



# Virtual MBX Driver Help

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*Virtual MBX Driver for  
Modbus, Modbus Plus and  
Modbus TCP Networks*

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## **VIRTUAL MBX DRIVER HELP**

### **Virtual MBX<sup>®</sup> Driver for Modbus, Modbus Plus and Modbus TCP Networks**

#### **Version 9**

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## INTRODUCTION

The Virtual MBX Driver allows all existing 16-bit DOS or Windows 3.x NETLIB/NetBIOS-compatible applications to run under current 32-bit Windows operating systems in their original binary form. This includes programs such as Modsoft, ModLink, MBPSTAT and hundreds of other custom applications written by software developers and system integrators. With the Virtual MBX Driver installed, you can execute 16-bit programs exactly the same way as in their original environment.

These applications can run concurrently with other 16- or 32-bit applications, sharing the same 32-bit device driver. In addition, you can concurrently execute multiple instances of the same application. For example, you can run multiple instances of MBPSTAT to monitor the operation of multiple Modbus Plus networks.

If your computer uses a 64-bit edition of Windows, refer to Cyberlogic Knowledge Base article *KB2010-02 Running 16-Bit Applications* for important information on using the Virtual MBX Driver on your system.

This driver is part of Cyberlogic's MBX Driver Suite, MBX OPC Server Suite, MBX OPC Premier Suite, MBX OPC Enterprise Suite and MBX Bridge Suite, providing 16-bit application compatibility for these products.

## Remote Connectivity

The MBX Gateway Driver, which is included with all MBX products, allows applications on your system to access MBX devices in other computers on your network. Your system will then have full driver functionality, just as though the MBX device in the other system were installed in your system. The Virtual MBX Driver is compatible with the MBX Gateway Driver, providing this remote connectivity to the 16-bit applications in your system. For more information, refer to the [MBX Gateway Driver](#) section.

The Virtual MBX Driver can also be used with the Mbx.Net Server. The Mbx.Net Server along with the [Mbx.Net Gateway Driver](#) can provide secure remote connectivity to MBX devices on a local network or over the Internet. Just like with the MBX Gateway Server, you will have remote connectivity to the 16-bit applications in your system.

## Compatibility

The Virtual MBX Driver is implemented as part of the Cyberlogic MBX architecture, which is the foundation used in other Cyberlogic drivers such as the MBX Driver, the Ethernet MBX Driver, the Serial MBX Driver, the MBX Gateway Driver and the Mbx.Net Gateway Driver. Consequently, the Virtual MBX Driver works with all of these drivers, supporting all DOS and Win16 applications that worked with Modicon's original DOS driver.

## Blending MBX-Supported Networks

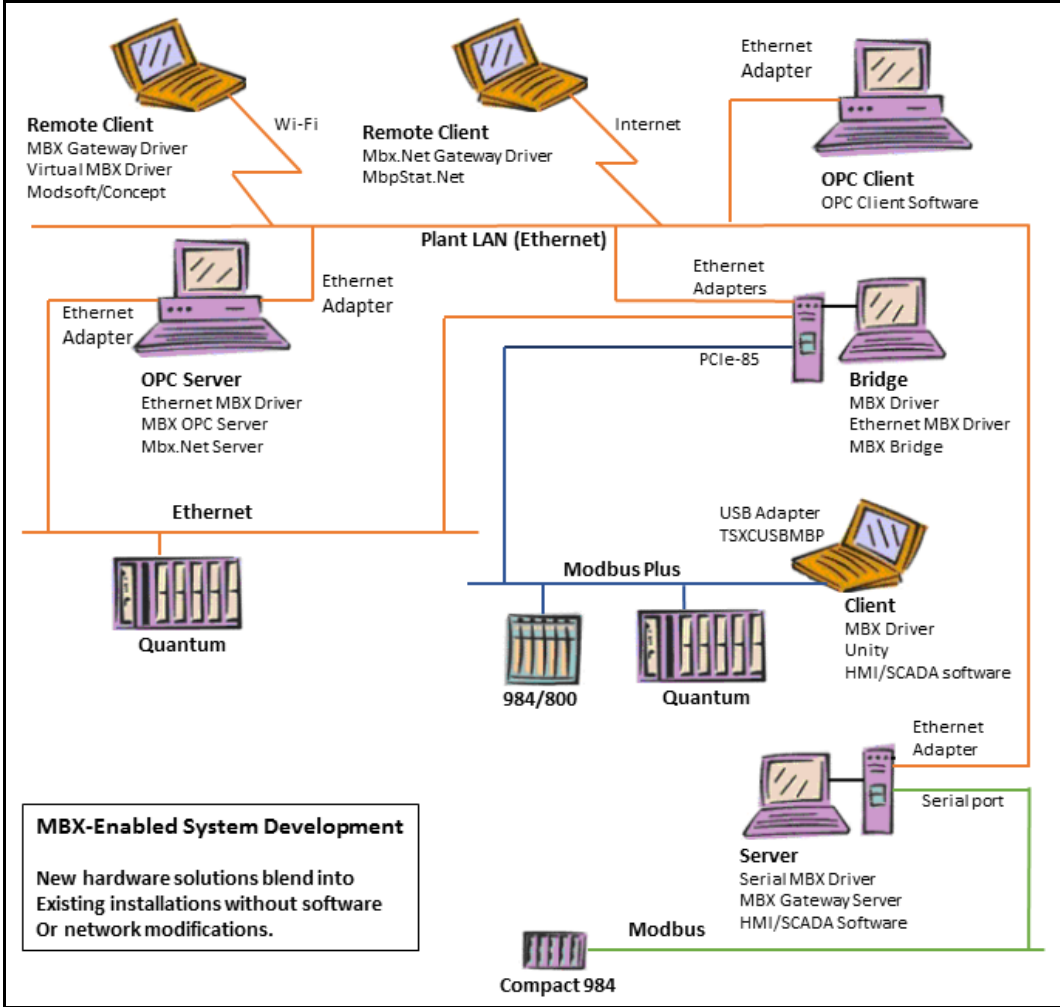
The MBX driver family provides support for all Modicon networks through a common architecture, with identical programming interfaces. This means that an application that

operates with one of the MBX family drivers, such as the Ethernet MBX Driver, will work with the rest of them as well. Thus, virtually all Modbus Plus compatible software programs can operate over all Modicon-supported networks with no code modifications. You will find a complete description of the MBX family in the [Appendix B: MBX Architecture and Companion Products](#).

Migration of existing installations to new hardware products does not require the user to discard working, proven software solutions. As depicted in the diagram below, a user can mix Modbus, Modbus Plus and Modbus TCP based hardware products in existing installations without losing software, network or integration investment.

The MBX family of products includes:

- [MBX Driver](#) is Cyberlogic's device driver for Modbus Plus interface adapters.
- [Ethernet MBX Driver](#) provides Modbus TCP communication.
- [Serial MBX Driver](#) provides Modbus RTU/ASCII communication.
- [MBX Gateway Driver](#) works with the other MBX drivers, giving access to Modbus, Modbus Plus and Modbus TCP networks from remote locations.
- [Mbx.Net Gateway Driver](#) works with the other MBX drivers, giving secure access to Modbus, Modbus Plus and Modbus TCP networks from remote locations, including over the Internet.
- [Virtual MBX Driver](#) works with the other MBX drivers to permit 16-bit legacy software to run in current 32-bit Windows operating systems.
- [MBX Bridge](#) allows you to bridge any combination of Modicon networks by routing messages between MBX devices.
- [MBX OPC Server](#) connects OPC-compliant client software applications to data sources over all Modicon networks.
- [MbpStat.Net](#) is the Modbus Plus network diagnostic utility. It provides the same functionality as the original DOS-based MBPSTAT application.
- [Mbx.Net Server](#) a WCF server that provides secure remote access to all MBX devices.
- [MBX SDK](#) is a software development kit for MBXAPI, MBXAPI.Net and NETLIB compliant development.



## WHAT SHOULD I DO NEXT?

The links below will take you directly to the section of this manual that contains the information you need to configure, use and troubleshoot the Virtual MBX Driver.

### Learn How the Driver Works

If you are not familiar with the way that the Virtual MBX Driver works, you should begin by reading [Communication Using the Virtual MBX Driver](#).

### Read a Quick-Start Guide

First-time users of the Virtual MBX Driver will want to read the [Quick-Start Guide](#), which walks through a typical configuration session, step-by-step.

### Get Detailed Information on the Configuration Editor

Experienced users who want specific information on features of the configuration editor will find it in the [Configuration Editor Reference](#) section.

### Verify That It's Working or Troubleshoot a Problem

If you have already configured the driver, you should verify that it operates as expected. Refer to the [Validation & Troubleshooting](#) section for assistance. In case of communication problems, this section also provides problem-solving hints.

### Get Information on Related Products

The MBX family consists of several well-integrated products, which provide connectivity for Modicon networks in distributed environments. For more information about these products, refer to the [Appendix B: MBX Architecture and Companion Products](#) section.

### Print a Copy of This Document

The content of this document is also provided in PDF format. PDF files can be viewed using the Adobe® Reader program, and can also be used to print the entire document.

### Contact Technical Support

To obtain support information, open the Windows **Start** menu and go to the product suite you have installed. From there, select **Product Information**.

## **COMMUNICATION USING THE VIRTUAL MBX DRIVER**

This section is intended to familiarize you with the main features of the Virtual MBX Driver.

### **Device Drivers for 16-Bit Applications**

The purpose of the Virtual MBX Driver is to allow legacy 16-bit applications to run under current 32-bit Windows operating systems. To do this, it must present the application with an interface that appears the same as the 16-bit device drivers they formerly worked with.

#### **The Prior Art: 16-Bit Device Drivers**

Prior to the introduction of 32-bit Windows operating systems, DOS and 16-bit Windows applications communicated over Modbus Plus through the use of a DOS device driver called MBPHOST.SYS (previously called SA85.SYS). This driver implemented the NetBIOS-style interface used in other standard networks. All NetBIOS commands were sent to the driver through a pre-selected software vector, typically vector 5C hex.

Some applications communicated to the driver through the direct NetBIOS calls. To simplify the driver's interface, Modicon introduced a simpler application programming interface (API) called NETLIB. This new interface became the standard API for Modbus Plus communications.

#### **Achieving Compatibility Using the Virtual MBX Driver**

The Virtual MBX Driver fully emulates the operation of the DOS-based SA85.SYS and MBPHOST.SYS drivers from Modicon. Therefore, the SA85.SYS and MBPHOST.SYS drivers are no longer needed and should not be used.

The Virtual MBX Driver fully supports all NETLIB/NetBIOS features. This includes support for Data Master/Slave, Program Master/Slave, Global Data and Peer Cop. Once the driver is installed, any existing DOS or Win16 application can run under current Windows operating systems without code modifications.

The Virtual MBX Driver uses the MBX Driver, Ethernet MBX Driver and Serial MBX Driver for all of its local I/O functions. It can also use the MBX Gateway Driver for network-based installations. At least one of these drivers is required for the proper operation of the Virtual MBX Driver.

### **Virtual DOS Machine for 16-Bit Applications**

When the user opens a DOS or Windows 3.x application, Windows launches a Virtual DOS Machine (VDM) instance within the Win32 subsystem. Several copies of the VDM may run simultaneously without interfering with each other, allowing the applications to



run independently. Each application can then run as it would in a native MS-DOS/Windows 3.x environment.

When the VDM is launched, it:

1. Allocates memory to create a virtual DOS machine
2. Reads the files ...\`config.nt` and ...\`autoexec.nt`
3. Loads drivers and executes batch files as specified
4. Loads the application and executes it

The `config.nt` and `autoexec.nt` files located in the `system32` directory are global for the entire Windows system. If you use a shortcut to launch a DOS application, you can specify private versions of these files, which may be located in any directory.

## Running DOS Applications

Although DOS applications do not require a shortcut to run, we recommend that you use a shortcut for them. This is important because each time a DOS application is launched, a separate VDM instance is started. Using a shortcut allows you to specify the `autoexec.nt` and `config.nt` files you wish to use for that instance, allowing you to configure each VDM for the specific application running in it.

For instructions on how to create these shortcuts, including instructions on how to configure the paths to the desired `autoexec.nt` and `config.nt` files, refer to the [Configuring Shortcuts for DOS Applications](#) section.

If you want to run two common DOS applications, Modsoft or MBPSTAT, you will find shortcuts for them already configured in the Windows **Start** menu under the product suite you installed. MBPSTAT is located in the **Diagnostics** submenu and Modsoft is in the **Applications** submenu.

## Running 16-Bit Windows Applications

When running 16-bit Windows applications such as Concept, you must use the global `config.nt` and `autoexec.nt` files located in the `system32` directory. The reason for this requirement is that all 16-bit Windows applications run in a single VDM instance, called the system VDM, and it uses those files. The system VDM will open when the first 16-bit Windows application is launched, and will stay open until the system shuts down. Because `config.nt` and `autoexec.nt` are processed only when the VDM opens, you must reboot the system whenever you change the configuration of these files.

Both files must be modified for the Virtual MBX Driver to run correctly.

The `config.nt` file must contain the following line:

```
device=%SystemRoot%\System\mbp16.sys
```

The `autoexec.nt` must contain the following line:

```
%SystemRoot%\System\mbp16vec {NetBIOS_vector}
```

In the above, {NetBIOS\_vector} is the software interrupt vector used by the NetBIOS interface. If a value is not specified here, the default value of 5C hex will be used.

The above modifications to the autoexec.nt and config.nt files can be done with a text editor, such as Notepad. However, it is much easier to do it by using the Virtual MBX Configuration Editor. The procedure to do this is found in the [Configuring Support for 16-Bit Windows Applications](#) section. After these changes are made, you must reboot the system for them to take effect.

## QUICK-START GUIDE

Depending on the applications you will use, you may need to configure the Virtual MBX Driver before using it. The setup program installs shortcuts that will be useful for some common applications, but you must manually configure others. To accomplish this, you must run the Virtual MBX Driver Configuration Editor after you install the software.

The following steps show a typical configuration session for the different types of applications. Use it only as a guideline of how to configure the most common features. For detailed descriptions of all of the available features, refer to the [Configuration Editor Reference](#) section.

The procedures in this guide are broken into several sections, covering the various types of applications and approaches you can use for each:

- [Running Modsoft and MBPSTAT from Shortcuts](#)
- [Running DOS Applications from a Command Prompt](#)
- [Configuring Shortcuts for DOS Applications](#)
- [Configuring Support for 16-Bit Windows Applications](#)

To begin, go to [Running Modsoft and MBPSTAT from Shortcuts](#).

### Running Modsoft and MBPSTAT from Shortcuts

Modsoft and MBPSTAT are two of the applications most commonly used with the Virtual MBX Driver. The installation program creates shortcuts for both of these applications, and no additional configuration is normally needed to run them.

**Caution!**

MBPSTAT is included with all of the MBX Suites, and is installed as part of the suite installation. Modsoft, however is not included and must be purchased separately from Schneider. You must install it in the C:\Modsoft directory, or modify the shortcut to reflect the correct path.

To run MBPSTAT, open the Windows **Start** menu and navigate to the product suite you installed. **Cyberlogic Suites**. Open the **Diagnostics** submenu and select the **Mbpstat** shortcut.

To run Modsoft, open the Windows **Start** menu and navigate to the product suite you installed. Open the **Applications** submenu and select the **Modsoft** shortcut.

To continue, go to [Running DOS Applications from a Command Prompt](#).

### Running DOS Applications from a Command Prompt

Windows allows you to start a DOS application from a command prompt, if you wish. The installation program creates a shortcut that will open for you a command prompt window

with Virtual MBX Driver support. If you use this shortcut, no additional configuration is needed.

**Caution!**

If you attempt to run an application from a regular command prompt window and if 16-bit Windows support is enabled, the application may run, using the global autoexec.nt and config.nt in the system32 directory. However, not all applications will run this way, and this type of operation is not recommended.

To open the DOS command prompt window, open the Windows **Start** menu and navigate to the product suite you installed. Open the **Diagnostics** submenu, and select the shortcut called **Command Prompt with VMBX**.

To continue, go to [Configuring Shortcuts for DOS Applications](#).

## Configuring Shortcuts for DOS Applications

It is possible to run DOS applications from the command prompt. However, we recommend that you use shortcuts for all 16-bit DOS applications. This allows you to configure your application's Virtual DOS Machine by using private versions of the autoexec.nt and config.nt files. You can set up these shortcuts easily by following the procedure in [Creating Shortcuts with the Virtual MBX Configuration Editor](#).

You can also create shortcuts directly in Windows Explorer. Using Explorer is more complicated, but it allows you to select custom versions of the autoexec.nt and config.nt files. If you prefer to use Explorer, follow the [Creating Shortcuts with Windows Explorer](#) section.

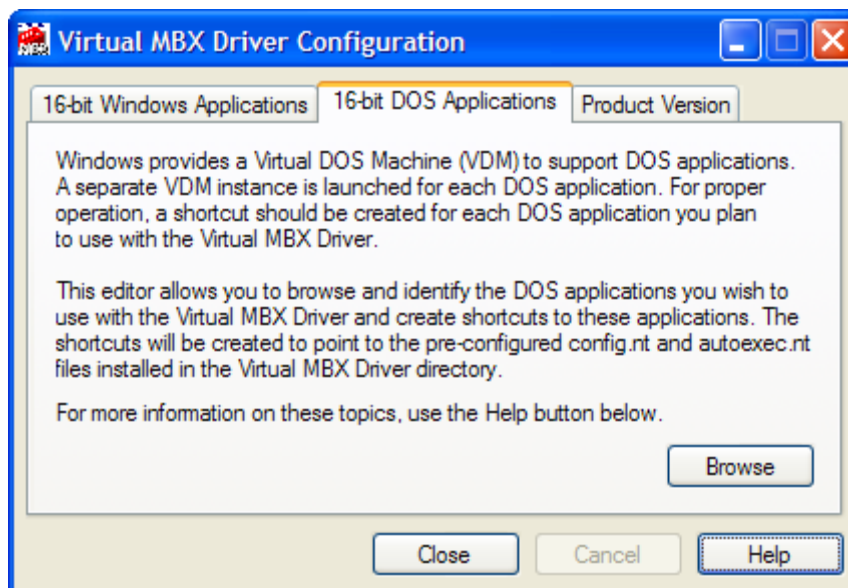
### Creating Shortcuts with the Virtual MBX Configuration Editor

During the Virtual MBX Driver installation, pre-configured versions of autoexec.nt and config.nt files are placed in the product directory. In most cases, these files can be used without any modifications. You can then use the Virtual MBX Configuration Editor to create shortcuts that point to these pre-configured files. The procedure to do that is explained in this section.

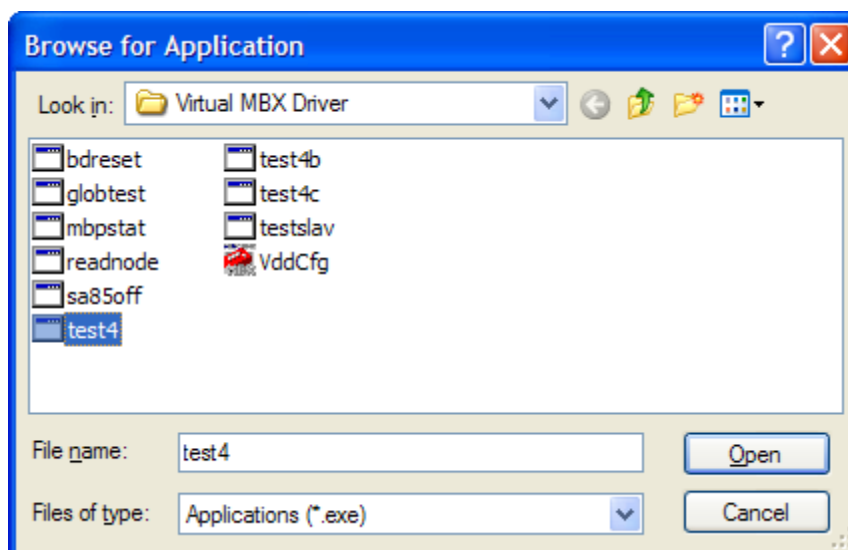
The pre-configured autoexec.nt is set up for applications that use the standard NetBIOS vector 0x5C. If your applications use a different NetBIOS vector, you can either modify the line with MBP16VEC in this file to use the correct vector, or you can create a custom version of autoexec.nt. If you want to use custom versions of autoexec.nt and config.nt, skip this procedure and instead go to the [Creating Shortcuts with Windows Explorer](#) section.

As an example, we will create a shortcut to the test4.exe program located in the product directory.

1. Open the Windows **Start** menu and go to the product suite you installed. Next, open the **Configuration** submenu and select **Virtual MBX Driver**.

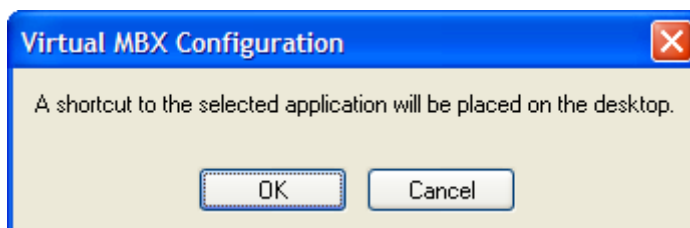


2. Select the **16-bit DOS Applications** tab, then click the **Browse** button.



By default, the test4.exe is located in \Program Files\Cyberlogic\Virtual MBX Driver directory.

3. Select the **test4.exe** program and then click the **Open** button.



4. Click the **OK** button. A shortcut will be placed on the desktop. Use Windows Explorer to edit this shortcut or to move it to a different location.

**Note**

When you create shortcut to a DOS application, a generic icon will be assigned to the shortcut. If you wish to use a different icon, refer to the procedure in [Appendix A: DOS Application Shortcuts](#).

To continue, go to [Configuring Support for 16-Bit Windows Applications](#).

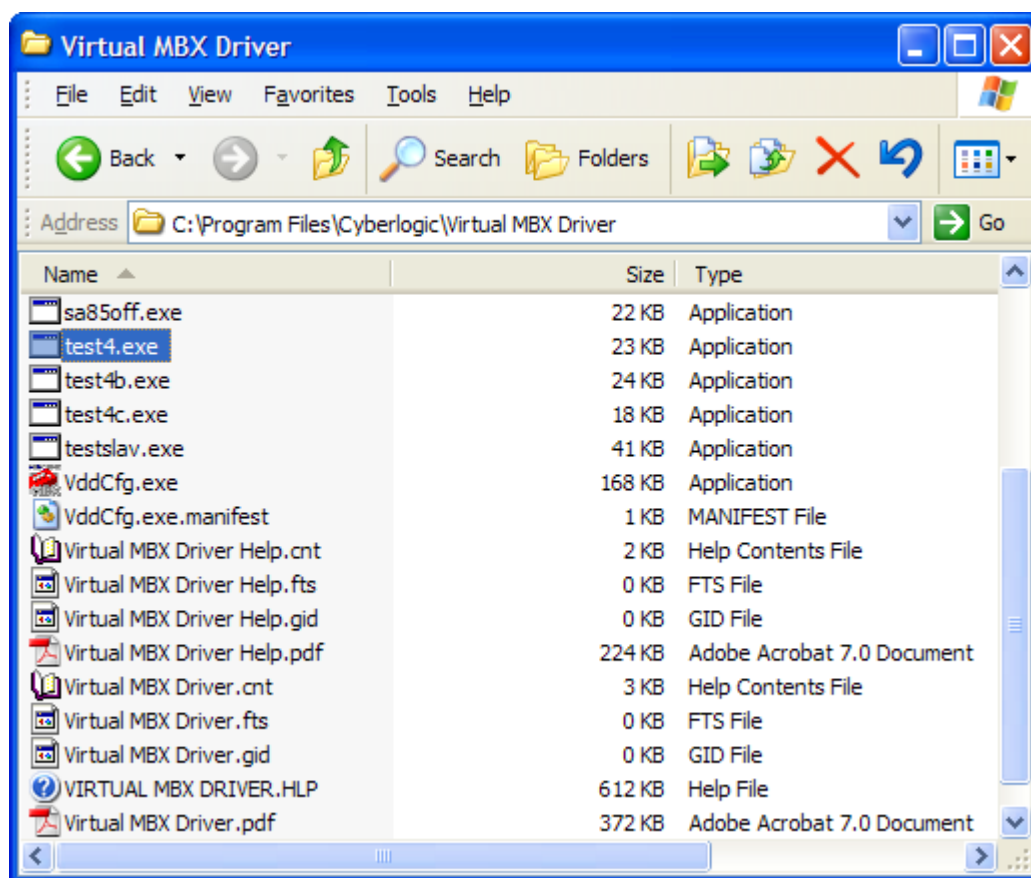
## Creating Shortcuts with Windows Explorer

This section describes the procedure to configure your application's shortcut by using Windows Explorer. This is the method you will use if you need to use custom versions of autoexec.nt and config.nt.

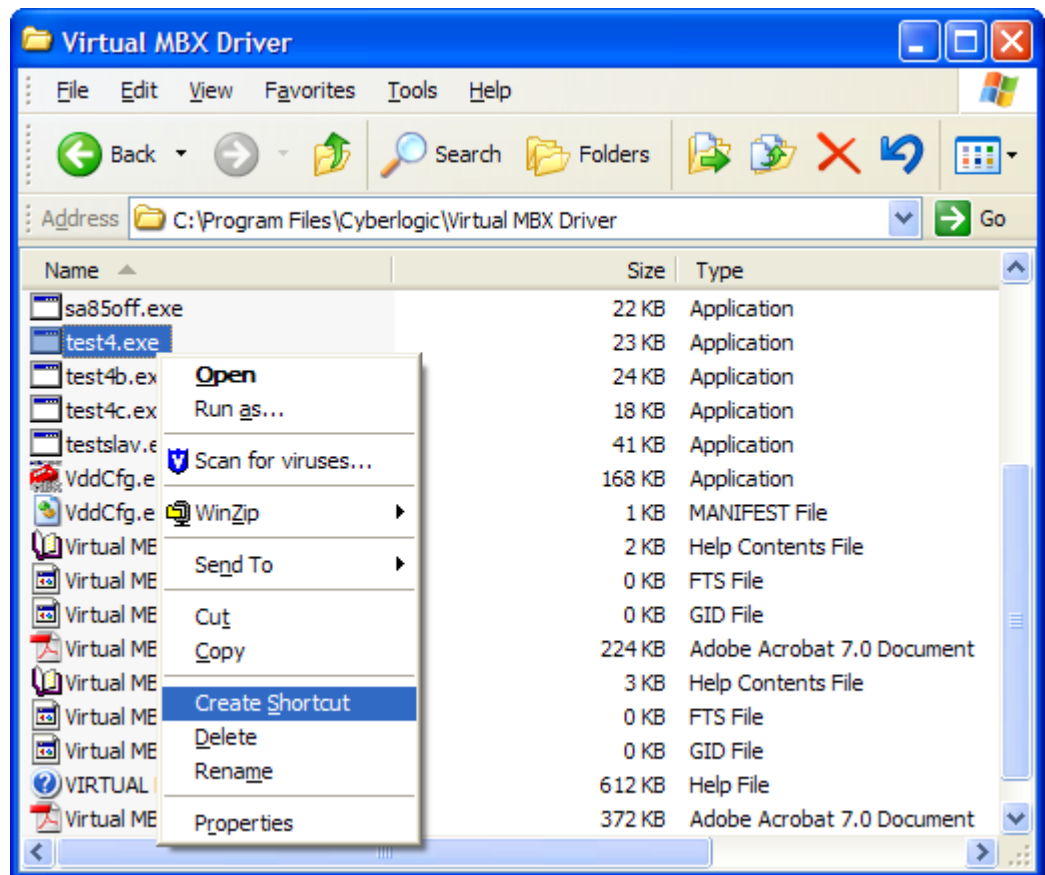
If you want to use the pre-configured versions of these files that were placed on your system by the installation program, go back to the [Creating Shortcuts with the Virtual MBX Configuration Editor](#) section.

As an example, we will use the 16-bit test4.exe program located in the product installation directory.

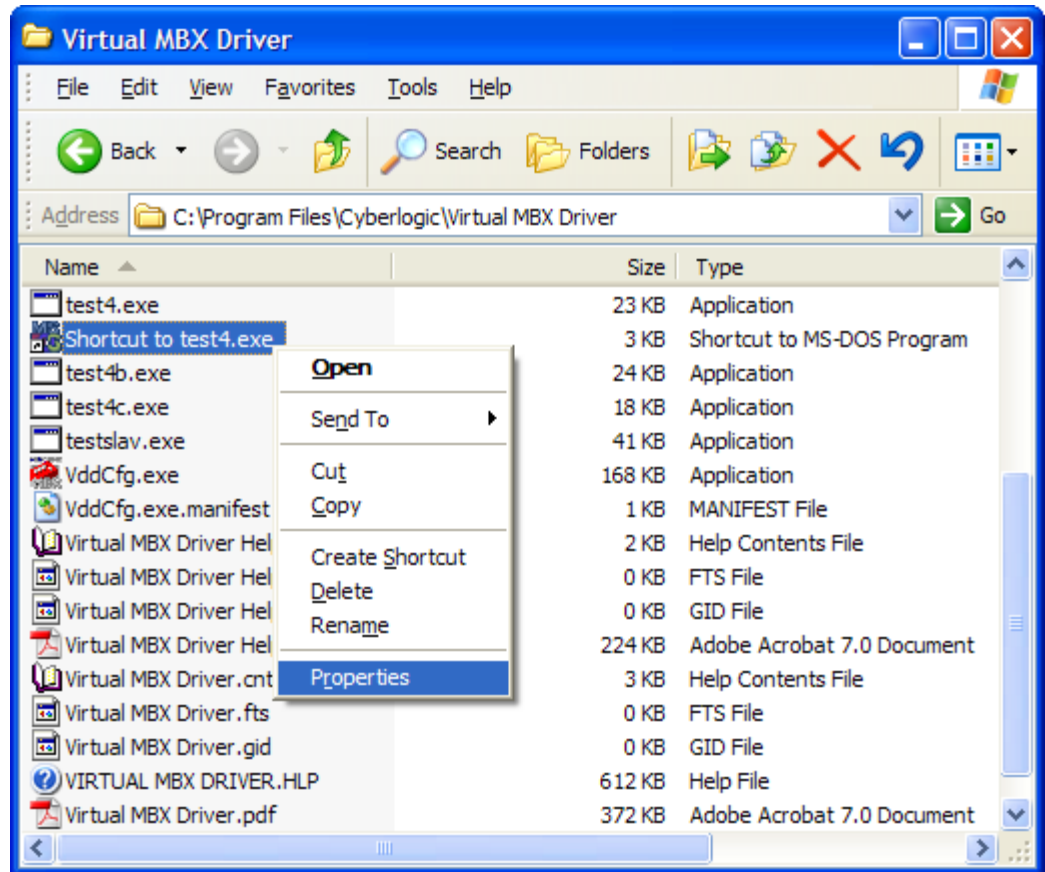
1. Start Windows **Explorer** and browse to the product installation directory. By default, this is \Program Files\Cyberlogic\Virtual MBX Driver.



2. Select **test4.exe**.

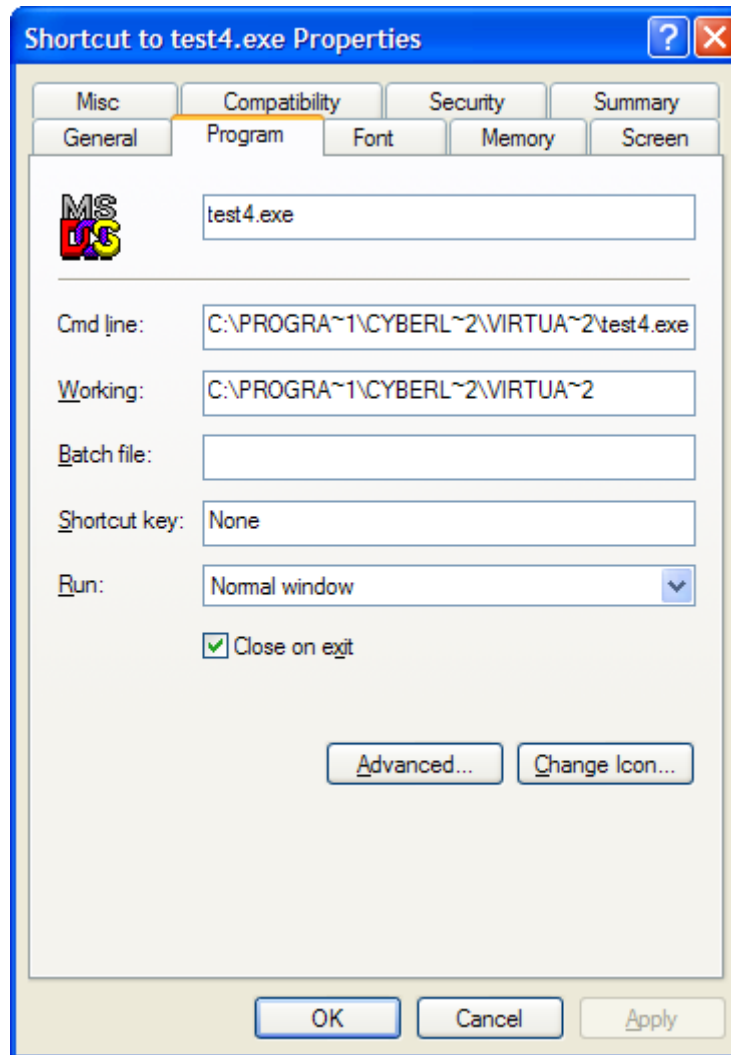


3. Right-click on **test4.exe** and select **Create Shortcut** from the context menu. A shortcut to test4.exe will be created.



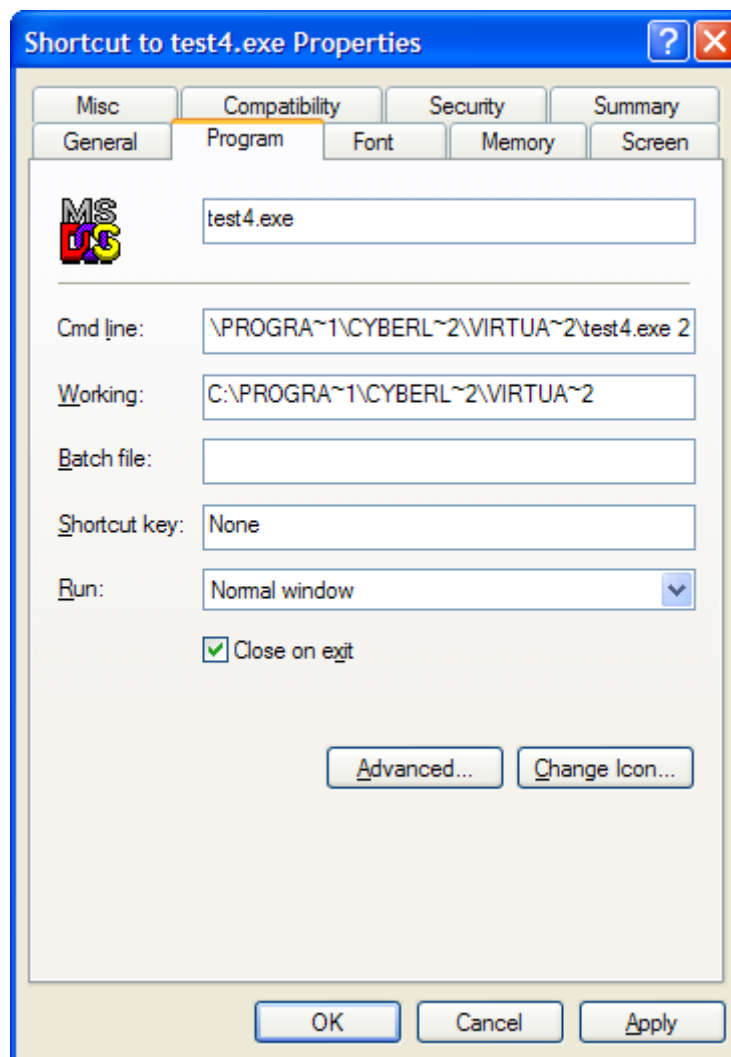
4. Select the **Shortcut to test4.exe**, then right-click and select **Properties** from the menu.



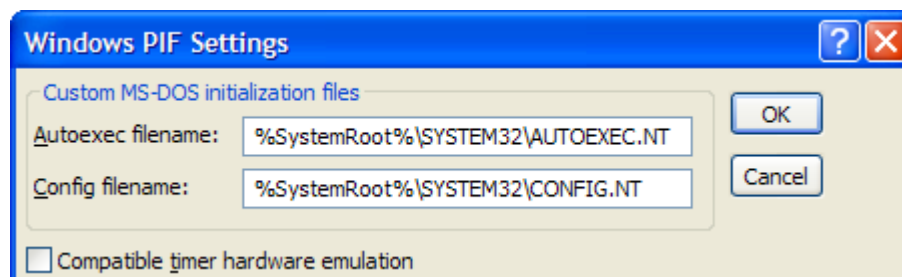


5. Select the **Program** tab.

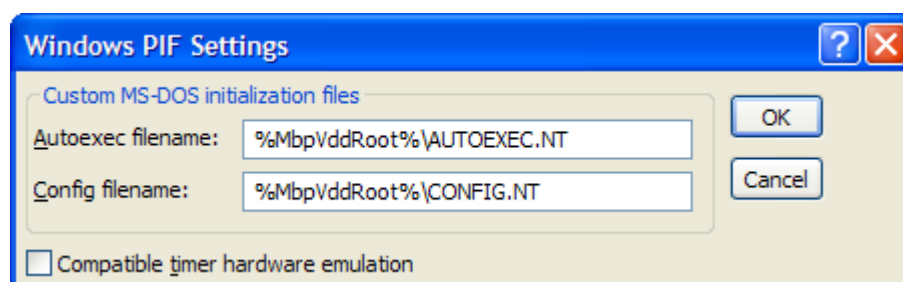
**Caution!** Your application may require some command line switches, which must be added at the end of the **Cmd line** field.



6. Append command line switches, if needed, in the **Cmd line** field.  
In this example, the test4.exe program requires node address 2 to operate.
7. Click the **Advanced...** button. You will see the following screen.

**Caution!**

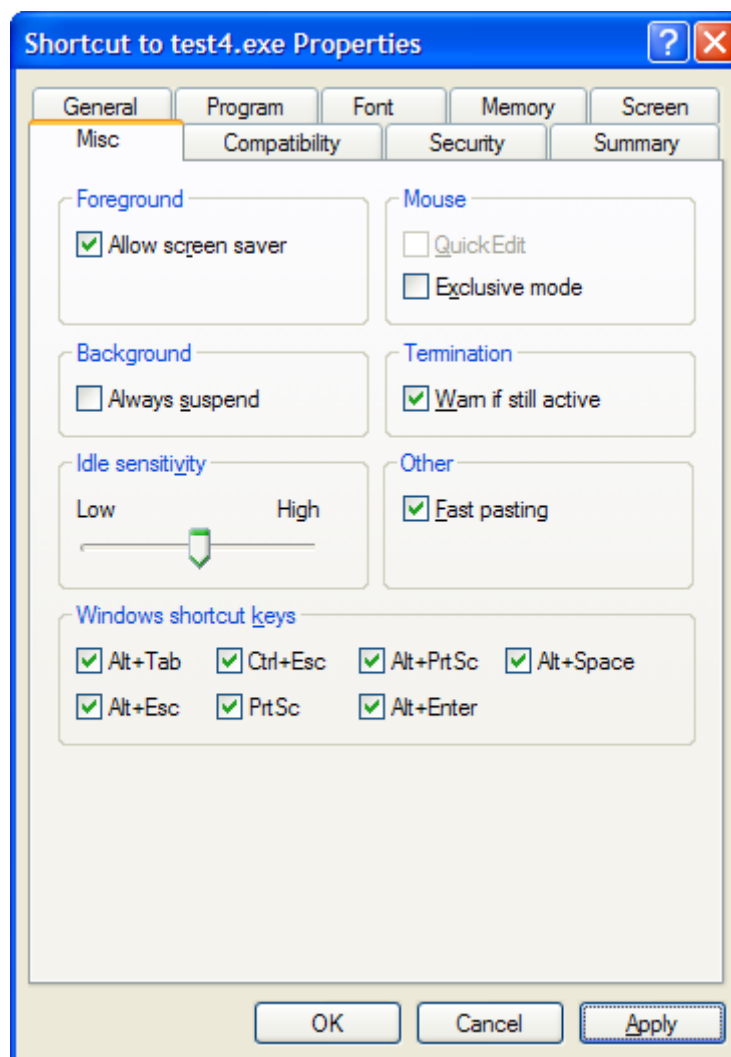
By default, when a new shortcut is created, Windows selects the autoexec.nt and config.nt files located in the system32 directory. To use private copies of these files, you must modify the directory paths shown in this dialog.



8. Edit the directory paths in the **Autoexec filename** and **Config filename** fields.

For this example, we want to use the autoexec.nt and config.nt files that are located in the product installation directory. Therefore, the correct paths to enter are ***%MbpVddRoot%\AUTOEXEC.NT*** in the Autoexec filename field and ***%MbpVddRoot%\CONFIG.NT*** in the Config filename field.

9. Click the **OK** button.



10. Select the **Misc.** tab.
11. Uncheck the **Always suspend** check box.

**Caution!**

By default Windows configures new shortcuts so that the application will suspend when the focus is moved away from its window.

If your application is constantly communicating to some devices, you will want it to run continuously, even when the focus is moved away. To do that, you must uncheck the **Always suspend** check box.

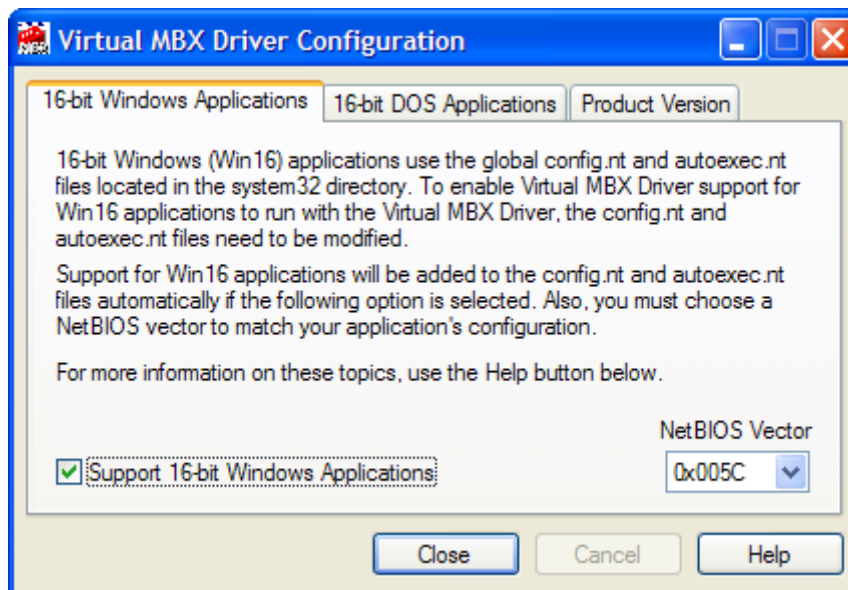
12. Click **OK** to complete the shortcut configuration.

To continue, go to [Configuring Support for 16-Bit Windows Applications](#).

## Configuring Support for 16-Bit Windows Applications

This section shows how to enable or disable support for 16-bit Windows applications. These applications always use the config.nt and autoexec.nt files located in the system32 directory.

1. Open the Windows **Start** menu and go to the product suite you installed. Next, open the **Configuration** submenu and select **Virtual MBX Driver**.



2. Select the **16-bit Windows Applications** tab.
3. Select the **NetBIOS Vector** to match your application's configuration, normally vector 0x005C.
4. Check the **Support 16-bit Windows Applications** box.

**Caution!**

When you select *Support 16-Bit Windows Applications*, the editor modifies the autoexec.nt and config.nt files. After you finish editing, you must reboot for these changes to take effect.

For more information, refer to the [Running 16-Bit Windows Applications](#) section.

5. Click **Close**.
6. Reboot the computer.

## CONFIGURATION EDITOR REFERENCE

Depending on the applications you will use, you may need to configure the Virtual MBX Driver before using it. The setup program installs shortcuts that will be useful for some common applications, but you must manually configure others. To accomplish this, you must run the Virtual MBX Driver Configuration Editor after you install the software.

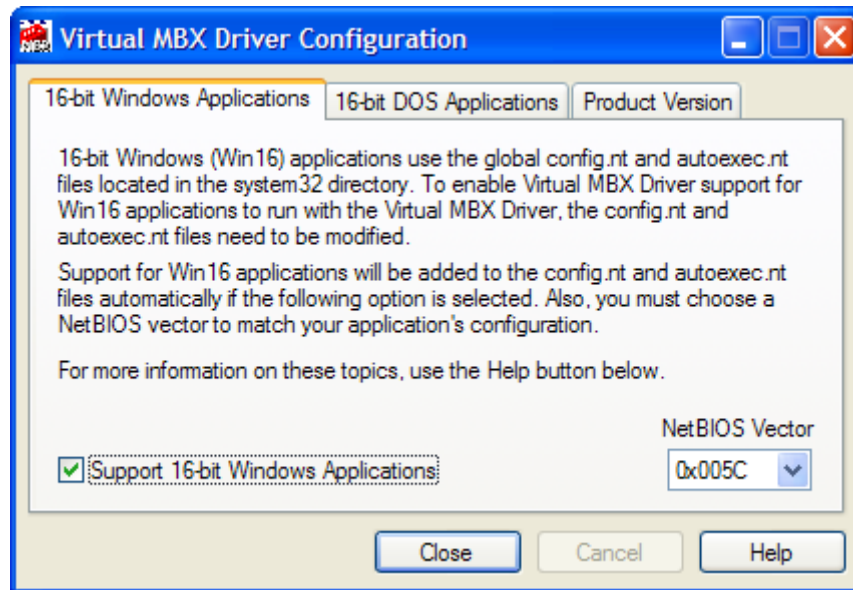
This section provides a detailed description of each of the configuration editor features. If you are a new user and want a procedure to guide you through a typical configuration session, refer to the [Quick-Start Guide](#).

The Virtual MBX Driver Configuration Editor consists of three tabs:

- [16-bit Windows Applications Tab](#)
- [16-bit DOS Applications Tab](#)
- [Product Version Tab](#)

### 16-bit Windows Applications Tab

Applications written for 16-bit Windows operating systems use the global config.nt and autoexec.nt files located in the system32 directory. To enable these applications to run with the Virtual MBX Driver, the config.nt and autoexec.nt files must be modified. This tab allows you to indicate if these files should be modified to add or remove support for 16-bit Windows applications.



#### *Support 16-bit Windows Applications*

Check this box to add Virtual MBX Driver support for 16-bit Windows Applications.

**Caution!**

When you select *Support 16-Bit Windows Applications*, the editor modifies the `autoexec.nt` and `config.nt` files. After you finish editing, you must reboot for these changes to take effect.

For more information, refer to the [Running 16-Bit Windows Applications](#) section.

*NetBIOS Vector*

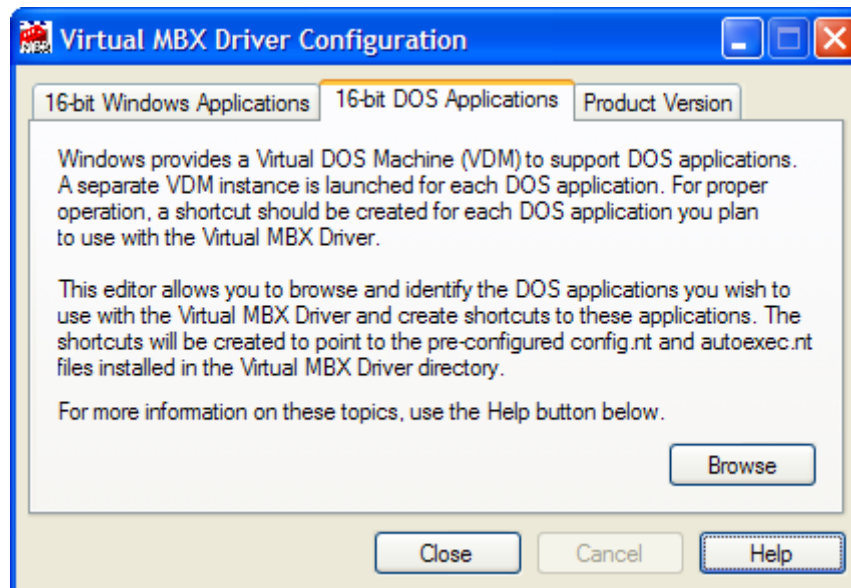
This box allows you to select the NetBIOS vector to match your application's configuration, typically vector 0x005C.

## 16-bit DOS Applications Tab

Windows provides a Virtual DOS Machine (VDM) to support DOS applications. A separate VDM instance launches for each DOS application. For proper operation, a shortcut should be created for each DOS application used with the Virtual MBX Driver.

This tab allows you to browse and identify the DOS applications that you wish to use with the Virtual MBX Driver and create shortcuts to these applications. The shortcuts will point to the pre-configured `config.nt` and `autoexec.nt` files installed in the Virtual MBX Driver directory.

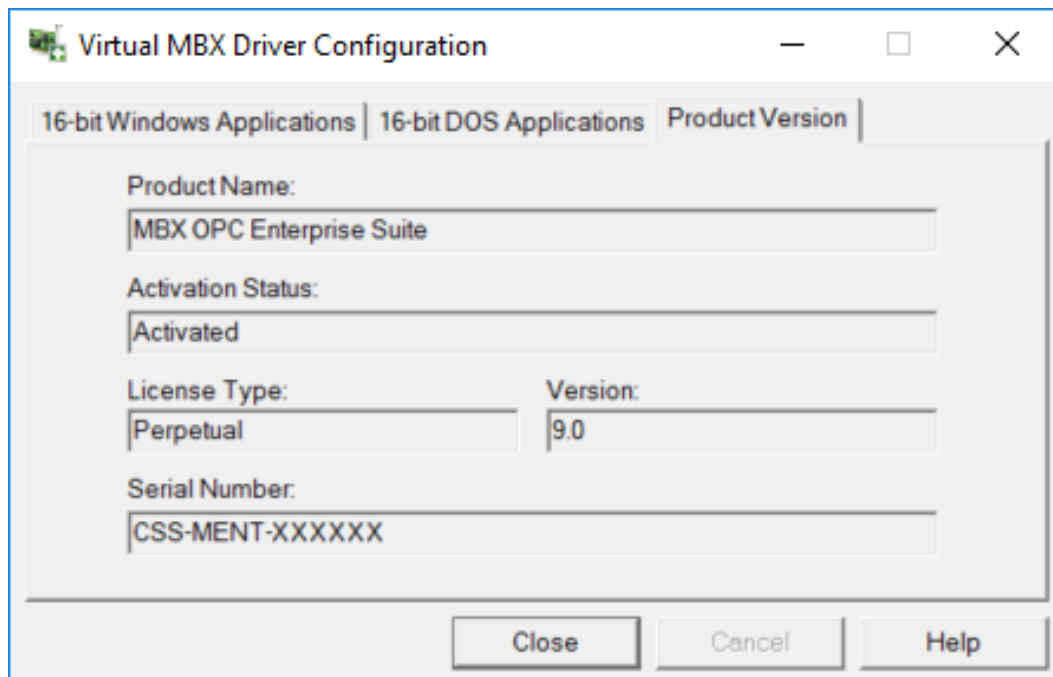
The pre-configured `autoexec.nt` is set up for applications that use the standard NetBIOS vector 0x5C. If your applications use a different NetBIOS vector, modify the line with `MBP16VEC` in this file to use the correct vector, or create a custom version of `autoexec.nt` and refer to the [Creating Shortcuts with Windows Explorer](#) section.

*Browse*

Click this button to browse for DOS applications. Then click the **Open** button to create a shortcut.

## Product Version Tab

This tab shows information about the Virtual MBX Driver installed on your system. This information, including the version number, may be requested if you call for technical support. It also tells you if the Virtual MBX Driver has been activated or if it is running in demo mode.



The screenshot shows a dialog box titled "Virtual MBX Driver Configuration" with three tabs: "16-bit Windows Applications", "16-bit DOS Applications", and "Product Version". The "Product Version" tab is selected. The dialog contains the following fields:

Product Name:	MBX OPC Enterprise Suite		
Activation Status:	Activated		
License Type:	Perpetual	Version:	9.0
Serial Number:	CSS-MENT-XXXXXX		

At the bottom of the dialog are three buttons: "Close", "Cancel", and "Help".

### Product Package

MBX products are sold and installed as packaged suites, such as the MBX Driver Suite and MBX OPC Server Suite. This field indicates the suite that is installed on your system.

### Activation Status

Most Cyberlogic software products operate in a time-limited demonstration mode until they are activated. This field tells you whether or not the installed product has been activated.

If your product requires activation, run the **Activation** wizard, which you will find in the Windows **Start** menu under **Cyberlogic Suites**. You will need the serial number and password that were assigned when you purchased your license for the software.

### **Note**

Some OEM versions of MBX products are pre-activated and do not require you to take any additional activation steps.



License Type

This field shows the licensing mode that the software is operating under. If the type displayed is *2 Hour Demo*, the software will run for only two hours at a time, after which you must restart the system to obtain another two hours of use. To enable continuous, uninterrupted operation, you must activate the software.

Version

This field displays the revision level of the Virtual MBX Driver that is installed in the system. It will help you to determine if the latest updates have been applied.

Serial Number

If you have activated the software by entering the serial number and password, the serial number used will be shown here. This will help you to determine which license goes with which of your systems.

## VALIDATION & TROUBLESHOOTING

The Virtual MBX Driver Setup program installs shortcuts to the MBPSTAT and Modsoft utilities. You can use these shortcuts to confirm that the Virtual MBX Driver works. First, verify that a 32/64-bit driver—for example, the MBX Driver, Serial MBX Driver or Ethernet MBX Driver—is installed and properly configured. Then, run Modsoft or MBPSTAT and choose various selections from the menu to verify that you can communicate.

If you are having difficulties communicating through the Virtual MBX Driver, the following FAQ section can help you determine the nature of the problem.

### Virtual MBX Driver Messages

***Selected communication mode is not available.***

When you are trying to run a 16-bit Windows application, this message may indicate an incorrect [NetBIOS Vector](#) setting.

***Registration DLL failed to load. The I/O operations of the Virtual MBX Driver have been disabled. Reinstall the product.***

A necessary registration DLL could not be loaded. This may indicate a corrupted installation. Repair the existing installation, or remove and reinstall the software.

***This is a <Number of Hours>-hour promotional copy of the Virtual MBX Driver. The driver started at <Start Time> and will stop at <Stop Time>.***

This is a time-limited installation of the software. After the stop time, the driver will not allow any further I/O operations.

***This is a promotional copy of the Virtual MBX Driver. The allowed operation time has expired. The driver has been disabled.***

This is a time-limited installation of the software. The stop time has been reached or exceeded, so the driver will not allow any further I/O operations.

***Product license verification failed!. The I/O operations of the Virtual MBX Driver have been disabled. Reinstall the product.***

A registration check indicated that the software's evaluation time has expired. Run the Activation Wizard to authorize further use of the software.

***The Cyberlogic License Server failed to respond with valid license information. The I/O operations of the MBX Driver have been disabled. Contact the manufacturer's technical support.***

The driver experienced a problem when it tried to contact the Cyberlogic License Server. If the license server is not running, start it and then try restarting the driver. If the license server is already running, contact Cyberlogic Tech Support.

## Frequently Asked Questions

***When I double-click on the Modsoft or MBPSTAT icons provided with the Virtual MBX Driver, these programs fail to communicate over Modbus Plus.***

The Virtual MBX Driver requires that at least one of the 32-bit drivers (for example, the MBX Driver, Serial MBX Driver, MBX Gateway Driver or Ethernet MBX Driver) is installed and properly configured. Refer to the Validation & Troubleshooting section of the help file for your 32-bit driver for information on how to verify that the driver is operating properly.

***I start my DOS application from the DOS prompt, but it fails to communicate over Modbus Plus.***

To run your application from the command prompt, you must use the **Command Prompt with VMBX** shortcut that is located in the **Diagnostics** submenu created by the installation program. Refer to the [Configuring Shortcuts for DOS Applications](#) section for more information.

***My 16-bit Windows application fails to communicate over Modbus Plus.***

16-bit Windows applications always use the config.nt and autoexec.nt files located in the system32 directory. Verify that these files are properly configured. Refer to the [Configuring Support for 16-Bit Windows Applications](#) section for more information.

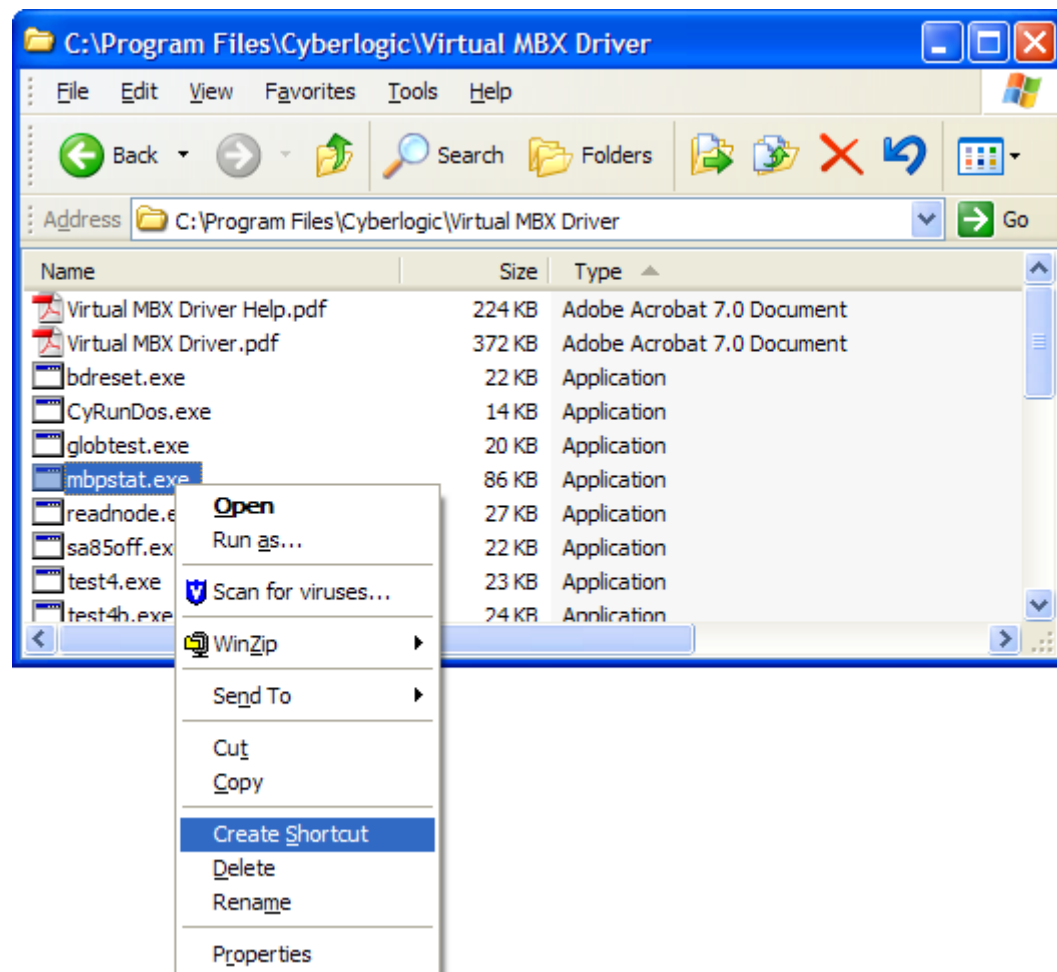
***I have more than one interface card installed in my computer. Can I configure the Virtual MBX Driver to work with all of them?***

Yes. The MBX Virtual Driver is a Windows driver that emulates the old Modicon DOS drivers. It allows DOS and 16-bit Windows programs to access all of the MBX devices configured in your system. There is no limit to the number of devices you can have configured on your system and available through the Virtual MBX Driver.

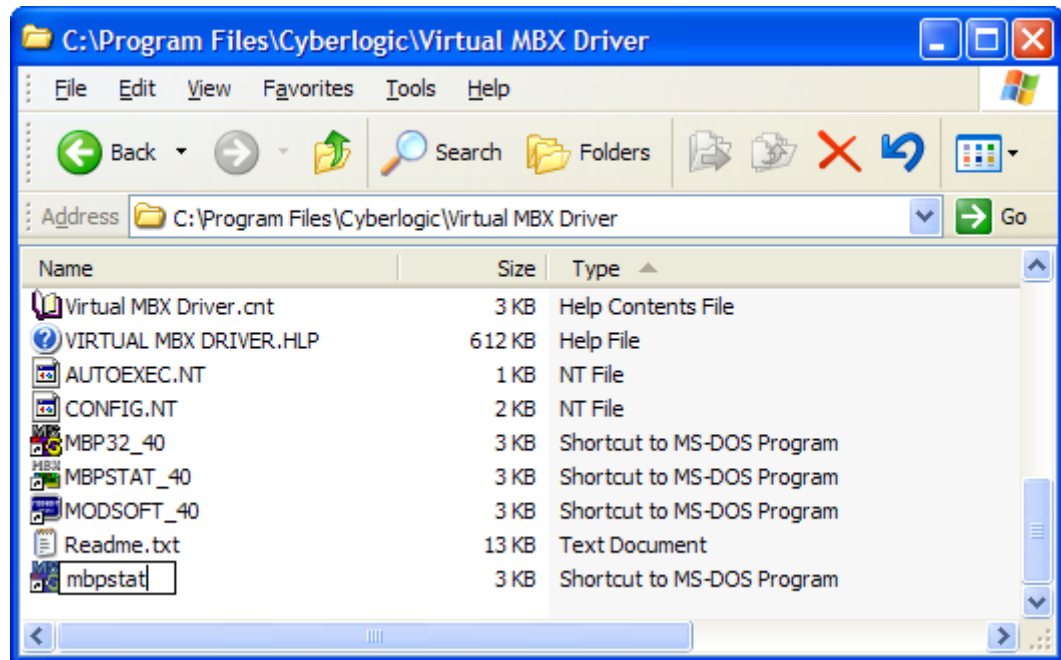
However, many older applications are capable of accessing only device numbers 0 and 1, so that may be a restriction that affects you. Note that this is a restriction in the application, not in the Virtual MBX Driver. If this is an issue for your application, you must configure one of your devices as device 0 and another as device 1, and the application will then be able to use those two devices.

## APPENDIX A: DOS APPLICATION SHORTCUTS

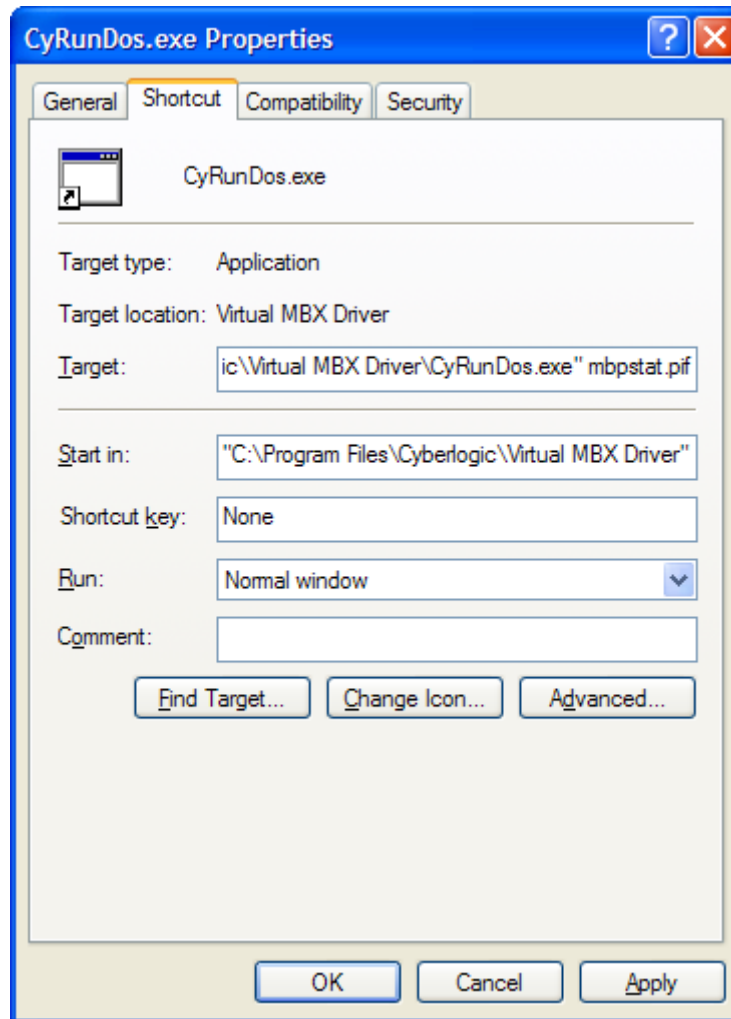
When you create a shortcut to a DOS application, the shortcut will use a generic icon that cannot be changed. If you want to use a different icon, you must create a shortcut that runs the program indirectly by using the `CyRunDos.exe` program. This appendix explains how to do that, using `MBPSTAT` as an example.



1. Right-click on the DOS program for which you want to create the shortcut and select **Create Shortcut** from the context menu.
2. Repeat this with the file **CyRunDos.exe**.



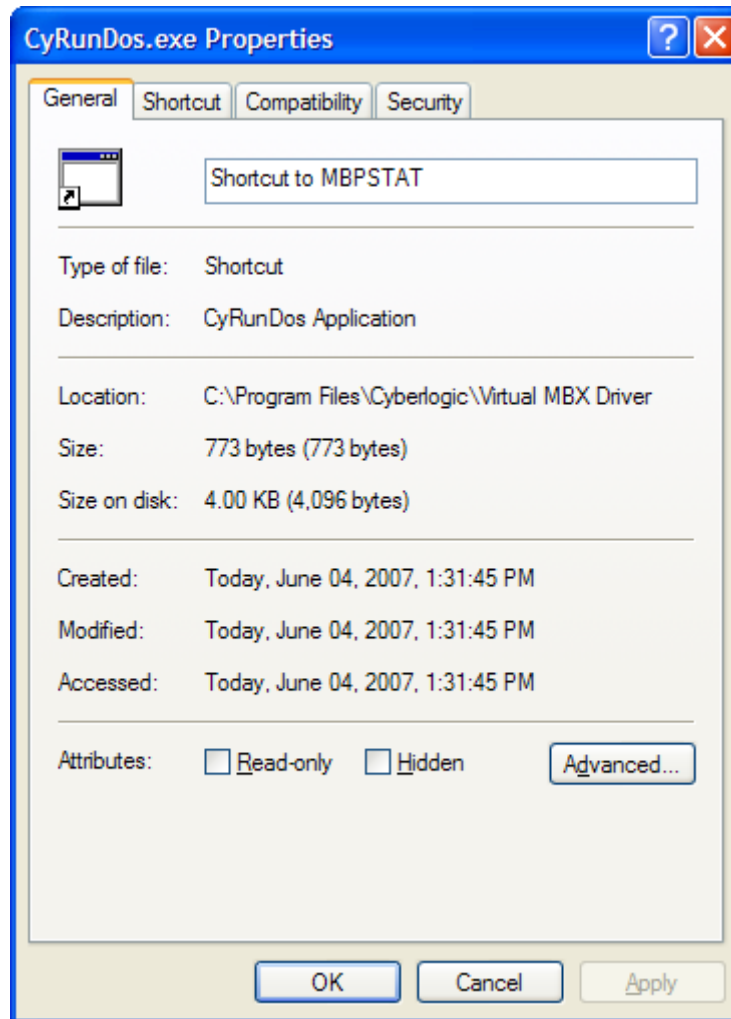
3. Rename the shortcut for the application to give it the name of the file, with no extension. In this case, the name would be ***mbpstat***.



4. Right-click on the CyRunDos.exe shortcut you created, and select **Properties** from the context menu.
5. Edit the **Target** field to add **mbpstat.pif** to the end. Notice that there is a space ahead of the pif name.
6. Click the **Change Icon...** button.



7. Browse to locate the icon you want to use.
8. Click **OK**.



9. On the General tab, edit the name of the shortcut to name it whatever you wish.

10. Click **OK**.



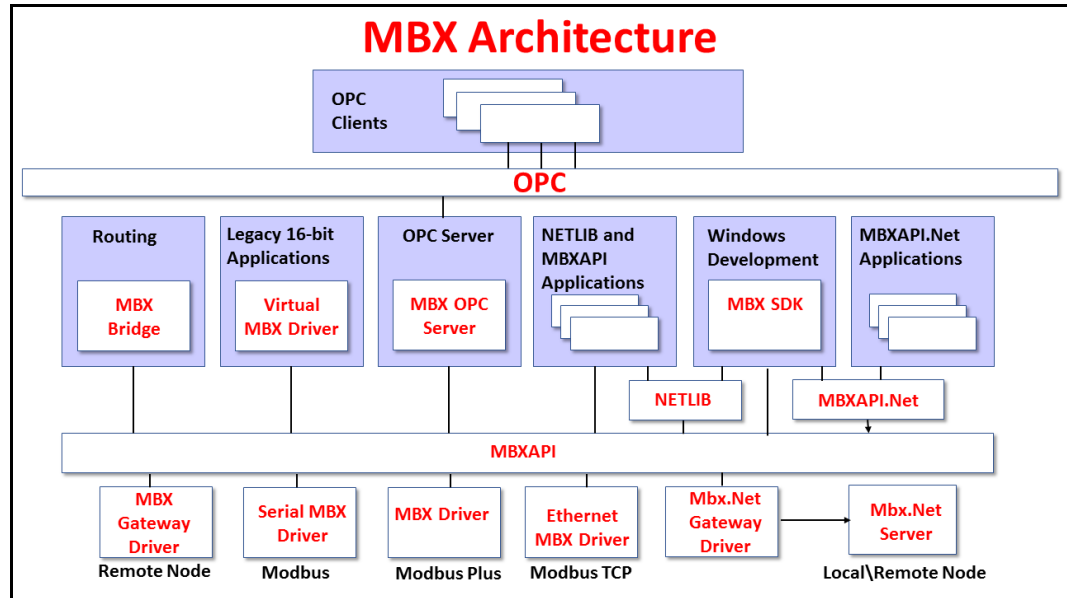
11. Your shortcut will now have the name and icon you selected.



## APPENDIX B: MBX ARCHITECTURE AND COMPANION PRODUCTS

The Virtual MBX Driver is part of the Cyberlogic MBX family. This family consists of several well-integrated products that provide connectivity for Modbus, Modbus Plus and Modbus TCP (Ethernet) networks in distributed environments.

This section illustrates the layout of the MBX architecture. It includes a description of each MBX component along with suggested methods for employing them to support Modicon networks.



*The MBX architecture presents a consistent framework to address different connectivity needs.*

### MBX Driver

The MBX Driver provides connectivity between Modbus Plus interface adapters and Windows-based applications. It supports all Modbus Plus interface adapters for PCI Express (PCIe), PCI, USB and PCMCIA buses that are compatible with the supported operating systems. For a complete list of supported adapters, refer to the MBX Driver help file. Multiple interface cards can be installed at the same time, limited only by the number of available slots.

The kernel mode device driver of the MBX Driver is the highest-performance Modbus Plus driver in the industry. The driver operates in either interrupt or polled mode and fully implements all Modbus Plus features, providing support for Data Master/Slave, Program Master/Slave, Global Data and Peer Cop. The high-performance native API (MBXAPI) of the MBX Driver takes advantage of the event-driven, multitasking, multithreaded features of Windows operating systems.

The driver includes the MBX Gateway Server for remote access by the MBX Gateway Driver and is fully compatible with all other components of the MBX family.

The MBX Driver is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite
- MBX Bridge Suite
- MBX Driver Suite

## **Ethernet MBX Driver**

The Cyberlogic Ethernet MBX Driver emulates Modbus Plus over the Modbus TCP protocol. This allows most Modbus Plus-compatible software to gain instant access to Modbus TCP-enabled devices without code modifications. It is compatible with all Ethernet cards supported by Windows.

The driver includes the MBX Gateway Server for remote access by the MBX Gateway Driver and is fully compatible with all other components of the MBX family.

The Ethernet MBX Driver is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite
- MBX Bridge Suite
- MBX Driver Suite

## **Serial MBX Driver**

The Serial MBX Driver provides connectivity to Modbus-compatible devices through standard serial COM ports. It supports both master and slave node communications for Modbus ASCII and Modbus RTU protocols.

The driver includes the MBX Gateway Server for remote access by the MBX Gateway Driver and is fully compatible with all other components of the MBX family.

The Serial MBX Driver is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite
- MBX Bridge Suite
- MBX Driver Suite (Some OEM versions do not include the Serial MBX Driver.)

## MBX Gateway Driver

The MBX Gateway Driver lets applications use MBX devices on remote MBX Gateway Server nodes as though they were on the local system. The client system running the MBX Gateway Driver must be a Windows node connected over a standard LAN to another system running the MBX Gateway Server. It can then access the Modbus, Modbus Plus and Modbus TCP networks that are connected to the server node.

For example, the MBX Gateway Driver provides complete MBX Driver functionality to the client node applications, including support for Data Master/Slave, Program Master/Slave, Global Data and Peer Cop. An interface adapter, such as a PCIe-85 card, is not required on the client node. MBX Gateway Driver nodes can communicate with multiple remote servers and all Windows-compatible TCP/IP networks are supported.

The MBX Gateway Driver is compatible with all other components of the MBX family.

The MBX Gateway Driver is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite
- MBX Bridge Suite
- MBX Driver Suite

## Mbx.Net Gateway Driver

The Cyberlogic Mbx.Net Gateway Driver provides similar functionality to the Cyberlogic MBX Gateway Driver. However, the Mbx.Net Gateway Driver uses newer and more secure infrastructure, and allows for more communication protocols.

The driver connects existing applications that use the MBXAPI, MBXAPI.Net or NETLIB to the Mbx.Net Server. The server can be on the local network or anywhere on the internet. The Mbx.Net Gateway node provides access to all MBX devices as though they were on the local system. The connection can be through Http, Net.Tcp or Net.Pipe protocols. A secure connection can be established and protected by a user name/password.

The Mbx.Net Gateway Driver is compatible with all other components of the MBX family.

The Mbx.Net Gateway Driver is included in the following products:

- Mbx.Net Suite
- Mbx.Net Premier Suite

## Virtual MBX Driver

The Virtual MBX Driver enables 16-bit NETLIB/NetBIOS-compatible applications, such as Modsoft and Concept, to run concurrently with 32-bit applications on the same computer.

It allows multiple 16-bit applications and multiple instances of a single 16-bit application to run under the latest 32-bit Windows operating systems.

If your computer uses a 64-bit edition of Windows, refer to Cyberlogic Knowledge Base article *KB2010-02 Running 16-Bit Applications* for important information on using the Virtual MBX Driver on your system.

The Virtual MBX Driver is fully compatible with all MBX components and requires at least one of these drivers to operate:

- MBX Driver
- Ethernet MBX Driver
- Serial MBX Driver
- MBX Gateway Driver
- Mbx.Net Gateway Driver

The Virtual MBX Driver is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite
- MBX Bridge Suite
- MBX Driver Suite

## **MBX Bridge**

The MBX Bridge seamlessly routes messages between MBX-compatible devices. For example, the MBX Bridge can route messages between Ethernet and Modbus Plus networks, between Modbus and Modbus Plus networks or any other combination of the supported networks.

Depending on the user's needs, it requires one or more of the following drivers to operate:

- MBX Driver
- Ethernet MBX Driver
- Serial MBX Driver
- MBX Gateway Driver
- Mbx.Net Gateway Driver

The MBX Bridge is included in the MBX Bridge Suite.

## **MBX OPC Server**

The Cyberlogic MBX OPC Server connects OPC-compliant client applications to Modbus, Modbus Plus and Modbus TCP networks. It supports the latest OPC Data Access and OPC

Alarms and Events specifications and uses the MBX drivers for connectivity to Modicon networks.

The MBX OPC Server supports multiple, priority-based access paths for reliable, redundant communications. It also supports both solicited and unsolicited communications and uses an advanced transaction optimizer to guarantee minimum load on your networks. With only a couple of mouse clicks, the MBX OPC Server will automatically detect and configure the attached networks and node devices. Other noteworthy features include DirectAccess, Data Write Protection and Health Watchdog.

The MBX OPC Server is included in the following products:

- MBX OPC Enterprise Suite
- MBX OPC Premier Suite
- MBX OPC Server Suite

## **MbpStat.Net**

The MbpStat.Net provides the same functionality as the original DOS-based MBPSTAT application. It can monitor local or remote Modbus Plus by connecting to systems running the Mbx.Net Server. It can run on 32-bit and 64-bit Windows, and it does not require the Virtual MBX Driver.

The MbpStat.Net is included in the following products:

- Mbx.Net Suite
- Mbx.Net Premier Suite

## **Mbx.Net Server**

The Cyberlogic Mbx.Net Server connects applications that use the MBXAPI, MBXAPI.Net or NETLIB to Modbus, Modbus Plus and Modbus TCP networks. The client applications and server can be on the local network or connected through the Internet.

The server is a Windows Communication Foundation (WCF) server that supports Http, Net.Tcp and Net.pipe protocols. It allows connections to be secured with a user name/password. When used with an application like MbpStat.Net it allows remote monitoring of networks and devices. Existing applications can use the server along with the Mbx.Net Gateway Driver to securely connect to remote devices.

The Mbx.Net Server is included in the following products:

- Mbx.Net Suite
- Mbx.Net Premier Suite

## **MBX SDK**

Software developers can use the MBX Software Development Kit to provide connectivity to Modbus, Modbus Plus and Modbus TCP networks from their 32-bit and 64-bit C/C++/C# applications.

The SDK supports NETLIB, and Cyberlogic's high-performance MBXAPI and MBXAPI.Net interfaces. NETLIB is an excellent bridge for developers who would like to port their 16-bit applications to the latest Windows environments. Developers of new applications can use any of the three interfaces. For a complete reference of all NETLIB library functions, refer to *Modicon IBM Host Based Devices User's Guide*, available from Schneider Electric (Order #890 USE 102 00).

Since all MBX family drivers are built on the same MBX architecture, applications developed with the MBX SDK can be used with all MBX family drivers and can execute under all current Windows operating systems.