



## Troubleshooting Wonderware Serial I/O Servers

Though, in most cases, you should not have problems networking your Wonderware® serial I/O Server with your Wonderware® InTouch™ application, the following is a list of things to check out or to try if you do have problems communicating with your serial DDE server. Here are some typical error messages that are generated by various Wonderware serial I/O Servers. These messages are in the Wonderware Logger (WWLogger) and they all indicate problems with the communications:

- Response Timeout
- WCRET=-2
- WakeUp=-2
- Receive Overrun
- Framing Errors
- See also Common Serial I/O Server Error Messages.

### Things to Try If You Have Problems

1. Check the cabling to the PLC. Is it wired correctly? Look for shorts, loose wires, broken wires, crossed wires, and so on. A continuity tester can be helpful here.
2. What type of UART is on the COM port? If it is not a 16550, then you must lower your baud rate to 9600 baud or slower. Only the 16550 UART can sustain continuous, error free communications at speeds higher than 9600 baud. Other UARTs may work at speeds faster than 9600 baud, but you may get errors in the WWLogger, such as Receive Overruns. To find out which UART you have, enter MSD at a DOS prompt, then choose COM Ports from the MSD menu.
3. Make sure the Parity, Stop Bits, Baud Rate, Checksum, Handshaking, and so on, in the DDE server match the settings in the physical hardware (such as the PLC).
4. Are you running Microsoft Windows For Workgroups (WFW)? If so, check the following:
  - Make sure these lines are added to the [386Enh] section of your SYSTEM.INI file that is located in the \WINDOWS directory:

`EMMEXCLUDE=A000-EFFF COMxFIFO=0`

Where x is the COM port number. You need a separate COMxFIFO line for each serial port that you have which uses a 16550 UART.

- If you are running WFW version 3.1 or 3.11, then you need to download a fixed version of the SERIAL.386 file from the Wonderware Bulletin Board System (phone (714) 727-0726) which fixes a Microsoft bug in this file. The fixed version is 10260 bytes in size and has a date of 2/17/94. The SERIAL.386 file is contained in a self-extracting Zip



file called  
WG1001.EXE and it is located in the PatchFix Library on the Wonderware  
BBS.

- If a) and b) do not work, then check the value of the ComBoostTime parameter in your SYSTEM.INI file. This represents the number of milliseconds that a virtual machine can process a COM interrupt. (The default value is two.) Although Wonderware Technical Support does not normally recommend you always do this, if you are getting errors such as Receive Overruns or WCRET=-2, then you should try increasing the value to 20.
5. Check the parameters for WWCOMTSR. Do not specify a receive and/or transmit buffer size of eight!  
For example, do not enter this:

COM1:0 COM2:1,8,8

This is wrong! Enter something similar to the following two examples:

COM1:0 COM2:1,2048,2048

COM1:0 COM2:1

6. Does the computer crash when you try to communicate through the COM port? If so, make sure each TSR has a unique software interrupt. (Wonderware Technical Support has a utility called ShowSoft that is available on the Wonderware Knowledge Base. ShowSoft can help you determine which software interrupts are available.)
7. Does the computer lock up? Make sure the COM port's IRQs do not conflict with each other or with other communication boards that may be in the computer.
8. If you experience occasional or seemingly random communication errors in the WWLogger (like Response Timeouts), check for noise. Do the physical cables run past any known noise sources like photocopiers, fluorescent lighting, pumps, motors, or generators? Are your cables properly shielded from its environment? (With radio modems and satellite link



- ups, occasional communications errors in WWLogger are normal and are expected, as long as they do not adversely affect the flow of data.)
9. Try increasing the Reply Timeout setting in the I/O Server to between five and 10 seconds. Some communication errors result from not giving the PLC or field device enough time to respond to the server's request for information.
  10. If the PLC or field device has more than one COM port, then make sure you are connected to the correct COM port. The COM port on your computer uses the RS-232 hardware communication standard. This means you must connect the cable from the COM port to a RS-232 compliant device. A common mistake is to connect to a RS-422 or RS-485 port on the PLC. If you do this, then you need an RS-232 to RS-422/485 conversion device. Wonderware Technical Support recommends, where possible, that you use an external converter, instead of a board-based converter that plugs into a slot in the computer. A board-based converter is typically more difficult to get working unless you have experience with this. If a board-based converter is not set up properly, then it can conflict with other communication boards in the computer, such as internal modems.
  11. How long is your RS-232 cable? **Fifty feet** is the maximum practical length for the RS-232 standard.
  12. Try a different COM port for the I/O Server.
  13. Verify that the PLC is properly configured and that the cable is good by using the programming software for that particular brand of PLC. When testing, Wonderware Technical Support recommends that you run the programming software and communicate to the I/O Server at the same time. (This ability depends on the type of PLC that you have.)
  14. If possible, reinstall Microsoft Windows (or WFW). Some of the programs that are installed on your computer may have modified the COMM.DRV file and this may cause your I/O Server to not work properly. Thus, reinstalling Windows or WFW may correct the COMM.DRV file.
  15. Reinstall the Wonderware serial I/O server and make sure you have the latest version. Sometimes reinstalling and reconfiguring a server will solve your problem. New versions of the I/O servers are released regularly on the I/O Servers CD-ROM and they are also available to Comprehensive Support customers on the BBS. Wonderware is continually improving their DDE servers and using the latest version will guarantee the best results.



16. If none of the suggestions listed in 1) through 16) solve your problem, then you should suspect your computer. There are many subtle differences between the various computer hardware brands. If the above suggestions do not work, then try using a different computer. When you switch to a different computer, select one that meets these criteria:
  - The computer is manufactured by a different company than the first computer that you tried.
  - The computer is not using an OEM (Original Equipment Manufacturer) version of Microsoft Windows. That is, when you start up Windows you should see only the Microsoft Windows (or WFW) logo displayed, not a logo from a particular hardware manufacturer.  
You should use Windows or WFW that is provided by Microsoft Corporation.

#### If All Else Fails, Call Technical Support

If you are still experiencing communication errors with your I/O Server, then do these steps:

1. Edit the WIN.INI file in your /WINDOWS directory and find the name of the server that you are using (the name will be in square [ ] brackets). Add this line to the section in the WIN.INI file following the server name:

`DebugMenu=1`

2. Restart Windows and the I/O Server. When the I/O Server's dialog box appears, click the window's Control Menu (the icon in the top left corner with the horizontal line). A drop down menu will appear. Make sure the Show Errors and Verbose checkboxes are selected.
3. Verify that WWLogger is running. Start a client program such as InTouch or Microsoft Excel and advise one point. (That is, attempt to bring in one memory location or register value from the PLC.) For more information on how to do this, see the I/O Server's user guide or see the on-line help file (.HLP) that is located in the directory where the I/O Server was installed.
4. Allow the server to run for a minute or so, so that it can try to bring in the one data item. Then, send these four items to Wonderware Technical Support:
  - a copy of the WWLogger (.AEH file) with today's date;
  - an MSD report of your system (type MSD at a DOS prompt, select the /File/Print Report menus and choose Report All);
  - a sketch of your computer and PLC setup;



- the name and version of the Wonderware I/O Server that you are using.