writing client applications for Pocket PC, Windows CE, and Windows Mobile devices, or laptop/desktop PCs; and for Visual Basic developers writing client applications for laptop and desktop PCs. (Visual Basic developers creating applications for Pocket PCs/Windows CE/Windows Mobile devices must go to "Using mEnable with eMbedded Visual Basic," page 69 or "Using mEnable with Visual Basic .NET" page 76.)

On Windows 9x, ME, XP, 2000, NT and Vista machines, the client accesses mEnable like any other ODBC driver. On Pocket PC, Windows CE, and Windows Mobile devices, the client accesses the mEnable client driver directly since there is no ODBC Driver Manager.

To create a C/C++ or Visual Basic application that uses mEnable:

1 Create a File DSN for the database on the server machine:

On Windows XP typically select: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**.

With the exception of username and password, this File DSN must contain all of the information required to establish a connection to the database on the development computer. For example, if your File DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the File DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

2 Copy this File DSN (a *.dsn file) to the client machine.

3 Write your ODBC-enabled client application.

Important Notes

- **Character Encoding:** mEnable technology uses the Multi-Byte character set, not UNICODE. If you are writing an application for a Windows CE device, you must convert the data (UNICODE from/to Multi-Byte).
- **Connection Parameters:** The client application must make the usual ODBC calls to connect to the server. The connection string that your application sends to SQLDriverConnect can use the connection parameters (keyword/value pairs) shown in the chart on page 67.

Connection Parameters

Keyword	Value	Notes
DSN=	SYWARE mEnable	Use this parameter only if your application runs on a desktop/laptop (not a handheld device). If used, the value MUST be SYWARE mEnable (i.e., DSN=SYWARE mEnable)
RASOrLAN=	Either RAS or LAN	Specifies the connection type
RASEntry=	Name of RAS entry	Used only if RASOrLAN=RAS
RemoteHost=	Name or IP address of the mEnable server	
RemotePort=	Port being used by the server	If not specified, 20225 is used
Config=	Full pathname of the File DSN on the client machine	
UID=	Username for logging into the database on the Server	This UID and PWD are for database login only. The username and password for RAS login must be specified when defining the RAS connection on the client.
PWD=	Password for logging into the database on the server	
DBQ=	Database on the server	

Here is a sample connection string:

```
DSN=SYWARE mEnable;RASOrLan=LAN;RemoteHost=syware.com;
Config=C:\test.dsn
```

4 Compile your Client Application program.

The ODBC functions are documented in the *ODBC Programmer's Reference*.

Special Notes for Windows CE Developers

- **ODBC header files:** The ODBC header files, SQL.H, SQLEXT.H, SQLUCODE.H, SQLTYPES.H (from Microsoft Visual C++), are included as part of the mEnable SDK for your convenience. To use them in your Windows CE source code:

```
#define SQL_NOUNICODEMAP 1
#include "sqlext.h"
```

- **ODBC Libraries:** If your application will run on a Windows CE device, you must compile it with the appropriate mEnable.lib. SYWARE has provided the following files in the mEnable SDK. Which file you use depends upon the processor of the CE device on which the application will run. **Be sure to rename the file to mEnable.lib before you use it.**
 - For Mips processors: mEnable.lib.Mips
 - For SH3 processors: mEnable.lib.SH3
 - For SH4 processors: mEnable.lib.SH4
 - For ARM processors mEnable.lib.ARM

Tip

SYWARE has provided a sample C/C++ application—sample.c—in the mEnable Software Development Kit.

mEnable and Applications Written in eMbedded Visual Basic



This topic is intended for developers who are writing client applications for Pocket PC, Windows CE, Windows Mobile devices using eMbedded Visual Basic. Developers writing in Visual Basic .NET should turn to page 76.

SYWARE's mEnable works with applications written in Microsoft eMbedded Visual Basic.

To create an eMbedded Visual Basic application that uses mEnable:

1 Create a File DSN for the database on the server machine:

On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**.

With the exception of username and password, this File DSN must contain all of the information required to establish a connection to the database on the development computer. For example, if your File DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the File DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

2 Copy this File DSN (a *.dsn file) to the client computer.

3 Write your eMbedded Visual Basic application.

When using eMbedded Visual Basic, you do not use the ODBC API. Instead, you use a simplified database access programming API (documented on the following pages) which is made available by including the **mEnable.bas** module into your eMbedded Visual Basic project. mEnable.bas is included with mEnable Windows Mobile/Windows CE/Pocket PC Software Development Kit.

Note about Character Encoding:

mEnable.bas handles all Multi-Byte to UNICODE data conversions.

mEnable API Functions for eMbedded Visual Basic

Your application first establishes a connection by calling **mEnableConnect**. You then execute SQL commands by calling **mEnableExecute**. By default, every insert, update, and delete is committed immediately, but you can override this behavior with **mEnableSetConnectOption**, **mEnableCommit**, and **mEnableAbort**. If the SQL statement returns a result set, the calls **mEnableColumnCount**, **mEnableDescribeColumn**, **mEnableNextRecord**, **mEnableGetDataAsString**, and **mEnableGetDataAsDate** can be used to retrieve the data, and **mEnableCloseResultSet** is used to close the result set. When you are finished with the connection, **mEnableDisconnect** closes the connection.

These functions are documented on the following pages. In addition, SYWARE has provided a sample eMbedded Visual Basic application—**sample.bas**—as part of the mEnable Software Development Kit.

mEnableConnect		
Description:	Establishes an mEnable connection.	
Parameters:	<i>hwnd As Long</i>	INPUT: If the Prompt parameter is True, the parent window for the dialog box. Otherwise this is ignored.
	<i>RASOrLAN As Long</i>	INPUT: Specifies the connection type. Either mEnableRAS or mEnableLAN (these constants are defined in mEnable.bas).
	<i>RASEntry As String</i>	INPUT: Name of RAS entry. Ignored if RASOrLAN is mEnableLAN.
	<i>RemoteHost As String</i>	INPUT: Name or IP address of mEnable server.
	<i>Port As String</i>	INPUT: Port being used by the mEnable server. If not specified, 20225 is used.
	<i>Config As String</i>	INPUT: Full pathname of the File DSN on the client machine.
	<i>Database As String</i>	INPUT: Database on the server.
	<i>User As String</i>	INPUT: Username for logging into the database on the server.
	<i>Password As String</i>	INPUT: Password for logging into the database on the server.
	<i>Prompt As Boolean</i>	INPUT: If True, put up a connection dialog. The values will default to the values specified above. If False, connect using the values above.
	<i>Connect As Long</i>	OUTPUT: A handle to the connection (used in subsequent mEnable calls).
	<i>ErrorMessage As String</i>	OUTPUT: If the connection fails, a description of the problem.
	<i>Cancel As Boolean</i>	OUTPUT: If Prompt is True and the user cancels the dialog box, this is set to TRUE. Otherwise this is set to False.
Returns:	Boolean (True for success, False for failure). If there is a failure, <i>ErrorMessage</i> contains a description of the problem. Note: If the user canceled the dialog box, Cancel will be set to True and this function will return True.	

mEnableSetConnectOption		
Description:	<p>Sets connection option(s). Note: No result sets can be open on the connection when this function is called.</p> <p>In the current release, this function is used to turn off/on a single option: AutoCommit. When AutoCommit is on (the default state), <code>mEnableExecute</code> commits every insert, update, and delete statement immediately after executing it.</p>	
Parameters:	<i>Connect As Long</i>	INPUT: Connection handle returned by <code>mEnableConnect</code> .
	<i>Option As Long</i>	INPUT: The connection option whose value is to be set (as defined in <code>mEnable.bas</code>): <code>mEnableConnectOption_AutoCommit</code>
	<i>Value As Long</i>	INPUT: One of the following (as defined in <code>mEnable.bas</code>): <code>mEnableConnectOption_AutoCommit_Off</code> <code>mEnableConnectOption_AutoCommit_On</code>
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>mEnableError</code> can be called to get a description of the problem.	

mEnableCommit		
Description:	Commits uncommitted transactions on the connection and closes any open results sets.	
Parameters:	<i>Connect As Long</i>	INPUT: Connection handle returned by <code>mEnableConnect</code> .
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>mEnableError</code> can be called to get a description of the problem.	

mEnableAbort		
Description:	Aborts uncommitted transactions on the connection and closes any open results sets.	
Parameters:	<i>Connect As Long</i>	INPUT: Connection handle returned by <code>mEnableConnect</code> .
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>mEnableError</code> can be called to get a description of the problem.	

mEnableExecute		
Description:	Executes an SQL statement. If the SQL statement returns a result set, use <code>mEnableNextRecord</code> to position to the first record of the result set.	
Parameters:	<i>Connect As Long</i>	INPUT: Connection handle returned by <code>mEnableConnect</code> .
	<i>SQL As String</i>	INPUT: SQL statement to execute.
	<i>ResultSet As Long</i>	OUTPUT: If the SQL statement returns a result set (i.e., if it is a SELECT statement), a handle to the result set (used in subsequent <code>mEnable</code> calls). Otherwise 0.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>mEnableError</code> can be called to get a description of the problem.	

mEnableColumnCount		
Description:	Returns the number of columns in the result set.	
Parameters:	<i>ResultSet As Long</i>	INPUT: <code>ResultSet</code> handle (returned by <code>mEnableExecute</code>).
	<i>Count As Long</i>	OUTPUT: Number of columns in the result set.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>mEnableError</code> can be called to get a description of the problem.	

mEnableDescribeColumn		
Description:	Returns the number of columns in the result set.	
Parameters:	<i>ResultSet As Long</i>	INPUT: ResultSet handle (returned by mEnableExecute).
	<i>ColumnNumber As Long</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnName As String</i>	OUTPUT: The name of the column.
	<i>DataType As Long</i>	OUTPUT: The SQL datatype of the column. One of the following (defined in mEnable.bas): mEnableDataType_CHAR mEnableDataType_NUMERIC mEnableDataType_DECIMAL mEnableDataType_INTEGER mEnableDataType_SMALLINT mEnableDataType_FLOAT mEnableDataType_REAL mEnableDataType_DOUBLE mEnableDataType_DATE mEnableDataType_TIME mEnableDataType_TIMESTAMP mEnableDataType_VARCHAR mEnableDataType_LONGVARCHAR mEnableDataType_BINARY mEnableDataType_VARBINARY mEnableDataType_LONGVARBINARY mEnableDataType_BIGINT mEnableDataType_TINYINT mEnableDataType_BIT mEnableDataType_WCHAR mEnableDataType_WVARCHAR mEnableDataType_WLONGVARCHAR
	<i>Length As Long</i>	OUTPUT: The precision of the column.
	<i>Scal As Long</i>	OUTPUT: The scale of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, mEnableError can be called to get a description of the problem.	

mEnableNextRecord		
Description:	Positions to the first/next record of the result set.	
Parameters:	<i>ResultSet As Long</i>	INPUT: ResultSet handle (returned by mEnableExecute).
	<i>NoMoreRecords As Boolean</i>	OUTPUT: True if the result set is exhausted. Otherwise False.
Returns:	Boolean (True for success, False for failure). If there is a failure, mEnableError can be called to get a description of the problem. Note: if the result set is exhausted, NoMoreRecords will be set to True and this function will return True.	

mEnableGetDataAsString		
Description:	Returns the value of one column of the current record in the result set.	
Parameters:	<i>ResultSet As Long</i>	INPUT: ResultSet handle (returned by mEnableExecute).
	<i>ColumnNumber As Long</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnValue As String</i>	OUTPUT: The value of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, mEnableError can be called to get a description of the problem.	

mEnableGetDataAsDate		
Description:	Returns the value of one column of the current record in the result set.	
Parameters:	<i>ResultSet As Long</i>	INPUT: ResultSet handle (returned by mEnableExecute).
	<i>ColumnNumber As Long</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnValue As Date</i>	OUTPUT: The value of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, mEnableError can be called to get a description of the problem.	

mEnableCloseResultSet			
Description:	Discards result set returned by <code>mEnableExecute</code> . Once the <code>ResultSet</code> is discarded, it should not be used again.		
Parameters:	<table border="1"> <tr> <td><i>ResultSet As Long</i></td> <td>INPUT: <code>ResultSet</code> handle (returned by <code>mEnableExecute</code>).</td> </tr> </table>	<i>ResultSet As Long</i>	INPUT: <code>ResultSet</code> handle (returned by <code>mEnableExecute</code>).
<i>ResultSet As Long</i>	INPUT: <code>ResultSet</code> handle (returned by <code>mEnableExecute</code>).		
Returns:	Boolean (True for success, False for failure). The <code>ResultSet</code> is discarded even if False is returned.		

mEnableDisconnect			
Description:	Terminates a connection made by <code>mEnableConnect</code> . Once the <code>Connect</code> is discarded, it should not be used again.		
Parameters:	<table border="1"> <tr> <td><i>Connect As Long</i></td> <td>INPUT: Connection handle (returned by <code>mEnableConnect</code>).</td> </tr> </table>	<i>Connect As Long</i>	INPUT: Connection handle (returned by <code>mEnableConnect</code>).
<i>Connect As Long</i>	INPUT: Connection handle (returned by <code>mEnableConnect</code>).		
Returns:	Boolean (True for success, False for failure). The <code>Connect</code> is discarded even if False is returned.		

mEnableError					
Description:	Returns a description of the most recent error.				
Parameters:	<table border="1"> <tr> <td><i>Handle As Long</i></td> <td>INPUT: Connection handle (returned by <code>mEnableConnect</code>) or <code>ResultSet</code> (returned by <code>mEnableExecute</code>).</td> </tr> <tr> <td><i>ErrorMessage As Long</i></td> <td>OUTPUT: Textual description of the error.</td> </tr> </table>	<i>Handle As Long</i>	INPUT: Connection handle (returned by <code>mEnableConnect</code>) or <code>ResultSet</code> (returned by <code>mEnableExecute</code>).	<i>ErrorMessage As Long</i>	OUTPUT: Textual description of the error.
<i>Handle As Long</i>	INPUT: Connection handle (returned by <code>mEnableConnect</code>) or <code>ResultSet</code> (returned by <code>mEnableExecute</code>).				
<i>ErrorMessage As Long</i>	OUTPUT: Textual description of the error.				
Returns:	Boolean (True for success, False for failure).				

Tip

SYWARE has provided a sample eMbedded Visual Basic application—`sample.bas`—in the mEnable Software Development Kit.

mEnable and Applications Written in Visual Basic .NET



This topic is intended for developers who are writing client applications for Pocket PC, Windows CE, and Windows Mobile devices using Visual Basic .NET. Developers writing in eMbedded Visual Basic should turn instead to page 69.

SYWARE's mEnable works with applications written in Microsoft Visual Basic .NET.

To create a Visual Basic .NET application that uses mEnable:

1 Create a File DSN for the database on the server machine:

On Windows XP this is typically done by selecting: **Start - Control Panel - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**. On Windows Vista: **Start - Control Panel - System and Maintenance - Administrative Tools - Data Sources (ODBC)**. Add a **File DSN**.

With the exception of username and password, this File DSN must contain all of the information required to establish a connection to the database on the development computer. For example, if your File DSN identifies MS SQL Server, it must identify the computer on which SQL Server is running.

Important: *When creating the File DSN, do **not** select the SYWARE mEnable driver. Instead, select the driver for the type of database you will be connecting to, for example, SQL Server or Microsoft Access.*

2 Copy this File DSN (a *.dsn file) to the client computer.

3 Write your Visual Basic .NET application.

When using Visual Basic .NET, you do not use the ODBC API. Instead, you use a simplified database access programming API (documented below) which is made available by adding the item **mEnable.vb** to your Visual Basic .NET project. mEnable.vb is included with mEnable Windows Mobile/Windows CE/Pocket PC Software Development Kit.

Note about Character Encoding:

mEnable.vb handles all Multi-Byte to UNICODE data conversions.

mEnable API Functions for Visual Basic .NET

Your application first establishes a connection by calling **ConnectToServer**. You then execute SQL commands by calling **Execute**. By default, every insert, update, and delete is committed immediately, but you can override this behavior with **SetConnectOption**, **Commit**, and **Abort**. If the SQL statement returns a result set, the calls **ColumnCount**, **DescribeColumn**, **NextRecord**, **GetDataAsString**, and **GetDataAsDate** can be used to retrieve the data, and **CloseResultSet** is used to close the result set. When you are finished with the connection, **Disconnect** closes the connection.

These functions are documented on the following pages. In addition, SYWARE has provided a sample Visual Basic .NET application—**sample.vb**—as part of the mEnable Software Development Kit.

ConnectToServer		
Description:	Establishes an mEnable connection.	
Parameters:	<i>hwnd As IntPtr</i>	INPUT: If the Prompt parameter is True, the parent window for the dialog box. Otherwise this is ignored.
	<i>RASOrLAN As Int32</i>	INPUT: Specifies the connection type. Either RAS or LAN (these constants are defined in mEnable.vb).
	<i>RASEntry As String</i>	INPUT: Name of RAS entry. Ignored if RASOrLAN is LAN.
	<i>RemoteHost As String</i>	INPUT: Name or IP address of the mEnable server.
	<i>Port As String</i>	INPUT: Port being used by the mEnable server. If not specified, 20225 is used.
	<i>Config As String</i>	INPUT: Full pathname of the File DSN on the client machine.
	<i>Database As String</i>	INPUT: Database on the server.
	<i>User As String</i>	INPUT: Username for logging into the database on the server.
	<i>Password As String</i>	INPUT: Password for logging into the database on the server.
	<i>Prompt As Boolean</i>	INPUT: If True, put up a connection dialog. The values will default to the values specified above. If False, connect using the values above.
	<i>Connect As Int32</i>	OUTPUT: A handle to the connection (used in subsequent mEnable calls).
	<i>ErrorMessage As String</i>	OUTPUT: If the connection fails, a description of the problem.
	<i>Cancel As Boolean</i>	OUTPUT: If Prompt is True and the user cancels the dialog box, this is set to TRUE. Otherwise this is set to False.
Returns:	Boolean (True for success, False for failure). If there is a failure, ErrorMessage contains a description of the problem. Note: If the user canceled the dialog box, Cancel will be set to True and this function will return True.	

SetConnectOption		
Description:	<p>Sets connection option(s). Note: No result sets can be open on the connection when this function is called.</p> <p>In the current release, this function is used to turn off/on a single option: AutoCommit. When AutoCommit is on (the default state), <code>Execute</code> commits every insert, update, and delete statement immediately after executing it.</p>	
Parameters:	<i>Connect As Int32</i>	INPUT: Connection handle returned by <code>ConnectToServer</code> .
	<i>Option As Int32</i>	INPUT: The connection option whose value is to be set (as defined in <code>mEnable.vb</code>): <code>ConnectOption_AutoCommit</code>
	<i>Value As Int32</i>	INPUT: One of the following (as defined in <code>mEnable.vb</code>): <code>ConnectOption_AutoCommit_Off</code> <code>ConnectOption_AutoCommit_On</code>
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

Commit		
Description:	Commits uncommitted transactions on the connection and closes any open results sets.	
Parameters:	<i>Connect As Int32</i>	INPUT: Connection handle returned by <code>ConnectToServer</code> .
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

Abort		
Description:	Aborts uncommitted transactions on the connection and closes any open results sets.	
Parameters:	<i>Connect As Int32</i>	INPUT: Connection handle returned by <code>ConnectToServer</code> .
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

Execute		
Description:	Executes an SQL statement. If the SQL statement returns a result set, use <code>NextRecord</code> to position to the first record of the result set.	
Parameters:	<i>Connect As Int32</i>	INPUT: Connection handle returned by <code>ConnectToServer</code> .
	<i>SQL As String</i>	INPUT: SQL statement to execute.
	<i>ResultSet As Int32</i>	OUTPUT: If the SQL statement returns a result set (i.e., if it is a SELECT statement), a handle to the result set (used in subsequent <code>mEnable</code> calls). Otherwise 0.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

ColumnCount		
Description:	Returns the number of columns in the result set.	
Parameters:	<i>ResultSet As Int32</i>	INPUT: <code>ResultSet</code> handle (returned by <code>Execute</code>).
	<i>Count As Int32</i>	OUTPUT: Number of columns in the result set.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

DescribeColumn		
Description:	Returns the number of columns in the result set.	
Parameters:	<i>ResultSet As Int32</i>	INPUT: ResultSet handle (returned by Execute).
	<i>ColumnNumber As Int32</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnName As String</i>	OUTPUT: The name of the column.
	<i>DataType As Int32</i>	OUTPUT: The SQL datatype of the column. One of the following (defined in mEnable.vb): DataType_CHAR DataType_NUMERIC DataType_DECIMAL DataType_INTEGER DataType_SMALLINT DataType_FLOAT DataType_REAL DataType_DOUBLE DataType_DATE DataType_TIME DataType_TIMESTAMP DataType_VARCHAR DataType_LONGVARCHAR DataType_BINARY DataType_VARBINARY DataType_LONGVARBINARY DataType_BIGINT DataType_TINYINT DataType_BIT DataType_WCHAR DataType_WVARCHAR DataType_WLONGVARCHAR
	<i>Length As Int32</i>	OUTPUT: The precision of the column.
	<i>Scal As Int32</i>	OUTPUT: The scale of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, GetError can be called to get a description of the problem.	

NextRecord		
Description:	Positions to the first/next record of the result set.	
Parameters:	<i>ResultSet As Int32</i>	INPUT: ResultSet handle (returned by Execute).
	<i>NoMoreRecords As Boolean</i>	OUTPUT: True if the result set is exhausted. Otherwise False.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem. Note: if the result set is exhausted, <i>NoMoreRecords</i> will be set to True and this function will return True.	

GetDataAsString		
Description:	Returns the value of one column of the current record in the result set.	
Parameters:	<i>ResultSet As Int32</i>	INPUT: ResultSet handle (returned by Execute).
	<i>ColumnNumber As Int32</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnValue As String</i>	OUTPUT: The value of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

GetDataAsDate		
Description:	Returns the value of one column of the current record in the result set.	
Parameters:	<i>ResultSet As Int32</i>	INPUT: ResultSet handle (returned by Execute).
	<i>ColumnNumber As Int32</i>	INPUT: Column number of interest. Column 1 is the first column.
	<i>ColumnValue As Date</i>	OUTPUT: The value of the column.
Returns:	Boolean (True for success, False for failure). If there is a failure, <code>GetError</code> can be called to get a description of the problem.	

CloseResultSet			
Description:	Discards result set returned by <code>Execute</code> . Once the <code>ResultSet</code> is discarded, it should not be used again.		
Parameters:	<table border="1"> <tr> <td><i>ResultSet As Int32</i></td> <td>INPUT: <code>ResultSet</code> handle (returned by <code>Execute</code>).</td> </tr> </table>	<i>ResultSet As Int32</i>	INPUT: <code>ResultSet</code> handle (returned by <code>Execute</code>).
<i>ResultSet As Int32</i>	INPUT: <code>ResultSet</code> handle (returned by <code>Execute</code>).		
Returns:	Boolean (True for success, False for failure). The <code>ResultSet</code> is discarded even if False is returned.		

Disconnect			
Description:	Terminates a connection made by <code>ConnectToServer</code> . Once the <code>Connect</code> is discarded, it should not be used again.		
Parameters:	<table border="1"> <tr> <td><i>Connect As Int32</i></td> <td>INPUT: Connection handle (returned by <code>ConnectToServer</code>).</td> </tr> </table>	<i>Connect As Int32</i>	INPUT: Connection handle (returned by <code>ConnectToServer</code>).
<i>Connect As Int32</i>	INPUT: Connection handle (returned by <code>ConnectToServer</code>).		
Returns:	Boolean (True for success, False for failure). The <code>Connect</code> is discarded even if False is returned.		

GetError					
Description:	Returns a description of the most recent error.				
Parameters:	<table border="1"> <tr> <td><i>Handle As Int32</i></td> <td>INPUT: Connection handle (returned by <code>ConnectToServer</code>) or <code>ResultSet</code> (returned by <code>Execute</code>).</td> </tr> <tr> <td><i>ErrorMessage As String</i></td> <td>OUTPUT: Textual description of the error.</td> </tr> </table>	<i>Handle As Int32</i>	INPUT: Connection handle (returned by <code>ConnectToServer</code>) or <code>ResultSet</code> (returned by <code>Execute</code>).	<i>ErrorMessage As String</i>	OUTPUT: Textual description of the error.
<i>Handle As Int32</i>	INPUT: Connection handle (returned by <code>ConnectToServer</code>) or <code>ResultSet</code> (returned by <code>Execute</code>).				
<i>ErrorMessage As String</i>	OUTPUT: Textual description of the error.				
Returns:	Boolean (True for success, False for failure).				

Tip

SYWARE has provided a sample Visual Basic application—`sample.vb`—in the mEnable Software Development Kit.

Appendix

Notes for Setting Up RAS



This topic is intended for all users who want to use RAS to connect to a server.

The Windows NT and Windows 2000 operating systems provide the Remote Access Service (RAS) for dial-up networking access. It enables a remote client to dial into the Windows NT server and connect to its local network. To utilize RAS, you must configure RAS on the server and specify a dialup connection on the client.

RAS is a Microsoft product. For assistance in setting up RAS on your server, please refer to your Microsoft documentation or contact Microsoft technical support.

Troubleshooting RAS on the Server

If you experience difficulties setting up RAS on the server, the following checklist may help identify and resolve problems:

- Make sure the RAS server is enabled:

From the server's **Start** menu, select **Settings – Control Panel**, then double-click the **Services** icon. Verify that the status for "Remote Access Server" is "Started." If not, highlight **Remote Access Server** and click the **Start** button.

Tip: You can set up RAS to start automatically when the server is booted. With **Remote Access Server** still highlighted in the Services dialog box, click the **Startup** button, then set **Startup Type** to **Automatic**.

- Make sure the Network settings for Remote Access Service are properly configured on the server:
 - Open the Control Panel's **Network** icon. Click the **Services** tab. Highlight **Remote Access Service** and click the **Properties** button. Click the **Network** button. Make sure **Allow Remote Clients Running TCP/IP** is enabled. Click the **Configure** button next to **TCP/IP** and make sure the settings are correct. You may have to set up an address pool of TCP/IP addresses for use by dialin clients.

- Open the Control Panel's **Network** icon. Click the **Services** tab. Highlight **Remote Access Service** and click the **Properties** button. In the list box, select the port (for example, "COM1: Standard Modem"). Click the **Configure** button and make sure the port is set to receive calls.
- Make sure the modem settings on the server are properly set up: Open the Control Panel's **Modems** icon. Click the **Properties** tab. Pay particular attention to the baud rate.
- Make sure that the server recognizes the userid that the client's RAS connection will use for login:
From the server's **Start** menu, select **Programs – Administrative Tools – User Manager**. Highlight the user and select **User – Properties** from the menu bar. Make sure the account is not disabled. Click the **Dialin** button and make sure the user has been granted dialin privileges.

Setting Up RAS on a Client

Working on the client device, create a dialup connection:

<i>If the client is a...</i>	<i>Select...</i>
Windows CE Pocket PC	Start – Settings – Connections – Modem
Windows CE H/PC Pro	Start – Settings – Communication – Remote Networking
Windows CE P/PC	Start – Programs – Communication – Connections
Desktop/Laptop	My Computer – Dialup Networking

Note

On a CE device, you may have to turn off compression under the TCP/IP settings. To do this, when making the connection, click **TCP/IP Settings** and clear the checkboxes labeled **Use software compression** and **Use IP header compression**.

Testing the Network Connection

After you start your RAS server and set up an RAS client, test the configuration by trying to connect without using mEnable technology:

<u><i>If the client is a...</i></u>	<u><i>Select....</i></u>
Windows CE Pocket PC	Start – Programs – Connections – [MyConnection]
Windows CE H/PC Pro	Start – Programs – Communication – Remote Networking – [MyConnection]
Windows CE P/PC	Start – Programs – Communication – [MyConnection]
Desktop/Laptop	My Computer – Dialup Networking – Dial

Tip

If you are having trouble connecting, and your CE device has both a modem and an Ethernet card, remove the Ethernet card and reset the device before trying to connect.

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