

W&T COM Port Redirector for Windows 95

Version 2.30

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1 Installation

1.1 Adding Ports

1.2 Configuration

1.3 Driver Updates

1.4 Uninstalling

2 Troubleshooting

3 Configuration by Registry

3.1 Hints for Programmers

4 TCP/IP Port Map

1 Installation

Start the setup program from the installation diskette (for example by selecting "Run..." from the Start menu and then entering: "A:/Setup"). This installs driver files and supplements the Windows Hardware Manager with special handling routines for the installation of Com Server ports.

1.1 Adding Ports

Open the Control Panel and start the Hardware Wizard (icon labeled "Add New Hardware"). Com Servers cannot be automatically recognized by Windows. When asked whether to search for new hardware (Windows 98: "Search for hardware which is not Plug & Play compatible?"), answer with "No".

The type of hardware to install is "Ports (COM & LPT)". When selecting the device, click on "Diskette..." and enter the drive with the installation files. There Windows should then find the device type "COM-Server".

Then enter the IP address which was set on the Com Server (four numbers separated by periods), and select the serial port of the Com Server you want to connect with. You can also correct these entries later using the Port configuration. Should Windows report that it can finish the installation without having first asked you for these two entries, this probably means that the setup program was not run correctly. In this case cancel the installation and start over again. Otherwise confirm this message with "Continue", and the installed port will be immediately available for application programs. It is not necessary to restart Windows.

The steps just described using the Hardware Wizard can be repeated as often as desired to add more Com Server ports to the system. You no longer require the installation diskette for this: Starting with the second port, you should be able to directly select "Wiesemann & Theis GmbH" as a vendor and then "COM-Server" as a model.

1.2 Configuration

Configuration is done using the port properties in the Control Panel. Double-click on the "System" icon, select the "Device Manager" tab, and select the port you wish to configure from the display device tree. Click on "Properties" and select the "Com Server" tab. Explanations of the individual parameters can be obtained through Online Help (F1).

Some of the settings which are needed less often are moved to a lower dialog page ("Advanced..."). Here for example you can turn off the error messages for the port driver and set details such as timeouts and guidelines for buffer utilization. Change only values whose meaning you understand, and even then only if you are sure that the change is necessary to eliminate a serious problem!

1.3 Driver Updates

To install updated drivers for the Com Server ports, run the setup program from the driver diskette (as before the initial installation).

1.4 Uninstalling

Com Server ports can be removed in the Control Panel. Start the "System" component, select the "Device Manager" tab, and find the port you want to delete in the displayed device tree. Click "Remove", answer the "Are you sure..." in the affirmative, and that's all there is to it.

The program "Uninst.exe" on the installation diskette resets the Hardware Wizard to its original condition which it had before first running the setup program. It does not remove any

Com Server ports, nor does it affect their functionality. If you later want to again install new Com Server ports on your computer, you must first run the setup program again.

2 Troubleshooting

If you have unusual problems with data transmission over a Com Server port (that is, problems which do not occur when your application uses a normal COM port), the first thing you should do is take a look at the connection statistics for the corresponding port. You can find this page under port properties in the Control Panel, as described under Configuration. There select “Statistics...”, and you will see various information on the last connection and perhaps a specific reference to possible problems.

Another possible cause of problems may be the number of COM ports installed. You can install up to 256 ports, but you might have problems using more than 4 or 9:

Because the 32-bit API of Windows 95 does not offer an easy way to determine the number of serial ports installed in your system, many existing programs simply take COM4 as the upper limit. The Hyperterminal version provided with Windows 95 is an example of this.

Another peculiarity in the Windows API makes the usual naming convention for COM ports fail with port numbers greater than COM9. A program must, for example, pass “\\.\COM10” as a file name, instead of just “COM10” (see Microsoft Knowledge Base article Q115831, <http://support.microsoft.com/default.aspx?scid=kb;en-us;Q115831>). Unfortunately there seem to be some application programs that are not aware of this.

3 Configuration by Registry

Starting with version 2.0, the COM Port Redirectors for both Windows 95 and Windows NT allow you to assign Com Servers to COM ports without having to use the Control Panel. In theory, this has always been possible, but only with great effort: Control Panel input would be stored in the Registry in a way that was hard to understand, that was even different between Windows NT and 95, and in Windows NT, to make things worse, it used a protected area of the Registry, where only administrators are allowed to make changes.

This situation hasn’t really changed, but the new idea is to also have “extended” configuration data, in a different part of the registry which is easier accessible. These data will only be used for a particular COM port after you have given explicit permission to do so: Using the Control Panel, you must set the IP address of its target device to 0.0.0.0. Then create a new Registry key:

HKEY_LOCAL_MACHINE\Software\Wiesemann & Theis\Com-Server\COMx

(where COMx is the port that you want to configure, for example COM5), and under this key add the value

- **IpAddress** (string): The IP address of a Com Server. This must be a numeric address (such as 172.16.232.77 for example), host names are not allowed here.

And the following optional values, where required:

- **SerialPort** (string): Code letter for one of the Com Server’s serial ports, A, B, C or D. If this value is missing, port A will be assumed.

- **Valid** (DWORD): May be used to limit the lifetime of the other values. Choices are “please ignore” (-1 or ffffffff), “use only for the next connection” (1), “use only today” (2) and “unlimited lifetime” (0).
- **Password** (string): The Com Server’s system password, if one has been assigned.
- **Scramble** (DWORD): When you are entering Registry values by hand, please skip this one or make sure it is 0. See below for a more detailed description of its significance.

Regarding the "Valid" entry, please note that values 1 and 2 will be automatically modified by the COM Port Redirector the next time the respective COM port is opened: 1 will become -1, 2 will be replaced by the number of days that have elapsed since January 1, 1601.

3.1 Hints for Programmers

About the “Valid” Value

To create a Registry entry that is valid “only today”, we recommended to calculate the number of days since 1601-01-01 directly and assign it to *Valid*, rather than use the shorthand value of 2. This can be done, for example, by the following C function:

```
// Get the current date, as days since Jan 1, 1601
DWORD Today()
{
    FILETIME ft;
    LARGE_INTEGER li;

    GetSystemTimeAsFileTime( &ft );
    FileTimeToLocalFileTime( &ft, (FILETIME *)&li );
    li.QuadPart /= 10 * 1000 * 1000;    // -> seconds
    li.QuadPart /= 3600 * 24;          // -> days
    return li.LowPart;
}
```

This is the very same value that the Com Port Redirector would make out of a 2 anyway, the next time it opens the port. But writing it directly does makes a difference in those cases where the COM port is not opened on the same day at all. A value of 2 would then remain unchanged and would make the address assignment last for at least one day longer than it was meant to.

About “Password” and “Scramble”

Those who feel uncomfortable with placing passwords in plain text in the Registry may render them illegible first, which is the purpose of the *Scramble* parameter. However this is no real encryption, and those who really want to steal your passwords will still be able to do so, with only slightly more effort. Anyway, the general idea is a simple XOR operation with an arbitrary 32bit value, and in detail it works like this:

```

// Save encoded password and the scrambler value itself
void ScrambleAndSave( HKEY hKey, char *pcPasswd,
    DWORD dwScramble )
{
    int i, nBytes, nDwords;
    DWORD *pdw = (DWORD *)pcPasswd;

    nBytes = strlen( pcPasswd ) + 1;
    nDwords = 1 + (nBytes - 1) / sizeof( DWORD );
    for( i = 0; i < nDwords; i++ )
        pdw[ i ] ^= dwScramble;
    RegSetValueEx( hKey, "Password", 0, REG_BINARY,
        (PBYTE)pcPasswd, nBytes );
    RegSetValueEx( hKey, "Scramble", 0, REG_DWORD,
        (PBYTE)&dwScramble, sizeof( DWORD ) );
    // undo the encoding:
    for( i = 0; i < nDwords; i++ )
        pdw[ i ] ^= dwScramble;
}

```

4 TCP/IP Port Map

Port	Protocoll	Purpose
8000	TCP	port A, data
8100	TCP	port B, data
8200	TCP	port C, data
8300	TCP	port D, data
9094	TCP	port A, control
9194	TCP	port B, control
9294	TCP	port C, control
9394	TCP	port D, control
8511	UDP	Com Server state (free/busy)

You may need this information, for example, for connections across a firewall, when you want to set packet filtering rules to allow that. Port 8511 is not required, by the way. Even if it should be blocked, the COM Port Redirector would still work.