

WW0340: Microsoft Windows 3.0 & MACH 20 Accelerator Card

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WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a
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You must update several of the Microsoft MACH 20 accelerator card files for the accelerator card to run properly under Microsoft Windows 3.0 standard mode. The updated files can be obtained in Application Note WW0340, "Microsoft MACH 20 Version 1.02 Update." The MACH 20 board is NOT supported by later versions of Windows.

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THE TEXT OF WW0340
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Microsoft Product Support Services Application Note (Text File)
WW0340: MICROSOFT MACH 20 VERSION 1.02 UPGRADE
=====

Revision Date: 12/92
Disk Included

The following information applies to Microsoft Windows version 3.0.

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INTRODUCTION

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This application note explains how to install and configure the Microsoft MACH 20 board, providing basic procedures for inserting the board, setting switches, and using the SMARTDrive disk-caching program to enhance performance. It also details hardware compatibility and parameter settings.

The MACH 20 version 1.02 update includes the following files:

Filename	Description
TEST.EXE	Basic diagnostic program
DISKPLUS.SYS	Memory-resident copies of Disk Plus ROM BIOS
DISKPLUS.COM	Memory-resident copies of Disk Plus ROM BIOS
INSTALL.EXE	Basic installation program
M20CACHE.COM	Memory caching program
M20DRV.SYS	Floppy disk driver for high-density floppy disks
M20EMM.SYS	Expanded/extended/high memory device driver
M20EMM.COM	Expanded/extended/high memory device driver
MACH20.SYS	Memory cache control program
MACH20.COM	Memory cache control program
SMARTDRV.SYS	Disk cache device driver
README.TXT	Original readme file (a soft copy of the information in this document)
DOSX.EXE	MS-DOS extenders for Windows 3.0 (compatible with MACH 20)

NOTE: If your system has a hard disk, back it up before installing a new hardware device.

Instructions for Updating to Windows Version 3.0

1. Install Windows 3.0.
2. Replace the Windows-supplied DOSX.EXE file (in the Windows\SYSTEM subdirectory) with the new DOSX.EXE file. The new DOSX.EXE file will work for all old DOSX.EXE configurations and the MACH 20.
3. Add the command line for the new M20EMM.SYS file to your CONFIG.SYS file or the command line for the new M20EMM.COM file to your AUTOEXEC.BAT file. Use only one of these command lines, replacing the old command line if there is one. Use the /H=x switch, where x is the number of 16K extended memory pages (64 pages/MB). See the next section for more information on this file.

New M20EMM.SYS File

M20EMM.SYS has been updated to support extended memory on the Microsoft MACH 20 board, along with the expanded memory it has always supported. The new M20EMM.SYS file allows you to partition the memory on the MACH 20 memory board, allocating some as extended and the rest as expanded. Extended memory is managed by a built-in high-memory driver, which is functionally equivalent to the HIMEM.SYS driver shipped with Windows.

Each page of memory on the MACH 20 board contains 16K, and all memory allocations must be in full pages. The M20EMM.SYS driver allocates all

available memory as expanded memory unless you instruct it to allocate extended memory. Do this by including the /H switch on the command line, using the syntax

```
/h,<#_pages>,<#_handles>
```

where:

- <#_pages> tells how many MACH 20 16K memory pages to set up as extended memory. The driver always allocates at least 4 pages (the default and minimum required for a high memory area [HMA]), and sets up all MACH 20 memory as extended if you request more pages than exist.
- <#_handles> tells how many extended memory handles to set up. When this many handles are used, no more extended memory can be allocated. The number can be any number between 32 (the default) and 128, inclusive.

INSTALLING MACH 20 =====

Addition to the "Guide to Quick Installation"
on Page 8 of the "Microsoft MACH 20 User's Guide"

After you insert the 40-pin blanking plug into the empty 8087 socket (step 5), make sure the math coprocessor switch on the system board is set correctly. This is switch 2 on switch block 1 (SW1) of an IBM® PC or compatible. Set this switch to on if you DO NOT have an 80287 coprocessor; set this switch to off if you DO have an 80287 coprocessor.

Installing the Blanking Plug in the 8087 Socket -----

You must install the blanking plug in the 8087 coprocessor socket on the system board, regardless of whether you removed an 8087 coprocessor from the socket or have installed an optional 80287 coprocessor on the MACH 20 board.

Connecting the MACH 20 Ribbon Cable to the System Board of an IBM PC/XT or Compatible -----

When you connect the MACH 20 ribbon cable connector to the 8088 socket on an IBM PC/XT or compatible, you may have to twist the cable to line up pin 1 on the ribbon cable connector with pin 1 of the 8088 socket. It is okay to twist the cable, but be careful not to crease it.

Running the Install Program with Your Standard System Configuration -----

When you run the Install program to set up MACH 20, be sure that your computer is set up in its standard configuration, with all the usual software, peripheral devices, and add-in boards installed. Otherwise, the Install program may not provide you with the proper setup instructions.

SWITCH SETTINGS FOR MACH 20 JUMPERS =====

8088 Jumper Block -----

S F

F = Fast: on for turbo (8 MHz) system board

S = Slow: on for standard (4.77 MHz) PC system board

287 Jumper Block -----

M L

L = Local: on to tie 287 to MACH 20 speed
M = Motherboard: on to tie 287 to system board speed

Cache Jumper Block

5 2 1 R *

* if horizontal = allow enabling/disabling of
cache; power up with cache on
* if vertical = allow enabling/disabling of
cache; power up with cache off
* if absent = no speed switching; always run fast
R = on to cache BIOS ROM
5 2 1 = system memory size

Mouse Jumper Block

D P 2 3 4 5 7

2 3 4 5 7 = to connect an InPort® device such
as a mouse; indicates mouse interrupt
level (one only)
P = on if MACH 20 has the primary InPort device
(for example, an InPort mouse)
D = on to indicate that no InPort device is
connected (for example, an InPort mouse) or
that it is disabled

MACH 20 WITH DUAL-SPEED SYSTEM BOARDS

=====

Installing an 80287 on MACH 20

If you have a dual-speed system board with a clock speed faster than 4.77 MHz, do not install an 80287-3 (6 MHz) chip on the MACH 20 board. Use an 8 MHz 80287-8 chip and set jumper block 287 to the "L" position.

"Hot Key" Control of Dual-Speed System Boards

When using an IBM PC/XT or compatible with a dual-speed system board, do not change the system board speed with a keyboard shortcut ("hot key").

MACH 20 cache switching may conflict with system board speed switching. (See "MACH 20 Caching" later in this document.) If they conflict, you will not be able to leave the * jumper on the cache jumper block in the vertical position to allow enabling and disabling of caching. If your speed-selectable PC hangs when you boot it up, make sure the * jumper is not in the vertical position.

MACH 20 DISK PLUS DRIVE COMPATIBILITY

=====

Connectors

The connector on the Disk Plus controller board is identical to the connector on an IBM PC Disk Controller card. Therefore, a drive must have connectors identical to those of an IBM PC floppy disk drive if you want to use Disk Plus with it.

There are two connectors on a standard IBM floppy disk drive -- a 4-pin connector for power and a 34-position edge connector used to connect the drive to the disk controller.

Floppy Disk Drives

A number of companies manufacture 5.25-inch 1.2-MB drives that have

cable connectors compatible with standard IBM PC/XTs. However, a 1.2-MB drive is half the height of a regular PC or PC/XT slot. To mount a 1.2-MB drive in a regular slot, you need a special bracket to fit the drive in the slot and a blank cover for the empty half of the slot. When you buy a 1.2 MB drive, make sure that the parts necessary to mount it in your machine are included and that both connectors are compatible with IBM-compatible PC cables.

To use a 3.5-inch 1.44-MB drive (2 MB unformatted) with Disk Plus, you must have an ANSI, or "media sensing," drive with no connection to pin 2 of the logic cable. Media-sensing drives detect the hole in a disk to determine if it is a 1.44-MB disk. Most 3.5-inch drives require a PC cable connector adapter for both the power cable and the logic cable because the drive connectors do not match standard IBM PC/XT cable connectors. A 3.5-inch drive is also half the height of a regular slot and requires the special bracket and blank cover described earlier. In addition, the 3.5-inch drive is not as wide as a regular slot and requires a 5.25-inch adapter kit to make it fit in place of a 5.25-inch drive. Some manufacturers offer kits containing the drive and the mechanical and electrical adapters required to fit a 3.5-inch drive in a 5.25-inch half-height slot. Among these kits are:

IBM P/N 6450258 3.5-inch 720K floppy disk drive
SONY® MP-F63W-31D 3.5-inch 720K drive
SONY MP-F73W-31D 3.5-inch 1.44 MB drive *
Universal Kit for ND 352 floppy disk drive (for the Toshiba® FDD 4603 3.5-inch 1.44-MB drive) **

* The SONY MP-F73W-31D 3.5-inch 1.44-MB drive is shipped configured, as drive 0. Because all IBM PC, PC/XT, and PC/AT® drives must be configured as drive 1, all 5.25-inch drives are shipped configured as drive 1. Therefore, if you purchase a SONY MP-F73W-31D 3.5-inch drive, you must change its drive select switch.

The drive select switch is a small, black slider switch with four settings. It is recessed into the side of the drive toward the back. If the face plate of the drive is toward you and the printed circuit board is facing up, the switch is on your left. The drive is shipped with the switch set to the farthest position away from the face plate; you must move the switch back one position toward the face plate. If the switch is in the wrong position, the motor will turn, but the drive select light will not go on when you try to obtain a directory listing of the drive.

** If you place the Toshiba FDD 4603 3.5-inch 1.44-MB drive in front of you with the printed circuit board facing up, the drive slot to your left, and the cable connector to your right, you will see an 8-pin jumper block recessed into the upper-right corner of the printed circuit board. This block has two jumpers, which should already be in the correct position for Disk Plus. If you imagine the jumper pins numbered as shown below, you should connect pins 2 and 3, and pins 7 and 8:

	4		8		
Disk		3		7	Cable
Slot		2		6	Connector
	1		5		

Support for the Mitsubishi® 3.5-Inch 1.44-MB Disk Drive

The MACH 20 board supports the Mitsubishi 3.5-inch 1.44-MB disk drive (model number MF355B). To configure the Mitsubishi drive to be compatible with MACH 20, you may need to change two jumpers on the disk drive's circuit board to make the drive "media sensing." To change the jumpers, you need a medium Phillips screwdriver and the disk drive installation manual.

To configure the Mitsubishi drive to work with MACH 20, follow these steps:

1. Discharge any static electricity by simultaneously touching both hands to a grounded, bare-metal surface. Any unpainted metal in the frame of your computer is probably grounded.
2. Following the instructions in your disk drive's manual, remove the mounting plate from the disk drive.
3. Remove the two screws holding the smaller printed circuit board to the mounting plate of the disk drive. (This is the circuit board with connectors for the data and power cables.)
4. Locate the jumper labeled "HDSEL" on the main printed circuit board. The board is shipped from the factory with the HO and HI pins connected. Move the plastic jumper block so that it connects pins HI and SW instead:

```
HDSEL  | | | _ |      HO HI SW
```

5. Locate the switch labeled "AB" on the main printed circuit board. Make sure that it is set to position A (the switch is shipped from the factory set to position A):

```
|_ | |  
A B
```

6. The disk drive is now reconfigured to work with MACH 20 Disk Plus. Reassemble and reinstall the drive.

M20DRV.SYS DEVICE DRIVER PARAMETERS

=====

The M20DRV.SYS device driver included on the MACH 20 Utilities disk is a customized version of DRIVER.SYS for MACH 20 Disk Plus. DRIVER.SYS comes with MS-DOS versions 3.2 through 3.31 and allows MS-DOS to recognize nonstandard disk types.

M20DRV.SYS works with MS-DOS 3.2 through MS-DOS 3.31.

NOTE: If you are using MS-DOS 4.0 or later, the Install program will not load M20DRV.SYS from the CONFIG.SYS file; instead, you will need to use the DRIVER.SYS file, which came with your version of MS-DOS. Consult your MS-DOS manual for more information on using DRIVER.SYS.

The parameters used by M20DRV.SYS are explained below. For more information on these parameters, refer to your MS-DOS manual (version 3.2 or later).

Drive Type	CONFIG.SYS Command Line
3.5 inch, 720K	DEVICE=M20DRV.SYS /D:<n> /T:80 /S:9 /H:2 /F:2 /C
5.25 inch, 1.2 MB	DEVICE=M20DRV.SYS /D:<n> /T:80 /S:15 /H:2 /F:1 /C
3.5 inch, 1.44 MB	DEVICE=M20DRV.SYS /D:<n> /T:80 /S:18 /H:2 /F:7 /C

The <n> parameter is either 0 for drive A, or 1 for drive B.

Install adds the lines for Disk Plus non-360K drive command lines to your CONFIG.SYS file for you.

When a 3.5-inch 1.44-MB drive is installed, you can format 720K disks in it by using the MS-DOS FORMAT command with the /N:9 /T:80 parameters as described in the MS-DOS 3.3 manual.

NOTE: The DRIVER.SYS /F:7 parameter for 3.5-inch 1.44-MB drives is not listed in the MS-DOS 3.2 documentation. This parameter is available with M20DRV.SYS, however, even if you are using MS-DOS 3.2.

When you start your computer, M20DRV.SYS is loaded into memory, and the following message appears

Loaded External Disk Driver for Drive <x>

where <x> is the drive letter you must use when formatting a disk in a high-density or low-density 3.5-inch drive or a high-density 5.25-inch drive. For example, if you have a 3.5-inch 720K drive installed in the drive B slot and <x> in the message above is D:, you format a disk in drive B by typing the following at the MS-DOS command prompt:

```
format d:
```

```
MACH 20 CACHING  
=====
```

```
Enabling and Disabling MACH 20 Caching  
-----
```

The M20CACHE program allows you to specify a keyboard shortcut to enable and disable MACH 20 caching. The M20CACHE command line has the following syntax

```
m20cache key <xy>
```

where <x> and <y> are the letters that correspond to the keyboard shortcut you want to use. The keys you can use and their corresponding letters are:

```
A=ALT    C=CTRL    L=LEFT SHIFT    R=RIGHT SHIFT
```

There are six key combinations to enable and disable caching: AC, AL, AR, CL, CR, and LR. (The order of the two letters doesn't make any difference. For example, both AC and CA specify the ALT + CTRL key combination for switching caching on and off.)

```
Disabling Caching with Microsoft Flight Simulator®  
-----
```

To run Microsoft Flight Simulator, you must turn caching off using the M20CACHE.COM CACHE OFF parameter. Be sure to start up your system using the disk you normally use (rather than the Flight Simulator disk), so that MACH20.SYS and M20CACHE.COM are loaded into memory. Otherwise, you will not be able to disable caching if the * jumper on the MACH 20 board is set to boot up with caching enabled. To disable caching, switch to the drive or directory that contains the MACH 20 software and at the MS-DOS command prompt type:

```
m20cache cache off
```

If you are using the MACH 20 Memory Plus option and you are running Flight Simulator version 2.14 or earlier, you must disable or remove the line in your CONFIG.SYS file that loads the Memory Plus expanded memory driver, M20EMM.SYS.

```
Additional Parameters Available for M20CACHE.COM  
-----
```

The CACHE OFF parameter described in the table on page 29 of the "Microsoft MACH 20 User's Guide" is available in MACH20.SYS. The default is CACHE ON. There are also additional parameters available for M20CACHE.COM. For a description of these parameters, make sure M20CACHE.COM is loaded into memory, switch to the drive or directory that contains the program, and at the MS-DOS command prompt type:

```
m20cache help
```

```
INSTALLING MEMORY PLUS AND SMARTDRIVE  
=====
```

The Install program on the MACH 20 Memory Plus Installation disk determines how much memory is on any add-in boards in your computer and asks you if you want to remove or disable memory on these boards.

WARNING: If you answer "yes," you must remove or disable the memory. Otherwise Memory Plus will try to backfill over the memory

on the add-in boards, which may damage data on your hard disk.

Using Memory Plus with Other Expanded Memory Boards

If you have another expanded memory board installed, you can use its memory as conventional memory (the memory below 640K), but you cannot have the other expanded memory board's expanded memory driver loaded at the same time as the Memory Plus expanded memory driver (M20EMM.SYS). Before attempting to use memory on Memory Plus as expanded memory, be sure to remove the line in your CONFIG.SYS file that refers to the other expanded memory driver.

Running Flight Simulator with M20EMM.SYS Installed

Microsoft Flight Simulator versions 2.14 and earlier will not run if M20EMM.SYS is installed. To run Flight Simulator, you must remove the line in your CONFIG.SYS file that refers to M20EMM.SYS.

SPEEDING UP DISK ACCESS WITH SMARTDRIVE

=====

The MACH 20 Memory Plus Installation disk includes the SMARTDrive disk-caching program for computers with a hard disk and expanded or extended memory. You can use SMARTDrive in conjunction with the expanded memory on Memory Plus to reduce the amount of time your computer spends reading data from your hard disk.

SMARTDrive is ideal if you work with many applications and files at once. It is especially useful when running multiple applications that require swapping -- copying applications to and from the hard disk to make room in memory for all applications.

How SMARTDrive Works

SMARTDrive reduces the amount of time it takes applications to read information from your hard disk by saving information read from or written to your hard disk in expanded memory on Memory Plus. Whenever an application makes a request to read the information from your hard disk, a relatively time-consuming process, SMARTDrive supplies the information directly from memory. SMARTDrive always copies new or modified information to the hard disk as well as to Memory Plus memory, so there is no danger of losing information when you turn off your computer.

Replacing Other Memory-Disk or Disk-Caching Programs

You should use SMARTDrive as a replacement for any memory-disk program (such as VDISK) or any disk-caching program (such as Vcache or LIGHTNING). If you are already using a memory-disk or disk-caching program, you must modify your CONFIG.SYS file to remove any command lines associated with that program. See the documentation provided with the program for information about its CONFIG.SYS command lines.

Setting Up SMARTDrive

The Install program on the MACH 20 Memory Plus Installation disk can set up your system to use SMARTDrive. Install automatically copies SMARTDRV.SYS from the MACH 20 Memory Plus Installation disk to your startup disk. If you have at least 128K of available expanded memory and you choose to run SMARTDrive, Install also adds a SMARTDrive command line to your CONFIG.SYS file. If you don't have a CONFIG.SYS file, Install creates one for you.

The SMARTDrive command line has the following form

```
device=<path>\smartdrv.sys [<size>] /a
```

where <path> is the drive and directory where SMARTDRV.SYS is stored. The /A switch specifies that you have expanded memory, and <size> (an optional parameter -- do not include the brackets if you specify a size) is the amount of expanded memory available to SMARTDrive.

Install determines how much memory to set aside for SMARTDrive based on the amount of available expanded memory and whether you plan to run other programs that use expanded memory. The program gives you two choices: either set aside all the expanded memory for SMARTDrive or set aside half (or 128K, whichever is greater) for SMARTDrive, and leave the rest for other programs that use expanded memory. At least 128K of available expanded memory (the default) is required to run SMARTDrive.

Once SMARTDrive is installed, it runs every time you start MS-DOS.

Specifying the Memory Amount Allotted to SMARTDrive

If you want to specify a different amount of expanded memory for SMARTDrive, you can edit the SMARTDRV.SYS command line in your CONFIG.SYS file.

WARNING: If you plan to run an application that uses expanded memory, make sure you specify a size that leaves enough memory for that application. If you specify more memory than you have available for SMARTDrive, you may destroy the contents of your hard disk.

To determine how much expanded memory you have available, add the amount of standard memory in your system and the amount of memory on your MACH 20 Memory Plus board, then subtract 640K (the amount of standard memory plus backfill from Memory Plus). If the result is less than 128K, you don't have enough expanded memory to run SMARTDrive. If the result is 128K or more, you can select any amount between 128K and the total to give to SMARTDrive. SMARTDrive will round the amount up to the next highest value divisible by 16.

Using Both SMARTDrive and M20EMM.SYS

If M20EMM.SYS is installed and you do not have at least 64K of available extended memory, it is either because you don't have enough extended memory mapped to segment FFFE, or because SMARTDRV.SYS has already allocated that memory. You will be warned of this by the following message when you start up your computer:

WARNING: High Memory Area Unavailable

If you are running Windows, consult Appendix C, "Speeding Up Windows with SMARTDrive," in the "Microsoft Windows User's Guide". It contains information on how to reduce the amount of memory SMARTDrive uses.

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WW0335: Memory Management with Windows 3.0 and 3.1

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WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a, 3.1, 3.11
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Microsoft Product Support Services offers an Application Note that describes memory management with Microsoft Windows. This Application Note, "WW0335: Memory Management with Windows," examines the three types of memory that Windows versions 3.0 and 3.1 can use (conventional, extended, and expanded) and discusses how the three modes of Windows (real, standard, and enhanced) operate and use memory.

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WW0335: Memory Management with Windows
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Revision Date: 4/92
No Disk Included

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INTRODUCTION =====

This application note outlines the memory management capabilities of Microsoft Windows versions 3.0 and 3.1. References that apply to both versions will refer to Microsoft Windows versions 3.x.

Microsoft Windows versions 3.x provide a protected mode graphical operating environment that runs existing MS-DOS applications and allows Windows applications to break the 640K barrier. Windows 3.1 memory management is simpler in many ways than that of previous versions. However, the flexibility of Windows 3.1 memory management continues to present a challenge to those who want to understand its operation in depth. This document examines the three types of memory that Windows 3.x can use or provide (conventional, extended, and expanded) and discusses how both standard and 386 enhanced modes of Windows 3.1 operate and use memory.

MEMORY TYPES =====

Three different kinds of memory can be installed in your machine: conventional, extended, and expanded memory. In addition, IBM-compatible machines contain a 384K upper memory area (UMA).

Conventional Memory -----

Conventional memory is the first 640K of memory in your machine. MS-DOS has a limit of 1024K of addressable memory (conventional memory plus the UMA), and all MS-DOS applications must run within this conventional memory. All Windows 3.x operating modes share this

limitation for running MS-DOS applications, but standard and 386 enhanced modes break the 640K limitation for running Windows applications. Windows 3.x enhanced mode can create multiple virtual MS-DOS machines (for more information on virtual MS-DOS machines, see the section of this application note called "386 Enhanced Mode and Conventional Memory."

NOTE: 386 enhanced mode Windows 3.1 also allows MS-DOS applications to break the 640K barrier if they are written to use the Microsoft DOS Protected Mode Interface (DPMI) specification. DPMI allows MS-DOS applications to run in protected mode under Windows 3.1, using up to 16 megabytes (MB) of extended memory directly. Applications must be specifically written for DPMI in order to take advantage of this feature.

384K Upper Memory Area (UMA)

Between the top of conventional memory at 640K and the start of extended memory at 1024K lies the 384K UMA. This area does not contain physical memory. Mapped into the 384K UMA are the system BIOS (basic input/output system) ROM chips and the display adapter memory. When you install other accessory cards, such as network adapters, they may also occupy space within the 384K UMA. It is important to remember that the 384K UMA is always located in the same area of the IBM-compatible computer's address space: from 640K to 1024K (A000 to FFFF hexadecimal). There are no exceptions to this rule.

This means that a standard IBM-compatible machine with 640K of conventional memory installed really has 1 MB of address space. The system memory occupies the first 640K, and the 384K UMA occupies the area from 640K to 1 MB (1024K). This does not mean that the machine has 1 MB of memory. A machine with 1 MB of physical memory has an address space of 1408K. This consists of the 640K of conventional memory, the 384K UMA, and the 384K of extended memory starting at 1024K.

Extended Memory

Extended memory is the simplest type of add-on memory to understand. It is also the type of memory used by Windows 3.x running in either standard or 386 enhanced operating mode. Extended memory is a seamless continuation of the original 1 MB address space on 80286 and 80386 computers. Extended memory always starts exactly at 1024K, where the 384K UMA ends. There are no exceptions.

It is not possible for an 8086 or 8088 machine to have extended memory. This is a hardware limitation of the 8086/8088 processors, which can handle only 1024K of total address space (that is, 640K of system memory plus the 384K UMA). This is one reason why Windows 3.1 cannot run on 8086/8088-based machines, as it requires a minimum of 256K of extended memory (or 1024K for enhanced mode). The 80286 processor can address 16 MB of total memory, and the 80386 processor can address up to 4 gigabytes (GB).

NOTE: PC manufacturers often refer to extended memory as expansion memory, which is not to be confused with expanded memory.

Windows 3.x and all applications running under Windows 3.x access extended memory through the Microsoft Extended Memory Specification (XMS). Rather than accessing extended memory directly, access is made through an XMS driver. The driver supplied by Microsoft for this purpose is called HIMEM.SYS. Older MS-DOS applications that check available extended memory through interrupt 15, service 88H will not see any extended memory with an XMS driver loaded. Such applications must be rewritten to use the XMS, instead of interrupt 15, to access extended memory.

Expanded Memory

Versions of Windows prior to 3.0 used mostly expanded memory. Windows 3.x does not use expanded memory but may be able to provide it to MS-DOS applications. It is important to understand the concept of expanded memory if you still run MS-DOS applications that use it. There are two different kinds of expanded memory, differentiated by their Lotus/Intel/Microsoft (LIM) Expanded Memory Specification (EMS) version numbers.

LIM 3.2 Expanded Memory

We discussed earlier how PC/XT machines with 8086/8088 processors can address only 1024K of memory, of which only 640K can be used as RAM for MS-DOS and MS-DOS applications. You can't add more than 640K of conventional memory to the system, but you can provide more than 640K through a technique called bank switching. Expanded memory uses an empty area in the 384K UMA of the machine to provide this functionality.

To use an expanded memory card, you must load a device driver to let the card know how to communicate with the PC. This device driver is called an expanded memory manager (EMM). A LIM 3.2 EMM establishes a 64K page frame within the 384K UMA to perform EMS bank switching. The 64K page frame consists of four contiguous 16K pages. LIM 3.2 expanded memory won't work without a 64K contiguous page frame.

The page frame is the area where the EMM maps information into and out of the RAM of the expanded memory card. Information is not physically copied from the EMS card to the RAM of the computer; the device driver simply makes the page frame point to the data on the expanded memory card. The data then appears in the page frame, and your application can access it.

LIM 4.0 Expanded Memory

LIM 3.2 expanded memory is fine for storing data such as spreadsheets in expanded memory; however, because the LIM 3.2 specification does not allow programs to run in expanded memory, it is not useful for multitasking.

There are two of major differences between LIM 3.2 and 4.0. First, with LIM 4.0 you can have many more than four 16K pages. LIM 4.0 supports up to 64 pages, which are enough to bank 1 MB of memory at once. Second, the page frame itself no longer must be four contiguous 16K pages. In fact, you need no page frame at all. Whichever EMS version you are dealing with, the basic operating principle of bank switching is still at work.

Although LIM 4.0 is a standard that offers many advantages over LIM 3.2, few applications have yet been written to take advantage of LIM 4.0.

Backfilling

With LIM 4.0's limit of 64 16K pages, you have enough pages to bank switch the entire conventional address range of the processor.

However, there must be no active ROM or RAM of any sort where you put an expanded memory page. Thus, you can't map EMS pages on top of anything that is already occupying address space in your machine (such as loaded MS-DOS or video/system ROM). On the 80286 processor, you should disable as much motherboard memory as possible (down to 256K) and let the expanded memory card supply that memory. This process is called backfilling. This doesn't mean that your computer will have only 256K--your programs still see a 640K machine. But because the

expanded memory card is now supplying the memory, it can bank switch the memory. This capability is called "large page frame" EMS, and it allows programs to run executable code in expanded memory, a major improvement over LIM 3.2.

The 80386 processor has a built-in ability to readdress any page of memory to any other location. This means you don't have to backfill on an 80386 to get large page frame LIM 4.0 functionality, nor do you need an expanded memory board. It's easy to convert your 80386 s extended memory to expanded memory with an 80386 EMM such as Microsoft's EMM386.EXE.

If you're using an expanded memory board on an 80386 machine, read your manual carefully before you backfill. Not all memory boards have the register support to supply more than four 16K pages (LIM 3.2). Though a memory driver may conform to the LIM 4.0 specification, that does not mean the hardware can provide more than four pages. Also, because Windows 3.1 supports extended memory directly, backfilling expanded memory will not give you any advantages, and the memory on the motherboard is often faster than memory on an expanded memory board.

LIMulators

Some programs, known as LIMulators, emulate expanded memory on 8088- and 80286-based machines using hard disk space and/or extended memory. These programs are not much of an advantage, because although they supply expanded memory, they are not hardware. They must locate a 64K EMS page frame in conventional memory and also take up space for the driver itself. LIMulators generally take close to 80K of conventional memory to run. Because conventional memory is the most precious memory on your machine, we do not recommend these types of programs. They are also typically extremely slow.

On 80386 machines, it is possible to use a 386 expanded memory manager (such as EMM386 or Quarterdeck's QEMM) to emulate expanded memory. These LIMulators use the XMS rather than interrupt 15 memory to emulate expanded memory and are much more efficient than other types of LIMulators.

Expanded Memory Difficulties

LIM 3.2 expanded memory requires a page frame to work, and the page frame is located within the 384K UMA of your machine. Unfortunately, your EMM is not the only competitor for that memory space. Add-on boards, such as network cards; 3270 emulation cards; RLL, SCSI, and ESDI disk controllers; and even high-resolution video cards, can contend for this address space. Several potential difficulties can arise due to this contention:

1. LACK OF SPACE. The major problem is simply finding at least 64K of contiguous free space in which to locate the LIM 3.2 page frame. LIM 4.0 does not require a 64K page frame but is almost useless without it, as very few applications have been written to take advantage of the LIM 4.0 specification. Frequently, the address areas of various adapter cards need to be shuffled to open a contiguous 64K page frame. Complicating this process are boards such as the IBM 3270, which have nonmovable addresses in most machines.
2. MAPPING CONFLICTS. Most 386 EMMs (such as EMM386.EXE and Windows 3.1 386 enhanced mode) use a search algorithm to find unused memory addresses between C000 and DFFF located in the 384K UMA to use as page frames. Some cards (adapters) do not reserve their address space until you access the card, so the memory manager can inadvertently map EMS pages on top of an address the card will request. This is often true of Token Ring network adapters and can

cause hanging and intermittent operation.

In case of problems, the first thing to do is disable expanded memory. This procedure will determine whether a page conflict is causing your difficulty. If the problem goes away without expanded memory, the memory manager must be told to exclude the address the adapter is occupying from consideration as a page location. Consult your memory manager's documentation for information on how to exclude an address range. The adapter may also have to be moved; you do this in different ways with different memory managers.

WINDOWS 3.X MODES AND MEMORY USAGE: HOW EACH MODE WORKS

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This section examines how standard and 386 enhanced mode Windows 3.x use the different types of memory we have discussed (conventional memory, the 384K UMA, extended memory, and expanded memory).

NOTE: Real mode is not available in Windows 3.1. Real mode for Windows 3.0 was supplied mainly for compatibility with older Windows 2.x applications. Most, if not all, of these older applications have now been updated to work properly with Windows 3.x. Valuable development time was saved in not maintaining this outdated mode, time that was then spent improving the two remaining Windows modes.

STANDARD MODE WINDOWS 3.1: BREAKING THE 640K BARRIER ON 286 MACHINES

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Standard Mode and Conventional Memory

When standard mode Windows 3.1 is started, it adds the amount of free conventional and extended memory and looks at the total amount as one contiguous block of memory. Conventional memory has no special meaning under standard mode, except when running MS-DOS applications. While standard mode Windows 3.1 has MS-DOS application support, the MS-DOS application(s) must run within conventional memory.

Standard Mode and the 384K Upper Memory Area (UMA)

In standard mode, Windows 3.x does not directly access the 384K UMA. Still, if a physical expanded memory board is present (or if a 386 memory manager is providing expanded memory under Windows 3.1), the EMM will use areas of the 384K UMA in order to provide a LIM 3.2 page frame. If you suspect a 384K UMA conflict is causing a problem, temporarily remove the external EMM for testing.

Standard Mode and Expanded Memory

Standard mode Windows 3.1 does not use expanded memory. MS-DOS applications running under standard mode can access expanded memory only if a physical expanded memory board, along with the appropriate memory manager, is present in the machine. Compatible 386 EMMs such as EMM386.EXE can be loaded to provide expanded memory outside Windows. However, 386 EMMs cannot be used to provide expanded memory to MS-DOS applications running in standard mode Windows. If possible, the 386 EMM will be disabled when standard mode loads. For more information on using expanded memory with standard mode see the "Expanded Memory for MS-DOS Applications" section of this application note.

Standard Mode and Extended Memory

Windows 3.x standard mode can access extended memory directly. It adds free conventional memory and free extended memory. It then provides the total as memory for Windows applications to use (minus the memory required by standard mode Windows itself). Standard mode accesses extended memory through the XMS driver HIMEM.SYS. MS-DOS applications

that use extended memory can also be run from standard mode Windows.

386 ENHANCED MODE WINDOWS 3.X: ENTERING THE WORLD OF VIRTUAL MEMORY
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386 Enhanced Mode and Conventional Memory

Windows 386 enhanced mode deals with conventional memory in much the same way that standard mode does. When 386 enhanced mode Windows 3.1 is started, it adds the amount of free conventional and extended memory; in addition, Windows 3.1 can use hard disk space as virtual memory (the "swap" file) and look at the total amount as one contiguous block of memory. Conventional memory has no special meaning under 386 enhanced mode, except when running MS-DOS applications. In 386 enhanced mode, MS-DOS applications run by creating virtual MS-DOS machines with up to 640K of free memory.

Each virtual MS-DOS machine inherits the environment that was present before Windows 386 enhanced mode was started. This means that every driver and terminate-and-stay-resident (TSR) program loaded before you run Windows, as well as the environment, is present and consumes memory in every subsequent virtual MS-DOS machine. The net memory available within virtual MS-DOS machines under 386 enhanced mode is slightly less than the free memory at the MS-DOS prompt before you start Windows, due to the overhead of creating and managing a virtual machine.

386 Enhanced Mode and the 384K Upper Memory Area (UMA)

Windows versions prior to 3.0 used the 384K UMA only to place the expanded memory page frame, and then to a maximum of only four 16K pages. Windows 386 enhanced mode uses the 384K UMA for two purposes:

1. To place MS-DOS protected mode application programming interface (API) translation buffers.
2. To place the LIM 3.2 expanded memory page frame (if required). As noted earlier, there may be adapters, such as network cards, trying to use the 384K UMA as well. Frequently, all the free pages in this area are used by 386 enhanced mode.

API Translation Buffers in the 384K Upper Memory Area (UMA)

Although Windows 3.1 386 enhanced mode breaks the 640K barrier for Windows applications, it still runs on top of MS-DOS. The copy of MS-DOS upon which Windows is running can execute and access data only within conventional memory. The same restriction applies to network software or other drivers loaded before 386 enhanced mode Windows. 386 enhanced mode allocates buffers in the 384K UMA to translate MS-DOS and network API calls from protected mode to real mode. Since the 384K UMA is within the first megabyte of address space, it can be accessed by MS-DOS in real mode. The translation buffers are used as a window through which applications running in protected mode can pass information to and from MS-DOS and the network drivers.

Ideally, there would be enough free space in the 384K UMA to place both the translation buffers and the expanded memory page frame. Yet on many configurations there isn't enough room, and on those systems you have to make a choice. Either the expanded memory page frame can be eliminated, or the translation buffers can be allocated in conventional memory instead of in the 384K UMA. If the translation buffers are allocated in conventional memory, they take up space in every virtual machine that you create from Windows, and you will have less space in which to run MS-DOS applications. The translation buffers can be allocated either in the 384K UMA or in conventional memory, but never half and half.

Fortunately, Windows 386 enhanced mode provides a method for specifying your preference. To do this, place the following setting in the [386enh] section of the SYSTEM.IN file:

```
ReservePageFrame=Boolean
```

If ReservePageFrame=true (the default), 386 enhanced mode Windows allocates the page frame first and the translation buffers second. This makes it likely that the translation buffers will be forced into conventional memory, but allows you to use expanded memory in MS-DOS applications. If ReservePageFrame=false, the translation buffers are allocated first and the page frame second if there is still room.

The ReservePageFrame=false provides the most free memory within virtual machines, although some MS-DOS applications may not be able to use expanded memory. Remember, however, that Windows applications do not need expanded memory to function; only MS-DOS applications that can use expanded memory will be affected.

NOTE: If you are using the EMM386.EXE driver, translation buffers are always placed in conventional memory.

Page Frame Placement in the 384K Upper Memory Area (UMA)

As noted in the expanded memory discussion earlier in this application note, expanded memory support requires a page frame located in the 384K UMA. With LIM 4.0 expanded memory, it is not necessary to have a 64K contiguous page frame in this area. In fact, it's not necessary to have a page frame at all in LIM 4.0. Still, if you want to use expanded memory in your MS-DOS applications, you must have a 64K contiguous page frame (composed of four contiguous 16K pages in the 384K UMA) because most applications are written to take advantage of LIM 3.2 expanded memory.

On a typical IBM-compatible machine there are only 12 free 16K pages in the 384K UMA, and on some machines (such as IBM PS/2s) there are only 8. Four contiguous pages are required for expanded memory support in MS-DOS applications, leaving only eight other free pages. Other items such as network adapters and many hard disk controllers, also need to occupy pages in the 384K UMA. Frequently, the combination of installed adapters can break up the free area in the 384K UMA so there is no 64K contiguous area in which to place the page frame. In this case, you will not see any free expanded memory in your MS-DOS applications.

If you experience this problem, you may need to rearrange your adapter memory locations to get expanded memory support for MS-DOS applications. This is easiest to do on machines using the Micro Channel Architecture (MCA) or Extended Industry Standard Architecture (EISA) bus standards. IBM PS/2 models 50 and above are equipped with the MCA bus. PS/2 machines allow you to change adapter memory locations simply by restarting with the PS/2 Reference Disk and choosing Change Configuration. A similar procedure is available on most EISA bus machines, such as the COMPAQ SYSTEMPRO and the HP Vectra 486. Normal Industry Standard Architecture (ISA) bus machines such as the IBM PC/AT and COMPAQ 386 may require you to open the case and flip DIP switches or move jumpers on the cards to change memory addresses; check your hardware manual for more information on changing memory addresses.

You can entirely disable expanded memory support under Windows 386 enhanced mode by adding the NoEMMDriver=yes setting to the [386enh] section of the SYSTEM.INI file.

Controlling 386 Enhanced Mode 384K Upper Memory Area (UMA) Mapping

In versions of Windows prior to 3.0, the WIN.INI file settings EMMExclude= and EMMInclude= were used to control expanded memory page

frame placement. These settings are used under Windows 386 enhanced mode to control not only the expanded memory page frame but also the API translation buffer mapping. Under Windows 3.x these settings begin with the letters "EMM" only for compatibility reasons; they no longer apply only to expanded memory. The EMMPageFrame= setting, however, still applies only to the expanded memory page frame. In Windows 3.x these three settings have been moved from the WIN.INI file to the [386enh] section of the SYSTEM.INI file. Earlier versions of Windows (2.x) do not use the E000-EFFF range of the 384K UMA unless specifically instructed to do so. Windows 386 enhanced mode will use this segment unless the machine identifies itself as a PS/2.

To explicitly exclude an area of the 384K UMA from mapping by Windows 386 enhanced mode, use the EMMExclude= setting. The EMMExclude= setting accepts a four-digit hexadecimal memory range, such as EMMExclude=E000-EFFF. Since there is no standard for hardware implementation of the E000-EFFF area, it is frequently necessary to exclude this range in order for 386 enhanced mode to function properly. Most adapter cards are automatically detected and excluded by Windows 386 enhanced mode. If you suspect a problem with a 384K UMA memory conflict, use the EMMExclude= setting.

NOTE: If you suspect that your machine has multiple adapter mapping conflicts, it may be useful to exclude the entire UMA (A000-EFFF) for testing purposes.

There are very few uses for the EMMInclude= setting. Normally Windows 3.1 386 enhanced mode automatically uses all free pages in the 384K UMA. Likewise, there are few uses for the EMMPageFrame= setting because it controls only the expanded memory page frame and not the translation buffers.

386 Enhanced Mode and Expanded Memory

Windows 386 enhanced mode does not use expanded memory itself. It can, however, create expanded memory for use by MS-DOS applications written to use expanded memory, such as Lotus 1-2-3 versions 2.x. Expanded memory required by an MS-DOS application can be specified in the application's program information file (PIF). It is no longer necessary for Windows applications to use expanded memory because they can now access extended memory directly. Thus, the main issues for expanded memory under Windows 3.1 are page frame conflicts, as discussed above.

Windows 386 enhanced mode provides large page frame LIM 4.0 expanded memory in all virtual MS-DOS machines. Although this feature is not currently useful for most MS-DOS applications that use expanded memory--they use only the LIM 3.2 64K page frame itself, not the additional bankable pages in conventional memory that large page frame LIM 4.0 supplies--it may be useful in the future.

A compatible external 386 memory manager such as EMM386.EXE can be loaded to provide expanded memory for MS-DOS applications running outside Windows 386 enhanced mode. Such a memory manager is not needed for expanded memory to be available inside Windows 3.x, and is actually turned off when Windows 386 enhanced mode is run. See the "Expanded Memory for MS-DOS Applications" section of this application note for more information.

386 Enhanced Mode and Extended Memory

Like standard mode, Windows 386 enhanced mode can directly access extended memory. It adds free conventional memory and free extended memory plus virtual hard drive memory (the "swap" file). It then provides the total as memory for Windows applications to use (minus the memory required by 386 enhanced mode Windows itself). MS-DOS applications that use extended memory can also access extended memory

in virtual machines under 386 enhanced mode Windows. The extended memory supplied to MS-DOS applications by Windows 3.1 386 enhanced mode can be virtualized.

Running Protected Mode MS-DOS Applications

Windows 386 enhanced mode allows MS-DOS applications to run in protected mode if they are written to use the DPMS specification.

Windows 386 enhanced mode uses the XMS driver to load itself and its drivers into extended memory before starting up. This is why 386 enhanced mode requires the presence of HIMEM.SYS or another compatible XMS device driver.

386 Enhanced Mode and Virtual Memory: A Virtual Memory Conceptual Analysis

Virtual memory allows you to simultaneously run more programs than the amount of physical memory installed on your computer would normally allow. Virtual memory has been widely used for years in the world of mainframe computers. Windows 386 enhanced mode offers virtual memory to the PC-compatible world by using the special demand paging capabilities of the Intel 80386 processor.

All Windows programs can take advantage of virtual memory in Windows 386 enhanced mode. When you start Windows 386 enhanced mode, choose About Program Manager from the Help menu. You will see that much more memory is available than is installed on your machine. Windows applications can use this extra memory without being written specially for it because Windows applications are device independent; they let Windows handle the memory management and simply ask Windows for memory allocations. With virtual memory, Windows applications keep asking for more memory, which Windows 386 enhanced mode is now able to deliver. If you have less physical memory and are forced to rely on virtual memory, the application runs more slowly; if you have more physical memory, it runs more quickly--in either case, it is almost always able to run.

While a program is running in virtual memory, at any given moment some parts of its code and data are in physical memory while the rest of the program is swapped to the hard disk. When a reference is made to a memory address, if the information is in physical memory, the information is used without program interruption. However, if the desired information is not in physical memory, a page fault occurs, and the Windows 386 enhanced mode virtual memory manager (VMM) takes control.

The required code or data is pulled into physical memory from the hard disk, and if necessary, some other information is swapped out. Pages are swapped out on a least recently used (LRU) basis. The pages that have not been accessed for the longest time are the first to be swapped out. All this swapping is invisible to the user, who sees only a little hard disk activity.

Windows 386 enhanced mode virtual memory brings pages of data into physical memory when they are referenced: this is called a demand-paged system. This system does not attempt to predict which pages will be required in the future. The 386 enhanced mode virtual memory subsystem is implemented by the Windows 3.x VMM and the page swap device. The VMM maintains the virtual memory page table; it lists which pages are currently in physical memory and which are swapped to disk. Because Windows 386 enhanced mode is a multitasking environment, the VMM page table also contains a list of which memory pages belong to which process. When the VMM needs a page that is not currently in physical memory, it calls the page swap device. The page swap device allocates and deallocates virtual memory and maps pages into and out of physical memory.

Some virtual memory systems rely on program segmentation to do their work. Windows applications are segmented; however, virtual memory under Windows 386 enhanced mode is not related to the segmentation of Windows applications. All memory, virtual and physical, is divided into 4K pages, and the system is managed on this basis. Page mapping starts at zero K and works up. Two kinds of pages can be allocated: physical pages and virtual pages. The number of physical pages is simply the amount of physical memory in the machine divided by 4K. In contrast, memory allocated to an application is made up of virtual pages. At any given time, a virtual page can be in physical memory or swapped to the hard disk.

As mentioned earlier, Windows 386 enhanced mode virtual memory management uses the LRU page-replacement algorithm. The virtual page table contains flags for each page that indicate whether the page has been "accessed" and if the page is "dirty." Accessed means that a process made a reference to the page after it was originally loaded. Dirty means that a write was made to the page after it was loaded. Because a memory write qualifies as an access, the dirty attribute implies the accessed attribute.

To illustrate, assume Windows 386 enhanced mode is out of physical memory space. A process requests additional memory. Windows has to decide which pages currently in physical memory it should swap to disk to fulfill the request. This decision is a three-step process:

1. The VMM scans the page table, looking for pages that have neither an accessed nor a dirty attribute. During the scanning process, the VMM clears the accessed attribute from all the pages.
2. If the VMM can find enough pages meeting the not accessed/not dirty requirement, it fulfills the request. It swaps the pages to disk and gives the resulting free memory to the process.
3. If the VMM can't find enough pages the first time through, it repeats the scan. However, this time through, none of the pages has an accessed attribute, because it was cleared by the first scan. Theoretically, therefore, more pages will meet the requirements, and the request can be fulfilled. If the required pages are still not found by the second scan, Windows then swaps out the pages regardless of their attributes.

The benefit of Windows 386 enhanced mode virtual memory support is the ability to run more programs than can be supported by actual physical memory. The drawbacks are the disk space requirement for the virtual memory swap file and a decrease in overall execution speed when swapping is required. However, it's better to be able to run a program slowly in a virtual memory system than not to be able to run it at all.

Virtual Memory Paging File Options and Controls

Windows 386 enhanced mode can use one of two types of virtual memory paging files, or swap files: temporary or permanent. Only one type of swap file can be used at a time when running Windows 3.1. Do not attempt to create a swap file on a RAM disk; this is a self-defeating pursuit--you would be sacrificing physical memory to provide a place to create virtual memory to replace the physical memory you have used to create the RAM disk. Windows 3.0 in 386 enhanced mode requires a minimum of approximately 1.5 MB of hard disk space free on the paging drive to provide virtual memory support with a temporary swap file. With Windows 3.1, that number is down to 512K.

A temporary swap file is simply a normal MS-DOS file created on the hard disk that can shrink and grow in size as necessary. The temporary swap file is called WIN386.SWP, and it is created automatically when Windows 3.x is started. The swap file does not have a hidden or system

attribute and can be deleted, if necessary, any time you are not running Windows, although it is normally deleted automatically when you exit Windows 386 enhanced mode.

Temporary swap file location and size can be adjusted by inserting parameters in the [386enh] section of the SYSTEM.INI file. In Windows 3.0, the temporary swap file is always created in your Windows 3.0 directory unless you set the PagingDrive= setting. If the PagingDrive= setting is set (for example, PagingDrive=D:), the swap file will be created in the root directory of the specified drive. There is no way to specify a subdirectory for the temporary swap file location in Windows 3.0. In Windows 3.1, the drive and subdirectory of the temporary swap file may be specified with the PagingFile= setting. Temporary swap file size is controlled by the MaxPagingFileSize= setting. The size of the temporary swap file can also be limited in a different way by the use of the MinUserDiskSpace= setting, which tells 386 enhanced mode to leave the specified amount of disk space in kilobytes free when creating a temporary swap file.

A permanent swap file occupies a contiguous section of your hard disk. Using a permanent swap file improves the speed of the Windows 3.x virtual memory system because there are fewer processor mode transitions and the swap file's access requires less overhead than a normal MS-DOS file. The permanent swap file is a hidden file called 386SPART.PAR, which also has a system attribute; the file is always placed in the root directory of the specified drive. Since the permanent swap file must be contiguous, you can't create one larger than the largest contiguous free segment of your hard disk.

Permanent swap files are created and deleted by running SWAPFILE.EXE in Windows 3.0 real mode, or from the Windows 3.1 Control Panel by choosing the 386 Enhanced icon and then choosing the Virtual Memory button. A SYSTEM.INI file setting is not used to point to the location of the permanent swap file. Instead, when the permanent swap file is created, Windows creates a file called SPART.PAR in your Windows 3.x directory. Windows 386 enhanced mode reads the SPART.PAR file to find out where the permanent swap file is and how large it is. SPART.PAR is marked read-only to keep you from accidentally deleting it. If you delete SPART.PAR, Windows will not know about the permanent swap file and won't be able to make use of it. Because SWAPFILE.EXE and the Virtual Memory utility both read SPART.PAR, they cannot be used to delete the permanent swap file if SPART.PAR is deleted.

If Control Panel (or SWAPFILE.EXE with Windows 3.0) says that the maximum swap file size it can create is smaller than your free disk space, your hard disk is fragmented.

If you want to create a larger permanent swap file than Control Panel (or SWAPFILE.EXE) reports possible, you must optimize your hard disk (optimizing is also known as unfragmenting, or compacting). Optimizing must be done with a third-party utility program such as Bridgeway Publishing FastTrax, Norton Utilities, Mace Utilities, Golden Bow VOpt, or Central Point PC Tools. It is important to run these programs outside the Microsoft Windows environment. If you have already created a permanent swap file, make sure you delete it using Control Panel before optimizing your hard disk. It is not necessary to delete the permanent swap file every time you optimize your hard disk--only when you want to increase the size of the permanent swap file by optimizing, then re-creating it.

The Virtual Memory utility supports only disks that use 512-byte sectors for the swap file. If 512-byte sectors are not being used, this indicates a non-standard configuration such as a third-party disk partitioning driver. The Virtual Memory utility (and Windows 3.x itself) supports drives with 512-byte sectors that have been partitioned with the MS-DOS fdisk command. (NOTE: Certain OEM versions of MS-DOS have altered versions of fdisk that will partition drives

using sector sizes other than 512 bytes.) Never run the Virtual Memory utility on a drive that uses a partitioning driver in the CONFIG.SYS file, with the exception of Compaq's ENHDISK.SYS. If you receive a message that your swap file is corrupted, use Control Panel (or SWAPFILE.EXE in Windows 3.0) to delete the corrupted swap file and create a new one.

Paging to Network Drives

Paging to a network drive, while certainly possible, is extremely slow and is not recommended. Only temporary swap files can be used on network drives. If you want to page to a network drive, the directory must not have an MS-DOS read-only attribute; you must have create and write access to the directory.

NOTE: Because the root of a Novell network drive is the root of the server, it is not MSNet-Redirector compatible. Do not set the PagingDrive= setting to a Novell network drive. If you do so and multiple users run Windows 3.1 386 enhanced mode, their computers will hang because they will overwrite each other's swap files, all with the same name and all created in the root directory of the server.

WIN.COM AUTOMATIC STARTUP PARAMETERS

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WIN.COM starts up automatically in the appropriate operating mode for your machine and the amount of memory installed. Operating modes are real mode (similar to Windows/286 2.x), which is only available in Windows 3.0; 286 standard mode (also known as 286 protected mode); and 386 enhanced mode (also known as 386 protected mode). However, Windows may be forced into any of the modes through the following command-line switches (provided the mode is supported by your hardware):

Command Line	Mode
win /r	Real (Windows 3.0 only)
win /s or win /2	Standard
win /3	386 enhanced

Real Mode Requirements

The requirements for WIN.COM to automatically start up in real mode are the following:

- Windows 3.0
- 8088 processor or above
- 384K of free conventional memory (393,216 bytes reported by chkdsk)Standard Mode Requirements

The requirements for WIN.COM to automatically start up in standard mode are the following:

- 80286 processor or above
- 192K of free extended memory
- XMS driver loaded (HIMEM.SYS)

Practical Standard Mode Requirements

Standard mode conventional/extended memory requirements are mutually dependent and are not fixed. A typical installation requires a minimum of 128K of memory free at the MS-DOS prompt to run standard mode, assuming sufficient extended memory is free. Standard mode requires between 384K and 512K of combined conventional and extended memory to run (approximately).

For example, if only the minimum 192K of extended memory is free,

approximately 322K of conventional memory is required to run standard mode. However, if available extended memory is increased to approximately 208K or greater, only 128K of conventional memory is required.

386 Enhanced Mode Requirements

The requirements for WIN.COM to automatically start up in 386 enhanced mode are the following:

- 80386 processor or above
- 1024K of free extended memory
- XMS driver loaded (HIMEM.SYS)

Practical 386 Enhanced Mode Requirements

See the above notes for standard mode regarding the interrelationship of conventional and extended memory requirements. A typical installation requires a minimum of 182K of memory free at the MS-DOS prompt to run 386 enhanced mode, assuming sufficient extended memory is free. Windows 386 enhanced mode requires between 580K and 624K combined conventional and extended memory to run (approximately).

NOTE: 386 enhanced mode can start up in low memory situations because it provides virtual memory support; however, it may be extremely slow due to the large amount of disk swapping it must perform.

All numbers are approximate and may vary widely depending on the configuration (for example, Windows device drivers chosen, MS-DOS version, display adapter, and so on). 128K of extended memory is recovered from shadow RAM usage on COMPAQ 386 machines. Memory requirements take into account memory that can be recovered from SMARTDrive (down to the minimum cache size specified).

THE FREE SYSTEM RESOURCES PERCENTAGE

=====

The Program Manager and File Manager About boxes in the Help menus of Windows 3.1's standard and 386 enhanced modes give percentage figures for free system resources and free memory. In Windows 3.0, these figures can be obtained from the About box of the Program Manager Help menu. To understand what the free system resources percentage means, you must understand some of the anatomy of Windows's internal structure.

The part of Windows that runs Windows applications is made up of three main segments called KERNEL, GDI (graphics device interface), and USER. KERNEL loads and runs Windows applications and handles their memory management. GDI manages graphics and printing. USER controls user input and output, including the keyboard, mouse, sound driver, timer, and communications ports. These three segments exist as separate .EXE files and are located in the WINDOWS\SYSTEM subdirectory.

GDI has a storage area limited to 64K, which is known as a local heap. Currently, USER has two such areas, hence 128K storage. The free system resources percentage reflects the remaining free percentage of USER or GDI local heap space, whichever is lower. Although Windows 3.1 allows you to run a much larger number of simultaneous Windows applications than any previous Windows version, like Windows 3.0, it is not without limitations. If you receive an "Out of memory" error and the Help About box shows a large amount of free memory, look at the free system resources percentage. Chances are you are low on system resources.

Every window and icon that is created requires USER local heap space. It is theoretically possible to exhaust the system resources with only

one application, such as Program Manager, if enough objects are created by the application.

Another important aspect of Windows application memory management that is not included in the free system resources percentage is the number of selectors. A selector is a memory pointer that is consumed with each memory allocation made by a Windows application. Windows 3.1 has a fixed number of selectors (4096 in standard mode, 8192 in 386 enhanced mode). If a Windows application allocates a very large number of small data objects, it is possible to run out of selectors. This will also produce an "Out of memory" error message.

Writing a Windows application to handle its own data objects more efficiently can help in this situation. If you experience a chronic problem with a particular application while few or no other applications are loaded, contact the application vendor. It is important that the vendor become aware of the problem so it can be corrected if possible. Writing an application to handle data objects more efficiently can help reduce "Out of memory" conditions.

386 ENHANCED MODE PERFORMANCE TIPS: GETTING THE MOST FROM YOUR MACHINE
=====

The following suggestions should assist you in maximizing the performance of your Windows 386 enhanced mode installation. Many of these suggestions apply to standard and real modes as well.

1. USE SMARTDRIVE. The Microsoft SMARTDrive disk caching driver can produce the largest single Windows 3.1 performance improvement. Use SMARTDrive whenever possible. For basic information on SMARTDrive installation and operation, refer to the "Microsoft Windows User's Guide" version 3.1 manual.
2. KEEP YOUR HARD DISK OPTIMIZED. A fragmented hard disk greatly impacts Windows's performance, especially when a temporary swap file and/or SMARTDrive is installed. Use a hard disk optimizer program on a weekly basis to keep your disk contiguous.
3. CREATE A PERMANENT SWAP FILE. Using a permanent swap file improves performance over using a temporary one. Under Windows 3.1, if supported by your hardware, also select the Use 32-Bit Disk Access check box in Control Panel by choosing the 386 Enhanced icon, choosing the Virtual Memory button, then choosing the Change button. See "386 Enhanced Mode and Virtual Memory" section of this application note for more information on permanent swap file allocation.
4. TURN OFF GRAPHICS PORT TRAPPING. The speed of MS-DOS applications running under 386 enhanced mode can be noticeably improved by not selecting any of the Monitor Ports options in the Advanced section of the PIF Editor. The High Graphics option provides the widest range of MS-DOS application compatibility but is not required for most applications.
5. TURN OFF THE FILESYSCHANGE= SETTING. Windows 3.1 386 enhanced mode can monitor disk access by MS-DOS applications and send directory update messages to File Manager. This allows File Manager to be automatically updated by changes MS-DOS applications have made to files or directories. However, this option is not a necessity, and leaving it off (the default) speeds file access by MS-DOS applications. To disable this feature, set FileSysChange=no in the [386enh] section of the SYSTEM.INI file.
6. TURN OFF THE RESERVEPAGEFRAME= SETTING. Turn this setting off if you do not require expanded memory support for MS-DOS applications. Turning this option off ensures that you're getting the most possible memory in virtual MS-DOS machines. To disable this feature, set ReservePageFrame=no in the [386enh] section of the SYSTEM.INI file.

7. USE THE RIGHT NUMBER OF MS-DOS BUFFERS. If you are using SMARTDrive, set the number of MS-DOS disk access buffers in your CONFIG.SYS file to 15 (that is, BUFFERS=15). Using a greater number of buffers with SMARTDrive will actually decrease efficiency. If you are not using SMARTDrive, use BUFFERS=30.
8. USE THE LOWEST COMMON DISPLAY DRIVER. Using a display driver with a high resolution or large number of colors results in slower display performance. If you do not require the extra features of the display driver, use a driver with less capability. Usually this suggestion applies to display systems that are VGA compatible but offer an extended mode driver, such as the Video Seven or 8514. Using the standard VGA driver instead offers faster display performance but less resolution and/or color support.
9. USE THE PROPER HARD DISK INTERLEAVE. Frequently, a hard disk is formatted with the wrong interleave at the dealer or factory. You can use a program such as Gibson Research's SpinRite or Central Point's DiskFix to verify that you are using the proper interleave. Some programs can correct your interleave without reformatting the hard disk.
10. ENABLE 32-BIT DISK ACCESS. 32-Bit Disk Access is a method for accessing the hard disk with fewer changes in the processor mode. Windows can do this by using a device driver that traps interrupt 13 calls and handles them itself. To take advantage of this feature of Windows 3.1, you need to have a Western Digital WD-1003 or compatible hard disk controller.

NOTE: To enable 32-Bit Disk Access in Windows 3.1, choose the 386 Enhanced icon in Control Panel. Choose the Virtual Memory button, then choose the Change button and create a permanent swap file. When you do this, select the 32-Bit Disk Access check box.

EXPANDED MEMORY FOR MS-DOS APPLICATIONS

=====

Under Real Mode Windows 3.0

Real mode Windows 3.0 and MS-DOS applications can both use the same external expanded memory manager (EMM). Expanded memory can be provided either by a physical expanded memory board, or by a 386 EMM. Common expanded memory boards include the AST RAMpage! and Intel Above Board. Common 386 EMMs include Microsoft's EMM386.SYS (included with Windows), Compaq's CEMM.EXE (included with COMPAQ 386 machines), Qualitas's 386 to the Max (386MAX.SYS), and Quarterdeck's QEMM.SYS.

If a physical expanded memory board is used, you will get the best performance from real mode Windows by backfilling to provide large page frame LIM 4.0 support. Some boards do not have the hardware register support to provide large page frame LIM 4.0--only small page frame (see "Expanded Memory" section of this application note). All 386 EMMs provide large page frame LIM 4.0 support.

Remember that MS-DOS applications require LIM 3.2 (a 64K contiguous page frame) to use expanded memory, but real mode Windows requires LIM 4.0 (does not require a 64K contiguous page frame). If you see expanded memory in Windows but not in your MS-DOS applications, you probably do not have a 64K contiguous page frame (LIM 3.2), and you may need to rearrange adapter locations. For more information, see "Expanded Memory" section of this application note.

Under Standard Mode Windows 3.x

As noted in the "Standard Mode and Conventional Memory" section of this application note, Windows 3.x standard mode does not use expanded memory. MS-DOS applications running under standard mode can use

expanded memory only with a physical expanded memory board such as an AST RAMpage! or Intel Above Board. You cannot use 386 EMMs to provide expanded memory support for MS-DOS applications running under standard mode. Still, 386-compatible EMMs can be loaded to provide MS-DOS-application expanded memory support outside standard mode in Windows 3.1. Such EMMs cannot be used in conjunction with standard mode Windows 3.0.

Under 386 Enhanced Mode Windows 3.x

Expanded memory emulation is provided internally for MS-DOS applications running under 386 enhanced mode. The only requirement is the presence of a 64K contiguous page frame for LIM 3.2 compatibility. For more information on page frame placement, see the "386 Enhanced Mode and the 384K Upper Memory Area (UMA)" section of this application note. Expanded memory for MS-DOS applications can be allocated and/or limited through PIF settings.

External 386 Expanded Memory Managers

Some 386 EMMs have a special feature that allows standard or 386 enhanced mode Windows to turn them off when Windows is run. Memory managers with this capability are EMM386.EXE and CEMM.EXE. Windows can turn off EMM386.EXE even if expanded memory is in use at the time. CEMM.EXE requires that no expanded memory be in use when standard or 386 enhanced mode Windows is run.

Some 386 EMMs provide the capability of loading MS-DOS device drivers into free areas of the 384K UMA. CEMM.EXE does not provide this capability, but the combination of MS-DOS 5.0 and EMM386.EXE, or 386MAX.SYS and QEMM386.SYS does.

DPMI AND VCPI

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Specifications for Different Purposes

The MS-DOS Protected Mode Interface (DPMI) was developed by a group of industry leaders including Borland, Eclipse, IBM, IGC, Intel, Locus, Lotus, Microsoft, Phar Lap, Quarterdeck, and Rational Systems. Several members of the DPMI committee were also involved in the creation of the Virtual Control Program Interface (VCPI). DPMI is primarily a creation of Microsoft, and VCPI was formulated primarily by Phar Lap Software.

MS-DOS Extended Applications

MS-DOS extended applications execute code in the protected mode of the 80286 or 80386 processor. Unlike OS/2 applications, MS-DOS extended applications are launched from standard MS-DOS. Creating an MS-DOS extended application requires a method to switch the processor to protected mode and to allocate extended memory. Until DPMI, there was no standard method for MS-DOS extended applications to perform these tasks and multitask memory with other applications on 80286 processors. Hundreds of existing applications have been created using various types of MS-DOS extenders. OS/2 extender applications that do not already support DPMI will require minor modifications to do so.

Comparing VCPI to DPMI

VCPI and DPMI solve two different problems. VCPI provides an interface between applications using MS-DOS extenders on an 80386 machine and 386 EMMs. For example, the 386 EMMs (EMM386.EXE, QEMM.EXE, 386MAX.EXE, and CEMM.EXE) support the VCPI specification. VCPI allows applications using MS-DOS extenders to run simultaneously with 386 EMMs on a 386

machine.

However, multitasking operating environments such as Windows 386 enhanced mode, OS/2, UNIX 386, and VM386 have memory and protection models that are not compatible with the VCPI interface. DPPI was created so these environments can run extended MS-DOS applications. Additionally, DPPI provides support for 80286-based machines, while VCPI does not. DPPI has the capability of running MS-DOS extended applications on a variety of processors and operating environments.

GLOSSARY =====

386 Expanded Memory Manager (EMM) -----

A device driver loaded that provides expanded memory on an 80386-based computer without a physical expanded memory board. 386 expanded memory managers (EMMs) operate through the 80386 processor's hardware capabilities.

386MAX.SYS -----

A 386 expanded memory manager (EMM) from Qualitas Corporation.

CEMM.EXE -----

A 386 EMM from Compaq. CEMM is provided with all Compaq 386-based computers. It has an extension of .EXE rather than .SYS, even though it is installed in the CONFIG.SYS file like other 386 EMMs.

Conventional Memory -----

The memory in your machine from zero K to 640K.

DPPI -----

The MS-DOS Protected Mode Interface (MS-DOS extender industry standard). Applications that use the DPPI specification can run in protected mode and break the 640K barrier under standard or 386 enhanced mode. The DPPI specification is available from Intel Corporation.

EMM386.EXE -----

The Microsoft 386 expanded memory manager (EMM). See the "Microsoft Windows 3.1 User's Guide" for more information.

EMM -----

Expanded memory manager.

EMS -----

Expanded Memory Specification.

Expanded Memory Specification (EMS) -----

There are two expanded memory specifications, which are designated LIM 3.2 and LIM 4.0.

Expanded Memory Manager (EMM) -----

A device driver that provides an interface to expanded memory. An expanded memory manager, or EMM, is either specific to a particular physical expanded memory board, or uses the 386 processor.

Extended Memory -----

Memory in your machine above 1 MB. Extended memory always starts at 1024K.

Extended Memory Specification (XMS)

The XMS provides a standard way for real mode applications to access extended memory. MS-DOS applications running under Windows 3.x can use the XMS to access extended memory. The XMS document and sample source code is available from Microsoft Sales Information Center (MSIC) at (800) 426-9400; international callers should call (206) 936-8661.

HIMEM.SYS

Microsoft's high memory manager. Manages extended memory in accordance with the Extended Memory Specification (XMS).

Large Page Frame

A slang term denoting the presence of bankable expanded memory pages in conventional memory. Large page frame is usually used to refer to a number of bankable pages equal to or greater than 384K (that is, bankable pages ranging from 256K to 640K). Note that the term "large page frame" is a misnomer. The page frame is actually never any larger than four 16K pages and is always located in the 384K UMA. Additional bankable pages in conventional memory do not make the page frame larger; they simply provide additional bankable pages.

LIM 3.2

The Lotus/Intel/Microsoft Expanded Memory Specification (EMS) version 3.2. It provides for a maximum of four 16K bankable pages that must be contiguous.

LIM 4.0

The Lotus/Intel/Microsoft Expanded Memory Specification (EMS) version 4.0. It provides for a maximum of 64 16K bankable pages that do not have to be contiguous.

Page Frame

An area within the 384K upper memory area (UMA) that is designated the expanded memory page frame. The page frame itself can be a maximum of four 16K pages.

QEMM386.SYS

A 386 expanded memory manager (EMM) by Quarterdeck Office Systems.

Small Page Frame

A slang term denoting the presence of expanded memory that does not place bankable pages within conventional memory.

UMA

Upper memory area.

Upper Memory Area (UMA)

The area between 640K and 1024K present on all IBM-compatible machines. Sometimes called the reserved address space because this area was originally reserved by IBM for the ROM BIOS, video memory, and other hardware functions.

VCPI

Virtual Control Program Interface. An 80386 memory management standard created by Phar Lap Software in conjunction with other software developers.

VM

--

Virtual (8086) machine. The VM exists in a protected memory space created through the hardware capabilities of the 80386 processor.

Virtual Memory

The space on a hard drive partition that 386 enhanced mode Windows can address as physical memory. Often referred to as the (temporary or permanent) "swap" file.

VMM

Virtual memory manager.

Virtual Memory Manager (VMM)

Manages the disk space used as virtual memory.

XMS

Extended Memory Specification.

TO OBTAIN THIS APPLICATION NOTE

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You can find WW0335.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0335.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Customer Service at (206) 936-8661.

KBCategory: kbfile kbenv kbhw kbappnote

KBSubcategory: win30 win31 winmem

Additional reference words: appnote 3.00 3.0 3.0a 3.00a 3.10 Win

=====
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Using Remote Boot Workstations in 386 Enhanced Mode

PSS ID Number: Q70202

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a
-

Microsoft Windows 3.0 cannot run in 386 enhanced mode on a workstation that was booted from a network server. Microsoft has an Application Note, "WW0407: RIPLMEM.EXE for Remote Boot Workstations and Windows 386 Enhanced Mode," that corrects this problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.

NOTE: This article does not apply to later versions of Microsoft Windows.



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WW0407.exe
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THE TEXT OF WW0407
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WW0407: RIPLMEM.EXE FOR REMOTE BOOT
WORKSTATIONS AND WINDOWS 386 ENHANCED MODE

=====

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The enclosed disk contains RIPLMEM.EXE, a memory-resident program that

allows you to run Windows version 3.00 in 386 enhanced mode on workstations that are booted from a network server (not from a local floppy or hard disk drive).

Using RIPLMEM.EXE

To enable 386 enhanced mode on a workstation:

1. Copy RIPLMEM.EXE from the enclosed disk to a location that the workstation can access while it is running Windows. For example, copy the file to the Windows directory (or copy the file to the workstation's hard disk, if the workstation has a hard disk).
2. Make sure that the workstation's path line includes both the drive and directory where RIPLMEM.EXE is located. Then, following the path line, insert a line that reads:

RIPLMEM

If you place the file on a network drive, make sure the workstation connects to the network before it attempts to start RIPLMEM.EXE.

3. Restart the workstation. RIPLMEM.EXE should start at this time.
4. Use the /3 switch to start Windows 3.00 in 386 enhanced mode on the workstation. For example:

win /3

To use RIPLMEM.EXE properly:

- Make sure RIPLMEM.EXE is on a drive that Windows can always gain access to. In other words, don't put the file on a drive that can be accessed only while the workstation is being started.
- Do not move the RIPLMEM.EXE file while RIPLMEM is running. If you do, the program will be disabled, and you will need to restart the workstation to restart the program.

TO OBTAIN THIS APPLICATION NOTE

This Application Note is also available in the Software/Data Library and can be found by searching on the keyword WW0407, the Q number of this article, or S12941. WW0407 was archived using the PKWARE file-compression utility.

You can find WW0407.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0407.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0407.EXE



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Dial (206) 936-6735 to connect to MSDL
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KBCategory: kbfile kbappnote

KBSubcategory: win30

Additional reference words: appnote 3.00 3.00a appnote kbnetwork

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Zenith Swapfile Application Note Available

PSS ID Number: Q71604

Article last modified on 12-04-1995

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

SUMMARY

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Microsoft Windows version 3.0 Swapfile does not work on Zenith computers. For this reason, Zenith has manufactured its own version of the Swapfile program. You can order this program in a Microsoft Application Note called "Zenith Swapfile."

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW0314

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The following is the text of this Application Note:

ZENITH SWAPFILE

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Introduction

Microsoft Windows version 3.00 Swapfile does not work on Zenith computers. For this reason, Zenith has manufactured its own version of the Swapfile program. The enclosed disk contains the Zenith version of SWAPFILE.EXE. The instructions below describe the steps to install the Zenith version of Swapfile for Windows version 3.00.

Installation

1. Exit Windows.
2. The SWAPFILE.EXE file on the enclosed Zenith Swapfile Disk is compressed in Windows 3.00 compression format. Decompress SWAPFILE.EXE and copy it to the appropriate directory by doing the following:
 - a. Copy EXPAND.EXE from Microsoft Windows Disk #2 to your hard drive (this utility expands compressed files to a usable format). To do this, insert Windows Disk #2 in Drive A and from the DOS prompt, type the following and press ENTER:

```
copy a:expand.exe c:\
```

- b. Remove Disk #2 and insert the enclosed Zenith Swapfile Disk in Drive A (or any floppy-disk drive).
 - c. Locate the directory where SWAPFILE.EXE currently resides on your hard disk (usually C:\WINDOWS\SYSTEM). Then (assuming the enclosed disk is in Drive A), type the following and press ENTER

```
expand a:swapfile.exe location\swapfile.exe
```

where location is the drive and directory where the Microsoft version of SWAPFILE.EXE resides -- for example, type the following:

```
expand a:swapfile.exe c:\windows\system\swapfile.exe.
```

The compressed file is expanded as it is copied to your hard-disk drive.

3. Follow the instructions on Page 522 of the "Microsoft Windows User's Guide" to set up a permanent Windows swap file.

For more information on the Zenith version of Windows, contact Zenith Corporation at (800) 842-9000 for the nearest dealer who can provide this information.

TO OBTAIN THIS APPLICATION NOTE

- =====
- You can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbother kbappnote

KBSubcategory: win30

Additional reference words: appnote 3.00 3.00a APPNOTE

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Calculator Does Not Reliably Subtract Two Numbers in Windows

PSS ID Number: Q72540

Article last modified on 01-13-1995

PSS database name: WIN3X

3.00 3.00a 3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a, 3.1, 3.11
- Microsoft Windows for Workgroups versions 3.1, 3.11

SYMPTOMS

=====

Microsoft Windows Calculator (CALC.EXE) does not reliably subtract two numbers with decimal values. This problem occurs in both modes (standard and scientific) of Calculator.

CAUSE

=====

Calculator does not round the decimal values properly. While Calculator is determining how to display the solution, it encounters a loss of precision and shows an incorrect answer.

RESOLUTION

=====

Windows 3.0

Microsoft has confirmed this to be a problem in Windows 3.0. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

Windows 3.1x, Windows for Workgroups 3.1x

To correct this problem in Windows 3.1x and Windows for Workgroups 3.1x, obtain the updated CALC.EXE file that is included with the PSS Application Note "WW1138: Updated Calculator Accessory for Windows."

For more information about this Application Note, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q124345

TITLE : WW1138: Updated Calculator Accessory for Windows

MORE INFORMATION

=====

Steps to Reproduce Problem

1. Start Calculator.

2. Input the largest number to subtract first (for example, 12.52).
3. Press the MINUS SIGN (-) key on the numeric keypad.
4. Input the smaller number that is one unit lower in the decimal portion (for example, 12.51).
5. Press the EQUAL SIGN (=) key on the numeric keypad.

Subtracting 12.51 from 12.52 results in one of the following incorrect numbers:

0.00
0.0099999999
0.010000001

KBCategory: kbtool kbbuglist kbappnote
KBSubcategory: win30 win31 wfw wfwg
Additional reference words: 3.0 3.00 3.1 3.10 subtraction 3.11 appnote
ww1138.exe

=====
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WW0440: The DrWatson and MSD Diagnostics

PSS ID Number: Q75020

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

This Application Note, "WW0440: The DrWatson and MSD Diagnostics" contains two programs that aid Microsoft programmers in debugging Windows. When an unrecoverable application error (UAE) occurs, you can send the information collected from these utilities to Microsoft.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.

NOTE: The most current version of MSD is included with PSS Application Note GA0363.



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THE TEXT OF WW0440

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WW0440: THE DRWATSON AND MSD DIAGNOSTICS
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Revision Date: 4/94

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Introduction

The disk included with this application note contains DrWatson and MSD, two programs that aid Microsoft programmers in debugging Windows. DrWatson is a program that logs information about conditions that exist when an unrecoverable application error (UAE) occurs. MSD (Microsoft Diagnostics) is a program that identifies system configuration information.

This application note explains how to install and use DrWatson and MSD. For Microsoft to most effectively identify and solve system problems, we ask that you use these programs and periodically send us the logs that result. The information in this application note describes what to do when a UAE occurs and how to send Microsoft the information that you gather.

DrWatson

DrWatson is a debugging tool designed to provide software programmers with detailed information on the internal state of Windows when a UAE occurs. DrWatson must be running at the time a UAE occurs to extract the internal information from the system.

As DrWatson uses very little memory and does not affect the performance of Windows, we encourage you to install DrWatson if a UAE has occurred before. After DrWatson is installed, information is collected when a UAE occurs and written to a special file (DRWATSON.LOG) located in the Windows directory.

DrWatson is a diagnostic tool, not a cure for a problem. Having DrWatson will not prevent an error from occurring, but the information in DRWATSON.LOG will help Microsoft developers make the next version of Windows even better.

Microsoft Diagnostics (MSD)

The Microsoft Diagnostics (MSD) program is designed to assist Microsoft customers and Product Support Services (PSS) technicians in solving problems with Microsoft products. MSD identifies system configuration information such as the BIOS, video card type and manufacturer, installed processor(s), I/O port status, operating system version, environment settings, hardware devices attached, and additional software running concurrently with MSD.

MSD should be used in conjunction with DrWatson to provide valuable information on hardware configurations and UAEs. Error reports should include information from both the MSD program and DrWatson. (The section titled "When a UAE Occurs" on page 2 of this application note details the procedure for using MSD with DrWatson.)

Installing DrWatson and MSD

We recommend that you start DrWatson automatically each time you start Windows. This will allow you to collect critical information each time a UAE occurs.

To install MSD and DrWatson and to start DrWatson automatically when you start Windows, do the following:

1. Place the enclosed disk in drive A.
2. From Windows, start File Manager.
3. From the File menu, choose Copy. In the From and To boxes, type the following:

```
From:  a:\msd.exe
To:    c:\
```

Choose the Copy button. The MSD program is now copied to your root directory (if your root directory is not on drive C, substitute the correct drive letter in the To box).

4. From the File menu, choose Copy. In the From box, type the following:

```
a:\drwatson.exe a:\toolhelp.dll
```

In the To box, type in the path to your Windows directory (for example: "c:\windows" -- without the quotation marks). Choose the Copy button. The DrWatson files are now copied to your Windows directory.

5. From the File menu, choose Copy. Make a backup copy of your WIN.INI file. For example, if your Windows directory is called Windows and is on drive C, in the From and To boxes, type the following:

```
From:  c:\windows\win.ini
To:    c:\windows\win.bak
```

Choose the Copy button.

6. Exit File Manager and open Notepad or any text editor. Open the WIN.INI file, and in the [Windows] section, add DrWatson to the LOAD= line. For example:

```
[windows]
Beep=yes
Spooler=yes
NullPort=None
LOAD=DRWATSON.EXE
```

7. Save the WIN.INI file and exit the text editor.
8. Exit and then restart Windows.

DrWatson should now appear as an icon on your desktop.

Using DrWatson

DrWatson adds a file to your Windows directory called DRWATSON.LOG. If a UAE occurs while DrWatson is running, DrWatson captures data regarding the internal operations of Windows. In addition, DrWatson prompts you for details on how the UAE occurred. When you type in your response, please include information on what you were doing or what steps created the UAE. This information is recorded in the

DRWATSON.LOG file and will help our software programmers track the problems.

At this time, DrWatson does not detect all system errors, so don't be alarmed if DrWatson does not record information after a particular system error.

Each time a UAE occurs, DrWatson appends new data to DRWATSON.LOG. To prevent this file from growing too large and to aid our processing, please save DRWATSON.LOG as a different file periodically. (For example, if five UAEs occur in one day, save DRWATSON.LOG under a different name before you start Windows again the next day.)

To save the file under a different name, type the following at the command prompt before you start Windows:

```
rename c:\drwatson.log <newname>
```

where <newname> is any legal MS-DOS filename, such as SEPT06.LOG. If your root directory is not on drive C, substitute the correct drive letter.

When a UAE Occurs

1. When a UAE occurs, the DrWatson dialog box will appear. Type in a description of what you were doing prior to receiving the error. Press ENTER.
2. Exit Windows if possible. If exiting is not possible, restart your computer.
3. Change to the root directory, and at the command prompt, type "msd" (without the quotation marks) and press ENTER to run the MSD program. (For LCD and monochrome screens, type "msd /b" and press ENTER.)
4. Press R to choose Generate Report. Select the Generate To File option. When prompted for a filename, type "msd.log" (without the quotation marks and press ENTER. Fill in the information requested.
5. Exit MSD by pressing X.
6. Append the MSD log to the DrWatson log by typing the following at the command prompt:

```
type <path>\MSD.LOG >> <path>\drwatson
```

where <path>\drwatson is the path and filename of the DrWatson log. For example, if you named your DrWatson log the default DRWATSON.LOG (in the WINDOWS directory on drive C), type the following:

```
type c:\msd.log >> c:\windows\drwatson.log
```

7. After you have logged several UAEs, send us the log by following the instructions listed on page 4 of this application note.
8. After sending us the log, delete the MSD and DrWatson logs (for example, MSD.LOG and DRWATSON.LOG) from your hard disk.

More Information About Using the Microsoft Diagnostics Program

The MSD program runs with MS-DOS and the DOS compatibility box of OS/2.

MSD presents a Main Menu screen split into two sections. The upper section presents a summary of information that the utility has gathered from your system. For additional information on any category, use the quick key commands, or move the highlight bar (using the arrow keys) to any category and press the ENTER key. A dialog box appears that presents detailed information for that category. Return to the Main Menu screen by pressing the ESC key.

The following is a brief explanation of the categories in the first section of the MSD program:

Category -----	Description -----
BIOS	Displays the BIOS manufacturer, date, version, and type
Processor	Displays the processor type and math coprocessor, if installed
Memory	Displays a map of memory from 768K to 1 MB and information concerning the configuration of RAM and ROM in your computer system
Video	Shows your video card's manufacturer and model, BIOS version, memory, and current video mode
Network	Detects whether a network is MS-Net or compatible, or Novell
Mouse	Shows the DOS mouse driver version number, mouse type, and other information concerning the mouse
Game Adapter	Dynamically displays game card status for up to two game devices or joysticks
CD-ROM	Displays the Microsoft CD-ROM Extensions (MSCDEX.EXE) version number and drive letter
Operating System	Displays the operating system version number and path from which MSD was run
Parallel Ports	Dynamically displays the status of installed parallel ports and their port addresses
Serial Ports	Dynamically displays the status of active serial ports and their current configurations
Disk Drives	Scans all local and logical drives and displays the total and available bytes
IRQ Status	Shows the current IRQ (hardware interrupt) status
Environment	Displays environment variables
AUTOEXEC.BAT	Lists the AUTOEXEC.BAT file
CONFIG.SYS	Lists the CONFIG.SYS file

The lower section of the MSD screen includes additional functions you can use with your system, as follows:

Function -----	Description -----
Resident Programs	Displays the names of programs loaded in RAM at the time MSD was executed, their locations, and their sizes; programs may be loaded into multiple segments of RAM and have multiple entries in the table
Device Table	Displays software and hardware device drivers installed; these include default devices, such as COM1 or LPT1, and user-installed devices loaded from the CONFIG.SYS file, such as HIMEM.SYS or EMM386.SYS
Printer Test	Prints a page to test the connection between the computer and either a TTY or PostScript-type printer
Generate Report	Prints a "faxable" report to a normal TTY

printer or to a file

File Viewer	Views text files by entering the path and filename
Memory Browser	Searches selected ROM and RAM areas for search strings such as "Copyright" and "Version"
About	Displays the MSD version number and copyright information
Exit	Exits MSD

Sending Information Gathered by DrWatson and MSD to Microsoft

Electronic format is currently the only way we can accept DrWatson log information. This means we can receive log data by disk, or through electronic mail. In all cases, we require your company name, address, and the name and phone number of a person we can contact in the event we need additional data.

You can use any of the following methods to send the report results to us:

1. Send a disk containing the DrWatson log(s) to the following mailing address:

Microsoft Corporation
Attn: Dr. Watson Program
One Microsoft Way, Building #3
Redmond, WA 98052-6399

2. Send the information in the DrWatson log(s) via email to Watson at Microsoft. Our Internet address is watson@microsoft.com.

After you have sent us the log file(s) by one of the methods described above, delete all of the log files from your hard disk to free up disk space.

Unfortunately, we cannot respond to log contributors, but we will review every DrWatson file and actively work on solving reported problems. We thank you in advance for your efforts. Your help will enable us to keep improving future versions of Windows.

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WW0440.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0440.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0440.EXE



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- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
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For additional information about downloading, please see the following

article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- If you are unable to access the source(s) listed above, you can have this Application Note mailed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbnetwork kbdisplay kb3rdparty kbfile kbappnote

KBSubcategory: win30

Additional reference words: appnote 3.00 kbmm

=====
Copyright Microsoft Corporation 1996.

WW0505: HP LaserJet III Printer Driver 30.3.86

PSS ID Number: Q79681

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

Microsoft has an Application Note titled "WW0505: HP LaserJet III Driver Version 30.3.86" that contains the Hewlett-Packard PCL/HP LaserJet III driver version 30.3.86 for Windows 3.0. The driver supports the HP LaserJet III, IIID, IIIP, and IIIsi printers.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



Press here to
copy
WW0505.exe
to your
computer

THE TEXT OF WW0505

=====

=====
Microsoft Product Support Services Application Note (Text File)
WW0505: HP LASERJET III DRIVER VERSION 30.3.86

=====

Revision Date: 11/91
Disk Included

The following information applies to Windows version 3.0.

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The enclosed WW0505 disk contains the Microsoft PCL/HP LaserJet III driver version 30.3.86 for Windows 3.0. The driver supports the Hewlett-Packard (HP) LaserJet III, IIID, IIIP, and IIIsi printers.

The PCL/HP version 30.3.86 driver supports the following cartridges:

Z: Microsoft 1A
HP: Bar Codes & More
HP: Forms, Etc.
HP: Global Text
HP: Great Start
HP: International Collection
HP: Polished Worksheets
HP: Persuasive Presentations
HP: ProCollection
HP: TextEquations
Distinctive Documents/Compelling Publications I
Brilliant Presentations/Compelling Publications II

The following files are contained on the enclosed WW0505 disk:

FINSTALL.DLL
FINSTALL.HLP
HPPCL5A.DRV
HPPCL5A.HLP
OEMSETUP.INF
README.TXT

NOTE: The 5.25-inch WW0505 disk is high density and can be read only by high-density disk drives.

INSTALLING THE PCL/HP 30.3.86 DRIVER
=====

Use the instructions below to successfully install the new printer-driver file.

Removing Existing LaserJet III
Entries from the Installed Printers List

NOTE: Any HP LaserJet III printer you have previously installed will use the new PCL/HP printer driver and HP Font Installer. Before installing the version 30.3.86 driver, use the Control Panel to remove any existing HP LaserJet III printer entries that are not needed.

1. Start Windows 3.0 if it is not already running.

2. From the Main Group in Program Manager, choose Control Panel.
3. From the Control Panel window, choose the Printers icon. The Printers dialog box appears.
4. Select the printer you want to remove.
5. Choose the Configure button.
6. Choose the Remove button.
7. Choose the Yes button when asked if you want to remove the printer.
8. Choose the OK button to exit the Printers dialog box and return to the Control Panel window. You must exit the dialog box to make the removal take effect.

You are now ready to install the new driver.

Installing the PCL/HP 30.3.86 Driver

1. Start Windows 3.0 if it is not already running.
2. From the Main Group in Program Manager, choose Control Panel.
3. From the Control Panel window, choose the Printers icon. The Printers dialog box appears.
4. From the Control Panel's Printers dialog box, choose the Add Printer button.
5. In the List of Printers box, select Unlisted Printer, which is the last entry in the box.
6. Choose the Install button.
7. Insert the WW0505 disk in your floppy disk drive.
8. In the Directories box, select the installation drive, which is the drive in which you have inserted the WW0505 disk.
9. In the Driver Files box, select HPPCL5A.DRV and choose the OK button.

Choose the New button if you are asked whether you want to use the current driver or install a new driver.

The entry "HP LaserJet III on None, Inactive" will appear in the Installed Printers box.
10. Choose the Configure button.
11. In the Ports box, select the correct printer port.
12. Choose the Setup button.
13. Make any necessary changes in the Setup dialog box to reflect your printer's configuration, such as making appropriate cartridge selections, resolution, orientation, and so on.
14. Choose the OK button to close the Setup dialog box. Choose the OK button again to close the Configure dialog box.
15. In the Status box, choose the Active option button.
16. Choose the OK button.

The PCL/HP LaserJet III 30.3.86 printer driver is now installed.

Until you exit and restart Windows 3.0, the printer setup function in the Control Panel is accessed from the installation disk. Therefore, after installing the new printer driver, make sure the WW0505 disk is inserted in the floppy drive if you choose Printer from the Control Panel before exiting Windows 3.0.

ADDITIONAL INFORMATION
=====

- On-screen Help files are included with this printer driver. For more information about the driver, select the appropriate printer in the Installed Printers box, choose the Configure button, and choose the Setup button. You can now access Help by choosing the Help button in the Setup dialog box.
- The WordPerfect Bitmap Cartridge support has been removed from the 30.3.86 driver. The WordPerfect Cartridge can be added to the Font Installer by using either the AutoFont support disk packaged with the cartridge or by obtaining AutoFont support from the Personal Peripherals Assistance Line.

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WW0505.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0505.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0505.EXE



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- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WW0505.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbprint kbfile kbappnote
KBSubcategory: win30
Additional reference words: appnote 3.00 3.86 3.00a

=====
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Windows: ALT+TAB, ALT+SPACEBAR Doesn't Work with Word 5.0

PSS ID Number: Q81230

Article last modified on 07-29-1996

PSS database name: WIN3X

2.x 3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 2.x, 3.0, 3.0a
-

SUMMARY

=====

The Microsoft Windows version 3.0 README.TXT file includes the following quotation regarding Word for MS-DOS version 5.0:

Microsoft Word

You might have problems using ALT+TAB with Microsoft Word 5.0 and also using ALT+SPACEBAR to transfer data into Microsoft Word 5.0 from the Windows 3.0 Clipboard. If so, contact Microsoft Customer Service for an updated version of Microsoft Word 5.0. The updated version contains a keyboard driver that lets you use ALT+TAB and ALT+SPACEBAR.

MORE INFORMATION

=====

Similar problems may occur when running Word for MS-DOS version 5.0 under Windows/286 version 2.03 or 2.1. In this case, pressing ALT+TAB will not exit you from the application. The workaround is to use ALT+ESC instead.

Microsoft Product Support Services has an Application Note called "Updated Screen and Keyboard Drivers" (DW0077) that corrects this problem in Word version 5.0 for MS-DOS.

You can find DW0077.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile DW0077.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get DW0077.EXE



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to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download DW0077.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling

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KBCategory: kbother kbfile kbappnote

KBSubcategory: win30

Additional reference words: appnote readme.doc hot key hot-key ALT-TAB ALT-SPACEBAR

2.03 2.10 3.00 3.00a 5.00 MS-Word

=====
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No Expanded Memory in MS-DOS-Based Applications w/ Windows 3.0

PSS ID Number: Q81422

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

SUMMARY

=====

If MS-DOS-based applications running under Windows version 3.0 386 enhanced mode do not see any expanded memory, the EMS settings in the PIF file may need to be increased. Increasing the EMS-required above 700K in the PIF Advanced Options box may allow the applications to use expanded memory. The following is an example of increasing the EMS settings:

Settings	Required	Desired
Default settings:	0K	1024K
Increased settings:	1024K	2048K

MORE INFORMATION

=====

EMS Settings

The EMS settings must be increased because of the way expanded memory is counted in Microsoft Windows version 3.0. Windows 3.0 supports LIM version 4.0 expanded memory. LIM 4.0 expanded memory counts conventional memory as expanded in a virtual machine.

MS-DOS-based applications use only LIM version 3.2 expanded memory. LIM 3.2 expanded memory does not count the conventional memory that it operates in. As a result, the MS-DOS-based application displays approximately 400K less expanded memory than is allocated through the Advanced PIF settings.

The difference between how LIM 3.2 and LIM 4.0 memory is counted results in the higher EMS settings under Windows 3.0 than would normally be expected.

Hardware Considerations

Note that modifying the Advanced PIF settings cannot override hardware or software conflicts. It may be necessary to use an EMMEXCLUDE statement to prevent the EMS page frame from conflicting with network cards or other hardware in the system. A 64K contiguous block of upper memory is required for windows to create an expanded memory page frame.

Additional Considerations

There is a problem with the Expanded Memory Manager in Windows 3.0. If the minimum EMS required is set to above 0, Windows will not release this memory back to the minimum memory size pool. To work around this, set the minimum EMS required to 0. This forces Windows to use memory from the Global EMS Memory Pool (memory it releases when it doesn't need it).

Microsoft has confirmed this to be a problem in Microsoft Windows version 3.0. This problem is corrected in version 3.1.

More information on Windows 3.0 and 3.1 and expanded memory can be found in the Microsoft Application Note "Memory Management with Windows" (WW0335). For more information about obtaining this Application Note, query on the following words in the Microsoft Knowledge Base:

ww0335 and appnote

KBCategory: kbenv kbfile kbappnote

KBSubcategory: win30 winmem

Additional reference words: appnote 3.00 3.00a 3.0 3.0a WW0335 S12782 softlib

=====
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How Does Cardfile Verify Writes?

PSS ID Number: Q82823

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SUMMARY

=====

In Microsoft Windows version 3.1, the Cardfile accessory application has a Validate Writes check box in the File Save dialog box. If this check box is selected, then Cardfile verifies the integrity of the changes it writes to the file.

MORE INFORMATION

=====

When Save or Save As is chosen from the File menu, Cardfile writes the changes to a temporary file. If Validate Writes is selected, Cardfile then reopens this temporary file and checks that it can read it.

Cardfile does not compare the files card by card, but merely makes certain that the file opened is in a valid Cardfile format by checking the validity of the following:

- The header for the whole file
- The header for each card

If one of the above checks fails, the temporary file is not considered valid. This means that if only one card is corrupted, the whole file will be marked as bad.

If the temporary file is valid, the temporary file is renamed to the filename you specify. By performing the validation in this manner, the old file is not corrupted when you try to update it with more information.

Cardfile for Windows 3.1 has a new format that allows it to support OLE and contain pictures. The new format entails a change in the header for the file. If the file contains a picture, Cardfile saves the file in this new format. If it does not contain a picture, Cardfile saves the file in the format used in Cardfile for Windows version 3.0, allowing both versions to read it. If someone takes a file containing a picture and tries to open it using the 3.0 version of Cardfile, the following message will appear:

Not A Valid Cardfile

For more information on the Cardfile format, query on the following words in the Microsoft Knowledge Base:

appnote and cardfile and format
validateFileWrite=1

KBCategory: kbtool kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.1 3.10 3.00 3.0

=====
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WW0526: Windows 3.1 Setup

PSS ID Number: Q83194

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1
-

Microsoft Product Support Services has an Application Note available titled "WW0526: Windows Setup." This Application Note describes the Windows version 3.1 Setup program and new setup modes, and it tells how to troubleshoot setup problems.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



THE TEXT FILE WW0526

=====

=====
Microsoft Product Support Services Application Note (Text File)
WW0526: WINDOWS SETUP
=====

Revision Date: 3/92
No Disk Included

The following information applies to Microsoft Windows version 3.1.

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A NEW SETUP PROGRAM
=====

The Windows 3.1 Setup program has been changed substantially from the Windows 3.0 Setup program. Setup was changed in order to improve its ease of use and to give you more control over the setup process.

When upgrading your machine from Windows 3.0 to Windows 3.1, the setup process will maintain your group files, system drivers and settings, desktop settings, applications, type managers, and CONFIG.SYS file settings, including the order in which your device drivers are loaded. Windows 3.1 Setup will update existing Windows device drivers (if 3.1 has updated versions), add any new entries to your .INI files, and install TrueType fonts.

The Setup program also has a tutorial that will familiarize you with the Microsoft Windows operating system version 3.1 and show you how to use the mouse.

When you select the Setup Existing Applications option, Setup will prompt you to identify applications with identical filenames. This new feature allows Setup to create program information files (PIFs) for MS-DOS applications that use the same .EXE filename.

WHAT SETUP DOES

=====

When Setup is first invoked, it searches your system for memory-resident programs, such as device drivers or terminate-and-stay-resident (TSR) programs, which are known to cause problems with Setup

or Windows 3.1. If Setup does detect a memory-resident program, it will advise you to remove that device driver or TSR program from your CONFIG.SYS or AUTOEXEC.BAT file, restart your system, and then start Setup again.

Setup will also check the available space on your hard drive. If Setup detects a lack of space for a full installation, it will provide an option for a partial installation of Windows. If the setup process does not complete for some reason (such as a power failure), you can start Setup again, and it will detect that the setup process has not been completed. At this point, Setup will offer suggestions on how to correct the condition that caused the previous setup to fail.

NEW SWITCHES FOR SETUP =====

The Windows 3.1 Setup program has new command-line switches in addition to those of the Windows 3.0 Setup program. The following is a list of the command-line switches that can be used with the Windows 3.1 Setup program:

- setup /? -- Displays the Help dialog box and a list of available command-line switches.
- setup /n -- Sets up a shared copy of Windows from a network server.
- setup /i -- Disables the hardware detection that the Setup program normally performs. Using the setup /i option allows you to check the accuracy of the settings on the System Information screen and possibly make corrections.
- setup /o:<filespec> -- Specifies the SETUP.INF file, where <filespec> is the name of the SETUP.INF file that will be used by Setup.
- setup /s:<filepath> -- Specifies a path to the Setup disk, where <filepath> is the full path to the Setup disk.
- setup /b -- Forces Setup to run in monochrome mode.
- setup /t -- Causes Setup to search the drive for software that is incompatible and should not be run at the same time as Setup or Windows 3.1.
- setup /c -- Turns off the search for memory-resident programs.
- setup /a -- Starts an administrative Setup program that places Windows onto a network server. Setup expands and copies all the files on every disk to a given directory and then marks the files read-only.
- setup /h:<filespec> -- Starts Batch Mode Setup, which requires little or no user interaction. <Filespec> is the name of the system settings file that contains your configuration settings. If <filespec> is not in the directory from which Windows is being set up, the path to it must also be included.

MODES OF WINDOWS SETUP =====

The Windows 3.1 Setup program has new setup modes, Express and Custom modes, as well as a new Batch Mode Setup feature that allows for automation of the setup procedure.

Express Setup -----

The Express Setup mode is new to Windows 3.1 and is the default installation mode. It automatically detects the system hardware and applies standard defaults to all other installation options. When upgrading from Windows 3.0 using Express Setup, the only entry requirement is your name. If using Express Setup for a new

installation of Windows 3.1, you will be required to enter your name and select a printer, printer type, and printer port, if applicable.

Custom Setup

The Custom Setup mode is very similar to the Windows 3.0 Setup process, with some additional features. A custom installation allows you to have full control in selecting the Windows directory, system hardware, optional component installation, changes to the CONFIG.SYS and AUTOEXEC.BAT files, printer installation, and setup of existing applications. If you are upgrading from an existing 3.0 installation, some options, such as the Printer Installation dialog box, will not be selected by default, in order to preserve the existing drivers.

Batch Mode Setup

The Batch Mode Setup process is designed to simplify and speed up the installation of Windows 3.1 onto multiple machines that will be using the same or very similar configuration information. Batch Mode Setup uses the /h:<filespec> switch, as described above. Setup uses the information provided in the specified file to determine the configuration during the setup process; minimal user input is required. If hardware or setup options are not specified in the file, Batch Mode Setup will use defaults for these options and will perform automatic detection of the system's hardware. The file containing the configuration information typically has an extension of .SHH. Windows 3.1 includes a sample file, with explanatory comments, called SETUP.SHH that can be modified to meet your needs. For more information about the Batch Mode Setup program for Windows 3.1, see the Microsoft Windows Resource Kit. For more information, call the Microsoft Sales Information Center (MSIC) at (800) 426-9400.

Maintaining Windows with Setup

Once you have successfully installed Windows 3.1, you can use the Windows Setup program to update your installation whenever your hardware or software configuration changes. To update your Windows 3.1 installation, start Setup either from inside Windows or from the WINDOWS directory command prompt.

When you start Setup from the command prompt, you can change the Windows device drivers for your system hardware, change code page and language options, and install third-party Windows device drivers.

When you start Setup from within Windows, you can change the video, mouse, keyboard, and network drivers. You can also have Setup search your hard disk for applications and set up icons for any applications it finds. You can also use Setup to add or remove, completely or partially, the optional components that come with Windows 3.1. The following are the components that can be added or removed through Setup:

- README files
- Windows accessories
- Games
- Screen savers
- Wallpaper and sounds

TROUBLESHOOTING SETUP

=====

The MS-DOS Portion of Setup

The first part of the Windows 3.1 setup process runs with MS-DOS. If the Setup program stops during this part of the installation, it may be due to one of the following problems:

1. Inability to correctly detect the system's hardware (which may result in your machine stopping).

To correct this problem, run Setup again by typing "setup /i" (without the quotation marks). This command causes Setup to bypass its hardware detection and run the Custom Setup process. When the System Information screen comes up, choose the settings that match the hardware on your system.

2. Incompatible hardware or software.

Run Setup again, and it will display a failure detection message, prompting you to take the necessary steps to continue. Continue the setup process and specify the correct hardware when the System Information screen appears. If the System Information selections appear correct, a memory-resident program may be interfering with the setup process. In such an instance, exit Setup and restart the machine with minimal CONFIG.SYS and AUTOEXEC.BAT files. Using a text editor such as Notepad, comment out any entries in these files that are not absolutely necessary for the operation of the machine. (To comment out an entry, type "rem" [without the quotation marks] at the beginning of the line.)

NOTE: If you do not know the purpose of a line in your CONFIG.SYS or AUTOEXEC.BAT file, leave that line as is. Also, if the system has RAM or ROM shadowing, this should be disabled, as it can interfere with both Setup and Windows 3.1.

3. Hard disk problems.

If your hard disk has a number of lost clusters (allocation units), is excessively fragmented, or has a number of bad sectors, Windows Setup may not be able to run. In such a case, the best course of action is to run the MS-DOS command CHKDSK. Note the amount of available disk space and whether CHKDSK reports any lost allocation units. If lost allocation units are reported, you can correct this problem by typing "chkdsk /f" (without the quotation marks).

CAUTION: If the number of lost allocation units is excessive (anything more than 10-20 lost allocation units), there may be a problem elsewhere in the system. Running CHKDSK /F with an excessive number of lost allocation units may result in data corruption on your hard disk. It is best to speak with your support consultant in such an instance to determine the best course of action. Bad sectors and fragmented disks can be corrected by using third-party utility packages such as Norton Utilities from Symantec, or PC Tools from Central Point.

The Windows Portion of Setup

Partway through the installation, the setup process will switch from MS-DOS to Windows. Windows Setup will inform you that it is trying to start Windows. At the point where the Setup program switches from MS-DOS to Windows, the screen may go black and the machine may stop. The following are possible causes and their resolutions:

1. Conflicts with memory-resident applications (TSR programs and/or device drivers).

When you started Setup, your system had an program in memory that writes directly to your video screen, rather than going through the BIOS--for example, a TSR network messaging program that notifies you when a print job completes. Other memory-resident programs can also interfere with Windows Setup. Setup will detect and warn you about many incompatible memory-resident programs when it first starts. (The file SETUP.TXT, located on Disk 1, provides additional information about using these programs with Setup or Windows. The information about memory-resident programs is listed alphabetically by program name.) Make sure that any extraneous applications and

device drivers have been closed or commented out of your CONFIG.SYS and AUTOEXEC.BAT files before starting Windows 3.1 Setup. To comment out an entry, type "rem" (without the quotation marks) at the beginning of the line.

NOTE: If you do not know the purpose of a line in your CONFIG.SYS or AUTOEXEC.BAT file, leave that line as is.

2. Inability to correctly detect hardware.

Type "setup /i" (without the quotation marks) at the command prompt. When the System Information screen comes up, make sure that the settings displayed match the hardware on the system. If the settings shown do not match, change them to the correct settings.

3. Incompatible hardware or software.

Run Setup again; Setup will display a message indicating which device is incompatible and prompt you to specify a different device. On the System Information screen, verify that all the settings are correct and modify them if they are not. If you are still unable to proceed through Setup, try installing Windows by typing "setup /i" (without the quotation marks), choosing the lowest resolution supported by your monitor, and selecting the No Mouse Or Other Pointing Device option. If the Setup program proceeds, you can run Setup again after Windows installs to correctly configure Windows for your machine. Install the proper configuration components one at a time. If you encounter problems with one or more of the components, contact the manufacturer of the component in question for more information.

4. Incorrect version of MS-DOS.

Windows 3.1 requires MS-DOS version 3.1 or later. To determine what version of MS-DOS is present on your system, type "ver" (without the quotation marks) at the MS-DOS command prompt, and you will receive a message indicating your MS-DOS version. If necessary, install a newer version of MS-DOS and then run Setup again. When you attempt to install Windows 3.1 with a version of MS-DOS prior to 3.1, Setup will display an error message and terminate. It is also important that the version of MS-DOS on your machine is designed for that machine.

CAUTION: Do not run an original equipment manufacturer (OEM) version of MS-DOS on a machine not manufactured by that OEM (for example, COMPAQ MS-DOS on an IBM machine).

If the Setup program does not detect that you have inserted the disk that you were prompted for, one of the following conditions may be true:

1. A disk-caching utility may be caching the floppy disk drive.

To remove the disk cache, use a text editor such as Notepad to open the CONFIG.SYS or the AUTOEXEC.BAT file and comment out the line pertaining to the disk-caching utility. To comment out a line, type "rem" (without the quotation marks) at the beginning of the line. After saving the file and exiting your editor, restart your system and run Setup again.

2. The system may not have received the message that the floppy disk has been changed.

Under MS-DOS 3.2 and later, you can try to correct this problem by adding either DRIVPARM or DRIVER.SYS to your CONFIG.SYS file and then restarting your computer. For example, if you are setting up Windows 3.1 from drive A, and it is a high-density 5.25-inch drive, you would add ONE of the following lines to your CONFIG.SYS file:

```
drivparm=/d:0 /f:1
```

-or-

```
device=c:\dos\driver.sys /d:0 /f:1
```

NOTE: If your MS-DOS files are located in a directory other than C:\DOS, make the appropriate change to the path in the above device= line. For more information on either of these commands, please refer to your MS-DOS user's guide.

NONSTANDARD WINDOWS 3.0 DRIVERS

=====

If you are using a nonstandard display driver, such as Super VGA, with Windows 3.0, you may receive an error message or encounter difficulty while starting Windows 3.1. The following are error messages that can be caused by an incompatible display driver:

- "Error loading VGA.DRV" will appear if the driver cannot be loaded.

NOTE: "VGA.DRV" will change to match the name of the currently installed display driver.

- "Error loading USER.EXE" or "Error loading GDI.EXE" can be caused by other nonstandard Windows drivers or components.

If you encounter any of these messages, you may need to exit Setup and run Setup within Windows 3.0 to return Windows 3.0 to a standard configuration. Once Windows 3.0 is at a standard configuration, run Windows 3.1 Setup. Contact your hardware manufacturer to see if there are any special concerns.

If none of the above steps allows Setup to install Windows 3.1 on your system, you may need to contact your hardware manufacturer for more information.

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KBCategory: kbsetup kbdisplay kbfile kbappnote

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WW0527: New Features in Windows 3.1

PSS ID Number: Q83245

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3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1

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=====
Microsoft Product Support Services Application Note (Text File)
WW0527: NEW FEATURES IN WINDOWS 3.1
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OVERVIEW

=====

For Windows version 3.1, Microsoft significantly enhanced the usability of the Windows operating system based on extensive feedback from users of Windows version 3.0. Dozens of improvements will be noticeable immediately, while hundreds of others work behind the scenes to support new features. Microsoft made more than 1000 changes in Windows 3.1, changes that contribute to a smoother, more responsive interaction between the user and Windows.

IMPROVED INSTALLATION

=====

The Windows version 3.1 Setup program can detect even more hardware and software configurations than its version 3.0 predecessor. Therefore, Windows 3.1 configures itself optimally for the computer on which it is installed. The Setup program also detects a wide variety of terminate-and-stay-resident (TSR) programs and hardware devices known to cause problems; it then notifies you of a problem, or corrects the problem without your involvement.

Windows 3.1 will be easier for novice users to install because of the Express Install feature. This is the default setup method for Windows 3.1 and requires minimal user input. For more advanced users, there is a Custom Installation option that gives you a high degree of control over the setup process, so you can customize the installation to fit your needs. For PC coordinators, Windows 3.1 installation provides the Batch Install option and better network setup features for network installations.

FILE MANAGER IMPROVEMENTS

=====

The Windows 3.1 File Manager has been completely redesigned for improved usability and performance. You can now display the directory tree and directory contents side by side in a window. The File Manager now supports multiple "panes" for easy browsing of different drives. The File Manager also allows the display of more file attributes than before and can even display filenames and folder names in a choice of fonts.

Another significant improvement is the quick format capability, which allows you to format floppy disks in much less time than before.

The File Manager also supports an easier, more intuitive "drag-and-drop" model for manipulating files. For example, to print a file, you drag the file's icon with the mouse and "drop" the icon onto the Print Manager icon. You can also drop an icon on a running application or the application's title bar; the application will then automatically open that file. This drag-and-drop functionality is controlled by the new Registration Database, which stores information on how

applications open and print files and how file types are associated with specific applications.

PROGRAM MANAGER IMPROVEMENTS

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Improvements to the Program Manager include "wrappable" icon titles that sit neatly under each icon in multiple lines, instead of a single long line that may overlap with other icon titles. The Program Manager also provides the new Startup group, which allows you to launch any group of applications automatically when the Windows operating system is started. Adding programs to the Startup group is done by simply dragging and dropping an icon.

CONTEXT-SENSITIVE HELP

=====

The Windows 3.1 help system has also been enhanced; it now provides context-sensitive help information. By highlighting a command or procedure and pressing the F1 key, you will be greeted with help screens containing specific information about the command, as well as any associated information.

PRINTING IMPROVEMENTS

=====

The Windows 3.1 Print Manager can now resume stalled print jobs without user intervention. For example, if a printer runs out of paper, the print job will be automatically resumed after the paper tray is restocked.

Another printing improvement introduced with Windows 3.1 is the universal printer driver (UNIDRV). This software offers a single, printer-independent driver for which specific printer drivers can be built rapidly. The universal printer driver makes it easier for printer manufacturers to write or update printer drivers, because the driver encapsulates all the major features of a printer driver in a single piece of software. Vendors simply provide a table of printer-specific parameters for each printer. Instead of using dozens of monolithic printer drivers, the Windows operating system needs only a single driver and a small support table for each printer. Nearly 250 printers are supported in Windows 3.1, with the majority supported through UNIDRV.

BETTER SUPPORT FOR NETWORKS

=====

Microsoft has made Windows 3.1 easier to use on a computer that is attached to a network. Network administrators will find setup is easier with Windows 3.1, especially for complex system configurations. Network problems are also easier to trace and correct because network error messages contain more information regarding the type and source of the problem.

Windows also maintains persistent network connections, meaning that information about a remote disk drive or printer is maintained by the Windows operating system after a network session is terminated. When Windows is restarted, it will reconnect automatically to the same network connections present when it was closed. Windows will even prompt the user for passwords if needed.

APPLICATION SUPPORT: INTEGRATION

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Windows 3.1 provides the most sophisticated platform yet for application integration, making it easier for users to exchange data between documents and for programmers to build data-exchange capabilities into applications for Windows. Application integration is supported by several features of version 3.1, as discussed below in detail.

Object Linking and Embedding

An important technology for the 1990s, object linking and embedding (OLE) creates an environment in which applications can share information seamlessly. With OLE, all data can be thought of as objects. A spreadsheet chart, an illustration, a table, and even a paragraph of text are all examples of objects. OLE provides the information necessary for applications to share these objects easily.

Windows 3.1 supports OLE by providing standard libraries, interfaces, and protocols that applications use to exchange data objects. As developers implement OLE capabilities within programs, you will see a new generation of applications that work together.

Microsoft has added OLE capabilities to new versions of the Windows Write, Paint, and Cardfile accessories, all of which are provided with Windows 3.1. You can, for example, create an illustration using the Paint program and embed the graphic in a Write document. If the illustration must be updated, you can double-click its icon within the Write document, which launches Paint automatically so you can edit the drawing. Since the original graphics file is embedded in the Write document, there is no need to store or update multiple copies of the image, and the file can be updated on any PC with Paintbrush.

Better Support for Dynamic Data Exchange

In the Windows operating system, the standard way of sharing data between applications is through a mechanism known as dynamic data exchange (DDE). OLE and other forms of data exchange use DDE as their primary means of sharing data.

Windows 3.1 provides developers with a new Dynamic Data Exchange Manager Library (DDEML), which offers a higher-level programming model and makes it easier for developers to implement DDE capabilities in an application designed for Windows.

Better Support for MS-DOS Applications

Windows 3.1 provides improved support for existing MS-DOS applications within the Windows operating system. In particular, performance of MS-DOS-based applications is enhanced when Windows 3.1 is used in conjunction with MS-DOS version 5.0, because MS-DOS 5.0 can significantly increase the amount of conventional memory available. In addition, Windows 3.1:

- Supports MS-DOS applications running in VGA graphics mode in a window or running in the background.
- Allows mouse support for MS-DOS-based applications when running in a full screen or in a window.
- Includes more prewritten program information files (PIFs), which tell Windows how to run a specific MS-DOS-based application; this results in even greater MS-DOS-based application support.
- Offers disk-paging, which will allow you to concurrently run more applications for MS-DOS than you can under Windows 3.0.

IMPROVED APPLICATION SUPPORT: TRUETYPE™

=====

Windows 3.1 includes the new TrueType scalable-font technology. TrueType provides outline fonts, giving you instant access to fonts in any point size, and allowing high-quality output on any monitor or printer supported by Windows. TrueType was designed and developed to meet the requirements of type professionals and graphic designers and offers the following benefits.

Complete Integration with the Operating System

TrueType is an integrated component of Windows 3.1. For the Windows customer, this means there is nothing to buy or install. All the benefits of scalable-font technology are built into the operating system, so existing applications can take advantage of the benefits immediately. TrueType fonts can be used in Windows applications and in the system itself. For example, you can now choose your own fonts for File Manager. Four TrueType scalable-font families will ship with all copies of Windows 3.1: Arial (alternative to Helvetica), Times New Roman, Courier, and Symbol.

Cross-Platform Compatibility

TrueType is also offered on the Apple Macintosh, and TrueType fonts can be ported between Windows and the Macintosh without conversion. Therefore, documents using TrueType fonts can be exchanged between a PC running Windows and a Macintosh without changes in character set, font metrics, or line endings. TrueType is also available in Macintosh-compatible laser printers and in TrueImage printers, and has been licensed to numerous printer vendors for use in future products.

Dynamic Font Downloading

TrueType fonts are automatically converted to bitmap images or outlines, depending on the printer being used, and then downloaded to the printer. For PostScript printers, both bitmaps and outlines are used. For printers using Printer-Control Language (PCL), bitmap images are used. TrueType uses dynamic downloading, sending only the characters requested rather than the entire character set, resulting in faster, more efficient printing.

Open Technology

To make it easy for vendors to support TrueType, Microsoft has published the complete specification for the TrueType font format. This specification details every aspect of the font format, including the outlines, metrics, font names, and all technical information associated with the font. Public availability of the TrueType font specification will make it easier and less expensive for vendors to support TrueType fonts with their products.

SYSTEM ROBUSTNESS AND PERFORMANCE

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Since its shipment in May 1990, Windows version 3.0 has proven to be a remarkably stable product. In fact, Microsoft implemented only one update release (version 3.0a) to accommodate minor corrections. Like any mature operating system, Windows works in cooperation with a vast number of hardware platforms, applications, and peripherals. With the countless permutations of software and hardware, occasional conflicts are inevitable, and approximately 1 to 2 percent of the calls to Microsoft Product Support Services about Windows 3.0 are regarding unrecoverable application errors (UAEs).

Through Microsoft's communication with Windows users and developers, Microsoft has gained a detailed understanding of how applications generate and handle errors. Most UAE questions pertaining to Windows 3.0 have been resolved by helping users remove misbehaving TSR programs, by answering questions on drivers or software, by removing unnecessary lines in CONFIG.SYS files, or by installing later versions of the applications that are causing problems.

Reducing UAEs and enhancing system robustness were primary goals for the designers of Windows 3.1. Microsoft's accumulated knowledge serves as the basis for the following design focal points:

- Developing better diagnostics to pinpoint the cause of application errors
- Providing tools and information to help developers write error-free applications
- Protecting the system from application errors
- Graceful handling of application errors if they do occur (so the application causing the error doesn't stop the system)

The following are several examples of how these design goals are implemented in the Windows operating system version 3.1.

Error Diagnostics and Reporting

If an application generates an error running with Windows 3.1, you will receive an error dialog box with specific information about the type of error that occurred and which application generated the error. (The Windows 3.0 dialog box simply says "Unrecoverable Application Error.") This allows problems to be traced and corrected much more quickly than before.

Additionally, Windows 3.1 ships with a diagnostic tool called Dr. Watson that logs information about an application error, should one occur. This logged data provides feedback on the error that can be used by a support technician to determine the solution to the error and help developers solve the application error.

Error Recovery

Windows 3.1 includes a number of improvements designed to handle application errors more effectively.

One of these improvements is the use of parameter validation--the same type of parameter validation that developers use also works in the retail version of Windows 3.1. This validation monitors application calls to ensure that applications do not violate system integrity.

An errant application may still cause problems, such as stopping so that your computer no longer responds to input. Under version 3.1, if an application stops, you can press the CTRL+ALT+DEL restart key sequence, and Windows will ask whether the application should be continued or closed. If you choose to close the application, Windows will reset the environment to a stable state that will allow you to continue working within the Windows operating system. You no longer have to exit and restart Windows. This gives you better control over your system.

The sum of all these efforts is a system with significantly enhanced reliability, in which application errors are far less likely to cause you to stop working and shut down the application or restart the system.

IMPROVED PERFORMANCE

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Many performance improvements have been achieved throughout Windows 3.1. These include:

- Faster, more responsive user shell components (notably, File Manager and Program Manager).
- Faster disk caching. The Windows SMARTDrive disk-caching utility has been completely redesigned for Windows 3.1. It installs automatically during setup and significantly boosts performance by caching read and write disk operations.
- Faster paging in 386 enhanced mode. Version 3.1 includes a 32-Bit-Disk-Access driver that allows Windows to bypass MS-DOS and the

BIOS to access the Windows virtual memory paging file.

- Increased display driver performance (for example, the VGA and 8514 drivers).
- Better printing performance. The overall printing speed is improved; but, more significantly, Windows also gives control back to the application more quickly after the Print command is invoked.

MULTIMEDIA

=====

Audio services and Media Control Interface (MCI) support have also been added to Windows 3.1. The audio application programming interfaces (APIs), which are identical to those found in Multimedia Extensions 1.0, specifically support waveform or PCM audio and Musical Instrument Digital Interface (MIDI) synthesized audio. Additionally, any application for Windows that supports OLE can take advantage of the audio capabilities in Windows 3.1 with no additional development required by the independent software vendor (ISV). From an application's perspective, audio becomes just another object type.

The MCI architecture supports control of media devices such as video discs and videotape. Using drivers provided by third-party peripheral vendors, this support provides greater flexibility to the standard computing environment and meets another growing market need, especially in the areas of corporate presentations, training, and education.

For those who require full multimedia support, Microsoft offers a CD-ROM version of Windows 3.1 with the multimedia extensions and drivers. This product includes Music Box, an accessory for playing CD audio disks, and HyperGuide, an online Help program. The addition of audio services and media control support to Windows 3.1 is yet another evolutionary step toward bringing multimedia functionality into the mainstream of desktop computing.

Windows 3.1 works seamlessly with Multimedia Extensions 1.0. These extensions allow you to embed new objects such as audio, animation, and full-motion video in existing applications. The objects also allow you to create a whole new class of multimedia documents, such as encyclopedias enhanced with video and audio clips, or catalogs that display animated illustrations. The extensible architecture of Windows makes it possible for multimedia computing to span low-cost systems for home and education to sophisticated multimedia authoring platforms for the higher end of the market.

An important enabling technology for multimedia computing is the OLE protocol described above. With OLE and Windows 3.1 or Multimedia Extensions 1.0, you can embed a multimedia object, such as an audio clip, in an existing application for Windows, just as you can embed a chart or text file.

LAPTOP SUPPORT

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Many vendors of today's popular 286- and 386-based laptop computers ship Windows version 3.0. Laptop users will appreciate a feature in Windows 3.1 called mouse trail, which makes it easier to find the cursor on a laptop display. In addition, Windows 3.1 supports the Advanced Power Management (APM) specification, which allows Windows to support the native power management of a laptop PC for longer battery life.

CONCLUSION

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The Windows operating system version 3.1 is an important next step in Microsoft's core systems strategy--an evolutionary strategy that spans 286-based laptops to high-end workstations or servers. Today, Windows

runs with MS-DOS, the operating system that spawned the PC industry and is currently in use by tens of millions of people. Windows also runs the thousands of existing MS-DOS and Windows-based applications. Extended versions of Windows--multimedia or pens, for example--allow you to run all these applications as well, plus unique new applications developed with pens or multimedia in mind.

Microsoft's vision of computing in the 1990s and beyond is that computers will empower individuals and organizations. With its scalable implementations, the investments of Microsoft, and the commitment of third parties, the Windows operating system will be the foundation for realizing this vision.

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WW0528: Application Note Discussing Fonts

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WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1
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Microsoft Product Support Services offers an Application Note that talks about fonts in general and Windows 3.1 fonts in particular. It includes information on raster, vector, and TrueType fonts; printer fonts; the Windows 3.1 character map; dot-matrix printer fonts; HPPCL printer fonts; downloadable fonts; and PostScript printer fonts.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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Microsoft Product Support Services Application Note (Text File)
WW0528: FONTS

Revision Date: 3/92
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The following information applies to Microsoft Windows version 3.1.

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INTRODUCTION

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There is a good deal of misunderstanding about just what a font is. When most people talk about a font, they are really talking about a typeface. A typeface is a set of characters that share common characteristics such as stroke width and the presence or absence of serifs. For example, Arial and Courier are each typefaces. Frequently, both the typeface and its name are copyrighted by the typeface designer or manufacturer.

A font is the complete set of characters for one style of a specific typeface, including all the letters, numbers, and punctuation marks. For example, Courier New Bold Italic is a font. In Windows, a font family refers to a group of typefaces with similar characteristics. The families that Windows recognizes for font installation and mapping are Roman, Swiss, Modern, Script, and Decorative. For example, Arial, Arial Bold, Arial Bold Italic, Arial Italic, Small Fonts, and MS Sans Serif are all part of the sans serif Swiss font family.

For printing and display on a computer system, each font has its own character set according to ASCII, ANSI, OEM, or other industry standards that defines what character is represented by a specific keystroke. Windows uses the ANSI character set. Many non-Windows applications use the ASCII character set.

The following basic terms are used in Windows to define the appearance of fonts in an application:

- "Font style" refers to specific characteristics of the font. The four characteristics you can define for fonts in Windows are italic, bold, bold italic, and roman (often called Normal or Regular in font dialog boxes).
- "Font size" refers to the point size of a font, where a point is about 1/72 of an inch. Typical sizes for fonts in text are 10 points and 12 points.
- "Font effects" refer to attributes such as underlining, strikethrough, and color that can be applied to text in many applications.

You may also encounter the following terms in descriptions of fonts and typefaces:

- "Pitch" refers to the type size for fixed-width fonts, specified in characters per inch (cpi), where 10-pitch = 12-point, 12-pitch = 10-point, and 15-pitch = 8-point type.
- "Serif" and "sans serif" describe specific characteristics of a typeface. Serif fonts, such as Times New Roman or Courier, have projections, or serifs, that extend from the upper and lower strokes of the letters. Sans serif fonts, such as Arial and MS Sans Serif, do not have serifs.
- "Slant" refers to the angle of a font's characters, which can be italic (slanted) or roman (not slanted).
- "Spacing" can be either fixed or proportional. In a fixed font such as Courier, every character occupies the same amount of space. In a proportional font such as Arial or Times New Roman, character width varies.
- "Weight" refers to the heaviness of the stroke for a specific font, such as light, regular, book, demi, heavy, black, and extra bold.
- "Width" refers to whether the standard typeface has been compressed or extended horizontally. The variations are condensed, normal, and expanded.

- "X-height" refers to the vertical size of lowercase characters.

WINDOWS 3.1 FONTS

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The Windows operating system version 3.1 provides three basic kinds of fonts, which are categorized according to how the fonts are rendered for screen or print output:

- "Raster fonts" are stored in files as bitmaps and are rendered as an array of dots for displaying on screen and printing on paper. Raster fonts cannot be scaled or rotated.
- "Vector fonts" are rendered from a mathematical model, where each character is defined as a set of lines drawn between points. Vector fonts can be scaled to any size or aspect ratio.
- "TrueType™ fonts" are outline fonts using new technology available in Windows 3.1. They can be scaled and rotated.

Besides the font-rendering mechanism, Windows fonts are described according to the output device:

- "Screen fonts" are font descriptions that Windows uses to represent characters on display devices. Windows uses special raster fonts as the system screen font for menus, window captions, messages, and other text. A set of system, fixed, and OEM terminal fonts is shipped with Windows 3.1 to match your system's display capabilities (that is, CGA, EGA, VGA, or 8514 video displays). The default system screen font in Windows 3.1 is System, a proportionally spaced raster font. The installed screen fonts are listed in the [fonts] section of your WIN.INI file.

Some screen fonts are installed for displaying non-Windows applications when Windows is running in 386 enhanced mode. By default, code page 437 (U.S.) fonts are installed. Other screen font files are included for international language support, identified by the code page number appended to the filename.

- "Printer fonts" are the font descriptions used by the printer to create a font. Windows applications can use three kinds of printer fonts: device fonts, downloadable soft fonts, and printable screen fonts.

Windows Raster Fonts

Raster fonts are bitmaps supplied in different sizes for specific video display resolutions. The Windows fonts MS Serif, MS Sans Serif, Courier, System, and Terminal are raster fonts. A raster font file contains data that describes all the characters and styles of a typeface for a specific display device. Windows provides several raster font sizes for various display devices. For example, MS Serif comes in point sizes 8, 10, 12, and 14 for CGA, EGA, VGA, and 8514 display devices. Windows can scale raster fonts to even multiples of their supplied sizes. This means that MS Serif can be scaled to 16, 20, or 24 points, and so on. Bold, italic, underline, and strikethrough styles can also be generated from a standard raster font.

Normally, the correct font sets for your display and printer are installed by Windows Setup. Additional raster font sets can be installed with Control Panel. The following is a list of the raster fonts installed in Windows 3.1:

Font	Filename	Character Set
----	-----	-----
Courier	COURIER.FON	ANSI
MS Sans Serif	SSERIFx.FON	ANSI
MS Serif	SERIFx.FON	ANSI

Small	SMALLx.FON	ANSI
Symbol	SYMBOLx.FON	SYMBOL

The raster font sets for different display resolutions are distinguished by a letter suffix on the font name (represented as x in the previous table). To determine the file that Windows installs for a given display or printer, refer to the "Font Set" column of the following table and add to the character set filename the letter that identifies the resolution of the raster font. For example, the resource file for MS Serif fonts for VGA is named SERIFE.FON.

Font Set	Output Device	Horizontal Resolution	Vertical Resolution	Aspect Ratio H:V
A	CGA display	96 dpi	48 dpi	2:1
B	EGA display	96 dpi	72 dpi	1.33:1
C	Printer	60 dpi	72 dpi	1:83
D	Printer	120 dpi	72 dpi	1.67:1
E	VGA display	96 dpi	96 dpi	1:1
F	8514 display	120 dpi	120 dpi	1:1

Raster fonts can also be printed if their resolution and aspect ratio are close to what your printer requires. If you do not see raster fonts for your printer in a fonts dialog box, check your printer's horizontal and vertical resolution and compare it with the table above. If there is a close match, choose the Fonts icon in the Control Panel window and make sure the appropriate font set is installed. If there is no close match, you will not be able to print the Windows raster fonts on your printer. Some printer drivers cannot print raster fonts, regardless of the aspect ratio.

MS Serif and MS Sans Serif in Windows 3.1 replace the identical raster fonts Tms Rmn and Helv that were installed in earlier versions of Windows. Windows matches MS Serif to Tms Rmn and MS Sans Serif to Helv through the [FontSubstitutes] section of the WIN.INI file.

The new Windows raster font named Small Font was designed for readable, efficient screen display of small fonts. For sizes under 6 points, Small Font is a better choice for screen display than any TrueType font because it's easier to read.

Windows Vector Fonts

Vector fonts are a set of lines drawn between points, like a pen plotter drawing a set of characters. They can be scaled to virtually any size, but generally they do not look as good as raster fonts in the sizes that raster fonts are specifically designed for. Vector fonts are stored in Windows as collections of graphics device interface (GDI) calls and are time-consuming to generate but are useful for plotters and other devices where bitmapped characters can't be used.

Some Windows applications automatically use vector fonts at larger sizes. These applications often allow you to specify at what point size you want to use vector fonts. For example, the "Vector Above" setting in Aldus PageMaker specifies the point size at which PageMaker will switch to vector fonts.

The Windows fonts Roman, Modern, and Script are vector fonts.

TRUETYPE AND WINDOWS 3.1

As mentioned earlier, Windows 3.1 includes a new implementation of outline font technology called TrueType. TrueType has many benefits over other kinds of Windows fonts:

- True WYSIWYG (what you see is what you get) display--what you see is really what you get because Windows uses the same font for both

the screen and printer. You don't have to think about whether you have a specific point size for a particular printer or for your display.

- You can scale and rotate TrueType fonts, and they look good in all sizes and on all output devices that Windows supports.
- Your document will look the same when printed on different printers, and any printer that uses the Windows 3.1 universal driver can print TrueType fonts.
- Your document will look the same if you move it across platforms. For example, because the Macintosh uses the same TrueType font technology as IBM-compatible computers, the text you format in Microsoft Word for Windows will look the same if you open the document in Microsoft Word for the Macintosh.
- Each TrueType typeface requires only an .FOT and a .TTF file to create fonts in all point sizes at all resolutions for all output devices. (Raster fonts need separate files for each point size, resolution, and display device.)
- TrueType is integrated with the operating environment, so all Windows applications can use TrueType fonts without changes or upgrades, just as they use other Windows raster fonts.

The TrueType fonts installed with Windows 3.1 are Arial, Courier New, Times New Roman, and Symbol in regular, bold, bold italic, and italic.

How TrueType Works

TrueType fonts are stored as a collection of points and "hints" that define the character outlines. When a Windows application asks for a font, TrueType uses the outline and the hints to render a bitmap in the size requested. Hints are the algorithms that distort the scaled font outlines to improve how the bitmaps look at specific resolutions.

Each time you run Windows, the first time you select a TrueType font size, TrueType renders a bitmap of the selected characters for display or printing. Because of this, the initial font generation may be slower than with Windows raster fonts. However, Windows stores the rendered bitmaps in a font cache, so each subsequent time the font is used during that Windows session, display or printing will be just as fast as with a Windows raster font.

The Windows universal printer driver supports TrueType. Any printer that works with the universal printer driver will support TrueType automatically.

Using TrueType in Windows Applications

With TrueType, you have more choices for fonts in most Windows applications, plus the same fonts you had in earlier versions of Windows. In many applications, TrueType fonts appear in the fonts dialog box with a "TT" logo beside the typeface name. Typefaces that are device fonts have printer icons beside their names in the list.

You will also notice that you can specify any size you want for TrueType fonts, rather than choosing from a limited list of raster or vector font sizes.

To specify that you want to use TrueType fonts or restrict all choices to TrueType, choose the Fonts icon in the Control Panel window and choose the TrueType button. If you restrict all choices to TrueType, you will ensure that the type styles in your documents will print on any dot-matrix, Hewlett-Packard Printer Control Language (HPPCL), or PostScript printer and that your documents can be moved to other platforms easily.

Windows 3.1 does not automatically change fonts in documents that were produced with earlier font technologies. If you want to update old documents to use TrueType fonts, you must update them manually. You might also contact your application vendor to see if there are new utilities available that will assist in upgrading of documents to use TrueType.

FONT INSTALLATION =====

In Windows 3.1, fonts can be installed on your system in several ways:

- Windows installs TrueType and its screen fonts automatically during installation. When you specify a printer and other options in the Printer Setup dialog box, Windows includes information about font cartridges and built-in fonts for your printer.
- Install more TrueType fonts from disks by choosing the Add Fonts button in the Font Installer dialog box.
- Install more HPPCL soft fonts on your hard disk by installing the AutoFont Support files and following the instructions for adding scalable printer fonts. Then choose the Add Fonts button in the Font Installer dialog box to install the fonts in Windows.
- Install other third-party soft fonts on your hard disk by using the utility supplied by the manufacturer. Then choose the Add Fonts button in the Font Installer dialog box to install the fonts in Windows.
- Install a new font cartridge in your printer, and choose the Printer icon in the Control Panel window. In the Setup dialog box, select a new item from the Cartridge list.

For more information about using the Font Installer, choose the Help button in the Font Installer dialog box.

HOW WINDOWS MATCHES FONTS =====

When an application asks for characters to print or display, Windows must find the appropriate font among the fonts installed on your system. Finding the font can be complex because, for example, your document may contain fonts that aren't available on the current printer, or there may be more than one font with the same name installed on your system.

The basic rules that Windows uses for finding a font are:

1. If the font is a TrueType font, then TrueType renders the character, and the result is sent to the display or to the printer.
2. If the font is not a TrueType font, then Windows uses the font mapping table to determine the most appropriate device font to use.

Before TrueType, when Windows mapped fonts that had the same name, the order of the internal listing of fonts determined which font was chosen. In Windows 3.1, TrueType fonts are always chosen first, then the internal listing order is followed.

When Windows uses the font mapping table to match screen fonts to printer fonts, the characteristics used to find the closest match are, in descending order of importance: the character set, variable versus fixed pitch, family, typeface name, height, width, weight, slant, underline, and strikethrough.

The following table shows which types of Windows fonts can be printed on different kinds of printers:

Printer Type	Device Font	Raster Fonts	Vector Fonts	TrueType Fonts
-----	-----	-----	-----	-----

Dot matrix	Yes	Yes	No	Yes
HPPCL	Yes	No	Yes	Yes
PostScript	Yes	No	Yes	Yes
Plotter	Yes	No	Yes	No

The following table lists the character sets installed with Windows 3.1:

Font ----	Font Type -----	Spacing -----	Default Sizes -----
Arial Bold Italic	TrueType	Proportional	Scalable
Arial Bold	TrueType	Proportional	Scalable
Arial Italic	TrueType	Proportional	Scalable
Arial	TrueType	Proportional	Scalable
Courier New Bold Italic	TrueType	Fixed	Scalable
Courier New Bold	TrueType	Fixed	Scalable
Courier New Italic	TrueType	Fixed	Scalable
Courier New	TrueType	Fixed	Scalable
Courier	Raster	Fixed	10,12,15
Modern	Vector	Proportional	Scalable
MS Sans Serif	Raster	Proportional	8,10,12,14,18,24
MS Serif	Raster	Proportional	8,10,12,14,18,24
Roman	Vector	Proportional	Scalable
Script	Vector	Proportional	2,4,6
Symbol*	Raster	Proportional	8,10,12,14,18,24
Symbol*	TrueType	Proportional	Scalable
System	Raster	Proportional	Display-dependent size
Terminal**	Raster	Fixed	Display-dependent size
Times New Roman Bold Italic	TrueType	Proportional	Scalable
Times New Roman Bold	TrueType	Proportional	Scalable
Times New Roman Italic	TrueType	Proportional	Scalable
Times New Roman	TrueType	Proportional	Scalable

* Symbol, rather than ANSI, character set

**OEM, rather than ANSI, character set

DISK SPACE, MEMORY USE, AND SPEED

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You may notice a performance decrease if your document uses many fonts in many sizes. Rendering many fonts requires a large font cache, which might force more swapping to the hard disk. This same problem occurs with other fonts in earlier versions of Windows. With TrueType, less memory is used for the cache than would be required for corresponding raster fonts; this should lead to a net performance gain. The font cache will use more memory with TrueType only if multiple logical fonts have been mapped to the same raster font. Usually, however, any additional swapping to disk is still faster than discarding the rendered bitmaps.

For TrueType fonts, hard disk space is not the problem it can be for a comparative selection of raster fonts. This is because the font information files do not contain actual raster images of the fonts, but only outline and hint information. When you install Windows, however, you will see that more disk space is being used to store fonts. This is because all Windows raster fonts are still shipped for backward compatibility with earlier applications. Any soft fonts you

already have on your hard disk will not be affected by the installation of TrueType with Windows 3.1.

TRUETYPE AND EARLIER WINDOWS APPLICATIONS =====

TrueType uses a different character spacing (called ABC widths) than is used for raster fonts. Applications that use this spacing will be able to space characters more accurately, especially in bold and italic text. However, because of this change in spacing, text can sometimes appear inaccurately in applications written for earlier versions of Windows. For example, the end of a highlighted text line may look odd on screen.

Most applications list font names on menus and in dialog boxes that match the names of fonts that can be printed on the current printer. So the change in font names for Windows 3.1 will probably not affect you. You will only see more choices in most fonts dialog boxes.

NOTE: Windows 3.1 maps the typefaces Helvetica to Arial, Times to Times New Roman, and Courier to Courier New in the [FontSubstitutes] section of the WIN.INI file. You can change this section of the WIN.INI file to map any font names to other font names.

PRINTER FONTS AND WINDOWS 3.1 =====

A printer font is any font that can be produced on your printer. There are three kinds of printer fonts:

- Device fonts are fonts that actually reside in the hardware of your printer. They can be built into the printer itself, or can be provided by a font cartridge or font card.
- Printable screen fonts are Windows screen fonts that can be translated for output to the printer.
- Downloadable soft fonts are fonts that reside on your hard disk and are sent to the printer when needed.

Not all printers can use all three types of printer fonts. Plotters, for example, cannot use downloadable soft fonts. HPPCL printers cannot print Windows screen fonts.

CHARACTER SETS FOR PRINTER FONTS =====

Windows uses the ANSI character set. Some printers, such as the IBM Proprietor, use the IBM (OEM) standard for codes above 128. Other printers might use their own proprietary set of extended character codes. To be sure you get the characters you want, consult your printer documentation to determine what character set is supported by the printer.

WINDOWS 3.1 CHARACTER MAP =====

You can also use the Windows Character Map to select and insert a special character in your document. When you insert a special character in a document to get a specific result in print, the character you see on the screen might not be correct because the character is displayed using the ANSI character set and the best matching screen font for the current printer font. However, the printed document will contain the correct character. Conversely, if you type an ANSI character that appears on screen but is not supported in the fonts your printer uses, some other character, such as a period, will be printed instead.

DOT-MATRIX PRINTER FONTS =====

Dot-matrix printers support device fonts and printable screen fonts.

Usually, a dot-matrix printer includes only a limited range of internal device fonts. Typically, fixed-spacing fonts are supplied in a variety of cpi sizes. Dot-matrix device fonts are conventionally named <typeface xx>CPI, where <typeface> is the typeface name, and <xx> is the number of characters per inch. Distinguishing a device font on a dot-matrix printer is usually as easy as checking for the CPI designation at the end of the font name, such as "Courier CPI 10."

Through the universal printer driver, dot-matrix printers can also support TrueType. When you use TrueType fonts on a dot-matrix printer, Windows sends a rasterized graphics image to the printer. Dot-matrix printers do not provide any landscape device fonts, but vector screen fonts can be printed in any resolution or orientation. Dot-matrix device fonts are faster but less flexible than screen fonts.

Some 24-pin dot-matrix printers, such as Epson and NEC printers, also support font cards or cartridges. You can use these fonts if the Windows driver for your printer supports them.

HPPCL PRINTER FONTS =====

Printers that use HPPCL can print several different types of fonts. HPPCL printers can use font cartridges, downloadable soft fonts, vector screen fonts, and TrueType fonts. HPPCL printers cannot print Windows raster screen fonts.

When you use TrueType fonts on an HPPCL printer, TrueType performs all the font rendering in the computer and downloads bitmaps of the fonts. TrueType downloads only the specific characters needed in a document, not the entire font.

HPPCL Memory Tracking -----

If you use an HP LaserJet-compatible printer, be sure to accurately specify the amount of memory installed in your printer. This is important because the Windows HPPCL driver now tracks the available memory in your printer. You may get an out-of-printer-memory error or other errors if the memory is set incorrectly.

DOWNLOADABLE FONTS =====

You can get HP LaserJet-compatible downloadable soft fonts from a number of sources, including Hewlett-Packard, Bitstream, SoftCraft, and CompuGraphics. Some downloadable font utilities also generate raster screen fonts for Windows. If an exact screen font match is not available, Windows uses one of its own screen fonts.

Hewlett-Packard downloadable fonts are installed with the Font Installer, while third-party HPPCL soft fonts are installed with their own installation utilities. To use the Font Installer, choose the Fonts button in the Printer Setup dialog box.

The Font Installer places soft font entries in the WIN.INI file under a section specific to a driver and port, such as [HPPCL,LPTx] (where x is the port number), as described later in this section. Because soft fonts are installed for a printer on a specific port, the soft fonts will not appear if you change the printer. To copy the soft font listings to another port, choose the Copy Fonts To New Port button in the Font Installer dialog box.

HPPCL fonts can be downloaded on either a temporary or a permanent basis. Temporary fonts are downloaded only when the HPPCL driver encounters a particular font while printing. At the end of the print job, the soft font is discarded from the printer's memory. Printers such as the Apricot Laser and Kyocera F-1010, which require temporary soft fonts to be downloaded only at the start of a print job but not during the job, cannot use soft fonts with the Windows HPPCL driver.

HP PLOTTER PRINTER FONTS

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Because plotters are vector devices, they can print only vector fonts. Plotters cannot print any kind of bitmap, including raster screen fonts and TrueType fonts. HP plotters include one internal vector font called Plotter. However, the Windows vector screen fonts Modern, Roman, and Script can be printed on HP plotters.

POSTSCRIPT PRINTER FONTS

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All PostScript fonts are scalable outlines that can be printed at any size. PostScript outline fonts can also be rotated to any angle and can be printed in both portrait and landscape modes. However, font size limitations are often imposed by applications. A common PostScript font size limitation in an application is 127 points.

Most PostScript printers include either the standard Apple LaserWriter Plus set of 35 scalable fonts or the earlier Apple LaserWriter set of 17 fonts.

PostScript soft fonts are installed with utilities provided by soft font vendors. Because the fonts are scalable, if there isn't a comparable screen font, mismatches can occur between screen display and printed output.

PostScript printers cannot print Windows raster screen fonts, although they can print vector screen fonts. Printing of Windows screen fonts is not usually necessary due to the large selection of resident fonts in a PostScript printer.

LaserWriter Plus Typefaces

The LaserWriter Plus standard font set includes 11 typefaces, 8 of which are available in roman, bold, italic, and bold italic. The Symbol typeface contains mathematical and scientific symbols, Zapf Chancery is a calligraphic specialty font, and Zapf Dingbats contains decorative bullet characters and embellishments. These typefaces are available only in roman style.

PostScript Printers and TrueType

TrueType fonts are treated as downloadable fonts by the PostScript driver. When you use TrueType fonts on a PostScript printer, scaling and hints are always performed in the computer. Scan conversion can be done in the computer or in the printer, depending on the point size. At smaller point sizes, TrueType performs scan conversion in the computer; at larger point sizes, scan conversion is done in the printer.

You can specify how to send TrueType fonts to your printer--for example, as bitmaps or in Adobe Type 1 format. To do this, in the Advanced Options dialog box of the Printer Setup command, select the method in the Send To Printer As list that you want to use for sending TrueType fonts.

If your PostScript printer supports downloadable fonts, you might want to use printer fonts in place of TrueType fonts to speed up printing and to use less printer memory. To do this, in the Advanced Options dialog box of the Printer Setup command, select the Use Printer Fonts For All TrueType Fonts check box. You can also map a TrueType font to a PostScript font in the [FontSubstitutes] section of the WIN.INI file; this will increase printing speed, but the results on the display may not be exactly the same as the printed output.

If your PostScript printer does not support downloadable fonts, you must use printer fonts to print any TrueType fonts in your documents.

There are two ways to do this: allow the PostScript driver to print using the printer fonts that most closely match the TrueType fonts, or edit the Substitution Table to select the printer fonts you want to use, as described in the next section.

PostScript Downloadable Outline Fonts

PostScript printers also accept downloadable outline fonts, which can be scaled to any size and printed in both portrait and landscape orientations. Downloadable PostScript fonts are available from several suppliers, including Adobe and Bitstream. Both Adobe and Bitstream supply utilities that install the fonts and add entries to the WIN.INI file. Because the font installation capability is included with these commercial font products, the Windows PostScript driver does not include a font installation utility.

Although PostScript downloadable outline fonts can be scaled to any size, Windows screen fonts cannot. You must install specific sizes of Windows screen fonts with the Adobe and Bitstream utilities. Install only the sizes you feel you will frequently use. If you specify a PostScript font size that does not have a corresponding screen font, Windows will substitute another screen font. This results in a little loss in display quality but, of course, no loss in print quality.

PostScript Cartridges

To use PostScript cartridges with Windows, you must use the PostScript printer driver. Choose the Printer icon in the Control Panel window and follow the steps for installing a printer, selecting the Apple LaserWriter Plus (PostScript) or another PostScript printer from the list in the Printer Setup dialog box.

PostScript cartridges are not supported directly by the Windows PostScript driver.

Substituting PostScript Fonts

You can edit the Substitution Table to specify which PostScript printer fonts you want to print in place of the TrueType fonts in your documents. The changes you make in the Substitution Table only affect the fonts that are printed. The fonts that appear on the screen will not change; the original TrueType fonts are still used to display TrueType text in your document.

To specify which printer fonts to use, choose the Edit Substitution Table button in the Advanced Options dialog box of the Printer Setup command. Then select the TrueType font you want to replace from the For TrueType Font list in the Substitution dialog box. From the Use Printer Font list, select the PostScript printer font you want to use instead of the selected TrueType font.

If your printer supports downloadable fonts, you can select the Download As Soft Font option. In this case, the selected TrueType fonts will be sent to the printer using the method you specified in the Send To Printer As list in the Advanced Options dialog box. Repeat these steps until you have selected printer fonts to use in place of all the TrueType fonts in your document.

Specifying Virtual Printer Memory

You can change the amount of virtual memory that your PostScript printer has available for storing fonts. The PostScript driver uses a default setting for virtual memory recommended by the printer manufacturer.

To find out how much virtual memory your printer has, print out the

TESTPS.TXT file in the WINDOWS directory. To adjust the amount of virtual memory, in the Virtual Memory (KB) box of the Advanced Options dialog box of the Printer Setup command, type the amount of virtual memory you want to use.

PostScript Drivers

In Windows 3.1, most PostScript printers use the universal PostScript driver, PSCRIPT.DRV. If you install a PostScript printer that does not appear in the List Of Printers box in the Printers dialog box, you must install a Windows PostScript Definition (.WPD) file for your printer. To do this, choose the Printers icon in the Control Panel window. Then select Install Unlisted Or Updated Printer from the List of Printers box in the Printer Setup dialog box.

The .WPD file for Windows 3.1 requires a version 3.1 OEMSETUP.INF file. If you have a .WPD file for Windows 3.0, then you do not need a new OEMSETUP.INF file to install the .WPD file.

In Windows 3.1, the PostScript driver can detect certain errors that Print Manager cannot detect. You can specify whether or not to print information about these errors after your document has finished printing. This information may help you or a Product Support Service representative determine what caused the error. To print out PostScript error information, in the Advanced Options dialog box of the Printer Setup command, select the Print PostScript Error Information check box.

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WW0532: Object Linking and Embedding (OLE)

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WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1

Microsoft Product Support Services offers an Application Note that describes object linking and embedding (OLE), compares OLE to dynamic data exchange (DDE), and explains how to insert, view, and edit embedded objects. This Application Note is titled "Object Linking And Embedding (OLE)" (WW0532).

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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WW0532: OLE
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INTRODUCTION TO OLE
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OLE is a technique for implementing "OLE document" features by making simple extensions to existing applications that run under Microsoft Windows. This technique allows you to view and manipulate various forms of information (for example, spreadsheets, text, and graphics) in the context of a single document. Rather than having to manually switch between different applications, you can alter data by simply selecting and double-clicking the object of interest. The process of running application code is automated and is invisible to you.

THE PROGRESSION FROM CLIPBOARD TO DDE TO OLE
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The need to integrate information from different applications is not new. In the past, users have taken advantage of the Windows Clipboard, and more recently, dynamic data exchange (DDE) to accomplish this.

The Clipboard provides a basic means for moving data between applications. You select the desired information in the source document, transfer the information to the Clipboard by choosing Copy from the Edit menu, then place the information in the target document using the Paste command on the Edit menu.

Data transfers through the Clipboard are static. This means that if the source information changes, you must manually copy the revisions to the target document if you want the target document to stay current. Additionally, the target application must understand the format of the data being transferred to it through the Clipboard. A word processor that accepts an ASCII text string, for example, will not be likely to understand a set of cells from a spreadsheet.

DDE complements the Clipboard's static data exchange capability by creating a link between the target document and the source document. The target document uses this link to dynamically retrieve the associated data whenever it is updated in the source document. Therefore, you do not need to remember to update each file that contains the data.

Microsoft created OLE because there are scenarios that are not served by either Clipboard or DDE linking--in particular, situations that involve OLE documents. Note that OLE does not replace either DDE or the Clipboard, but rather complements them by providing additional functionality.

OLE employs both the Clipboard and DDE linking mechanisms, and the Copy, Paste, and Paste Link commands. That is, you still select and copy the data from the source, and paste or paste link the data to the client. The OLE specification defines a set of rules that client applications can use to decide whether to import pasted information as an object or as converted data when both options are possible. A new Paste Special command is also defined to give you explicit control over the choice of format.

BENEFITS OF OLE
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- An application that implements OLE allows you to move away from an

application-centered view of computing, in which the tool used to complete a task is a single application, and move toward a document-centered view, in which you employ as many tools as necessary to complete the job.

- OLE allows applications to specialize in performing one job very well. A word processing application that implements OLE, for example, does not necessarily need any illustration tools; users can put illustrations into their documents and edit those illustrations using any illustration application that supports OLE. An example of such a relationship is the one between Microsoft Word for Windows and the illustration application Microsoft Draw, which is included with Word.
- Applications are automatically extensible for future data formats because the content of an object does not matter to the containing document.
- You can concentrate on the tasks you are performing, instead of on the applications required to complete the tasks.
- Files can be more compact because OLE linking to objects allows a file to use an object without having to store that object's data.
- A document can be printed or transmitted without using the application that originally produced the document.
- Linked objects in a file can be updated dynamically.

FEATURES OF OLE NOT FOUND IN DDE
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Feature	Description
Extensibility for future enhancements	The OLE libraries can be updated in future releases to support new data formats, link tracking, and other new features of OLE as they are developed.
Persistent OLE embedding and OLE linking of objects	The OLE libraries do most of the work of activating objects when an embedded document is reopened, by reestablishing the conversation between a client and server. In contrast, establishing a DDE link is either your responsibility (if there is no link) or the application's responsibility (if the link is persistent).
Rendering of common data formats	The OLE libraries assume the burden of rendering common data formats in a display context. DDE applications must do this work themselves.
Server rendering of specialized data formats	The OLE libraries facilitate the rendering of specialized data formats in the client's display context. The server application or object handler actually performs the rendering. The client application has to do very little work to render the embedded or linked data in its display context.
Activation of embedded and	The OLE libraries support activating

linked objects	a server application (the application associated with the object) to edit a linked or embedded object to render data. Activating servers for data rendering and editing is beyond the scope of DDE.
Creation of objects and links from the Clipboard	The OLE libraries do most of the work when an application is using the Windows Clipboard to copy and paste links or exchange objects. In contrast, DDE applications must directly call the Windows Clipboard functions to perform such operations.
Creation of objects and links from files	The OLE libraries provide direct support for using files to exchange data. No DDE protocol is defined for this purpose.

OLE LINKING AND OLE EMBEDDING TERMINOLOGY
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OLE DOCUMENT
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An OLE document is a document that contains data in several different formats (see Figure 1). An OLE document uses the facilities of different OLE applications to present the different kinds of data it contains.

Note that an OLE document can incorporate links to information, rather than the information itself. If a document uses links, it requires minimal storage and is updated automatically whenever the linked data changes.

<Graphic Deleted>
Figure 1. An OLE document

When you are working with an OLE document, you do not need to know which data formats are compatible with one another or how to find and start the applications that created the data. Whenever you choose part of an OLE document, the server application starts automatically. For example, an OLE document could be a brochure that includes text, charts, cells of financial data, and illustrations. By selecting different data within the brochure, you can automatically switch between the word processor, spreadsheet, and graphics programs that produced its components.

CLIENT
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A client is a document that contains objects managed by other applications, or the application that manages such documents. The OLE client applications that are included with Microsoft Windows 3.1 are Write and Cardfile. Figure 1 shows Write acting as a client. Other examples of OLE clients are Microsoft Word for Windows and Microsoft Excel for Windows.

SERVER APPLICATION
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A server application is an application that provides editing and rendering services for a linked and embedded object. When you double-click an object in a client document, the server application is invoked. A new instance of the server application is started even if one is already running. (The advantage of starting a new instance of the server application is that it is initially dedicated to the

current object and does not contain any unrelated document windows.)

<Graphic Deleted>

Figure 2. Microsoft Draw--an OLE server application

Paintbrush is an OLE server application that is included with Microsoft Windows 3.1. Other examples of OLE server applications are Microsoft Excel, Microsoft PowerPoint, and Microsoft Draw.

OBJECT
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An object is any data that can be displayed in an OLE document and manipulated by a user. An object can be anything from a single cell in a spreadsheet to an entire document or illustration. When an object is incorporated into a document, it maintains an association with the application that produced it. OLE applications are "opaque"; that is, the client application never looks inside the object and therefore doesn't need to understand its contents. The client simply calls functions in the OLE libraries when it needs to display an object or invoke the server application for editing purposes.

<Graphic Deleted>

Figure 3. The Insert Object dialog box from Microsoft Word for Windows

EMBEDDED OBJECT
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An embedded object is an object that is completely contained within the client document. For example, when a range of spreadsheet cells from Microsoft Excel is embedded in a Microsoft Write file, all the data associated with the cells, including any formulas, is saved as part of the Write file. The name of the server for the spreadsheet (Microsoft Excel) is saved along with the data. While working with the Write file, you can double-click this embedded object (the range of cells), and Microsoft Excel will start automatically so that you can edit those cells.

LINKED OBJECT
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A linked object is a reference, or link, to data shared by a server application and a client. If the range of spreadsheet cells from our example is a linked object instead of an embedded object, the data is stored in a Microsoft Excel file and only the link to the data is saved with the Write file. The server then "presents" the data, in the proper format, to the client document (see "Presentation Data" below). You can still double-click the object to bring up the server application (in this case, Microsoft Excel) and edit the information.

PRESENTATION DATA
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Presentation data is formatted data sent from the server application to the client so that the client can display and print the object. (Presentation data is referenced by an ObjectLink.)

OBJECT CLASS
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The object class describes the type of information an object contains, and is assigned by the server application. Examples of Microsoft object classes include picture (Microsoft Paintbrush), worksheet (Microsoft Excel for Windows), and document (Microsoft Word for Windows).

DOCUMENT NAME/ITEM NAME
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The document name and item name identify the object within whatever server application or document it resides.

OBJECTLINK

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An ObjectLink is a DDE and Clipboard format that carries a descriptor of a source object. The ObjectLink contains the class, document, and item that identify a linked object. An ObjectLink is represented internally by three null-terminated strings followed by a null string (that is, a null character). (This format describes a linked object.)

OWNERLINK

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An OwnerLink is a DDE and Clipboard format that carries a descriptor of the owner of an OLE object. An OwnerLink has the same format as an ObjectLink, and is used to communicate information about the owner of an object, which may be distinct from the source. (This format describes an embedded object.)

NATIVE

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Native is the format of the data that defines the object; this format and its interpretation are known only to the server application. Native format data is transferred between the client and the server application in the case of embedded objects, where a client document provides permanent storage and the server application provides editing features.

VERB

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The types of actions you can perform on an object are called verbs. For example, two common verbs for an object are play and edit. The nature of an object determines the verbs that you can initiate; for example, you typically play a voice annotation and edit a text file. The typical use for an object is called the "primary verb." Double-clicking an object usually executes the action specified by the primary verb. Other possible verbs for an object are called "secondary verbs." (Note that many objects support only one verb.)

PACKAGE

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A package is a type of OLE object that encapsulates another object, a file, or a command line inside a graphic representation (such as an icon or bitmap). When you double-click the graphic object, the OLE libraries execute the primary verb of the object contained in the package. The graphic part of a package is always an embedded object, not a link; thus, the graphic is saved as part of the client document. The package contents can be an embedded object, a linked object, a static object, or a command line.

Packages are useful for presenting compact "token" views of large files or OLE objects. An application can also use packages as hyperlinks. You can use Microsoft's Object Packager (PACKAGER.EXE), a packager application that ships with Windows 3.1, to associate a file or data selection with a particular icon or graphic. (The secondary verb for a package is "edit package"; when you choose this verb, Object Packager starts.)

OLE LIBRARIES

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DATA TRANSFER IN OLE

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Applications use three dynamic-link libraries (DLLs)--OLECLI.DLL, OLESVR.DLL, and SHELL.DLL--to implement OLE. OLECLI.DLL and OLESVR.DLL support OLE, while SHELL.DLL supports the system registration database. These libraries can be included with any products developed

under Windows versions 3.1 and 3.11 to ensure the products will run under Windows version 3.0.

COMMUNICATION BETWEEN OLE LIBRARIES

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Client applications use functions from the OLE application programming interface (API) to inform the client library, OLECLI.DLL, that a user wants to perform an operation on an object. The client library uses DDE messages to communicate with the server library, OLESVR.DLL. The server library is responsible for starting and stopping the server application, directing the interaction with the server application's callback functions, and maintaining communication with the client library.

When a server application modifies an embedded object, the server application notifies the server library of changes. The server library then notifies the client library, and the client library calls back to the client application, informing it that the changes have occurred. Typically, the client application then forces the embedded object to be redrawn in the document file. If the server application changes a linked object, the client library is notified that the object has changed and should be redrawn.

OBJECT HANDLERS

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Some server applications implement a fourth kind of OLE library called an "object handler." Object handlers are DLLs that act as intermediaries between client and server applications. Typically, an object handler is supplied by the developer of a server application as a way of improving performance. For example, an object handler can be used to redraw a changed object if the presentation data for that object could not be rendered by the client library.

OBJECT INSERTION METHODS

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INSERTING AN EMBEDDED OBJECT

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The basic procedure for inserting an embedded object is simple. For example, to insert a Paintbrush drawing in a Write document:

1. In the server application (Paintbrush), select the drawing, then choose the Copy command from the Edit menu.
2. Switch to the client application (Write), position the insertion point at the correct location, and choose the Paste command from the Edit menu.

Generally, in applications that support OLE, the Paste command will embed the object that is on the Clipboard, as in the previous example. Under some circumstances, however, the application may choose not to embed the object. For example, suppose that the object is represented on the Clipboard not only by the embedded object format but also by an alternative format that completely represents the original data and that the client application knows how to edit. In this case, the client may choose to insert this editable alternative data rather than OLE embedding the object. (An example of this concept, though not practical, is one in which the server and client are the same application--for example, Word for Windows version 2.0).

Most applications, however, will not be able to provide full editing capabilities for any alternative format, and they will simply embed the object and allow the source application to provide editing tools.

Therefore, in most applications that support OLE, when the Clipboard contains an object from another application, the Paste command embeds the object in the current document. Note that in applications that do

not support OLE, the Paste command simply inserts a static copy of the data, without providing easy access to the tools required for later editing of the data.

INSERTING A LINKED OBJECT

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Inserting links to objects is just as easy as OLE embedding objects. To continue the example using Paintbrush and Write, suppose that instead of OLE embedding the drawing, you wanted to insert a link to the drawing. The following steps would be required:

1. In the server application (Paintbrush), select the drawing and choose Copy from the Edit menu.
2. Switch to the client application (Write), position the insertion point at the correct location, and choose Paste Link from the Edit menu.

This procedure inserts in the Write document a link to the drawing. The drawing is displayed in the Write document but is stored in the original Paintbrush file. The link is an "automatic" link, meaning that whenever the Paintbrush drawing file is changed, the drawing in the Write file is updated dynamically.

Once a link exists in one document, it can be inserted in other documents using the Copy and Paste commands. When a linked object, including the ObjectLink format, is copied, all information describing the object is copied to the Clipboard as one self-contained unit. When the object is pasted into a client, it possesses the same attributes as the original object from which it was copied.

PASTE SPECIAL

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The Paste Special command on the Edit menu allows you to control the manner and format in which an object is inserted into a client document. For example, you may want the data to be inserted as an embedded object (rather than translated into a client-editable format), so that the tools of the server application can easily be invoked to edit the object. Alternatively, certain special tools or editing operations might be available only when the data is in a format that cannot be manipulated by the client application.

The dialog box activated by the Paste Special command enables you to control the insertion of the object in the following ways:

- The Data Type list allows you to choose the format for the inserted object. The first choice is generally the "object class name," which is the format the data takes in the server application. Examples of object class names are Microsoft Excel Worksheet, Microsoft PowerPoint Slide, and Microsoft Paintbrush Bitmap. The other choices are the formats available on the Clipboard: Formatted Text (meaning RTF, or rich-text format), Unformatted Text, Picture, and Bitmap.
- Paste and Paste Link buttons are provided so that you can override the default choice made by the client application. Both choices translate the data into the selected format and insert the data into the document. The Paste button does not establish a link to the original source of the data. If you have selected the object class name rather than a data format, the data is inserted as an embedded object instead of being translated into a client-editable format. The Paste Link button establishes an automatic link to the original source of the data.

NOTE: Not all Windows applications contain the Paste Special command.

INSERT OBJECT

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To facilitate the OLE embedding of blank objects, applications may

implement an Insert Object command. In applications that include an Insert menu (for example, Microsoft Word for Windows), the command appears on that menu and is labeled "Object." In applications that do not include an Insert menu, the command appears on the Edit menu and is called "Insert Object." The dialog box that appears when you choose the Insert Object command contains the Object Type list, a list of object names drawn from the registration database maintained by the system in the REG.DAT file.

To embed an object, select its name from the list, and choose the OK button (or press ENTER). This activates the server application for the selected object. The server application then displays a blank window in which you can create and edit the object. After creating and editing the object, choose Update from the File menu of the server application. This command inserts the object where the insertion point was positioned in the client when the Insert Object command was chosen. You can then close the server application by choosing Exit from the File menu, and return to the client document.

NOTE: Not all Windows applications contain the Insert Object command.

OBJECT ACTIONS
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VIEWING OBJECTS
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Complex OLE documents may contain several linked or embedded objects (OLE objects), interspersed with objects that are native to the document. Because OLE objects support different operations than those supported by the native objects, it is convenient if you can visually distinguish OLE objects from native ones. For this purpose, applications should provide visual indications of OLE object boundaries. The boundaries of a particular object should appear whenever the object is selected. In addition, applications should provide a way for all object boundaries to be turned on or off at once, to facilitate easy viewing of all OLE objects in a document. For example, applications may reveal object boundaries, as well as other normally hidden information, through a Hidden Structure command on the View menu or through a Show All check box in a Preferences dialog box.

The exact method of indicating object boundaries depends on the nature of the client application and the type of OLE object. Three possible methods are:

1. Complete borders surrounding the object. For VGA monitors, the border should be dark gray; for non-VGA monitors, the border should be a 50-percent gray pattern.
2. Special graphic characters (for example, "{" and "}") at the beginning and end of the object.
3. Distinctive formatting (for example, a dotted underline) that is not used elsewhere in the client.

EDITING OBJECTS
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Double-Clicking the Object

Once linked or embedded objects are inserted in a document, the standard user interface provides three methods for editing them. The first method involves double-clicking the object or object boundary to invoke a new instance of the server application, with the OLE object as the active document.

Note that in the following situations, a new instance of the server application is not started:

- The object is already open in an existing instance of the server

application. In this case, the existing instance should be brought to the front.

- The server application is a multiple document interface (MDI) application and is the same as the client application. The appropriate behavior depends on whether the link is external or internal.

EXTERNAL LINKS: Suppose that one Word document contains a link to another Word document. In this case, double-clicking the link should not start a new instance of Word. Instead, if the document window for the server document is already open within the current instance of Word, then that document window should be brought to the front. If no document window is open for the server document, a new document window should be opened for it within the current instance of Word.

INTERNAL LINKS: In contrast to the preceding example, suppose that the link in the original Word document refers to another part of that same document. If you double-click the link, the current document window should scroll to show the source of the link.

When the server application's window opens, the object is loaded into the window. For embedded objects, the window is initially sized to show only the portion of the object displayed in the client. You can resize the window to display additional portions of the embedded object. When linked objects are used, the entire linked file is loaded, and the linked portion is selected. You can then modify the object with the tools provided by the server application.

Updating Objects from Non-MDI Server Applications

When a non-MDI application (for example, Paintbrush) functions as a server application for an embedded object, the Save command on the File menu changes to Update. This change occurs only for embedded objects, not for linked objects. The Update command updates the object in the client but does not close the server application. The server application remains open so you can make further changes after noting the effects (for example, repagination) of the update on the client. Updates to embedded objects can be undone through the Undo command on the client's Edit menu.

If you attempt to exit the server application without updating the object, a warning message is displayed, asking if you want to update the client document ("Update <client filename>?").

When an embedded object is being edited, the Save As command on the File menu can be used to save a copy of the object in a separate file. If the client file has not yet been updated, the "Update <client filename>?" warning message is displayed before the Save As dialog box appears. Choosing New from the File menu also displays the "Update <client filename>?" warning message.

When the server closes, the focus returns to the client. If you attempt to close the client while server documents for that client are still open, the server documents are closed first, after the usual checks for unsaved data.

Updating Objects from MDI Server Applications

The procedure for editing and updating objects from MDI server applications is similar to the procedure for non-MDI server applications, with the following exceptions.

If the focus changes from the embedded object window to a "normal" document window (that is, one containing an existing file or a new document), the Update command on the File menu changes back to Save. If the embedded object window regains the focus, Save becomes Update

again.

When New is chosen from the File menu, the window containing the embedded object remains open. Therefore, the "Update <client filename>?" warning message is not displayed if the client file has not yet been updated.

Updating Objects Using the Links Command

The second method for editing OLE objects involves two commands on the Edit menu. The Links command produces a dialog box that allows you to change the type of updating (automatic or manual) for links, update linked objects, cancel links, repair broken links, and invoke the verbs associated with linked objects. The Links dialog box should use object-specific verbs if possible; otherwise, the generic verbs "activate" and "edit" should be used.

When the Links dialog box opens, the Links list shows each link in the document; links in the current selection are highlighted. Embedded objects in the current selection are not shown in the list. As you select different links in the Links list, the verbs on the two object-specific buttons will change accordingly.

Below the Links list, the dialog box contains two Update option buttons: Automatic and Manual. These buttons reflect whether the currently selected links are automatically updated whenever the linked file changes or whether they must be manually updated.

The Update Now button in the Links dialog box updates all links selected in the Links list. The presentations of the linked objects in the client are updated to reflect the current data in the linked (server) files.

The Cancel Link button in the Links dialog box permanently breaks the link between the client and the server application. The linked object in the client is changed to a picture that can no longer be edited or updated through the standard OLE techniques. The picture can still be edited using the cut/copy/paste techniques, but it will not retain all the data present in the original linked object. No link boundaries will be displayed for the picture.

The Change Link button in the Links dialog box is dimmed if the selection in the Links list includes multiple links to multiple files. Otherwise, if all the selected links are linked to the same file, the button is active and leads to a dialog box exactly like the File Open dialog box, except that the title is Change Link (in most applications). The Change Link dialog box allows you to change the file to which a link refers. This feature has two uses. First, it allows broken links to be reestablished. Second, the dialog box allows a single client that operates on linked data files to be successively connected to different linked files. This flexibility in providing data to the client is particularly useful for applications such as spreadsheets and databases.

In addition to these standard options, an application's Links dialog box may also include a list box for changing the format in which the object is displayed.

Updating and Acting Upon Objects Using the "Object Class Name" Object Command

The third method for editing OLE objects involves the "Object Class Name" Object command on the Edit menu, which allows you to choose one of an object's verbs. If the selection in the document is a single embedded object, the class name placeholder is typically replaced by the class and name of the object (for example, "Microsoft Excel Worksheet"). If an object supports only one verb, the name of the verb should precede the class name in the menu item (for example, "Edit

WPDObject Object"). When an object supports more than one verb, choosing this menu item brings up a menu listing each of the verbs associated with the selected object.

REGISTRATION =====

When a server application is installed, it registers itself as an OLE server application with the system registration database (REG.DAT). This database is supported by SHELL.DLL. To register itself as an OLE server application, a server application records in the database that it supports one or more OLE protocols. The protocols currently supported are "StdFileEditing" and "StdExecute." StdFileEditing is the protocol for linked and embedded objects. StdExecute is used only by applications that support the OleExecute function.

The entries in the registration database are used whenever an application or library needs information about an OLE server application. For example, client applications that support the Insert Object command refer to the database in order to list the OLE server applications that could provide a new object. The client applications also use the registration database to retrieve the name of the server application for the Paste Special dialog box.

The registration database stores key/value pairs, where keys and values are null-terminated strings. Keys are hierarchically structured, with the names of the components and keys separated by backslash (\) characters. To be available for OLE transactions, a server application should register the key/value pairs shown in the following example when the server application is installed. The class name and server application path should be registered for every class the server application supports. If a class has an object-handler library, it should be registered using the "handler" keyword. An application should also register all the verbs its class or classes support. An application's verbs must be sequential; for example, if an object supports three verbs, the primary verb is 0 and the other verbs must be 1 and 2.

The following example shows the form of the key/value pairs as they would be added to a database using the Registration Information Editor, REGEDIT.EXE. An application could also use the registration API to add this information to the database.

```
HKEY_CLASSES_ROOT\<<class name> = readable version of class name
HKEY_CLASSES_ROOT\<<.ext> = <class name>
HKEY_CLASSES_ROOT\<<class name>\protocol\StdFileEditing\server =
  <executable filename>
HKEY_CLASSES_ROOT\<<class name>\protocol\StdFileEditing\handler =
  <dll name>
HKEY_CLASSES_ROOT\<<class name>\protocol\StdFileEditing\verb\0 =
  <primary verb>
HKEY_CLASSES_ROOT\<<class name>\protocol\StdFileEditing\verb\1 =
  <secondary verb>
```

Server applications that support the OleExecute function also add the following line to REG.DAT:

```
HKEY_CLASSES_ROOT\<<class name>\protocol\StdExecute\Server =
  <executable filename>
```

Server applications can register data formats that they accept on calls to the OleSetData function or that they can return when a client calls the OleRequestData function. Clients can use this registered information to initialize newly created objects or to manipulate data with the server application. Client applications should not depend on the requested data format because the calls can be rejected by the server application.

For compatibility with earlier applications, the system registration

service also reads and writes registration information in the [embedding] section of the WIN.INI initialization file. A sample [embedding] section follows:

```
[embedding]
ExcelWorksheet=Worksheet created by Microsoft Excel,Excel Worksheet,
EXCEL.EXE, picture
WordDocument=Word Document,Word Document,C:\WINWORD\WINWORD.EXE,
picture
SoundRec=Sound Recorder Waveform Audio,Sound,SoundRec.exe,picture
Package=Package,Package,packager.exe,picture
PBrush=Paintbrush Picture,Paintbrush Picture,pbrush.exe,picture
```

The syntax is:

```
<Object Class Name>=<Comment>,<Textual Class Name>,<Path>/<Arguments>,  
[picture]
```

The keyword "picture" indicates that the server application can produce metafiles for use when rendering objects.

Note that a server application can register the entire path for its executable file, or register only the file's name and arguments. Registering only the filename without the path will cause the server application to fail if the application is installed in a directory that is not mentioned in the PATH environment variable in the AUTOEXEC.BAT file. Generally, registering the path and filename is recommended instead of registering only the filename. In the above example, you may want to verify that the directory containing EXCEL.EXE is mentioned in your PATH environment variable.

TO OBTAIN THIS APPLICATION NOTE
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You can find WW0532.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0532.EXE, and click GO! Open the article, and click the button to download the file.
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KBCategory: kbfile kbdisplay kbsound kbappnote kbole

KBSubcategory: wfw wfwg win31

Additional reference words: appnote 3.10 win31

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WW0525: Troubleshooting 386 Enhanced Mode Problems

PSS ID Number: Q83259

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

Microsoft Product Support Services offers an Application Note titled "WW0525: Troubleshooting 386 Enhanced Mode Problems" that can help you troubleshoot 386 enhanced mode problems. Symptoms of these problems include:

- Windows stopping or returning to the MS-DOS prompt
- General protection (GP) faults
- Windows defaulting to standard mode when you type "win" (without the quotation marks) at the MS-DOS prompt

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THE TEXT OF WW0525

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Microsoft Product Support Services Application Note (Text File)
WW0525: Troubleshooting 386 Enhanced Mode Problems
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Revision Date: 3/92
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The following information applies to Microsoft Windows version 3.1.

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Introduction

Microsoft Windows version 3.1 has two modes of operation: standard and 386 enhanced modes. 386 enhanced is the highest-level mode of operation because it utilizes the virtual mode of the 80386i processor. However, you may experience the following problems when attempting to run Windows 3.1 in 386 enhanced mode:

- Windows stopping or returning to the MS-DOS prompt
- General protection faults (GPFs)
- Windows defaulting to standard mode when you type "win" (without the quotation marks) at the MS-DOS prompt

Troubleshooting Procedure

The following steps may correct or reduce these problems:

1. Ensure that the system has the minimum configuration required to run Windows 3.1 in 386 enhanced mode. These requirements are:
 - An 80386 or faster processor
 - 200K of free conventional memory
 - 1024K of free extended memory
 - 2 MB of free disk space
2. Try to force Windows into 386 enhanced mode by typing "win /3" (without the quotation marks). If this is successful, the computer probably has available less than the 1024K of extended memory required for Windows to default to 386 enhanced mode on startup. Verify that you are running an extended memory manager (HIMEM.SYS is the extended memory manager that comes with Windows 3.1). If so, you should free up extended memory so that Windows can default to 386 enhanced mode.

The best way to accomplish this is to start your computer with minimal CONFIG.SYS and AUTOEXEC.BAT files. Using a text editor such as Notepad, comment out any lines that load extraneous device drivers, terminate-and-stay-resident (TSR) programs, and so forth, that are not required to run your machine. To comment out a line, type "rem" (without the quotation marks) at the beginning of the line.

Caution: If you do not know the purpose of a line in your CONFIG.SYS or AUTOEXEC.BAT file, leave that line as is.

Other things that might help free up extended memory include

reducing the size of any disk cache, such as SMARTDRV.EXE, or RAM drive. Although you can force Windows into enhanced mode if there is less than 1024K of extended memory, this is not recommended because this condition can adversely affect the performance of Windows.

3. Try starting Windows by typing:

```
win /d:xvs
```

If this is successful, try each of the following switches individually to see which is required:

WIN /D:X

This switch excludes the entire upper memory block region from A000-FFFF. It is functionally equivalent to adding EmmExclude=A000-EFFF to the [386enh] section of the SYSTEM.INI file.

NOTE: If any upper memory block (UMB) provider is installed in the CONFIG.SYS file, this switch has no effect in the region the UMB provider is using. The UMB provider has priority in the UMB area. For this reason, you should disable the UMB provider (such as EMM386.EXE), restart the system, and then try the WIN /D:X switch.

WIN /D:V

This switch is equivalent to adding the line VirtualHDIrq=OFF to the [386enh] section of the SYSTEM.INI file. For more information about the VirtualHDIrq= setting, consult the SYSINI.WRI file in the \WINDOWS directory.

WIN /D:S

This switch is equivalent to adding the line SystemROMBreakPoint=OFF to the [386enh] section of the SYSTEM.INI file.

After determining which switch, or combination of switches, allows Windows 3.1 to successfully start in 386 enhanced mode, use a text editor such as Notepad to add the corresponding line, or lines, to the [386enh] section of the SYSTEM.INI file.

4. Create a BOOTLOG.TXT file by typing "win /b" (without the quotation marks) to start Windows. This switch will create a file called BOOTLOG.TXT in the \WINDOWS directory. Once this file has been created, you can view it using any text editor (such as Notepad). In this file, Windows creates a list of the basic Windows drivers as they are loaded. If there is a problem with one of these drivers loading, a statement will appear in the BOOTLOG.TXT file showing which driver could not load. This information is valuable in determining which component of Windows is not able to function properly.

NOTE: This switch will append new information to the end of an existing BOOTLOG.TXT file. Therefore, you may want to rename or delete any existing BOOTLOG.TXT file in the \WINDOWS directory before using the /B switch.

The following is a list of error codes that may appear in the BOOTLOG.TXT file:

- 0 Out of memory
- 2 File not found
- 3 Path not found
- 5 Attempt to dynamically link to a task
- 6 Library requires separate data segments for each task
- 8 Insufficient memory to start application
- 10 Incorrect Windows version
- 11 Invalid .EXE file (non-Windows .EXE file or error in .EXE file image)

- 12 OS/2 application
 - 13 MS-DOS 4.0 application
 - 14 Unknown .EXE file type
 - 15 Attempt in protected (standard or 386 enhanced) mode to load an .EXE file created for an earlier version of Windows
 - 16 Attempt to load a second instance of an .EXE file containing multiple writeable data segments
 - 17 Attempt in a large-frame EMS mode to load a second instance of an application that links to certain nonshareable DLLs already in use
 - 18 Attempt in real mode to load an application marked for protected mode only
5. At the MS-DOS prompt, change to the \WINDOWS directory before starting Windows. When Windows starts, it reads the .INI files that specify the locations of many of the files that Windows needs in order to start. When Windows reads the .INI files, it looks for the specified files in the following locations:
- a. The current directory
 - b. The \WINDOWS directory
 - c. The \WINDOWS\SYSTEM subdirectory
 - d. All of the directories listed in the PATH environment variable in the AUTOEXEC.BAT file
 - e. All of the directories in the list of directories mapped on a network

For example, if there is an outdated MOUSE.DRV file (the Windows Microsoft Mouse driver) in the current directory, Windows may not be able to start.

6. Verify that Windows can run in standard mode by typing "win /s" (without the quotation marks) at the MS-DOS prompt. If Windows can run in standard mode, you may have installed a mouse, keyboard, video, or printer driver designed for a previous version of Windows, or you may have made an incorrect selection for your hardware.

To change the printer driver, start the Control Panel and choose the Printers icon. To change the mouse, keyboard, video, or network driver, from the Program Manager File menu, choose Run, type "setup," (without the quotation marks) and choose the OK button. This command brings up the System Information screen; from the Options menu, choose Change System Settings.

Also, check the "Microsoft Windows Version 3.1 Hardware Compatibility List" that ships with Windows to see if your computer requires special handling. If it does, exit Windows and then reinstall it, using only a minimum of drivers (use no mouse or network driver and use the lowest resolution video driver) and the SETUP /I switch.

Another option is to delete Windows and reinstall it using the SETUP /I switch, along with the minimal configuration described above. This may be necessary if it is not possible to determine which component of Windows is preventing proper operation.

7. Check your AUTOEXEC.BAT and CONFIG.SYS files for TSR programs, sufficient buffers, files, and environment space. Some TSR programs are not compatible with Windows 3.1 and may need to be commented out during Windows operation. Again, if you do not know the purpose of a line, do not comment it out.
8. Disable the autoswitching or autosensing feature on the video card if applicable. Verify that you are using the latest version of the BIOS (basic input/output system) for that video card (see step 13).

9. Disable system or video ROM shadowing if it is supported by the system.
10. Verify that you are using the correct version of MS-DOS for the system. You should be using a version of MS-DOS that is 3.1 or later and is designed for the machine. Do NOT use an original equipment manufacturer (OEM) version of MS-DOS on a computer that was not manufactured by that OEM (for example, do not use COMPAQ MS-DOS on an IBM computer).
11. Ensure that HIMEM.SYS loads successfully. If it does not, or if a problem is suspected, try ALL A20 handlers available to the version of HIMEM.SYS being used. The DEVICE=C:\HIMEM.SYS line in your CONFIG.SYS file should include the /M:x switch, where x denotes a handler number. For example, if you are using a PS/2, this line should read DEVICE=C:\HIMEM.SYS /M:2.

For more information about the /M switch, see pages 543-547 of the version 3.1 "Microsoft Windows User's Guide."

NOTE: Some A20 handlers may lock up your computer, so it is important to have a system MS-DOS floppy disk available that contains an ASCII text editor (such as Edlin or Edit) should this problem occur.

12. Install Windows in an empty directory. Do not install Windows version 3.1 over a 2.x version, because some files and drivers may not be updated properly.
13. Confirm that you are using a system BIOS that is dated 1988 or later. If you are using a BIOS with a date earlier than 1988, you may encounter problems when trying to run Windows 3.1 in 386 enhanced mode. The BIOS date will vary depending on the brand of your BIOS and the manufacturer of your machine. The BIOS version and date are typically displayed when you first start up the system. If the date is not displayed when the system is started, or if you have any questions about the compatibility of your BIOS with Windows 3.1, you should contact your hardware manufacturer.
14. Remove any additional hardware from the system (mouse, network card, fax board, modem, and so forth). After all the nonessential hardware has been removed, restart the system, and run Windows 3.1. If you can now run in 386 enhanced mode, it is likely that an interrupt request line (IRQ) conflict exists. Replace one piece of hardware at a time, restarting the machine after each new piece of hardware is replaced, and run Windows in 386 enhanced mode. Do this until the symptom reoccurs, at which point you've most likely found an IRQ conflict. For more information on how to deal with IRQ conflicts, contact the manufacturer of the piece of hardware in question.
15. If none of the above steps has corrected the problem, you may want to contact your hardware manufacturer for additional information.

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KBCategory: kbfile kbdisplay kbtshoot kbappnote
KBSubcategory:

Additional reference words: appnote tshoot gpf 3.10 S13365 winmem win31

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WW0530: SMARTDrive and 32-Bit Disk Access

PSS ID Number: Q83325

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1
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Microsoft has an Application Note available titled "WW0530: SMARTDrive and 32-Bit Disk Access." This Application Note discusses the enhancements in Windows 3.1 features for accessing and using the hard disk drive of your computer.

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Microsoft® Product Support Services Application Note (Text File)
WW0530: SMARTDrive and 32-Bit Disk Access
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Revision Date: 4/92
No Disk Included

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INTRODUCTION
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Microsoft Windows operating system version 3.1 has a number of enhancements over previous versions that improve both its usability and its performance. Foremost among these enhancements are Windows 3.1's improved features for accessing and utilizing the hard drive of your PC.

SMARTDRIVE 4.0 DISK CACHE
=====

Microsoft's first release of the Windows graphical environment included a disk caching program called SMARTDrive 3.03. SMARTDrive has been improved with each subsequent release of Windows and has been entirely redesigned in Windows version 3.1. SMARTDrive 4.0 in Windows 3.1 provides faster and more intelligent disk caching that takes better advantage of the revolutionary way that Windows and Windows-based applications use extended memory.

SMARTDrive 4.0 gives Windows 3.1:

- Improved performance by speeding up hard disk and RAM access.
- Improved stability in 386 enhanced mode by double buffering data when needed.

The remainder of this section compares the performance of SMARTDrive 4.0 to SMARTDrive 3.x and illustrates how SMARTDrive 4.0 works at a

more technical level.

WHAT IS SMARTDRIVE?

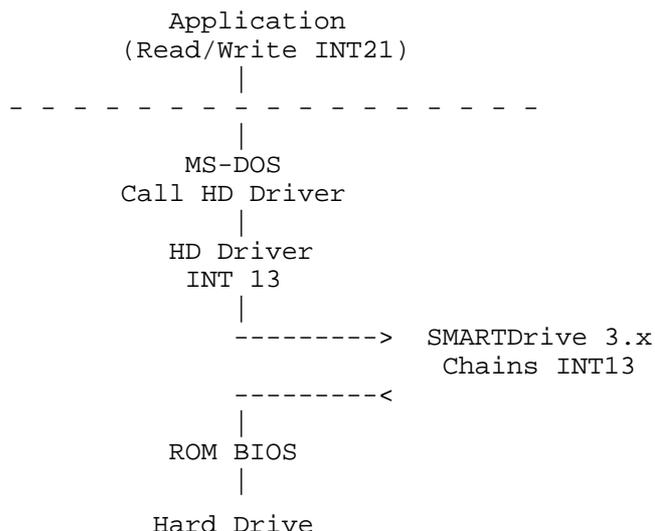
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SMARTDrive is a disk caching program that intercepts system calls to the hard disk to control read/write access to the disk. SMARTDrive intercepts any calls to the hard disk and loads the needed data into a cache it establishes in RAM. (Unless specified otherwise, SMARTDrive automatically determines a reasonable cache size based on the amount of free extended memory available when it initially loads; the maximum amount it will take is around 2 MB.) Subsequent calls to the hard disk are intercepted by SMARTDrive, which scans the cache for the requested data. If the data is already present in the cache, SMARTDrive can access it directly in RAM. If the data is not in the cache, SMARTDrive accesses the hard disk and loads the necessary data into the cache. The least recently used data residing in RAM is cached back to the hard disk to make room for the new data. By loading blocks of data from the hard disk into RAM, SMARTDrive helps decrease the number of calls to the hard disk. This can dramatically speed up applications that repeatedly access the hard disk for data because accessing the hard disk is considerably slower than accessing RAM. Essentially, SMARTDrive attempts to maintain information in RAM that an application needs at any given time from the hard disk.

SMARTDRIVE 3.X

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To understand why SMARTDrive needed to be redesigned, let's look at how SMARTDrive 3.x works and examine some of the shortcomings of its design. First, SMARTDrive 3.x is a read-only track cache, which means that it caches on a track basis and for read operations only. This means that the internal data structures of the SMARTDrive program are tied to the logical geometry of the disk (that is, what MS-DOS sees). In the diagram below, you can see that SMARTDrive 3.x caches at the ROM BIOS INT13 level and uses the BIOS-specified disk geometry to decide the size of its caching element (that is, track size). INT13 is the most common method for interacting with hard disks (and has evolved into the industry standard). SMARTDrive under Windows 3.0 can be loaded into either extended memory or expanded memory.



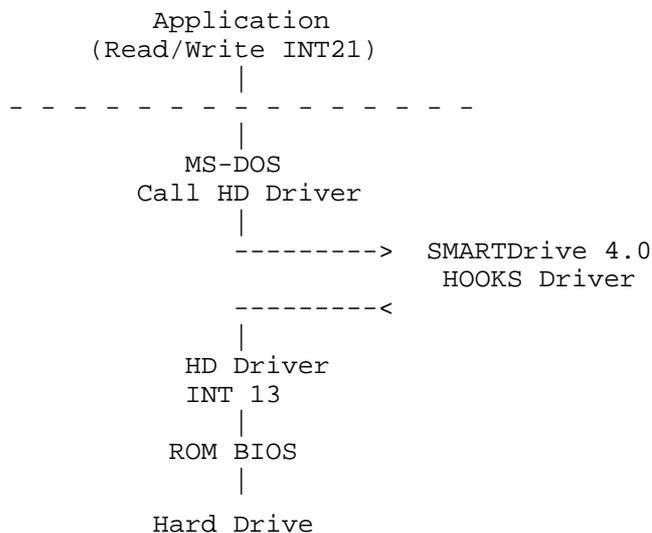
SMARTDRIVE 4.0

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SMARTDrive 4.0 is designed as a block-oriented disk cache. It hooks into the system at the MS-DOS device driver level rather than at the ROM BIOS INT13 level (as with SMARTDrive 3.x). Each block device driver on the MS-DOS device driver chain is "front-ended" by a

SMARTDrive 4.0 module that provides the actual caching. This new design yields the following benefits:

- It is independent of the INT13 interface.
- It is independent of disk geometry.



Independent of INT13 Interface

Many device drivers do not use the INT13 (BIOS) interface (for example, Bernoulli drives, some hard cards, and many SCSI and WORM drives). This means that SMARTDrive 4.0 can cache these devices, whereas SMARTDrive 3.x cannot. SMARTDrive 4.0 can cache any disk controller that uses an MS-DOS block device driver.

Independent of Disk Geometry

Some disk managers and disk controllers use a disk geometry mapping scheme that causes the logical geometry to be different from the physical geometry (for example, many PS/2 systems, Ontrack's Disk Manager, and several disk controllers). The INT13-based disk caches are sensitive to this and often have problems. For example, some disk management software actually changes the ROM BIOS-specified disk geometry, which confuses INT13-based disk caches (including SMARTDrive 3.x).

There usually is an interface to determine the true geometry, but this requires detection of the specific disk manager driver and generally complicates the disk cache software. Often, logical tracks actually cross physical track boundaries, causing the track caches to incur performance penalties (intertrack seeks and rotational latencies, for example). To get around the ROM BIOS 1024-cylinder limitation, disk managers and controllers sometimes fold multiple tracks into one logical track. This results not only in problems with the physical track boundaries as noted above, but forces track caches to have a very large track buffer as well. In some cases, this buffer can be as large as 31.5K and must reside in conventional memory. The design of SMARTDrive 4.0 eliminates this geometry mismatch problem.

OTHER SMARTDRIVE 4.0 FEATURES

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Write-Behind Cache

SMARTDrive 4.0 is a write-behind cache, also known as lazy write. A write-behind cache adds significant performance improvements wherever files are being written to disk. For example, an application writes data to what it thinks is the hard disk. SMARTDrive takes this data

and places it in the cache, rather than physically writing it to the disk. This write-behind data stays in the cache until one of the following occurs:

1. The cache fills up. The oldest block in the cache is freed up, and if it is write-behind data, physically written to the disk.
2. The system goes idle. SMARTDrive writes the oldest write-behind data block to the physical disk. As long as the system is idle, SMARTDrive continues to write to the disk until all the write-behind data is written. This write-behind data also comes from Windows-based and MS-DOS-based applications that are idle.
3. SMARTDrive detects that you have pressed CTRL+ALT+DEL. When you restart by pressing CTRL+ALT+DEL, SMARTDrive writes all write-behind data to the physical disk. This is a synchronous operation-- SMARTDrive does not give up control until all data is written.
4. A block is older than five seconds. If a block is older than five seconds, it is written to the physical disk.

Shrink Algorithm

Similar to SMARTDrive 3.x, SMARTDrive 4.0 implements a shrink algorithm that frees memory for Windows (that is, the cache set up by SMARTDrive is removed from memory). The difference is that SMARTDrive 4.0 watches for the Windows startup broadcast while SMARTDrive 3.x provides an IOCTL interface. The net effect is identical, but the SMARTDrive 4.0 code is much simpler. Upon exiting Windows, the process is reversed and the memory is reacquired by SMARTDrive 4.0.

Automatic Load High

When an upper memory block (UMB) provider (such as EMM386.EXE) is loaded, SMARTDrive 4.0 (SMARTDRV.EXE) automatically attempts to load itself high. Unlike the Windows 3.0 SMARTDrive, SMARTDrive 4.0 can only be loaded into extended memory.

DOUBLE BUFFERING AND BUS MASTERING

The second major benefit of SMARTDrive 4.0 is the protection it provides through double buffering. Double buffering is a response to bus mastering, which is supported by certain (usually older) disk controllers. Bus mastering refers to a situation in which the hard disk controller takes over the bus to directly transfer data to or from system RAM, bypassing the CPU entirely. A problem occurs when Windows 3.x virtual machines and/or popular memory managers (such as EMM386.EXE and QEMM.SYS) are running in virtual 8086 mode. The read or write address that is passed to MS-DOS from the bus master controller is often not the same as the actual physical memory address. This can cause data to be read from the wrong location, or worse, can cause data to be written to the wrong RAM address, resulting in erratic system behavior and potential file corruption.

When paging is enabled on an 80386 or faster processor, it is possible for the physical address (the actual location of the memory) to be different from the virtual address (the address that programs are using to access memory). Paging is enabled by all device drivers that can provide load high capability and by Windows in 386 enhanced mode. For example, say SMARTDrive wants to write to an area of memory that has a virtual address in conventional memory, but a physical address in extended memory. When the hard drive controller takes over the bus and transfers data from the UMB to the disk, the controller does not use the CPU, so there is no address translation, resulting in the wrong data being written to disk. To avoid this problem, double buffering copies the data into a buffer in conventional memory and then passes the information to the hard disk controller. So, the

virtual address always equals the physical address when using devices that only recognize conventional memory.

Installing Double Buffering

To install the SMARTDrive double-buffering feature, add the following line to your CONFIG.SYS file:

```
device=c:\windows\smartdrv.exe /double_buffer
```

Including this line does not install the cache, only the double-buffering driver. The cache must be installed from the AUTOEXEC.BAT file or MS-DOS command line.

Most disk controllers do not need double buffering. These include all MFM, RLL, and IDE controllers as well as many ESDI and SCSI devices. The Setup program in Windows 3.1 will install the double buffer in the following cases:

1. If the computer has an 80386 or faster processor
2. If 32-Bit Disk Access was not installed in the SYSTEM.INI file (see next section)

You should install the double buffer in these cases in the interest of added safety. Another new feature of SMARTDrive 4.0 that helps you determine if double buffering is necessary is the smartdrv command. Once your system is running with SMARTDrive loaded, type "smartdrv" (without the quotation marks) at the MS-DOS prompt and press ENTER. Information similar to the following is displayed:

```
Microsoft SMARTDrive Disk Cache version 4.0
Copyright 1991, 1992 Microsoft Corp.
Cache size: 1,048,576 bytes
Cache size while running Windows: 1,048,576 bytes
```

Disk Caching Status

drive	read cache	write cache	buffering
A:	yes	no	no
B:	yes	no	no
C:	yes	yes	yes
D:	yes	yes	---

For help, type "Smartdrv /?".

Note the column labeled "buffering." For each drive that is being cached, one of three values is displayed--"yes," indicating that double buffering is needed; "no," indicating that double buffering is not needed; or "---," indicating that SMARTDrive has not yet determined the necessity of double buffering. If the buffering column displays a "no" for each drive, the double buffer driver is unnecessary, and you can safely remove it from your CONFIG.SYS file.

Setting Up SMARTDrive 4.0

The Setup program in Microsoft Windows 3.1 automatically installs SMARTDrive (SMARTDRV.EXE) in the first line of your AUTOEXEC.BAT file. In general, you should let the Setup program configure SMARTDrive's cache size for you. However, please note it is critical that SMARTDRV.EXE load after any block devices that reside on your system, such as:

- Hard disk partitioning software (for example, DMDRVR.BIN and SSTOR.SYS)
- Hard disk drivers (for example, SCSI drives, hard cards, and Bernoulli drives)
- Data encryption software (for example, Stacker and DoubleDisk)

The configuration of SMARTDRV.EXE is controlled by command-line parameters. Most configuration options can be modified without restarting; however, without the Windows Resource Kit utility SMARTDrive Monitor (SMARTMON.EXE), the configuration cannot be altered while running Windows. Also note that SMARTDrive:

- Needs a minimum cache size of 16K.
- Creates a cache size of 16K by default if you supply an invalid cache size.
- Gives you benefits up to a cache size of 2 MB, whereupon the benefits typically plateau.

32-BIT DISK ACCESS =====

Another new feature of Windows 3.1 is its use of 32-Bit Disk Access. 32-Bit Disk Access is not a program but rather a term used to refer to a system of Windows components working together. The main purpose of these components is to allow Windows to interact directly with the hard disk, bypassing the BIOS, which is normally used for communicating with the hard disk. Under 386 enhanced mode Windows, where 32-Bit Disk Access is supported, you get the following benefits:

- Faster hard disk access
- Ability to run more MS-DOS-based applications
- Faster overall system response, even when running MS-DOS-based applications in the background
- More powerful off-the-shelf disk utilities to choose from, since independent software vendors (ISVs) are writing programs that take advantage of this new set of services

WHAT IS 32-BIT DISK ACCESS? =====

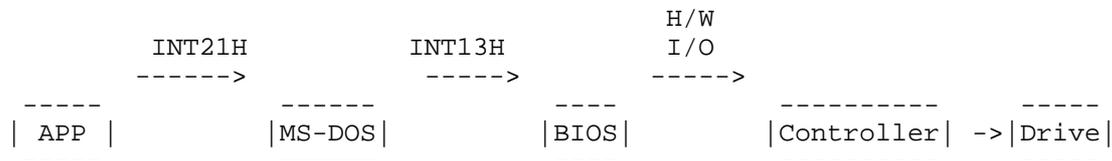
- A SYSTEM OF WINDOWS COMPONENTS. Some of these components are called 32-Bit Disk Access devices, but they are useless without the rest of the components to support them. Each of these components is discussed below.
- A REPLACEMENT FOR THE HARD DISK BIOS. 32-Bit Disk Access serves as a device driver that interacts with the hard disk controller. 32-Bit Disk Access watches for INT13H calls and handles them if they are for the disk it represents; otherwise, it passes the calls on to the BIOS in the usual way, as if 32-Bit Disk Access were not available.
- AN EXACT MATCH FOR THE HARD DISK CONTROLLER (NOT THE SPECIFIC HARD DISK). There are some standards for hardware communication that work on many different controllers. The most widely adopted standard is that introduced by Western Digital in its 1003 controllers. This is the standard supported by Windows 3.1 and more than 90 percent of hard disk controllers, with the exception of ESDI and SCSI controllers.
- AN OPEN STANDARD FOR CERTAIN CONTROLLERS. 32-Bit Disk Access is an open standard that is being promoted to all manufacturers of hard disk controllers. This means that every manufacturer has the opportunity to write a device driver that supports 32-Bit Disk Access functionality for its hardware. Many hardware manufacturers are writing 32-Bit Disk Access device drivers that will be available at the time Windows 3.1 ships or shortly thereafter.
- AN OPTION, NOT A SYSTEM REQUIREMENT. Without the 32-Bit Disk Access device driver installed, you lose the hardware-access benefits provided by 32-Bit Disk Access, but your system is otherwise unaffected. Windows 3.1 without 32-Bit Disk Access has the same disk access capabilities of Windows 3.0.

DISK ACCESS UNDER MS-DOS

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The 32-Bit Disk Access feature bypasses the system BIOS to more directly control hard disk access. It acts, in a sense, as the hard disk controller. Before discussing how disk access has changed under Windows 3.1, let's look at how MS-DOS handles calls to the hard disk.

In the MS-DOS-based PC, when an application wants to read from the disk, it tracks the following sequence:



1. The application makes an INT21H call to MS-DOS.
2. MS-DOS locates the requested part of the file on the hard disk.
3. MS-DOS issues an INT13H call to talk to the hard disk BIOS. The BIOS contains a program to control each device in the system.
4. The BIOS driver talks directly to the hard disk controller. Each hard disk controller requires its own BIOS driver, but these BIOS drivers are usually not specific to the hard disk itself, but rather to the controller board (or adapter) that connects the hard disk to the rest of the system.

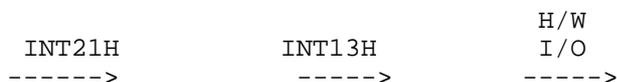
This system works well, because MS-DOS is able to identify the files and directories and keep track of their locations, regardless of the type of hard disk MS-DOS is accessing. But, on the other hand, the system BIOS is wholly linked to the hard disk, which provides disk independence for the applications but does not allow the BIOS to differentiate between a call from MS-DOS or a program such as SMARTDrive.

But remember that not all disk device drivers reside in ROM. If you purchase an off-the-shelf disk drive and install it, your computer's ROM BIOS may not know how to communicate with it. If this is the case, you must install a device driver that is specific to your new hard disk. This additional device driver is usually installed in your CONFIG.SYS file when you install the software that comes with your hard disk. With some devices, such as a CD-ROM drive, a device driver that provides the BIOS interface and INT13H interface to the CD-ROM drive appears in your AUTOEXEC.BAT file. This type of device driver traps INT13H calls to the hard disk and makes sure the calls are understood by the hard disk. Usually, the device driver handles any attempts to access the hard disk; the calls never get passed on to the real ROM BIOS. If the call is not for the device that the device driver represents, then the INT13H call is passed on to the BIOS, where it is handled in the usual way. 32-Bit Disk Access represents a way for Windows to provide a BIOS that better suits customers' device support needs.

32-BIT DISK ACCESS SPEEDS UP DISK ACCESS

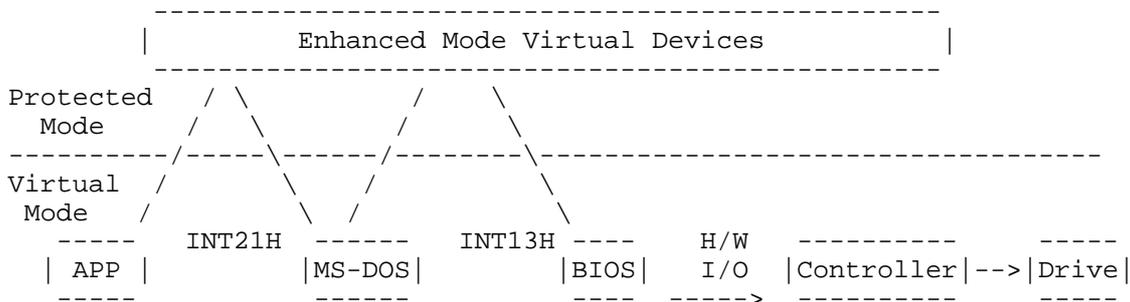
=====

On many machines, the resident hard disk BIOS is slow and inefficient. Since 32-Bit Disk Access is specific to devices, it is often more efficient, leading to very impressive performance increases. 32-Bit Disk Access also allows Windows 3.1 to handle BIOS requests in protected mode, rather than in real mode, which may also speed up disk access. The following diagram charts the flow of calls under Windows in standard mode:





Under 386 enhanced mode Windows, the flow of calls is more complicated:



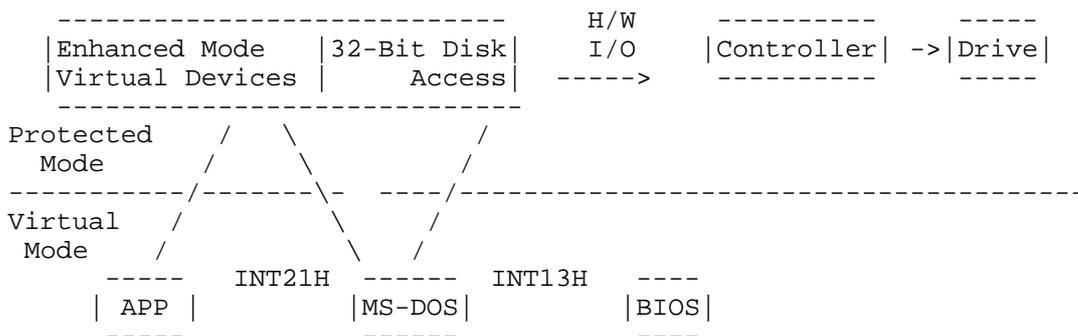
Windows 3.1 and Windows applications run in protected mode. Windows has to switch back into real mode (or virtual 8086 mode) to run older code (for MS-DOS and the BIOS calls, for example). Switching modes is very time consuming. For example, when a non-Windows application running under 386 enhanced mode tries to read from a file, the following occurs:

Windows starts out in virtual mode running the application. Windows makes an INT21H call to read from the file. 386 enhanced mode traps this interrupt and switches to protected mode, where a number of virtual device drivers look at the call and try to qualify it. If none of the device drivers intercepts the call, the call is accepted and is subsequently handed off to MS-DOS.

Windows then switches back to virtual mode to let MS-DOS handle the call. MS-DOS reads a particular location on the disk and then generates an INT13H call to talk to the BIOS. Windows in 386 enhanced mode then traps the call again and switches to protected mode to perform certain tasks, hands the call back to the real BIOS, and switches back to virtual mode.

The BIOS handles the call and accesses the hard disk controller to set the physical read in motion. Once the BIOS reads the call, Windows goes back to protected mode to perform more tasks and then returns to virtual mode to let MS-DOS see the returned call. Windows returns the INT21H call, switches to protected mode to perform yet more tasks, and then finally switches back to virtual mode to communicate with the application that issued the call to begin with.

All this mode switching takes time but is necessary due to the nature of the 80386 processor, MS-DOS, and the PC BIOS. With a 32-Bit Disk Access device installed, Windows can start trapping INT13H calls and handling them entirely in protected mode. With 32-Bit Disk Access, the call diagram now looks like this:



With 32-Bit Disk Access, Windows no longer has to go through two mode

transitions--one mode to get to the BIOS and the other mode to get back. Only two mode switches per INT13H call, rather than four, are now being performed.

32-BIT DISK ACCESS SUPPORT FOR NON-WINDOWS APPLICATIONS

=====

Sometimes Windows shows an adequate amount of free memory and large Windows-based applications run just fine, yet an "Out of Memory" message is generated when a non-Windows application is started. Also, in spite of the available memory, Windows-based applications may slow down and constantly access the hard disk after a non-Windows application is started.

These discrepancies occur because of the difference between virtual memory (which is often large) and physical memory (RAM, which is usually limited). On a given machine, virtual memory might be four times the size of RAM. But, while virtual memory works well for Windows-based applications, it doesn't always meet all the system's memory needs for MS-DOS-based applications.

Because each non-Windows application runs in its own virtual machine, each application takes up 640K or more of virtual memory. When the virtual machine is actually running, all of the program code needs to occupy RAM. Parts of the non-Windows application cannot be paged out while keeping other parts in RAM, as is the case with Windows-based applications. The virtual machine in which the non-Windows application runs must be treated as a single block. This is true even if the application is currently inactive in the background.

With Windows-based applications, most of the program remains resident on the hard disk, while only the parts that are actually being used are loaded in RAM. Problems occur when Windows tries to do this with non-Windows-based applications.

If a part of the application that is not currently being used--a data buffer, for example--is paged out, it can always be read back in whenever the application needs to access it. However, if the application makes a call to MS-DOS to read some data from the disk into a buffer, MS-DOS starts handling the call by making a call to INT13H to talk to the BIOS, which in turn talks to the hard disk controller, resulting in the transfer of data into the buffer. So when the application needs to transfer the page into the buffer, which is currently out on disk, the application tries to call MS-DOS to read the page.

Because MS-DOS is already occupied, the application can't call MS-DOS; and MS-DOS is not reentrant, so the second call from the application fails. Nor can the application have the page read by calling the BIOS, because the BIOS is also in the middle of a call, so it can't be reentered either. This situation results in a type of deadlock: the application can't let the current call finish until the page is put in the buffer, but the page cannot be placed in the buffer until the current call finishes.

The only way to ensure that this deadlock situation does not occur is to make sure that Windows never has to page anything in while the application is in the middle of an MS-DOS or BIOS call. Because Windows cannot predict ahead of time what the application will try to access, the only way to be 100-percent safe from deadlocking is to make sure everything the application might try to access is already in RAM (that is, never paged out to disk). In other words, all 640K-plus of the virtual machine in which the non-Windows application is running has to remain resident in RAM, thereby using up a lot of physical memory. Running several non-Windows-based applications at once uses large amounts of RAM, so you may soon end up with only a small amount of free RAM left for everything else you're trying to do, such as run Windows-based applications. When you check the Program Manager About

dialog box (from the Help menu), it shows that you have plenty of memory--virtual memory--and you do. But if you try to start another non-Windows application, which requires yet another 640K of RAM, the application won't start. So, Windows starts running sluggishly and/or may generate the "Out of Memory" message.

So how does 32-Bit Disk Access help? Windows 3.0 offered a contiguous paging file (which is created with Swapfile) for any pages using the INT13H BIOS calls. Windows 3.1 handles the same task by making calls to the 32-Bit Disk Access system. Unlike MS-DOS or the BIOS, the 32-Bit Disk Access system can queue up multiple requests and is completely reentrant. Windows no longer needs to rely on MS-DOS or the BIOS; so regardless of what the application is doing, Windows can always page calls in from the hard disk. Free from a potential deadlock situation, Windows 3.1 can now make the virtual machines that are running completely pageable. Non-Windows-based applications no longer need to take up so much RAM, since they can now use virtual memory the way Windows-based applications do. When Windows needs some RAM space, it can now page out pieces of these virtual machines.

With Windows 3.1 and 32-Bit Disk Access, you can run multiple non-Windows-based applications and Windows-based applications without generating an "Out of Memory" message. When the About box tells you that you have 14 MB of memory, you can actually use all 14 MB for running your applications, whether they are Windows or non-Windows.

Improved Performance for Non-Windows Applications Under Windows

In the previous example, we saw how 32-Bit Disk Access in Windows can page non-Windows-based applications to free up enough RAM for those applications when they need to use it. The 32-Bit Disk Access feature also improves Windows performance all around, making the system run much more quickly.

Switching between non-Windows-based applications by pressing ALT+TAB is faster with 32-Bit Disk Access. Without 32-Bit Disk Access, a non-Windows application can only be swapped out to disk if it is configured to not run in the background. This means when you press ALT+TAB to switch to such an application, Windows has to read the entire program into RAM, causing the task switching to take a long time. When Windows is paging using 32-Bit Disk Access, Windows can load in just the small amount of information that the application is actually using, so task switching becomes almost instant. And, since only a small part of the application needs to be in RAM at one time, Windows may not have to access the hard disk at all.

THE COMPONENTS OF THE 32-BIT DISK ACCESS SYSTEM

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The 32-Bit Disk Access system is composed of the following 386 enhanced mode virtual devices:

- WDCTRL, which is the 32-Bit Disk Access device that talks to standard Western Digital 1003 or ST506 hard disk controllers (about 90 percent of the installed base). WDCTRL is only installed if Setup detects a compatible hard disk controller.
- BlockDev, which coordinates calling block I/O services between devices and the 32-Bit Disk Access devices that provide those services for specific hard disk controllers. BlockDev is always installed.
- PageFile, which handles the virtual memory paging file and calls through BlockDev if any 32-Bit Disk Access devices are available. PageFile is always installed.
- INT13, which traps and emulates INT13H BIOS calls by calling BlockDev. INT13 is only installed if at least one 32-Bit Disk Access device is present.

Because WDCTRL is the only 32-Bit Disk Access device included in the Windows box, the standard Windows components only support 32-Bit Disk Access for Western Digital-standard controllers. When you run Setup, it automatically detects these controllers and adds the following lines to the [386Enh] section of your SYSTEM.INI file:

```
device=*int13
device=*wdctrl
```

If you want to disable 32-Bit Disk Access, start the Control Panel and choose the 386 Enhanced icon, or comment the lines out of your system by placing a semicolon (;) at the beginning of both lines. You do not need to delete any files from your hard disk, as the 32-Bit Disk Access devices are contained within the file WIN386.EXE.

32-BIT DISK ACCESS AND HARD DISK PROTECTION =====

Microsoft identified machines where the use of WDCTRL can stop the system. Usually, this is caused by hard disk controllers that appear to be Western Digital 1003 compatible but are really not. WDCTRL has been put through rigorous testing to make sure it is as safe as possible, and is designed with a built-in safety measure--every time it starts, it performs elaborate tests to make sure it can communicate in the same language as the hard disk controller before it attempts to read and write data. WDCTRL starts testing by taking a peripheral look at some data on the hard disk for tell-tale traces of a Western Digital 1003-compatible controller. If the controller passes that test, WDCTRL then starts calling up larger pieces of data to try to elicit the correct response. Finally, after much redundant checking, WDCTRL tries actually reading data from the disk. If it is able to read data, WDCTRL then tries to write data and read it back. Only after the read/write test is passed does WDCTRL continue and start Windows, reassured that it will not cause any catastrophic errors on the hard disk.

However, there are still a few exceptions. There are drives that appear to be WD1003 compatible but are not, and which cannot be detected by WDCTRL. In addition, there can be problems even with compatible controllers on some portable computers, specifically those that power down the hard disk to conserve power without telling the running software. If the disk is powered down and then back up while it is being tracked by WDCTRL, the tracking information will be incorrect, and serious damage can result. For these reasons, 32-Bit Disk Access is not turned on by default. When you install Windows, 32-Bit Disk Access is disabled until you make the decision to enable it through Control Panel. Only original equipment manufacturers (OEMs) who preinstall Windows 3.1 on a 100-percent-compatible system can turn 32-Bit Disk Access on before the user receives the system without jeopardizing the user's hard disk.

When something does go wrong, WDCTRL may do different things, depending on where it is in its verification code. The initial tests have reported WDCTRL as extremely safe. The controllers that WDCTRL fails with are considered incompatible with 32-Bit Disk Access, so WDCTRL simply does not load when it senses these unsupported controllers. This procedure is invisible to the user; he or she just won't receive the benefits of 32-Bit Disk Access. If WDCTRL fails a test after it is installed, Windows displays an error message that warns that something is wrong, most likely that the hard disk might have been damaged, and advises to restart the machine (so that WDCTRL does not load, and 32-Bit Disk Access is disabled).

THIRD-PARTY 32-BIT DISK ACCESS DEVICES =====

Windows 3.1 ships with only one 32-Bit Disk Access device--WDCTRL. However, Microsoft is working with most of the major hardware and

software vendors to help them design 32-Bit Disk Access devices for their products. Concerns regarding distribution and quality of testing for these third-party devices are currently being addressed.

TO OBTAIN THIS APPLICATION NOTE

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You can find WW0530.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0530.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note mailed or faxed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbother kbfile kbappnote
KBSubcategory:
Additional reference words: appnote 3.10 win31

=====

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Missing Network Drives in Common Dialog Boxes in Windows 3.1

PSS ID Number: Q83609

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SYMPTOMS

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Network drives may not appear in some common dialog boxes under Windows 3.1 if one or more floppy disk drives are disconnected.

CAUSE

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If a computer has a floppy controller card installed and the CMOS settings are set, BIOS indicates the presence of one or more floppy disk drives; however, if the floppy disk drives are not connected, the common dialog boxes do not show network drives. You can see network drives when you try to open a file from Word 2.0 for Windows or Microsoft Excel 3.0 for Windows because these applications do not use the common dialog boxes. You cannot see network drives when you try to open a file from Microsoft Windows Notepad, Write, or any of the other Windows 3.1 programs because they all use the common dialog boxes (COMMDDL.DLL).

NOTE: This affects all functions supported by the common dialog boxes: File Open, File Save, Find, Replace, Color, Font, and Print.

WORKAROUND

=====

You should be able to correct the problem by reconnecting the floppy disk drives to the floppy controller card or by removing the floppy controller card from the system and reconfiguring the CMOS settings for no floppy disk drives.

The common dialog box dynamic link library (COMMDDL.DLL) relies on BIOS information to determine the number of drives and their types. When a remote boot system starts from drive A, the network treats the connection as drive A. But if the actual computer BIOS doesn't report the existence of a drive A (and it shouldn't since there is no physical drive), the common dialog box DLL can't determine the number of drives.

If you are unable to correct the problem using the preceding methods, try to work around this problem by using the SUBST command before starting Windows. The following example creates a virtual drive A that points to the USER directory on the network drive C:

```
subst a: c:\user
```

Do not add or remove "substituted" drives while running Windows 3.1. If you change the state of the substituted drives from MS-DOS Prompt within Windows, Windows 3.1 will NOT work properly.

REFERENCES

=====

For more information on the SUBST command, see page 571 of the version 5.0 "Microsoft MS-DOS User's Guide and Reference."

KBCategory: kbnetwork kbfile kbappnote
KBSubcategory: wfw wfwg
Additional reference words: appnote 3.10

Copyright Microsoft Corporation 1996.

Dr. Watson Version 0.80 Required for Windows 3.1

PSS ID Number: Q83639

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SUMMARY

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Earlier versions of Dr. Watson (DRWATSON.EXE) may cause various problems, such as general protection (GP) faults or system hangs, under Microsoft Windows 3.1.

NOTE: Dr. Watson is included in Windows versions 3.1 and 3.11 and Windows for Workgroups version 3.1. It is not included with Windows 3.0 or Windows for Workgroups 3.11. Earlier versions of Dr. Watson were shipped with version 1.x of the Windows Resource Kit and were also available from Microsoft Product Support as an Application Note.

MORE INFORMATION

=====

Make sure you are using the version 0.80 of Dr. Watson that ships with Windows 3.1. To determine the version of Dr. Watson you are using:

1. Start Dr. Watson.
2. Choose the Dr. Watson icon from the Desktop.
3. Press ENTER.

The version of Dr. Watson currently running will be displayed in the Windows title bar.

KBCategory: kbtool kbfile kbappnote

KBSubcategory: wfw wfwg

Additional reference words: appnote gpf 3.10 win31

=====
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Norton Utilities Version 6.01 and Windows 3.1

PSS ID Number: Q84782

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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This article discusses information from the Symantec application note

#4103 about Norton Utilities version 6.01 and Microsoft Windows operating system version 3.1.

MORE INFORMATION

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1. NCACHE, the Norton disk caching software, may cause system lockups when Windows 3.1 is run in standard mode. Norton recommends configuring NCACHE for extended memory. If the problem continues, then disable the Write cache. Consult your Norton manual for instructions.
2. NCACHE is not compatible with Windows 3.1's 32-Bit-Disk-Access. If using 32-Bit-Disk-Access, then use SMARTDRV.EXE version 4.0.
3. The following error message will occur if you run Norton's Calibrate utility while SMARTDRV.EXE is caching the drive:

Disk Mapping Error

Disable SMARTDRV.EXE when using the Calibrate program.
4. Microsoft recommends not running Norton Disk Monitor, DISKMON.EXE, while Windows is running. It may cause a prolonged beeping noise.
5. Erase Protect is normally configured to use as much free hard drive space as necessary, this will sometimes cause Windows to experience printing and temporary swap file problems, due to lack of space for temporary files. Norton recommends configuring Erase Protect not to protect files with the extensions of .TMP and .SWP, and limiting the size of the of Erase Protect to 2048. Consult your Norton manual for instructions.

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KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 Smartdrive

=====
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WIN87EM.DLL GP Faults with Intel 80387

PSS ID Number: Q85100

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
- Microsoft Excel for Windows, version 4.0

SYMPTOMS

=====

A timing problem with some 80387 Intel math coprocessors causes general protection (GP) faults in WIN87EM.DLL or causes applications that make use of the coprocessor (such as Microsoft Excel, CorelDRAW, Lotus 1-2-3,

Quicken, AMI Pro, After Dark, and WordPerfect 6.0) to experience other errors when you run applications under Windows 3.1.

WORKAROUND
=====

To work around these problems, obtain an updated version of WIN87EM.DLL, which adjusts for the timing problem. The updated file is available in Application Note "WW0548: WIN87EM.DLL Patch for Intel 80387." For information about obtaining this Application Note, query on the following words in the Microsoft Knowledge Base:

ww0548 and appnote

MORE INFORMATION
=====

For more information on how Microsoft Excel is affected by this problem, query on the following words in the Microsoft Knowledge Base:

intel floating win87em.dll

CorelDRAW, Quicken, AMI Pro, Lotus 1-2-3, WordPerfect, and After Dark are manufactured by vendors independent of Microsoft; we make no warranty, implied or otherwise, regarding these products' performance or reliability.

KBCategory: kbtool kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 gpf GP Fault 4.00 Invalid

Register

ID win31

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WW0511: Panasonic 9-Pin Printer Drivers

PSS ID Number: Q85183

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a
-

Microsoft has an Application Note that contains Panasonic 9-pin printer drivers to be used with Windows version 3.0. These drivers support the Panasonic KX-P1180 and KX-P1695 printers. Installation instructions are included in the Application Note, which is titled "Panasonic 9-Pin Printer Drivers" (WW0511).

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW0511
=====

=====
Microsoft Product Support Services Application Note (Text File)
WW0511: PANASONIC 9-PIN PRINTER DRIVERS
=====

Revision Date: 2/92
Disk Included

The following information applies to Microsoft Windows version 3.0.

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The enclosed WW0511 disk contains Panasonic 9-pin printer drivers to be used with Windows version 3.0. These drivers support the Panasonic KX-P1180 and KX-P1695 printers.

The following files are contained on the enclosed WW0511 disk:

DINSTALL.EXE
PANSON9.INF
PANSON9.DRV
UNIDRV.DLL
UNIDRV.HLP
DMCOLOR.DLL
README.TXT

Installing the Panasonic Printer Drivers

Included on this disk is a program called DINSTALL. It will search all the directories listed in the PATH statement in your AUTOEXEC.BAT file for earlier versions of the printer driver and ask if you want to delete the old driver and replace it with the updated printer driver. To run DINSTALL, do the following:

1. Start Windows 3.0 if it is not already running.
2. Insert the enclosed WW0511 disk in the appropriate floppy disk drive.
3. From Program Manager's File menu, choose Run.
4. In the Command Line box of the Run dialog box, type the path to DINSTALL.EXE on the floppy disk. For example, if the WW0511 disk is in drive A, type the following: "a:\dinstall" (without the

- quotation marks). Choose the OK button.
5. This will load DINSTALL and bring up a Driver Install window. Using the mouse or keyboard, select the driver that you want to install and then choose the Install button.
 6. If DINSTALL finds earlier versions of the driver, it will ask if you want to delete the old Panasonic drivers. Choose the Yes button to delete them. The old drivers will then be deleted and replaced with the updated printer drivers.
 7. A DINSTALL Info dialog box will appear with the status of the new driver when the installation is complete. Choose the OK button to remove the dialog box and then choose the Exit button to leave the installation program.

The driver is now installed and you can configure it by choosing the Printers icon from the Control Panel. For more information on configuring printers for use with Windows, refer to pages 163-176 of your version 3.0 "Microsoft Windows User's Guide."

If DINSTALL does not work, you can install the drivers manually. For information on installing the drivers manually, please read the README.TXT file on the enclosed WW0511 disk.

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WW0511.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0511.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0511.EXE



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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbprint kbfile kbappnote

KBSubcategory: win30

Additional reference words: appnote 3.00 3.00a

=====
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WW0512: Panasonic 24-Pin Printer Drivers

PSS ID Number: Q85393

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.0
-

An Application Note titled "WW0512: Panasonic 24-Pin Printer Drivers" that contains Panasonic 24-pin printer drivers to use with Windows version 3.0 is available. These drivers support the Panasonic KX-P1123, KX-P1124, and KX-P1624 printers.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW0512

=====

=====
Microsoft Product Support Services Application Note (Text File)
WW0512: PANASONIC 24-PIN PRINTER DRIVERS
=====

Revision Date: 2/92
Disk Included

The following information applies to Microsoft Windows version 3.0.

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The enclosed WW0512 disk contains Panasonic 24-pin printer drivers to be used with Windows version 3.0. These drivers support the Panasonic KX-P1123, KX-P1124, and KX-P1624 printers.

The following files are contained on the enclosed WW0512 disk:

DINSTALL.EXE
PANSON24.INF
PANSON24.DRV
UNIDRV.DLL
UNIDRV.HLP
DMCOLOR.DLL
README.TXT

Installing The Panasonic Printer Drivers

Included on this disk is a program called DINSTALL. It will search all the directories listed in the PATH statement in your AUTOEXEC.BAT file for earlier versions of the printer driver and ask if you want to delete the old driver and replace it with the updated printer driver. To run DINSTALL, do the following:

1. Start Windows 3.0 if it is not already running.
2. Insert the enclosed WW0512 disk in the appropriate floppy disk drive.
3. From Program Manager's File menu, choose Run.
4. In the Command Line box of the Run dialog box, type the path to DINSTALL.EXE on the floppy disk. For example, if the WW0512 disk is in drive A, type the following: "a:\dinstall" (without the quotation marks). Choose the OK button.
5. This will load DINSTALL and bring up a Driver Install window. Using the mouse or keyboard, select the driver that you want to install and then choose the Install button.
6. If DINSTALL finds earlier versions of the driver, it will ask if you want to delete the old Panasonic drivers. Choose the Yes button to delete them. The old drivers will then be deleted and replaced with the updated printer drivers.
7. A DINSTALL Info dialog box will appear with the status of the new driver when the installation is complete. Choose the OK button to remove the dialog box and then choose the Exit button to leave the installation program.

The driver is now installed and you can configure it by choosing the Printers icon from the Control Panel. For more information on configuring printers for use with Windows, refer to pages 163-176 of your version 3.0 "Microsoft Windows User's Guide."

If DINSTALL does not work, you can install the drivers manually. For information on installing the drivers manually, please read the README.TXT file on the enclosed WW0512 disk.

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WW0512.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon.
Click Knowledge Base, and select the product.

Enter kbfile WW0512.EXE, and click GO!
Open the article, and click the button to download the file.

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ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbprint kbfile kbappnote

KBSubcategory: win30

Additional reference words: appnote 3.00 3.0a 3.00a

=====
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WW0550: Running Windows with DR-DOS

PSS ID Number: Q85565

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

Microsoft has an Application Note titled "Running Windows with DR-DOS" (WW0550), which contains instructions for running the Windows operating system version 3.1 with Digital Research DR-DOS.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



THE TEXT OF WW0550
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=====
Microsoft Product Support Services Application Note (Text File)
WW0550: RUNNING WINDOWS WITH DR-DOS
=====

Revision Date: 6/92
No Disk Included

The following information applies to the Microsoft Windows operating system version 3.1.

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NOTE: Microsoft has tested the Microsoft Windows operating system on versions 3.1 or later of MS-DOS and PC-DOS. However, we cannot ensure the success of running Windows with DR-DOS from Digital Research®. Digital Research has announced the availability of a software update for running Windows with DR-DOS. You may want to obtain this update as an alternative to the following procedure. However, Microsoft neither ensures the stability of nor endorses running Microsoft Windows version 3.1 on DR-DOS with or without Digital Research's software update.

When you install Microsoft Windows operating system version 3.1 with DR-DOS, Windows may display the following message when it enters the graphical user interface (GUI) mode of Windows Setup:

Standard Mode: Fault in MS-DOS Extender

Recovering Windows 3.0

The above message indicates a failed Windows 3.1 installation. If you receive this message when you try to upgrade from Windows 3.0 to Windows 3.1, you will be unable to start Windows. The following set of instructions allow you to return to a functional Windows 3.0 installation after a failed installation of Windows 3.1:

1. Restart your computer.

2. Change the current directory to the Windows directory. For example, if Windows is installed on drive C in the WINDOWS directory, type the following at the C:\> command prompt and press ENTER:

```
cd windows
```

3. Rename all the .INI and .GRP files in the Windows directory to .INN and .GRN by typing the following at the command prompt and pressing ENTER after each line:

```
rename *.ini *.inn  
rename *.grp *.grn
```

4. Delete the WINVER.EXE file from the Windows directory. This will allow Windows 3.0 to update all the Windows files. To delete this file, type the following at the command prompt:

```
del winver.exe
```

5. Reinstall Windows 3.0 to the Windows directory with the previous configuration options (accept the previous configuration options that the Windows Setup program displays).

Do not select any of the options in the graphics mode of Windows 3.0 Setup (that is, Printers, Setup Applications, Read Documents, and modify the CONFIG.SYS and AUTOEXEC.BAT files).

If you do not have enough disk space to install Microsoft Windows version 3.0, you will receive the message:

```
Your System does not have enough free disk space. Windows  
requires a minimum of 6300000 bytes of free disk space for  
installation.
```

Note: If you receive this message, see the section "If Disk Space Is Limited" later in this document.

6. Copy all the .INN and .GRN files to the same name with the original extensions (.INI and .GRP), by typing the following at the command prompt:

```
copy *.inn *.ini  
copy *.grn *.grp
```

7. Copy the SYSINI.W31 and WININI.W31 files to SYSTEM.INI and WIN.INI, respectively, by typing the following at the command prompt. The .W31 files are the backup .INI files that Windows 3.1 created during the failed upgrade to Windows 3.1.

```
copy sysini.w31 system.ini  
copy winini.w31 win.ini
```

8. Delete the W8D40P2T.A4G file in the Windows directory by typing the following at the command prompt. This file is used by Windows 3.1 to start the graphics mode of Setup.

```
del w8d40p2t.a4g
```

All object linking and embedding (OLE) functionality will be intact for pre-Windows 3.1 OLE applications such as version 3.0 of Microsoft Excel and version 2.0 of Microsoft Word for Windows.

If Disk Space Is Limited

To set up Windows 3.0 on a system with limited hard disk space, you may need to temporarily adjust the Windows 3.0 SETUP.INF file. Before you reinstall Windows 3.0 (step 5 of the "Recovering Windows 3.0" procedure above), do the following:

1. Copy the SETUP.EXE and SETUP.INF files from Windows 3.0 Disk 1 to a separate directory on the hard disk. For example, if you insert Disk 1 in drive A and want to copy the files to the root directory,

type the following at the command prompt:

```
copy a:\setup.exe c:\
copy a:\setup.inf c:\
```

2. Use a DOS-based editor, such as DR-DOS Editor, to edit the [DATA] section of this SETUP.INF file for Windows 3.0. When you open the file, the [DATA] section will read as follows:

```
[DATA]
neededspace386=6300000
space386upgrade=2000
neededspace286=4500000
space286upgrade=1000
```

Change the values for neededspace386= and neededspace286= as follows:

```
neededspace386=1
neededspace286=1
```

3. Run Windows Setup from the directory with the adjusted SETUP.INF file (in this example, the adjusted SETUP.INF file is in the root directory).
4. After Windows Setup is complete, copy the Windows 3.0 SETUP.INF file from Disk 1 to the Windows 3.0 SYSTEM subdirectory. For example, if you insert Disk 1 in drive A and your Windows directory is on drive C and is named WIN, type the following at the command prompt:

```
copy a:\setup.inf c:\win\system
```

For more information on running Microsoft Windows with DR-DOS, please contact Digital Research.

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KBCategory: kb3rdparty kbdisplay kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 3rdparty win31

=====
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WW0553: Hewlett-Packard Plotter Driver

PSS ID Number: Q86868

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00. 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

Microsoft has an Application Note that contains a revised Hewlett-Packard (HP[C]) plotter driver for use with Windows 3.0. This driver supports the following HP plotters:

HP 7470A	HP ColorPro
HP 7475A	HP ColorPro with GEC
HP 7550A	HP DraftPro
HP 7580A	HP DraftMaster I
HP 7585A	HP DraftMaster II
HP 7580B	
HP 7586B	

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The following is the text of the Application Note:

=====
Microsoft® Product Support Services Application Note (Text File)

WW0553: HEWLETT-PACKARD® PLOTTER DRIVER

Revision Date: 7/92
Disk Included

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The enclosed WW0553 disk contains the Hewlett-Packard (HP[C]) plotter driver for use with Microsoft Windows version 3.0. The enclosed disk contains the following files:

DINSTALL.EXE
HPPLOT.DRV
HPPLOT.INF
README.TXT

HPPLOT.DRV supports the following HP plotters:

HP 7470A HP ColorPro
HP 7475A HP ColorPro with GEC
HP 7550A HP DraftPro
HP 7580A HP DraftMaster I
HP 7585A HP DraftMaster II
HP 7580B
HP 7586B

Installing the HP Plotter Driver

Included on this disk is a program called DINSTALL. It will search all the directories listed in the PATH statement in your AUTOEXEC.BAT file for an earlier version of the printer driver and ask if you want to delete the old driver and replace it with the updated printer driver. To run DINSTALL, do the following:

1. Start Windows 3.0 if it is not already running.
2. Insert the enclosed WW0553 disk in the appropriate floppy disk drive.
3. From Program Manager's File menu, choose Run.
4. In the Command Line box of the Run dialog box, type the path to DINSTALL.EXE on the floppy disk. For example, if the WW0553 disk is in drive A, type the following:

a:\dinstall

Choose the OK button.

5. This will load DINSTALL and bring up a Driver Install window. Using the mouse or keyboard, select the driver that you want to install and then choose the Install button.
6. If DINSTALL finds an earlier version of the driver, it will ask if you want to delete the old HP driver. Choose the Yes button to delete it. The old driver will then be deleted and replaced with the updated printer driver.
7. A DINSTALL Info dialog box will appear with the status of the new driver when the installation is complete. Choose the OK button to close the dialog box and then choose the Exit button to leave the installation program.

The driver is now installed and you can configure it by choosing the Printers icon from the Control Panel. For more information on configuring plotters for use with Windows, refer to pages 163-176 of the version 3.0 "Microsoft Windows User's Guide."

If DINSTALL does not work, you can install the drivers manually. For information on installing the drivers manually, please read the README.TXT file on the enclosed WW0553 disk.

TO OBTAIN THIS APPLICATION NOTE

=====

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- Internet (anonymous FTP)
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Additional reference words: 3.0 3.00 3.0a

=====
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WW0548: WIN87EM.DLL Patch for Intel 80387

PSS ID Number: Q86869

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

Microsoft has an Application Note that contains a revised Windows WIN87EM.DLL file for use with the Windows 3.1 and the Intel 80387 math coprocessor. The Intel 80486DX and 80486DX2 processors do not require the new file.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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=====
Microsoft Product Support Services Application Note (Text File)
WW0548: WIN87EM.DLL PATCH FOR INTEL 80387
=====

Revision Date: 5/92
Disk Included

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INTRODUCTION

The enclosed WW0548 disk contains a revised Windows WIN87EM.DLL file. You must be using Windows version 3.1 to use this dynamic-link library (DLL) file. If you have a version of Windows earlier than 3.1, you do not need to replace your current WIN87EM.DLL file. You also do not need to replace your WIN87EM.DLL file unless you are using the Intel 80387 math coprocessor. The Intel 80486DX and 80486DX2 processors do not require the new file.

Installation

1. Exit Windows. The WIN87EM.DLL file that you will be replacing is used by Windows and, therefore, cannot be updated while you are running Windows.
2. Insert the enclosed WW0548 disk in your floppy disk drive.
3. Copy the file from the WW0548 disk to your Windows \SYSTEM subdirectory. To do this, type the following from the command prompt and press ENTER

```
copy <drive>:\win87em.dll <destination>
```

where <drive> is the letter of the floppy disk drive and <destination> is the path to the Windows \SYSTEM subdirectory. For example, if your Windows \SYSTEM subdirectory is \WINDOWS\SYSTEM on drive C and you have inserted the WW0548 disk in drive A type the following:

```
copy a:\win87em.dll c:\windows\system
```

4. Restart Windows.

The new WIN87EM.DLL file has now been installed and will be used by Windows upon restarting.

TO OBTAIN THIS APPLICATION NOTE

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- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0548.EXE, and click GO! Open the article, and click the button to download the file.
 - Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote win31 3.10

=====
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DefaultDialogs=1 in WIN.INI Overrides Updated LANMAN21.DRV

PSS ID Number: Q89275

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SYMPTOMS

=====

If your WIN.INI file's [network] section contains the line

DefaultDialogs=1

then the updated LANMAN21.DRV's new File Manager dialog box will not be available.

The updated LANMAN21.DRV is available as Microsoft Application Note WW0634. The date and size of this updated driver is 6/18/92 and 227104 bytes. For information about obtaining Application Note WW0634, query on the following words in the Microsoft Knowledge Base:

ww0634 and appnote

MORE INFORMATION

=====

The WIN.INI file's DefaultDialogs=1 switch was added to work around some of the problems that the original LANMAN21.DRV had, such as the lack of a Previous button for connecting to former connections without having to type the full connection path again. The new LANMAN21.DRV corrects this and several other problems.

For more information on the problems corrected by this updated driver, query on the following words in the Microsoft Knowledge Base:

updated and lanman21 and ww0634

KBCategory: kbnetwork kbfile kbappnote
KBSubcategory:
Additional reference words: appnote 3.10 win31 LANMAN

=====
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Intel EtherExpress (EE) 16 Network Card Configuration

PSS ID Number: Q90325

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11

SUMMARY

=====

The Intel EtherExpress (EE) 16 network card that ships with Windows for Workgroups is a software configurable card. This card is shipping in the following Windows for Workgroups packages:

- Windows for Workgroups Starter Kit
- Windows for Workgroups User Kit
- Windows for Workgroups add-on for 2 users of Microsoft Windows version 3.1
- Windows for Workgroups add-on for 1 user of Microsoft Windows version 3.1

The settings for the card can be configured and tested in MS-DOS using the program SOFTSET.

MORE INFORMATION

=====

SOFTSET is a utility program that allows you to configure and test the Intel EE 16 card. The Intel EE 16 works with thick or thin Ethernet cable. The board has a DIX(15 pin, D-shaped) and a BNC Connector.

If you suspect there is a hardware conflict with the Intel EE 16 card, you may want to place the card in 8-bit mode. To do this within Windows for Workgroups, take the following steps:

1. From Control Panel, choose Network.
2. Choose the Adapters button.
3. Select the Intel EE 16 Adapter, then choose the Setup button.
4. Choose the Advanced button.
5. Set I/O Channel Ready to NEVER. This changes the IOCHRDY= line in the PROTOCOL.INI to NEVER.

You can also configure other settings on the Intel EE 16 card (that is, IRQ, I/O, and RAM addresses). For more information on changing the software configurable settings, consult the documentation for the card.

KBCategory: kbnetwork kbfile kbappnote kbhw kbprb kb3rdparty

KBSubcategory: wfw wfwg

Additional reference words: appnote Intel adapter 3.11 3.10 3rdparty

=====
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WinLogin FastTips Questions & Answers

PSS ID Number: Q90759

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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=====
Microsoft® Product Support Services Application Note (Text File)
WW0618: WINLOGIN QUESTIONS AND ANSWERS
=====

Revision Date: 9/92
No Disk Included

The following information applies to Microsoft Windows™ version 3.1.

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1. Q. What is Microsoft WinLogin, and what does it do?

A. Microsoft WinLogin is a set of tools designed to help manage the configurations of Microsoft Windows 3.1 workstations on a network.

Using WinLogin, you can manage configuration files for the Windows operating system and for Windows-based applications from a central location on a network. This makes it easy to set up new applications or change characteristics for groups of users or types of workstations. With WinLogin, you need to change only one configuration file for each type of computer.

You can also use WinLogin to match user preferences with workstation requirements. A user can log on to any workstation running WinLogin and see his or her own personalized Windows environment.

2. Q. How can I obtain Microsoft WinLogin?
 - A. You can order Microsoft WinLogin from Microsoft Consumer Sales by calling (800) 426-9400 or by mailing a form supplied with the Windows Resource Kit (WRK) for the Microsoft Windows operating system version 3.1.
3. Q. What should I do if Microsoft WinLogin stops functioning after I change my Windows display driver?
 - A. There are two ways for the WinLogin administrator to re-enable WinLogin after someone changes a display driver. The administrator can use the WinLogin client setup disk to automatically reinstall WinLogin on the client machine. Or, the administrator can manually make the changes described in the first paragraph of the "Changes to your Windows setup" section in the administrator's CLIENT.WRI file.
4. Q. When I try to run WinLogin, I receive the error messages "CANNOT CONNECT TO REMOTE RESOURCE" and "COULD NOT LOCATE THE FILE SYSTEM.MBD." Why is this occurring?
 - A. The error messages "CANNOT CONNECT TO REMOTE RESOURCE" and "COULD NOT LOCATE THE FILE SYSTEM.MBD" indicate that the WinLogin workstation is not properly connected to the network drive where the WinLogin database resides. Reconnect to the network drive to restore the connection. The error messages should no longer be displayed.
5. Q. During the WinLogin Client Setup, I receive the error message "WinLogin Client Setup could not access the WinLogin Database as described in the WINLOGIN.INI." How can I correct this problem?
 - A. The following two problems can cause the error message "WinLogin Client Setup could not access the WinLogin Database as described in the WINLOGIN.INI:"
 - a. There may be insufficient space on the WinLogin client hard disk to initialize Setup. (A minimum of 500K of free disk space is required to set up a WinLogin client.)
 - b. The client may not have access to the remote network resource. Make sure the client has full read-write access to the database and the network share is not password protected.
6. Q. What networks work with Microsoft WinLogin?
 - A. Networks that work with Microsoft Windows version 3.1, except IBM PC-LAN Program (an MS-DOS-based network that does not support file locking), also work with WinLogin. If you are using Microsoft LAN Manager version 2.1, you must obtain an updated LANMAN21.DRV file. This file is available from the Microsoft Download Service (MSDL), Microsoft Consumer Sales, and Microsoft Product Support Services. If you are using 3Com® 3+Share® and you receive errors when you try to open the WinLogin database, you may need to increase the number of concurrent file range locks supported by your server.
7. Q. At the end of a WinLogin installation, I receive the error message "SHARING VIOLATION ON DRIVE" followed by a drive letter designation. How can I correct this problem?
 - A. The following two situations can cause the "SHARING VIOLATION ON DRIVE" error message:

- a. Microsoft Windows and Microsoft WinLogin are using a file called VER.DLL. To determine if VER.DLL is being used, look for this file in the MS-DOS.T directory. If you find VER.DLL, choose the OK button to close the error message, then close and restart Windows.
 - b. There is a failed installation of WinLogin. Check for the existence of a directory called \MS-SETUP.T. This directory may have been left in the root directory of the local hard drive. If this directory exists and contains the file VER.DLL, any subsequent attempts to run Setup generate this error message. To correct this problem, delete both the file and the directory and run Setup again.
8. Q. The network that I am using requires that SHARE.EXE be loaded. What values should I set for file space and for the number of file locks in my AUTOEXEC.BAT file?
- A. For networks that use SHARE.EXE, we recommend that the file space be set to 4096 and the number of file locks be set to 200.
9. Q. During WinLogin Setup, I have to select either Log Unknown Settings or Ignore. What are these options for? Can I change my selection at a later time?
- A. This option tells WinLogin how you want it to handle initialization settings that users cannot change. If you select the Log Unknown Settings option button, WinLogin creates a .DIF file for any initialization setting that cannot be changed. When you exit Windows, an error message informs you that the .DIF file has been created. The system administrator can use the information in this file to create merge rules. If you select the Ignore option button, WinLogin ignores the initialization setting and does not generate an error message. During WinLogin Setup, you select one of these options, and the database is set up accordingly. If you want to change this setting, you must reinstall WinLogin and create a new database file.

KBCategory: kbfile kbdisplay kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 ivrfax fasttips

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Setup, Network Card Settings, and Preliminary Troubleshooting

PSS ID Number: Q90970

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1

SUMMARY

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This article contains the complete text of the "Setup, Network Card Settings, and Important Preliminary Troubleshooting Steps Questions &

Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WG0689: SETUP, NETWORK CARD SETTINGS, AND IMPORTANT PRELIMINARY
TROUBLESHOOTING STEPS QUESTIONS & ANSWERS

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Revision Date: 10/92

No Disk Included

The following information applies to Microsoft Windows™ for Workgroups version 3.1.

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1. Q. What are the memory and disk space system requirements for Microsoft Windows for Workgroups?
 - A. Windows for Workgroups must be run in 386 enhanced mode in order to share resources. 386 enhanced mode requires a minimum of 3 megabytes (MB) of memory; however, 4 MB is recommended. Standard mode operation requires a minimum of 2 MB of memory. These memory requirements refer to total conventional and extended memory only. Windows for Workgroups requires a minimum of 9.5 MB and a maximum of 14.5 MB of free disk space. Upgrading over Microsoft Windows operating system version 3.1 reduces these free disk space requirements to a minimum of 3.5 MB and a maximum of 8.5 MB. Workgroup Connections require 320 kilobytes (K) of free conventional memory and 1 MB of free disk space.

Windows for Workgroups must be installed on a workstation that has a hard disk drive. Windows for Workgroups and Workgroup Connections are supported on MS-DOS-based systems.
 2. Q. I'm having difficulty installing Microsoft Windows for Workgroups. What should I do?
 - A. Complete information on installing Windows for Workgroups is contained in the "Getting Started" manual. The following are

five general setup tips:

1. Before you run the Setup program, start your machine with a minimal configuration. For more information, please refer to the section titled "Streamline the CONFIG.SYS and AUTOEXEC.BAT Files" in Chapter 6 of the "Getting Started" manual. The examples provided in this manual refer to a minimum configuration after Windows for Workgroups is loaded. The last three lines in the CONFIG.SYS file and the first line in the AUTOEXEC.BAT file that relate to the network are not loaded before installation.
 2. Windows for Workgroups installations are most successful when installed to a newly created and empty subdirectory. This applies to all packages of Windows for Workgroups, including upgrade packages. Upgrading over a Windows 3.x environment configured for a network other than Microsoft LAN Manager or Novell® NetWare® may cause incompatibility issues. If Windows 3.x is currently installed on your computer for a network, choose the Windows Setup icon, choose Change Systems Settings from the Options menu, and select the No Network Installed option before you run the Windows for Workgroups upgrade.
 3. If your Windows 3.x environment is not installed for a network and you are using any third-party drivers, font software, desktop shells, or utilities, consider installing Windows for Workgroups to a different directory. If you choose to upgrade over the Windows 3.x directories, at least disable any third-party products from the Windows 3.x environment before you run Setup.
 4. Workgroup Connections should be installed to a different subdirectory; do not upgrade over Windows. If you do so, a new SYSTEM.INI file is created.
 5. During Setup, if your machine locks up, reboots itself, or displays corrupt images on the screen, Setup may have incorrectly recognized your hardware. For solutions to these problems, please refer to the section titled "Setting Up Windows for Workgroups" in Chapter 6 of the "Getting Started" manual.
3. Q. Where can I find more information about setup entries and the setup of supported network adapter cards?
- A. To properly configure your network card, please refer to the complete instructions in the section titled "Setting Up a Network Card" in Chapter 6 of the "Getting Started" manual. The following are four general tips:
1. Entries referring to Workgroup and ComputerName should be limited to 15 characters. All other share names should conform to the MS-DOS file-naming convention, which consists of an eight-character maximum filename and an optional extension limited to three characters.
 2. The Windows for Workgroups Setup may not always detect your network card and its configuration accurately. For this reason, you may want to choose Custom Setup so that you can modify the network card configuration. This configuration can also be changed in the Windows for Workgroups Control Panel after Setup is complete.
 3. Some cards, such as the Intel® EtherExpress™, may be software configurable; therefore, there may not be any jumpers and/or switches on the card to configure the IRQ, I/O port, and RAM addresses. The Windows for Workgroups network card installation software configures these cards.

4. Windows for Workgroups supports only the NetBEUI protocol. The MSIPX protocol is available only after you install the optional network functionality for Novell NetWare. The protocols conform to the Network Driver Interface Specification (NDIS). If you want to use another protocol, obtain the NDIS-compliant protocol driver and an OEMSETUP.INF file from the software company that provides the protocol.
4. Q. Where can I find information on installing unlisted network protocols and adapters?
 - A. Information on installing third-party networks and protocols can be found on pages 152 and 204 of the "User's Guide." The following are six general tips:
 1. For information about using the Microsoft LAN Manager TCP/IP protocol with Microsoft Windows for Workgroups, please refer to the Windows for Workgroups Resource Kit. For information on purchasing Microsoft Data Link Control (DLC) and Microsoft TCP/IP for Windows for Workgroups, Call Microsoft Consumer Sales at (800) 426-9400. Both TCP/IP and MSDLC are supported by Microsoft LAN Manager support.
 2. The MSIPX protocol is available only after you add Novell NetWare connectivity to Windows for Workgroups.
 3. If you have an Ethernet adapter that can emulate either an NE1000 or an NE2000 network card, choose the NE1000-compatible adapter for an 8-bit card or the NE2000-compatible adapter for a 16-bit card in the Network Adapter dialog box.
 4. If you have an ArcNet® adapter that conforms to the Network Driver Interface Specification (NDIS), select ArcNet Compatible in the Network Adapter dialog box.
 5. If you are not sure whether your network card can use the drivers included with Windows for Workgroups, please refer to the Network Adapter Compatibility List available through the FastTips Technical Note Library.
 6. If your network card is not listed in the Network Adapter Compatibility List, you must obtain the NDIS driver specific to your network card and the OEMSETUP.INF file from the vendor of your network card. The OEMSETUP.INF file is necessary for the proper installation of the network card. Information on how to create an OEMSETUP.INF file is available through the FastTips Technical Note Library.
5. Q. I'm receiving the error message, "The Protocol Manager has reported an incomplete binding." What is causing this error?
 - A. The error "The Protocol Manager has reported an incomplete binding" is most often caused by a conflict in the upper memory area or an incorrect setting in the PROTOCOL.INI file. To correct the error, use the following two steps:
 1. If the memory manager EMM386.EXE is loaded in the CONFIG.SYS file, modify the line to read as follows:

```
device=<path>emm386.exex=a000-efff
```
 2. Save this file and restart the computer. If the "incomplete binding" error message continues after you modify the CONFIG.SYS file, the answers to the next two questions may help you correct this problem.
6. Q. I'm still receiving the "incomplete binding" error message after I exclude the upper memory area with EMM386 in the

CONFIG.SYS file. What should I try next?

- A. If you still receive the "incomplete binding" error message after you have excluded the upper memory area, use the following four steps to check for possible PROTOCOL.INI setting errors:
1. In the Control Panel window, choose the Network icon.
 2. Choose the Adapters button and note the brand name and model of the network card listed under Network Adapter In Use. If the network adapter is incorrect, choose the Remove button, then choose the Add button to select the correct driver.
 3. Note the IRQ, I/O Port, and Base Memory address configurations. If any of these settings is incorrect, change the entry to its correct setting. This configuration information can also be found by choosing the Setup button in the Network Adapter dialog box.
 4. The last item to check is the protocol. You must have at least one protocol selected in the dialog box titled Protocols In Use. Windows for Workgroups supports the NetBEUI protocol. MSIPX is only available after Novell NetWare connectivity is added to Windows for Workgroups.
7. Q. I'm still receiving the "incomplete binding" error message even after I have confirmed and corrected all the settings in the PROTOCOL.INI file. What should I do now?
- A. If you continue to receive the "incomplete binding" error message after you verify that all the settings in the PROTOCOL.INI file are correct, and if you are using the Intel EtherExpress adapter card, use the following three steps:
1. Turn off the computer and disconnect any cables from the card.
 2. Attach a T connector to the card with two terminators on the T.
 3. Restart the computer. If the message "The Protocol Manager has reported an incomplete binding" no longer displays, there is a problem with the cable.
8. Q. I'm running Microsoft Windows for Workgroups on a Novell Token Ring network and am receiving the error message "File server cannot be found." What is causing this error?
- A. If you are running on a Novell Token Ring network, the error "File server cannot be found" may be caused by loading ROUTE.COM in the AUTOEXEC.BAT file. Edit the AUTOEXEC.BAT file and remove the line that loads ROUTE.COM. After you save the file, restart your machine.
9. Q. I'm running on a Novell Ethernet network and am receiving the error message "File server cannot be found." What is causing this error?
- A. If you are running on a Novell Ethernet network, the error message "File server cannot be found" may be caused by exceeding the user limit of the Novell software or by an entry in the PROTOCOL.INI file referring to the incorrect Ethernet frame type. If you have not exceeded your user limit on the Novell network, try correcting this problem by using the following three steps:
1. In the Control Panel window, choose the Network icon, then choose the Adapters button.
 2. Select the adapter that is bound to MSIPX, choose the Setup button, then choose the Advanced button.

3. Select Novell IPX from the Protocols In Use box, then choose the Settings button.
 4. In the Adapter Media Type Value box, you will see either Novell/Ethernet or Ethernet_II(DIX). Note which parameter is indicated, and then select the other Media Type parameter.
10. Q. I'm receiving the error message "NetBIOS session limit exceeded." What is causing this error?
- A. "NetBIOS session limit exceeded" refers to the number of connections that can be made to your server at any one time. This limit is affected by the number of sessions set in the [MS\$NetBEUI] section of the PROTOCOL.INI file. Other protocols refer to variables other than SESSIONS. Please refer to your network protocol documentation for more information. Use the following four steps to increase the number of sessions:
1. Open the PROTOCOL.INI file from the WINDOWS directory in an ASCII text editor, such as Microsoft Windows Notepad.
 2. Locate the section titled [MS\$NetBEUI].
 3. Double the value following SESSIONS=. When you increase the value following SESSIONS=, you must also increase the value following NCBS=. The NCBS value should be double the value of SESSIONS.
 4. Save the file and restart Windows.

KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax wfwg wc fast tips

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FastTips: Connecting to Novell NetWare Resources

PSS ID Number: Q90972

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

SUMMARY

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This article contains the complete text of the "Connecting to Novell NetWare Resources Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WG0690: CONNECTING TO NOVELL® NETWARE® RESOURCES
QUESTIONS & ANSWERS
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Revision Date: 10/92
No Disk Included

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1. Q. Does Microsoft Windows for Workgroups support Novell NetWare?
 - A. Windows for Workgroups does support the network-specific features of Novell NetWare. However, ArcNet® is not supported with the Microsoft IPX transport. For additional information, please refer to the section titled "Using Novell NetWare" in Chapter 6 of the "Getting Started" manual.
 2. Q. When I run Microsoft Windows for Workgroups, what changes are made within Novell NetWare?
 - A. Microsoft has created two new components that take the place of the Novell IPX.COM file. These components are MSIPX.SYS and MSIPX.COM. The MSIPX.SYS file provides compatibility with the Network Driver Interface Specification (NDIS). This NDIS compatibility gives the MSIPX transport the flexibility to bind with different network adapter cards without requiring the Novell regeneration procedure each time you change a driver. MSIPX.SYS is loaded as a device driver in the CONFIG.SYS file after the device driver PROTMAN.DOS. MSIPX.COM is loaded in the AUTOEXEC.BAT file before NETX.COM. (NETX.COM is the NetWare command-line shell redirector. It is not modified for use with Windows for Workgroups.)

The Novell Opened Datalink Interface (ODI) is not supported by Windows for Workgroups. For this reason, PROTMAN.DOS replaces the Novell LSL.COM file. Both files allow for multiplexing transports and network cards. However, PROTMAN.DOS provides an NDIS interface; LSL.COM provides for ODI. In addition, Windows for Workgroups defaults to drive letter P as the LastDrive= setting and uses the MS-DOS letters up to P to connect with other Windows for Workgroups machines. The default login drive for Novell NetWare is usually F; with Windows for Workgroups it is changed to Q. Therefore, you may need to change some Novell login scripts or the LastDrive= statement. You can map Novell network drives to drive letters A through P.
 3. Q. What steps do I take to add Novell NetWare connectivity to Microsoft Windows for Workgroups?

- A. You can add the Novell NetWare network-specific features either during or after Windows for Workgroups Setup. If you have already installed Windows for Workgroups, use all four following steps. If you are adding Novell NetWare connectivity during setup, skip steps 1 and 2.
1. In the Control Panel window, choose the Network icon.
 2. Choose the Networks button at the bottom of the Network Settings dialog box.
 3. In the Available Network Types dialog box, select Novell NetWare, and choose the Add button.
 4. After you provide the appropriate files from the setup disks, Novell NetWare appears in the box titled Other Networks In Use. Choose the OK button. You must restart Windows before this change can take affect.

Your Novell NetWare server may be running protocols in addition to what you have already installed. Windows for Workgroups supports only the MSIPX protocol with Novell NetWare.

4. Q. How can I connect to Novell NetWare drives and printers with Microsoft Windows for Workgroups installed?
- A. To connect to Novell NetWare drives and printers, you must have access rights for these servers and their resources. If you cannot view NetWare drives and printers in the NetWare Connect dialog boxes, you can manually enter the server name and directory in the Path box. The proper syntax for this entry is <"servername/volumename:directoryname" (without the quotation marks)>. To connect to Novell NetWare servers for disk and printer access, your workstation must use the same protocols. If you do not know which protocols your Novell NetWare server uses, check with the system administrator.
5. Q. How can I find out which protocols are installed on my computer?
- A. To determine which protocols are configured on your computer, use the following two steps:
1. In the Control Panel window, choose the Network icon.
 2. In the Network Settings dialog box, choose the Adapters button.
- The protocols are listed in the parentheses beside the network card name.
6. Q. I'm running Microsoft Windows for Workgroups on a Novell Token Ring network and am receiving the error message "File server cannot be found." What is causing this error?
- A. If you are running on a Novell Token Ring network, the error message "File server cannot be found" may be caused by loading ROUTE.COM in the AUTOEXEC.BAT file. Edit the AUTOEXEC.BAT file and remove the line that loads ROUTE.COM. After you save the file, restart the machine. If the message continues to be displayed, the network hardware may be failing and should be checked.
7. Q. I'm running Microsoft Windows for Workgroups on a Novell Ethernet network and am receiving the error message "File server cannot be found." What should I do in this case?
- A. If you are running on a Novell Ethernet network, the error message "File server cannot be found" may be caused by an incorrect Ethernet frame type setting in the PROTOCOL.INI file. To correct this problem, use the following four steps:

1. In the Control Panel window, choose the Network icon, then choose the Adapters button.
2. Select the adapter that is bound to MSIPX, choose the Setup button, then choose the Advanced button.
3. Select Novell IPX from the Protocols In Use box, then choose the Settings button.
4. In the Adapter Media Type Value box, you will see either Novell/Ethernet or Ethernet_II(DIX). Note which parameter is indicated, and then select the other Media Type parameter.

KBCategory: kbnetwork kbfasttip kb3rdparty kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax fast tips wfwg AWG31

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FastTips: Connecting to Microsoft LAN Manager Resources

PSS ID Number: Q90973

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

SUMMARY

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This article contains the complete text of the "Connecting to Microsoft LAN Manager Resources Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WG0691: CONNECTING TO MICROSOFT LAN MANAGER RESOURCES
QUESTIONS & ANSWERS
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Revision Date: 10/92
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1. Q. What are the requirements for using Microsoft LAN Manager with Microsoft Windows for Workgroups?
 - A. Windows for Workgroups is compatible with Microsoft LAN Manager versions 1.x and 2.x. We recommend using version 2.1 or later. For more information, please refer the section titled "Using Network Features Under Windows for Workgroups" in Chapter 6 of the "Getting Started" manual.

To add LAN Manager functionality to Windows for Workgroups, you may need to edit both the CONFIG.SYS and AUTOEXEC.BAT files. All references to the LAN Manager directories must be removed from these files. This includes the directory entries for the network device drivers in the CONFIG.SYS file and the PATH statement in the AUTOEXEC.BAT file. Removing the LAN Manager references should eliminate errors referring to the protocol manager, PROTMAN.DOS.

Adding LAN Manager connectivity to Windows for Workgroups provides most of the additional LAN Manager features; however, network pop-up messaging services are not available.
2. Q. How can I connect to Microsoft LAN Manager resources using Microsoft Windows for Workgroups?
 - A. You can add the Microsoft LAN Manager network-specific features either during or after Windows for Workgroups setup. If you have already installed Windows for Workgroups, use the following five steps. If you are adding LAN Manager during setup, skip steps 1 and 2.
 1. In the Control Panel window, choose the Network icon.
 2. At the bottom of the Network Settings dialog box, choose the Networks button.
 3. In the Available Network Types box, select Microsoft LAN Manager, then choose the Add button.
 4. After you provide the appropriate files from the Setup disks, Microsoft LAN Manager appears in the box titled "Other Networks In Use." Choose the OK button.
 5. Choose the OK button again. You must restart Windows before the change can take effect.

Your LAN Manager server may be running protocols in addition to those you have already installed. Windows for Workgroups supports only the NetBEUI protocol.
3. Q. How do you connect to Microsoft LAN Manager drives and printers using Windows for Workgroups?
 - A. To connect to LAN Manager drives and printers, you must have access rights for those servers and their resources. To view LAN Manager servers in a LAN Manager domain, at least one Windows for Workgroups server must have a workgroup name identical to the name of the LAN Manager domain. If you cannot view LAN Manager drives and printers in the Connect Network Drive and Connect Network Printer dialog boxes, you can manually enter the server name and directory in the Path box. The proper syntax for this entry is "\\<servername>\<directoryname>" (without the quotation marks).

To connect to LAN Manager servers for disk and printer access, your workstation must use the same protocols. If you do not know which protocols your LAN Manager server uses, check with the system administrator.

4. Q. How can I determine which protocols are installed on my computer?
- A. To determine which protocols are configured on your computer, use the following two steps:
1. In the Control Panel window, choose the Network icon.
 2. In the Network Settings dialog box, choose the Adapters button.

The protocols are listed in parentheses beside the network adapter card name. Windows for Workgroups supports only the NetBEUI protocol.

KBCategory: kbothr kbfasttip kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax fast tips wfwg AWG31

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FastTips: Mail and Schedule+ Questions and Answers

PSS ID Number: Q90974

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PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11

SUMMARY

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This article contains the complete text of the "Mail and Schedule+ Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WG0692: MAIL AND SCHEDULE+ QUESTIONS & ANSWERS
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1. Q. What are the general requirements for using Microsoft Mail and Microsoft Schedule+ with Microsoft Windows for Workgroups?
 - A. To effectively use Mail and Schedule+, all computers within a workgroup should be connected to one postoffice. Only one postoffice should be created for a workgroup. Schedule+ relies on the established Mail connections in order to work correctly. For more information, please refer to the user's guides for Mail and Schedule+.
 2. Q. What steps are involved in creating a new postoffice for Microsoft Mail?
 - A. To use Mail, create only one postoffice for all computers in a designated workgroup. If you will be the postoffice administrator, use the following four steps to do this:
 1. When you start Mail for the first time, select the Create A New Workgroup Postoffice option. Unless you specify otherwise, this creates a new subdirectory named WGPO in the postoffice administrator's Windows directory by default.
 2. Enter your administrator account details in the dialog box. You must include entries for Name and Mailbox. A password is optional. The Name value is your alias for Mail. The Mailbox value is used for internal referencing in Mail. The Password value defaults to the word "password"; however, you can change this value or remove it if you choose not to have a password.
 3. In File Manager, select the WGPO directory.
 4. From the Disk menu, choose Share As, and select the Full option button under Access Type. You may want to type "Postoffice" (without the quotation marks) in the Comment field so that people at other workstations can identify this directory when they connect to the postoffice.
 3. Q. I cannot access the initial mail dialog box that allows you to either connect to or create a postoffice. How can I correct this problem?
 - A. This problem occurs when more than one postoffice exists within a workgroup. Extra postoffices must be deleted. If you delete the extra postoffices, those computers that were formerly postoffices must connect to the existing postoffice. To delete extra postoffices, use the following four steps:
 1. Quit Mail.
 2. From File Manager, select the MSMAIL.INI file. From the

File menu, choose Rename. In the To box, type "msmail.bak" (without the quotation marks), then choose the OK button.

3. Restart Mail. In the Welcome To Mail dialog box, select the Connect To An Existing Postoffice option.
4. Select the server name and shared directory for the postoffice. If you do not have an account, add your information to the postoffice.

NOTE: You must have entries for the Name, Mailbox, and Password boxes. Be sure to use the same entries that you were using before you renamed the MSMAIL.INI file so that you can access your old mail messages.

4. Q. I'm receiving the error messages "Cannot establish a DOS or Windows Mail Server" and "Cannot connect to the Workgroup Postoffice." How can I correct this problem?

- A. If you receive the error message "Cannot establish a DOS or Windows Mail Server" or "Cannot connect to the Workgroup Postoffice," a postoffice may not have been created yet or your postoffice server may be down. Check with the workgroup or system administrator to find out if a postoffice has been created. If a postoffice has not been created, determine who will be the postoffice administrator and refer to the previous procedure for creating a postoffice.

If a postoffice has been created, you may need to modify the MSMAIL.INI file to reflect the location of the postoffice. Use the following three steps:

1. Quit Mail.
2. Open the MSMAIL.INI file from the Windows directory in an ASCII text editor, such as Microsoft Windows Notepad.
3. Note the entry beside the ServerPath= setting. This should match the server name and the shared directory name of the postoffice. The proper syntax is as follows:

```
serverpath=\\servername\directoryname
```

5. Q. I can't move mail messages or delete them from a folder. How can I correct this problem?

- A. If you cannot move or delete mail messages from a folder, you may have a corrupt MSMAIL.MMF file. This file contains all your mail folders and messages. To repair the MSMAIL.MMF file, use the following three steps:

1. From the File menu in Microsoft Mail, choose Exit And Sign Out.
2. Restart Mail.
3. If the built-in Mail utility detects any corrupt mail files, a dialog box should appear with the message "Your database file is corrupt, repair now?" Choose the Yes button.

The Mail Message File utility should repair any damage to the MSMAIL.MMF file and, when completed, return to Mail.

6. Q. I am receiving the error message "Schedule file could not be opened. You may not have the necessary access privileges or the file may not be available." How can I correct this problem?

- A. When you choose Open Other's Appt. Book from the File menu in Schedule+, you may receive the error message "Schedule file could not be opened. You may not have the necessary access privileges or the file may not be available." This error occurs when the person whose file you are trying to access has not granted you access privileges. You must have at least the Read

Appointments And Tasks privilege to open another's Appointment Book. The default setting for privileges is View Free/Busy Times, which allows you to view other schedules from Planner.

Schedule+ defaults to the Appointment Book. To access Planner, you must select the tab labeled Planner from the left side of the Schedule+ screen. To set access privileges for other users, choose Set Access Privileges from the Options menu. For more information on access privileges, please refer to the "User's Guide."

7. Q. How can I import appointments from Microsoft Windows Calendar or WordPerfect Office into Microsoft Schedule+?
- A. Schedule+ has a feature that allows you to import appointments from Windows Calendar 3.1 and WordPerfect Office. To import your appointments from either of these applications, use the following three steps:
1. In Schedule+, choose Import Appointments from the File menu.
 2. In the List Files Of Type box, select the file type that corresponds to the appointment book application.
 3. Select a file to import, then choose the OK button.
8. Q. I changed my password in Microsoft Mail and the new password works correctly in Mail; however, Schedule+ is prompting me for my old password. Is this a problem?
- A. No. If you change your password in Mail, the Schedule+ password is affected. After you successfully create a new password in Mail, you are prompted for your old password in Schedule+ before you can enter the application. If you change your password in Schedule+, Mail accepts your new password without prompting you for your old password.

KBCategory: kbother kbfasttip kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax fast tips wfwg

=====
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FastTips: Sharing CD-ROMs and Printers Questions & Answers

PSS ID Number: Q90977

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11

SUMMARY

=====

This article contains the complete text of the "Sharing CD-ROMs and Printers Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Desktop Systems at (800) 936-4200.

MORE INFORMATION

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=====
Microsoft® Product Support Services Application Note (Text File)
WG0694: SHARING CD-ROMS AND PRINTERS QUESTIONS & ANSWERS
=====

Revision Date: 10/92
No Disk Included

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-
1. Q. When you are using Microsoft Windows for Workgroups, what are the system requirements for using File Manager or Print Manager to share resources?
 - A. To share network resources using File Manager or Print Manager, you must have at least 3 megabytes (MB) of RAM on your machine and be operating in 386 enhanced mode. You can only share resources that are on your machine; you cannot share resources to which you are connected over the network.
 2. Q. How can I share my local CD-ROM drive using Microsoft Windows for Workgroups?
 - A. To share a CD-ROM drive using Windows for Workgroups, use the following five steps:
 1. Load the device-dependent CD-ROM driver in the CONFIG.SYS file. This driver can be obtained from your CD-ROM vendor.
 2. Load MSCDEX.EXE /S in the AUTOEXEC.BAT file. MSCDEX.EXE must be version 2.21 and loaded with the /S switch to allow sharing capability. MSCDEX.EXE can be obtained from your CD-ROM vendor. If you are running Novell® NetWare® with Windows for Workgroups, MSCDEX must be loaded prior to MSIPX.
 3. After you make these modifications, save the files, restart the machine, then start Windows.
 4. The CD-ROM drive can be shared in the same way any other local hard disk drive can be shared. Choose the CD-ROM icon and select the directories to be shared.

5. In File Manager, choose Share As from the Disk menu. In the Share Directory dialog box, type the Share Name information, any comments you want to use to describe the shared resource, and then set the Access Type and Password options.

For more information on troubleshooting CD-ROM sharing issues, please refer to your Windows for Workgroups documentation.

3. Q. Are there differences between Windows for Workgroups Print Manager and Print Manager in Windows 3.1?
 - A. Yes. Please note the following three differences in the Windows for Workgroups Print Manager:
 1. The user interfaces for both Print Manager and the Printers icon in Control Panel are different from those used in Microsoft Windows operating system version 3.1. For example, you must disconnect printers from Print Manager only; you can no longer disconnect printers from Control Panel.
 2. The toolbar in Print Manager is a new feature. Unlike the toolbar in File Manager, the Print Manager toolbar cannot be customized.
 3. Print Manager cannot pause print jobs locally.

For more information, please refer to your Windows for Workgroups documentation.

KBCategory: kbnetwork kbfasttip kb3rdparty kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax fast tips wfwg

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FastTips: Using Third-Party Utilities

PSS ID Number: Q90980

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

SUMMARY

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This article contains the complete text of the "Using Third-Party Utilities Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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=====
Microsoft® Product Support Services Application Note (Text File)
WG0695: USING THIRD-PARTY UTILITIES QUESTIONS & ANSWERS
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Revision Date: 10/92
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1. Q. Is Microsoft Windows for Workgroups compatible with utilities produced by other software companies (for example, PC Tools™ Backup and Norton Desktop for Windows)?
 - A. Windows for Workgroups is compatible with most popular third-party applications. However, as discussed in the Setup section of FastTips, Windows for Workgroups should be installed in a newly created directory if you experience problems with updating your current Windows installation. Third-party drivers, font software, and desktop shells should then be reinstalled in the new directory location of Windows for Workgroups. Third-party utilities that are known to adversely affect the Windows for Workgroups Setup program are Norton Desktop for Windows, PC Tools Backup version 7.1, and disk-compression software.
2. Q. Can I use Norton Desktop for Windows with Microsoft Windows for Workgroups?
 - A. Before you upgrade to Windows for Workgroups from Microsoft Windows versions 3.x, disable the Norton Desktop shell to avoid functionality conflicts with Norton Desktop for Windows. Disabling Norton Desktop includes replacing the line "shell=ndw.exe" (without the quotation marks) with "shell=progman.exe" (without the quotation marks) in the SYSTEM.INI file and removing all other Norton Desktop references in both the SYSTEM.INI and WIN.INI files. After you successfully install Windows for Workgroups, you can reinstall Norton Desktop for Windows version 2.0 or later.

When you use Norton Desktop for Windows, you cannot disconnect a network drive using the Desktop's Disk menu. You must use File Manager's Disk menu to disconnect a network drive. Norton Desktop for Windows lacks the functionality to share directories with other workstations in your workgroup. At this time, only the Windows for Workgroups File Manager Disk menu can provide the user interface and functionality to share directories.
3. Q. I use a disk-compression utility to compress my hard drive. What steps should I take to install and use Microsoft Windows for Workgroups?
 - A. When you install Windows for Workgroups to a drive that has been compressed with a disk-compression utility, such as Stacker™,

some Windows for Workgroup files are copied to the root of the boot drive. These files include the network card and protocol device drivers, PROTMAN.DOS, WORKGROUP.SYS, and HIMEM.SYS. The network device statements should be loaded after the disk-compression device statements in the CONFIG.SYS file.

4. Q. When I exit PC Tools Backup, Windows stops responding and hangs. How can I correct this problem?
 - A. If Windows hangs after you exit PC Tools Backup, use the following five steps:
 1. Open the SYSTEM.INI file in an ASCII text editor such as Microsoft Windows Notepad.
 2. In the [386enh] section, search for the line "dmabuffersize=" (without the quotation marks). If this line exists, increase its value. If it does not, add the line "dmabuffersize=64" (without the quotation marks).
 3. Check for the line "device=*vdmad" (without the quotation marks). If this line exists, replace it with "device=vdmad.386" (without the quotation marks).
 4. Save the SYSTEM.INI file.
 5. Check the date of the file VDMAD.386. This file should be located in the WINDOWS\SYSTEM subdirectory and be dated October 1992. If VDMAD.386 is located in the WINDOWS directory, rename or delete it, and expand the VDMAD.386 file to the WINDOWS\SYSTEM subdirectory.

After carrying out these steps, if the PC Tools Backup utility continues to cause Windows to hang, please contact the manufacturer (Central Point Software, Inc.) directly.

KBCategory: kb3rdparty kbfasttip kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.10 ivrfax fast tips 3rdparty wfwg
AWG31

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WW0634: Updated LANMAN21.DRV File

PSS ID Number: Q92446

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

Microsoft has an Application Note titled "Updated LANMAN21.DRV File" (WW0634), which contains an updated version of the LANMAN21.DRV file for use with Microsoft LAN Manager version 2.1 and Microsoft Windows operating system version 3.1. The updated driver corrects a problem that produces the following error message when you install WinLogin:

- WinLogin Client Setup Error

- WinLogin Client Setup could not access the network path where this machine's configuration files are to be stored.
- Please ensure this machine has access to the remote network resource and retry.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW0634

=====

=====
Microsoft® Product Support Services Application Note (Text File)
WW0634: UPDATED LANMAN21.DRV FILE
=====

Revision Date: 9/92
Disk Included

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About This Update

The enclosed WW0634 disk contains an updated version of the LANMAN21.DRV file for use with Microsoft LAN Manager version 2.1 and Microsoft Windows operating system version 3.1.

NOTE: By using the following Windows 3.1 driver (the "Software"), you are hereby agreeing to the included license agreement. Please review the LICENSE.TXT file on the enclosed disk.

The updated driver corrects a problem that produces the following error message when you install WinLogin:

WinLogin Client Setup Error
WinLogin Client Setup could not access the network path where this machine's configuration files are to be stored.

Please ensure this machine has access to the remote network resource and retry.

Added Features

The updated driver also supplies Windows 3.1 with the following features:

- Shows only one dialog box for both net connections and net disconnections. Previously, there were two separate dialog boxes.
- Allows you to make multiple disconnections without having to leave the dialog box. Previously, the dialog box closed after each disconnection.
- Allows you to view your previous connections in a drop-down list box from the Net Connections dialog box.
- Includes a Reconnect At Startup check box that allows you to designate a connection as a "persistent connection" (that is, Windows 3.1 will make the connection to this share each time you log on).

Installing the Updated LANMAN21.DRV File

1. Exit Microsoft Windows.
2. Insert the enclosed WW0634 disk in the appropriate floppy disk drive.
3. Copy the LANMAN21.DRV file from the enclosed disk into the <windows>\SYSTEM subdirectory by typing the following at the command prompt
copy <x>:\lanman21.drv <path>\system
where <x> is the drive containing the WW0634 disk and <path> is the path to your Windows program directory. For example:
copy a:\lanman21.drv c:\windows\system
4. Copy the LANMAN21.DRV file from the enclosed disk into the LANMAN.DOS\NETPROG subdirectory by typing the following at the command prompt
copy <x>:\lanman21.drv <y>:\lanman.dos\netprog
where <x> is the drive containing the WW0634 disk and <y> is the drive containing the LANMAN.DOS directory. For example:
copy a:\lanman21.drv c:\lanman.dos\netprog
5. Restart your computer and restart Windows.

The updated LANMAN21.DRV file is now installed.

TO OBTAIN THIS APPLICATION NOTE

You can find WW0634.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0634.EXE, and click GO! Open the article, and click the button to download the file.
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KBCategory: kbother kbfile kbapnote

KBSubcategory:

Additional reference words: appnote 3.10 Win Login 1.0 1.00

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WW0654: Windows 3.1 and Serial Communications

PSS ID Number: Q92447

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

Microsoft has an Application Note, "Windows 3.1 and Serial Communications" (WW0654), that provides information about serial communications in the Windows 3.1 environment. This Application Note includes a discussion of improvements in Windows 3.1, a conceptual overview, and a discussion of why conflicts occur.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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Microsoft® Product Support Services Application Note (Text File)
WW0654: WINDOWS 3.1 AND SERIAL COMMUNICATIONS
=====

Revision Date: 10/92
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INTRODUCTION
=====

This Application Note provides information about serial communications
in the Microsoft Windows version 3.1 operating system environment. The
first section, "What's New in Windows Version 3.1," gives an overview
of improvements in Windows 3.1. The section "Conceptual Overview"
explains basic and advanced concepts in serial communications,
including port addresses, device contention, and so forth. The section
"Why Conflicts Occur" discusses the most common reasons why you may
experience difficulties with serial communications, and the section
"How to Resolve Conflicts" explains what to do once you have
identified the problem.

If you need help with a specific problem, you may want to start by
reading the "Troubleshooting" section.

WHAT'S NEW IN WINDOWS VERSION 3.1
=====

Here are some highlights about improvements in how Windows 3.1 handles
serial communications.

Performance Improvements

- Windows 3.1 supports the high-speed 16550AFN UART buffer; Windows
3.0 does not. (The 16550AFN buffer is supported for Windows-based

applications only.)

- Windows 3.1 supports baud rates of up to 57.6K. (You may need to update your application to take advantage of these higher baud rates.) Some users experienced lockups during high-speed, full-duplex transfers while using Windows 3.0. These problems are resolved in Windows 3.1.
- Windows 3.1 has a new serial driver interface that allows data to be passed in blocks, instead of one character at a time. (Each block is treated as a single character.) This means faster data throughput and fewer transmission errors. Windows 3.0 passes data one character at a time.
- Windows 3.0 uses a "constant polling" method to determine when serial ports are occupied. Windows 3.1 uses the EnableCommNotification API; this enables applications to directly notify Windows of serial events, thereby increasing overall system performance.

Better Support for Your Ports

- Windows 3.1 provides better support for COM ports 3 and 4. You can now configure these ports by using Windows Control Panel.
- Windows 3.1 fully supports IRQ sharing; Windows 3.0 does not. (To take advantage of this feature, your PC must have Extended Industry Standard Architecture (EISA) or Micro Channel® Architecture (MCA), or you must have a serial I/O card that supports IRQ sharing.)

CONCEPTUAL OVERVIEW

=====

This section provides a general introduction to the subject of serial communications and explains many of the concepts and issues that are discussed throughout the "Windows 3.1 and Serial Communications" Application Note.

SERIAL VS. PARALLEL PORTS

=====

Input/output (I/O) ports provide the means for your PC to send or receive data through external devices such as modems, printers, fax machines, and so forth. Virtually all PCs have both parallel and serial ports. There are several distinctions between serial and parallel I/O ports.

Parallel ports are generally used only for printers, which is where the name LPT, for line printer, originates. Parallel ports transmit data in complete bytes, and in most cases they handle outgoing data only; they cannot receive information. (The IBM[R] PS/2[R] parallel ports are bidirectional; in addition, you can use certain peripherals, such as network card adapters, to enable your ports to transmit data bidirectionally.) You do not configure parallel ports; they are preconfigured for your machine.

Serial ports are generally used for communications, or COM devices, which include serial printers, modems, fax machines, and so forth. Serial ports are capable of both sending and receiving data. You can configure settings--such as parity, stop bits, and data length--for your serial ports. (In Windows, you can specify these settings by using Control Panel.) Serial ports transmit data one bit at a time, sequentially (or serially).

PORT ADDRESSES AND IRQS

=====

Every time you start your PC, your system BIOS checks your COM ports to see what serial devices are installed on your PC and posts this

information to the system BIOS data area (BDA). Windows "reads" the BDA, and uses the default interrupt request line (IRQ) for each device that is registered there. Usually, each COM port requires a unique IRQ to communicate with your PC. Certain PCs and some I/O cards support IRQ sharing.

NOTE: Some earlier BIOS versions may not check for devices on COM ports 3 and 4. If you have devices installed on COM port 3 or 4 and your system BIOS does not recognize these ports, you need to register the addresses for COM3 and COM4 by using Windows Control Panel. This is explained in the procedure "To register a serial device" later in this Application Note.

How Should My COM Ports Be Configured?

Generally, PCs come with built-in ports COM1 and COM2 preset to the following values:

Port	Address	IRQ
COM1	03F8	4
COM2	02F8	3

In most cases, the default values for COM ports 1 and 2 should work for your system. You can view your COM port settings by using Windows Control Panel.

Most PCs do not have built-in ports for COM3 and COM4. The default settings for these additional ports are listed here:

Port	Address	IRQ
COM3	03E8	4
COM3 (PS/2)	3220	3
COM4	02E8	3

Because COM1 and COM3 both use IRQ4 as the default, and COM2 and COM4 both use IRQ3, you may need to reassign the IRQ if you use serial devices (such as a fax card or modem) on COM ports 3 or 4. You can reassign IRQs by using Control Panel. For more information, see the procedure "To reassign the IRQ" later in this Application Note. (You do not need to reassign the IRQ if you have an MCA or EISA machine, or a serial I/O card that supports IRQ sharing.)

16550AFN UART CHIP SUPPORT

=====

Every serial port uses a Universal Asynchronous Receiver-Transmitter (UART) chip to send and receive data. Inside your PC, data travels in parallel form. When you send or receive data by means of a serial device, the UART chip converts the data to a serial format so that your port can read it.

Many machines still use either the 8520 or the 16450 UART chip. The main advantage of the 16550AFN UART chip is its first in, first out (FIFO) buffering scheme, which can dramatically improve performance for modem transfer speeds of 9600 baud or higher. If you usually set your modem to 2400 or 1200 baud, chances are you don't need the 16550AFN UART.

NOTE: The 16550, an earlier version of the chip, was used in IBM PS/2 computers, models 50, 60, and 80, and replaced by the 16550AFN in the PS/2 model 70. You may want to check with your manufacturer to determine which version of the 16550 chip is installed in your machine. The 16550 chip does not support FIFO buffering.

MS-DOS-BASED VS. WINDOWS-BASED APPLICATIONS

=====

Windows-based applications share a single time slice; each MS-DOS-

based application running under Windows receives its own time slice. A time slice is the amount of processor time allocated to an application, usually measured in milliseconds. The smaller the time slice, the more efficiently Windows can run multiple tasks; therefore, in general, you will notice better performance with Windows-based applications running under Windows. You can also use "Windows-aware" software to emulate timeslice sharing for MS-DOS-based applications and thereby improve performance.

You run MS-DOS-based applications under Windows by writing PIF files that specify how you want Windows to schedule processor time for these applications. (For more information about PIF files, refer to Chapter 8, "PIF Editor," in the version 3.1 "Microsoft Windows User's Guide.")

WHY CONFLICTS OCCUR =====

For serial communications to be successful, three settings must match: the port addresses in the BIOS data area, the COM port entries in the SYSTEM.INI file, and the switches on your serial hardware (if you have any installed). This section discusses the situations that can occur if these settings do not match, as well as other situations that can cause conflicts.

Determining whether these settings match, and changing them if they do not, is discussed in the section "How to Resolve Conflicts" later in this Application Note.

IRQ SHARING =====

Many serial communications problems result from two devices attempting to use the same IRQ. For example, if you install a serial mouse on COM1 and a modem on COM3, both devices could attempt to use IRQ4 (the default setting) at the same time. Unless your PC supports IRQ sharing (the ability to have multiple ports using the same IRQ), this could cause your mouse or modem to lose functionality.

MCA and EISA machines support IRQ sharing. In addition, some serial I/O cards support IRQ sharing even if your machine is not specifically configured to do so. Windows 3.1 fully supports such serial I/O cards.

For more information, see the "IRQ Sharing" section under "How to Resolve Conflicts" later in this Application Note.

BIOS DATA AREA AND ADDRESS PACKING =====

There are four sequential spaces in the BDA for COM port addresses 1 through 4. The BIOS lists port addresses so that no blank spaces occur between addresses. Windows reads the BDA sequentially and actually expects a blank address where there is no COM port. This can cause conflicts when Windows assigns IRQs.

For example, if you have a mouse on COM1, a printer on COM2, and a modem on COM4, Windows expects the BDA to look something like this:

	(COM1)	(COM2)	(COM3)	(COM4)
0040:0000	F8 03	F8 02	00 00	E8 02

Because the BIOS does not use zeros as placeholders, however, the BDA actually looks something like this:

	(COM1)	(COM2)	(COM3)	(COM4)
0040:0000	F8 03	F8 02	E8 02	00 00

This behavior is known as address packing, or address shifting. Windows assigns IRQs in the order that it finds a COM port address. In this situation, Windows would assign IRQ4 (the default for COM3) to the device that is actually on COM4. This could cause loss of

functionality on COM4 because IRQ4 is already being used by COM1.

BIOS packing can affect COM ports 1 and 2 as well. For instance if you have no device on COM1, your COM2 address may register in the COM1 BIOS area.

Whether or not you experience problems as a result of address packing may depend on what COM ports you are using, what type of hardware you have, and whether you are using MS-DOS-based communications software.

To correct this type of situation, you write a Debug script. A Debug script records the correct port addresses in your system memory. This procedure is described in the section "How to Resolve Conflicts" under "Address Packing."

MS-DOS-BASED COMMUNICATIONS SOFTWARE AND WINDOWS 3.1 =====

MS-DOS-based applications and Windows-based applications handle serial communications in different ways. This section discusses guidelines for using your MS-DOS-based communications programs under Windows 3.1. For more information, see chapters 7, "Non-Windows Applications," and 8, "PIF Editor," in the version 3.1 "Microsoft Windows User's Guide."

General Guidelines -----

You use 386 enhanced mode Windows, and PIF files, to give Windows control of your MS-DOS-based communications applications. We don't recommend running MS-DOS-based communications applications in standard mode Windows, as this may cause data loss or other problems.

For better performance, run your MS-DOS-based applications in full-screen mode rather than in a window. If you run an MS-DOS-based communications application in the background during a data transfer, run it minimized as an icon rather than in a window.

PIF File Guidelines -----

- Select the Background check box (under Execution in the main PIF Editor dialog box), or your MS-DOS-based application will stop running when you switch away from it.
- Select the Lock Application Memory check box (in the PIF Editor Advanced Options dialog box), or you may receive an error message. (This setting applies only if you have a permanent swap file and 32-bit disk access is enabled.)
- If you encounter errors during data transfers, specify a larger Background Priority or Foreground Priority setting (in the Multitasking Options area of the Advanced Options dialog box).

Device Contention -----

In the Windows multitasking environment, two applications sometimes simultaneously request the use of a device (such as a COM port or modem). This is known as device contention. When you are running MS-DOS-based communications applications under Windows in 386 enhanced mode, you need to set device contention options in Control Panel. Doing so specifies how you want Windows to handle device requests from your MS-DOS-based applications.

Problems that can occur as a result of serial device contention include the inability to access a COM port. For more information, see the procedure "To set device contention options" later in this Application Note.

UART Support for MS-DOS-Based Applications -----

Windows 3.1 provides application support for the new 16550AFN UART buffer (see the section on the UART earlier in this Application Note). However, MS-DOS-based applications may not recognize the 16550AFN UART, treating it instead like the earlier 8250 version. This, in turn, may result in data loss. Whether you experience these problems also depends to a certain extent on your hardware manufacturer.

Pacific Commware's TurboCom is an advanced serial port communications driver for Windows that provides UART support for MS-DOS-based applications running under Windows. TurboCom also supports IRQ sharing and baud rate speeds of up to 57.6K. If you regularly use MS-DOS-based communications software or software that requires a baud rate of 9600 bits per second (bps) or higher, you may want to use the TurboCom driver. For additional information, contact your local dealer, or call Pacific Commware at (510) 540-8080.

NOTE: If your communications software runs at 2400 baud or lower, using the 16550AFN UART probably won't noticeably improve your system's performance.

Address Packing and MS-DOS-Based Applications

If Windows assigns an IRQ that is being used by an MS-DOS-based program, you may receive the message "The COM port is currently assigned to a DOS application. Do you want to reassign the port to Windows?"

The problem occurs when your machine BIOS packs addresses before posting them to the BDA. Windows reads the BDA sequentially, assigning the default IRQ for COM1 to the first entry it finds, the IRQ for COM2 to the second entry, and so forth. For example, if you have a device on COM2 but not on COM1, and your system BIOS packs addresses, the COM2 address "shifts" into the BDA slot for COM1. Consequently, Windows assigns IRQ4 (the default for COM1) to the device that is actually on COM2.

MS-DOS-based communications programs access the COM ports directly, without posting their port address to the BDA. Using the same example, if you have no serial device on COM1, and your MS-DOS-based communication program is using COM2, the MS-DOS-based program still uses the default IRQ for COM2.

You can remedy this situation by writing a Debug script. For more information, see the procedure "To write a Debug script" later in this Application Note.

THIRD-PARTY COMMUNICATIONS DRIVERS

=====

Some Windows-based third-party programs install their own drivers to replace the drivers provided by Windows. If these third-party drivers are installed in your system when you upgrade from Windows 3.0 to Windows 3.1, Setup does not install the Windows communications driver (COMM.DRV). In most instances, it is best to use the Windows 3.1 driver, rather than a driver designed for Windows 3.0.

If you are experiencing driver problems (such as an inability to use higher baud rates, or problems accessing the modem), you can reinstall COMM.DRV or contact the manufacturer of your third-party driver for an update.

You can tell whether you have the Windows communications driver, or whether it has been replaced by the driver(s) that came with your communications software, by looking in your SYSTEM.INI file. See the procedure "To check for third-party drivers" later in this application note.

HOW TO RESOLVE CONFLICTS

=====

You should now be familiar with the most common reasons for serial communications problems in Windows 3.1. This section describes a few simple procedures you can follow to correct these problems.

RESOLVING IRQ CONFLICTS

=====

If you have serial devices on both COM1 and COM3, or COM2 and COM4, and your machine architecture does not support IRQ sharing, you need to reassign the IRQ for COM3 or COM4. (If you are using a serial card that supports IRQ sharing, read the section that follows this procedure.)

To properly reassign the IRQ:

1. Determine the valid IRQ settings for the serial device by referring to the manufacturer's documentation.

Most serial devices such as I/O cards or internal modems can use either of several valid IRQs. For example, a modem on COM3 may be able to use IRQ5 if IRQ4 is not available.

2. Determine which IRQs are available on your PC.

You can do this by referring to the table provided below, or you can use the Microsoft Diagnostic (MSD) utility. (Refer to the procedure, "To use MSD to determine available IRQs" later in this Application Note.) MSD is included with Windows version 3.1.

3. Point both your serial device and Windows to the IRQ that you have determined is valid and available.

Set your serial device to the alternate IRQ by following the directions in the manufacturer's documentation. Point Windows to the alternate IRQ by using Control Panel to place an entry in your SYSTEM.INI file.

NOTE: Your serial device setting MUST match the COMxIRQ setting in your SYSTEM.INI file. If these two settings do not match, the COM port will not function properly.

Standard IRQ Settings (Table)

The following table shows the most common IRQ settings. You can use Control Panel to specify an IRQ from this table if it matches your hardware requirements. Or, if you'd like to view a table similar to this that lists the current settings in your PC, you can use MSD.

IRQ Number	Description
0	Timer
1	Keyboard
2	Link to IRQs 8-15
3	COM2, COM4
4	COM1, COM3
5	LPT2, or Reserved
6	Floppy disk controller
7	LPT1, LPT3
8	Real time clock
9	Redirected IRQ2
10	Reserved
11	Reserved
12	PS/2 mouse
13	Math coprocessor
14	Hard disk controller
15	Reserved

The IRQs with "Reserved" entries in the corresponding Description column are often available. (This does not guarantee they are

currently available on your PC.) You can use Control Panel to choose one of the "Reserved" IRQs, such as IRQ10, and then restart your system to see whether the COM port now works.

NOTE: You must also change the hardware setting to the same IRQ. To do this, follow the manufacturer's instructions.

If the first IRQ you choose does not work, you can try the next IRQ from this table, and so forth. If you do not have a PS/2 mouse port, you may be able to use IRQ12. Or, you can use MSD to view the IRQs that are actually available on your PC.

To Use MSD to Determine Available IRQs

1. Quit Windows.
2. At the MS-DOS command prompt, type "msd" (without the quotation marks).
An initial screen appears, providing information about MSD. Choose the OK button to view the MSD main menu.
3. From the MSD main menu screen, choose the IRQ Status button.
The IRQ Status screen shows which IRQs are currently assigned (not available).
4. Make a note of each IRQ number where the entry in the corresponding Detected column reads No.
A No entry in the Detected column indicates that the corresponding IRQ is available. If you do not find a "No" entry in the Detected column, there are no available IRQs, and you should not attempt to reassign IRQs.
5. Use Control Panel to assign one of the available IRQs to the COM port whose IRQ you want to change.
See the next procedure. You must also change the hardware setting to the same IRQ. Follow the manufacturer's instructions.

NOTE: Windows 3.1 does not support nonstandard IRQ settings. If your serial communications device requires an IRQ that is different than what is described in the MSD listing, we cannot guarantee the results.

To Reassign the IRQ from Control Panel

1. In the Main group, choose the Control Panel icon.
2. In the Control Panel window, choose the Ports icon.
3. In the Ports dialog box, select the COM port for the device whose IRQ you want to change, and then choose the Settings Button.
4. In the Settings dialog box, choose the Advanced button.
5. Open the Interrupt Request Line (IRQ) list box, and select a number.
This number must match your hardware setting.
6. Choose the OK button twice to exit the settings dialog boxes, and then choose the Close button to exit the Ports dialog box.

IRQ-Sharing Serial I/O Cards

If you are using an IRQ-sharing I/O card on a machine that does not have MCA or EISA architecture, you need to add the following line to the [386Enh] section of the SYSTEM.INI file:

```
COMIrqSharing=TRUE
```

NOTE: This setting does not, by itself, provide your system with IRQ-sharing support. You must have the correct hardware configuration, and the hardware must be installed according to the manufacturer's specifications.

ADDRESS PACKING
=====

If you are using an MS-DOS-based communications program, Windows may assign an IRQ to a Windows serial device that is already in use by your MS-DOS-based program. If this happens, you may receive the error message "The COMx port is currently assigned to an MS-DOS application. Do you want to reassign the port to Windows?"

To remedy this situation, you need to familiarize yourself with the BDA. (This error message may also occur if you have a BIOS that does not search for serial devices on COM ports 3 or 4. If this is the case, you can use Control Panel to register the devices.)

To View the BDA by Using Debug

1. Quit Windows.
2. At the MS-DOS command prompt, type "debug" (without the quotation marks), then press ENTER.

A hyphen (-) prompt appears.

3. Type "d40:0" (without the quotation marks), then press ENTER.

This returns a listing of the BIOS data area (BDA). The first row of the BDA shows the COM port and LPT port addresses, divided by a center hyphen. COM ports are listed to the left of the hyphen; LPT ports are listed to the right.

4. Once you have interpreted the BDA (see the following procedure), type "q" (without the quotation marks) to quit Debug.

To Interpret the BDA COM Address Entries

This table shows the four standard COM addresses as they should be listed in the BDA. (The COMx headings do not appear in the BDA.)

	(COM1)	(COM2)	(COM3)	(COM4)
0040:000	F8 03	F8 02	E8 03	E8 02

If you have a serial device on COM port 3 or 4, and the BDA does not show an entry for the device, you can use Control Panel to register the device in the BDA. However, if the BDA shows any of the standard addresses in a location other than what is shown here (for example, address F8 02 in the space for COM1, or address E8 02 in the space for COM3), then you need to write a Debug script.

NOTE: If you see an address in your BDA that is not shown here, your hardware may use nonstandard serial port addresses. In this case you need to register the nonstandard address by using Control Panel. See the procedure "To register a serial device."

To Write a Debug Script

1. Open any standard text editor, such as Windows Notepad.
2. Type the following three lines:

```
E40:0
F8 03 F8 02 E8 03 E8 02
q
```

You must press ENTER after typing "q" (without the quotation marks). If you do not, the Debug script will cause your system to remain indefinitely in Debug mode.

3. Save the file as FIXCOM.DEB, or any filename with a .DEB extension.
4. Add the following line to the end of your AUTOEXEC.BAT file:

```
DEBUG < FIXCOM.DEB > NUL
```

The "> NUL" ending keeps the Debug script from echoing to the screen.

NOTE: Do not place this entry after a program execution line, such as WIN. If you do, the Debug script will not execute.

5. Save your AUTOEXEC.BAT file and reboot your PC.

You can view the BDA again to see whether the address changes have taken effect.

NOTE: The port address setting on your physical serial device must match what you specify in the Debug script. If your hardware requires a nonstandard address, you can specify that address in the Debug script.

SERIAL DEVICES ON COM3 AND COM4 DO NOT REGISTER =====

Some earlier BIOS versions only recognize devices installed on COM ports 1 and 2. If your system BIOS does not recognize serial devices on COM ports 3 and 4, you can use Control Panel to notify Windows that you have devices installed at these locations. However, if your BIOS registers such devices but incorrectly records them at different addresses in the BDA (due to address shifting or packing), you cannot use Control Panel to correct this situation. Instead, you need to write a Debug script. Refer to the previous procedure.

To determine whether your system BIOS registers devices on COM port 3 or 4, you need to read the BDA. Refer to the procedure "To view the BDA by using Debug."

CAUTION: Setting the port address by using Control Panel does not override a BDA value. What the BIOS reads replaces any entries you make by using Control Panel, if there is a discrepancy between the two. This procedure is not a substitute for writing a Debug script if your BIOS incorrectly registers COM addresses.

To Register a Serial Device -----

1. In the Main group, choose the Control Panel icon.
2. In the Control Panel window, choose the Ports icon.
3. In the Ports dialog box, select the port you want to identify to Windows, and then choose the Settings button.
4. In the Settings dialog box, choose the Advanced button.
5. Open the Base I/O Port Address list box and select an address. Check your hardware documentation for the appropriate value.
6. Open the Interrupt Request Line (IRQ) list box, and select an IRQ. Check your hardware documentation for the appropriate value.

Selecting values in this dialog box places COMxBase and COMxIRQ entries in your SYSTEM.INI file.

For more information on COMxBase and other SYSTEM.INI file entries, refer to the SYSINI.WRI file in your Windows directory.

DEVICE CONTENTION =====

You need to specify the device contention options for each MS-DOS-based communications application you are running under Windows.

To Set Device Contention Options

-
1. In the Main group, choose the Control Panel icon.
 2. In the Control Panel window, choose the 386 Enhanced icon.
 3. Select the port that is connected to the device you want to control.
 4. In the Device Contention group, select the option you prefer. Each option is described below.

Always Warn

Select this option to have Windows display a dialog box whenever more than one application requests use of a COM port at the same time. The dialog box lets you specify which MS-DOS-based application should receive control of the COM port. In most cases, you should select Always Warn.

NOTE: The Always Warn option does not replace IRQ sharing. When you specify that one application receive control of a COM port, the other application requesting to use the port is interrupted. Optimally, once the first application completes its operation (for example, a fax transmission), the COM port becomes available again and the other application can resume. However, sometimes giving control of a COM port to one application over another can indefinitely hang the application that is required to wait.

Never Warn

When you select this option, Windows provides COM port access to MS-DOS-based applications even if it detects that the requested port may already be in use by another application.

Selecting this option may cause unexpected problems, such as data loss or an interruption during application processing.

Idle (in sec.)

Select this option to specify the number of seconds Windows should wait before giving port access to an application without notifying you. For instance, if you specify 10 seconds, Windows displays a dialog box when any application requests the use of a port that was occupied within the last 10 seconds. The dialog box lets you specify which MS-DOS-based application should receive control of the COM port. Otherwise, Windows provides COM port access without a warning.

For more information about these options, see page 247 of Chapter 7, "Non-Windows Applications," in the version 3.1 "Microsoft Windows User's Guide."

THIRD-PARTY DRIVERS

=====

The Windows 3.1 Setup program updates many drivers that were included in Windows 3.0. Setup cannot update third-party drivers, however. You should obtain updates from the manufacturer for any third-party drivers that you are using under Windows 3.1.

To Check for Third-Party Communications Drivers

1. Open your SYSTEM.INI file by using any text editor, such as Windows Notepad.
2. Under the [boot] section, look for the following entry:

```
comm.drv=comm.drv
```

If this entry reads differently, then your system is using a third-party Windows-level driver.

3. Under the [386Enh] section, look for the following entries:

```
device=*vcd  
device=*combuff
```

If either of these entries reads differently, or if there is an additional entry, then your system is using third-party communications drivers.

To determine whether you need an update, contact your manufacturer.

To use third-party drivers that have not been updated, you need to add the following line to the [386Enh] section of your SYSTEM.INI file:

```
COMMdrv30=TRUE
```

Once you obtain an update for your third-party driver, you can remove this entry from your SYSTEM.INI file.

TROUBLESHOOTING COMMUNICATIONS PORT PROBLEMS =====

This section can help you to identify what is causing a problem and then point you to the appropriate section in this Application Note for an explanation of how to resolve the problem.

COMMUNICATIONS APPLICATION CANNOT ACCESS A SERIAL PORT =====

Are you using MS-DOS-based communications software? Refer to the "MS-DOS-Based Communications Software and Windows 3.1" section in this Application Note.

Related procedure:

"To set device contention options"

Is the serial device using an available IRQ? Refer to the "Resolving IRQ Conflicts" section in this Application Note.

Related procedures:

"To use MSD to determine available IRQs"

"To reassign the IRQ from Control Panel"

PC LOCKS UP WHEN ACCESSING SERIAL PORT =====

Is the serial device using a unique IRQ? Refer to the "Resolving IRQ Conflicts" section in this Application Note.

Related procedures:

"To use MSD to determine available IRQs"

"To reassign the IRQ from Control Panel"

Is the serial device on COM4? Refer to the "Serial Devices on COM3 and COM4 Do Not Register" section.

Related procedure:

"To register a serial device"

ERROR MESSAGES =====

"The COM Port is Currently Assigned to a DOS Application..."

If you receive this error message, refer to the procedure "To write a Debug script."

MODEM PROBLEMS =====

Does your system BIOS recognize your internal modem? Refer to the "Address Packing and MS-DOS-Based Applications" section for information about reading the BDA.

Related Procedures

"To view the BDA by using Debug"
"To interpret the BDA COM address entries"
"To register a serial device"

Do you have a modem on COM3 and a mouse on COM1, or a modem on COM4 and a mouse on COM2? Unless your machine or serial I/O card supports IRQ sharing, this configuration is not recommended. Refer to the "Resolving IRQ Conflicts" section in this Application Note.

Related Procedure:

"To reassign the IRQ from Control Panel"

Do you have an internal modem and a serial I/O card? Have you observed any of the following symptoms:

- The modem dials and rings but does not connect.
- The system reboots when the modem attempts to dial out.
- The system reboots when the modem should have connected.
- The cursor does not work in Window Terminal.

If your internal modem uses a COM port that is addressed by your serial I/O card, you may experience IRQ conflicts. To correct this problem, disable the COM port setting on the serial I/O card. For example, if your internal modem is set to use COM2, and you have a serial I/O card that recognizes COM2, you may need to disable COM2 on the serial I/O card for the modem to work correctly.

MOUSE PROBLEMS

=====

General Guidelines

The mouse uses a different driver for MS-DOS-based applications than it does for Windows-based applications. In general, all mouse drivers should come from the same vendor. For example, do not use a Microsoft driver as the Windows mouse driver and a third-party driver as the MS-DOS mouse driver.

Do not install a modem on COM3 if you have a mouse on COM1, or a modem on COM4 if you have a mouse on COM2, unless your machine or serial I/O card supports IRQ sharing. Refer to the "Resolving IRQ Conflicts" section in this Application Note.

Mouse Doesn't Work in Enhanced Mode

If your PC has no COM1 or if you have disabled COM1 and you have a mouse installed on COM2, you may experience problems using the mouse in 386 enhanced mode. Refer to the "BIOS Data Area and Address Packing" section in this Application Note.

Logitech™ Mouse

The Logitech virtual mouse driver (LVMD.386) is hard coded for the standard base port addresses and IRQs. If you use the Logitech mouse with a nondefault port address or IRQ, it may fail to work in 386 enhanced mode.

100%-Microsoft-Compatible Mouse

Any "100% Microsoft compatible" mouse that you purchase from your dealer is not interchangeable with the Microsoft mouse. If your 100%-Microsoft-compatible mouse comes with a driver disk that contains both Windows and MS-DOS mouse drivers, install these in place of the Microsoft mouse drivers. Installing such drivers places a new setting in the Mouse section of Windows Setup. After you install a 100%-Microsoft-compatible mouse, use Windows Setup to select your mouse type.

Microsoft Mouse

If you are using the Microsoft Mouse with Windows 3.1, make sure each of the following is true:

- You are using version 8.2 or 8.2a of MOUSE.COM and MOUSE.SYS (the mouse drivers for MS-DOS-based applications). Version 8.2 or 8.2a of the driver is included with Windows 3.1.
- MOUSE.DRV (the mouse driver for Windows-based applications) is in the Windows SYSTEM subdirectory, is the only copy of this file on your system, and is the most current version of the driver.
- The mouse is assigned a unique IRQ (unless the serial port supports IRQ sharing). For more information, see the "IRQ Sharing" section in this Application Note.
- The mouse is not installed on COM3 or COM4.

To see what version of the MS-DOS mouse driver you have

At the MS-DOS command line from the MS-DOS mouse directory (usually, MSMOUSE), type:

```
mouse /?
```

To see what Windows mouse driver you are using

>From the Main group, choose the Windows Setup icon. The mouse type should be "Microsoft, or IBM PS/2."

To change your Windows mouse driver

1. In the Main group, choose the Windows Setup icon.
2. From the Options menu, choose Change System Settings.
3. Open the Mouse list box and select the type of mouse that you are using.
4. Choose the OK button to close the dialog box.

COM4 PROBLEMS

=====

If your communications software doesn't recognize a serial device on COM port 3 or 4, you may have a system BIOS that was manufactured before those COM ports became standard. Refer to the "Serial Devices on COM3 and COM4 Do Not Register" section earlier in this application note.

The COM4 default address of 02E8 conflicts with some peripheral devices, including the 8514/A, Ultra (ATI), and S3 (Orchid Fahrenheit 1280 STB WIND/X, Diamond Stealth VRAM) display adapters, and certain network adapters. Do not readdress COM4 in this situation. Contact your hardware manufacturer for information about how to reset the adapter's default address.

PROBLEMS RUNNING WINDOWS IN 386 ENHANCED MODE

=====

Problems of this type may be related to a number of causes, including outdated driver files or IRQ conflicts. You can try the troubleshooting steps outlined below if you experience any of the following problems when trying to run Windows in 386 enhanced mode:

- Windows stops running or returns to the MS-DOS prompt
- General protection (GP) fault
- Windows defaults to standard mode

If the steps outlined below do not help, then the problem is probably not caused by a serial communications conflict. Refer to the Windows Resource Kit for more information about problems running Windows in 386 enhanced mode.

To Check for Outdated Driver Files

Before starting Windows from the MS-DOS prompt, change to the Windows directory, and then start Windows.

If Windows runs in 386 enhanced mode only when you start it from the Windows directory, you may have an outdated driver file in some other directory. When Windows starts, it looks for the files it needs in the following order:

- The current directory
- The Windows directory
- The Windows SYSTEM subdirectory
- All the directories listed in the PATH statement in the AUTOEXEC.BAT file
- All the directories in a network path

If you suspect that you have outdated driver files, you need to delete them from your system.

To Delete Outdated Driver Files

1. Use File Manager to find all versions of the driver file(s) on your system. Compare each version by date.
2. Delete all other versions of the driver file(s) except the most current version. Retain a single copy of the most current version in the Windows SYSTEM subdirectory.

To Identify an IRQ Conflict

1. Remove any serial hardware you have installed on your system (mouse, network card, fax board, modem, and so forth) and then restart Windows.

If Windows now runs in 386 enhanced mode with no problems, the problem may be caused by an IRQ conflict.
 2. Reinstall each separate piece of serial hardware, one at a time, restarting Windows between each addition.

This isolates the hardware that is causing the IRQ conflict. When the problem recurs, you can assume it is caused by the hardware you have just reinstalled.
 3. Reassign the IRQ for the piece of hardware in question.

Refer to the procedure in this Application Note on "To reassign the IRQ from Control Panel."
-

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WW0654.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0654.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0654.EXE



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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note mailed or faxed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
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KBCategory: kbfile kbdisplay kbappnote

KBSubcategory:

Additional reference words: appnote gpf 3.10 comm port lpt 1.0

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WW0653: Using Automated Setup: Setup /H

PSS ID Number: Q92448

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

Microsoft has an Application Note titled "Using Automated Setup: Setup /h" (WW0653) that describes the Windows 3.1 Automated Setup option, SETUP /H (also called Batch Mode Setup). You can use Automated Setup to set up either a shared or nonshared copy of Windows, and you can use it whether you are setting up Windows from a network drive or from the Windows Setup disks.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



Press here to
copy
WW0653.exe
to your
computer.



Press here to
copy
WW0653.exe
to your
computer

THE TEXT OF WW0653
=====

=====
Microsoft® Product Support Services Application Note (Text File)
WW0653: USING AUTOMATED SETUP: SETUP /H
=====

Revision Date: 10/92
No Disk Included

The following information applies to Microsoft Windows™ version
3.1.

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USING AUTOMATED SETUP: SETUP /H
=====

The Microsoft Windows operating system version 3.1 Automated Setup
option (also called Batch Mode Setup) uses information that you define
in a system settings file to install Windows quickly and easily, with
little or no user interaction. Automated Setup is useful if you have
to set up many workstations or if you want users to be able to set up
Windows on their own workstations without having to make any system
configuration choices, such as hardware components and printers, or
choices about which optional Windows components to install.

You can use Automated Setup to set up either a shared or nonshared
copy of Windows, and you can use it whether you are setting up Windows
from a network drive or from the Windows Setup disks.

NOTE: Before you run the Setup program, turn off any network
messaging services or terminate-and-stay-resident programs (TSRs)
that allow the network or another user to send a message to your
screen. These pop-up programs can cause Windows Setup to fail if a
message is received while Windows is being installed.

TO USE THE AUTOMATED SETUP OPTION:
=====

1. Create a system settings file for each workstation configuration.

For details, see the following section, "Creating the System
Settings File."

2. Place the system settings file(s) in a directory where users have rights to open and read files. You can also copy the settings file to a user's local drive or to a bootable floppy disk.
3. If you are setting up Windows from a network, connect to the network drive and change to the directory where the Windows Setup files are located. If you are setting up Windows from the Windows Setup disks, change to the floppy disk drive. You can also set up Windows from the user's workstation.
4. If you want to run a shared copy of Windows from the network, type
`setup /h:[<path>]<filename> /n`

where <filename> is the name of the system settings file that contains details about the system configuration. Include a path if the system settings file is not in the directory where you are setting up Windows.

For example, connect to the network drive and directory where the Windows Setup files are located. Create a system settings file named SETUPVGA.SHH in the same directory as the Setup program. At the command prompt, type "setup /h:setupvga.shh /n" (without the quotation marks) and press ENTER.

If you want to run a nonshared copy of Windows from a local drive or a network drive, type:

```
setup /h:[<path>]<filename>
```

For example, create a system settings file named SETUPVGA.SHH in the same directory as the Setup program. At the command prompt type "setup /h:setupvga.shh" (without the quotation marks) and press ENTER.

CREATING THE SYSTEM SETTINGS FILE

=====

Windows comes with a system settings template file called SETUP.SHH, which you can copy or modify to create a custom system settings file. The SETUP.SHH file is located on Microsoft Windows 3.1 Disk 1 and is copied to the shared Windows directory when you use SETUP /A. You can modify this file with any text editor (such as Notepad) that can save unformatted text (ASCII) files.

NOTE: When you create the .SHH file, use only ANSI characters; characters that may be included in any other code page character set currently installed on your system are not supported.

The sections in the system settings file are summarized in the following table. Valid entries for each section are described after this table.

Section	Purpose
[sysinfo]	Specifies whether the System Information screen is displayed during Setup
[configuration]	Specifies the various devices on the user's system
[windir]	Specifies where to put Windows files
[userinfo]	Specifies the user and company name
[dontinstall]	Specifies components that should not be installed
[options]	Specifies various Setup options such as viewing README files, setting up existing applications, and starting the Windows tutorial
[printers]	Specifies printers to set up
[endinstall]	Specifies whether Setup modifies the CONFIG.SYS and

AUTOEXEC.BAT files and whether the system is rebooted after Windows is installed

Many of the entries require values from the Windows SETUP.INF, CONTROL.INF, and WIN.INI files. When you use SETUP /A to place Windows files on a network server, the SETUP.INF, CONTROL.INF, and WIN.INI files are copied to the shared Windows directory. The master WIN.INI and SYSTEM.INI files are called WIN.SRC and SYSTEM.SRC in this directory. You can also find SETUP.INF on Microsoft Windows 3.1 Disk 1. You can print or view all of these text files with any text editor.

[sysinfo]

The System Information screen gives users the option of confirming or changing system configuration settings before continuing with Setup. Specify showsysinfo=yes to display the screen, or showsysinfo=no if you don't want to display the screen. (The default is no.)

[configuration]

If an entry for a device is not included in this section, Windows will use the detected or default device. The following table describes valid device settings. Each of these settings requires information from the SETUP.INF file.

Use	To
machine=	Specify the type of machine by using a profile string from the [machine] section of SETUP.INF. Example: machine=ibm_compatible.
display=	Specify the type of display by using a profile string from the [display] section of SETUP.INF. Example: display=vga.
mouse=	Specify the type of pointing device by using a profile string from the [pointing.device] section of SETUP.INF. Example: mouse=ps2mouse.
network=	Specify the type of network and the version number. Use a profile string from the [network] section of SETUP.INF to specify the network. Example: network=lanman. If there is a [<network_version>] section in SETUP.INF--for example, [lanman.versions]--use a number from that section to specify the version for your network. Separate the version number from the network type with a slash (/). Example: network=lanman/01020000 sets up Microsoft LAN Manager version 2.0 Enhanced. If you do not specify a version number and your network software is loaded when you run Setup, Windows sets up the version that it detects.
keyboard=	Specify the type of keyboard by using a profile string from the [keyboard.types] section of SETUP.INF. Example: keyboard=t4s0enha.
language=	Specify the language by using a profile string from the [language] section of SETUP.INF. Example: language=enu.
kblayout=	Specify the keyboard layout by using a profile string from the [keyboard.tables] section of SETUP.INF. Example: kblayout=nodll.

If you are updating Windows, Setup ignores some of these entries and

uses the devices that are already installed. If you want to override an installed device, precede the machine=, display=, mouse=, and network= values with an exclamation point (!)--for example, display=!vga. Any keyboard=, language=, or kblayout= values specified will automatically override and update the currently installed device.

[windir]

This section specifies where to place the user's Windows files. If Windows is already installed in the directory specified here, Setup updates the Windows files. For example, if you want to install Windows in the WINDOWS directory on drive C, specify "c:\windows" (without the quotation marks) in this section. This setting overrides the value of defdir= in the [data] section of SETUP.INF. If you do not specify a directory here, or if the directory you specify is not valid, a dialog box appears during Setup asking for the directory where you want to set up Windows.

[userinfo]

This section specifies the user and company name. The first line specifies the user name. This line is required unless you are setting up a shared copy of Windows by using SETUP /N (see "Note," below). The second line specifies the company name and is optional. Each name can be up to 30 characters long and must be enclosed in double quotation marks (" ") if it includes blank spaces. For example:

```
"Susan Smith"  
"My Company"
```

If you do not specify a user name, a dialog box appears during Setup to ask for the name.

NOTE: If you use SETUP /N to set up a shared copy of Windows, the [userinfo] section is ignored because the information was supplied when you used SETUP /A to copy Windows files to the server.

[dontinstall]

This section specifies optional Windows components that you do not want Windows to set up. If this section is not present or is empty, all optional components are set up. You can choose not to install the components listed in the following table:

Specify	If you do not want Windows to install
readmes	Readme files.
accessories	Accessories (however, WRITE.EXE is always installed).
games	Games.
screensavers	Screen savers.
bitmaps	Background wallpapers.

[options]

This section specifies whether a user can set up applications during Setup and whether to start the Windows Tutorial at the end of Setup. If you don't want any of these options, omit this section. Valid entries for this section are shown in the following table:

Specify	To
setupapps	Set up applications interactively during Setup. The

Add/Remove File dialog box appears during Setup so the user can choose which applications to install.

autosetupapps Automatically set up all applications found on the user s hard disk.

tutorial Start the Windows Tutorial at the end of Setup.

You should not specify both setupapps and autosetupapps, but if you do, Windows sets up all applications it finds on the hard disk.

[printers]

This section specifies which printers to install during Setup. To install a printer, specify a printer name and a port. Use one of the descriptive strings found in the [io.device] section of the CONTROL.INF file to specify the printer name. The printer name must be enclosed in double quotation marks (" ") if it contains blank spaces. Use one of the values found in the [ports] section of the WIN.INI file to specify the port. The printer name and the port must be separated by a comma. For example, to specify the HP® LaserJet® III printer connected to port LPT1, include this entry:

"HP LaserJet III",LPT1:

If you don t want to install any printers during Setup, omit this section.

[endinstall]

This section specifies what should happen after Windows is successfully installed. You can specify whether Setup should modify the CONFIG.SYS and AUTOEXEC.BAT files, and then whether to exit to MS-DOS, restart Windows, or restart the system.

Specify If you want Setup to

configfiles=modify Make all changes to CONFIG.SYS and AUTOEXEC.BAT. When Setup changes these files, the previous CONFIG.SYS and AUTOEXEC.BAT files are saved as CONFIG.OLD and AUTOEXEC.OLD in the root directory. (If CONFIG.OLD or AUTOEXEC.OLD are already present, the previous file will be renamed CONFIG.000 or AUTOEXEC.000, or the next number that does not conflict with an existing file.) If you are setting up Windows on a diskless workstation, Setup disregards this entry.

configfiles=save Save proposed changes to CONFIG.SYS and AUTOEXEC.BAT in alternate files (CONFIG.WIN and AUTOEXEC.WIN) stored in the Windows directory. The CONFIG.SYS and AUTOEXEC.BAT files are not changed; you must make these changes later. (If CONFIG.WIN or AUTOEXEC.WIN are already present, the previous file will be renamed CONFIG.000 or AUTOEXEC.000, or the next number that does not conflict with an existing file.)

endopt=exit Return to MS-DOS on completion of Setup.

endopt=restart Restart Windows on completion of Setup.

endopt=reboot Restart the user s system on completion of Setup. If this setting is specified and the user uses SETUP /N to install Windows, Setup will return to MS-DOS without rebooting after completing the installation.

SAMPLE SYSTEM SETTINGS FILE

=====

The following system settings file installs Windows on a PC-compatible computer with these characteristics:

- The system includes a VGA display, a Microsoft Mouse, LAN Manager 2.0 Enhanced local area network software, and a 101-key U.S. keyboard.
- The System Information screen is displayed for confirmation, and Windows files are placed in the C:\WINDOWS directory.
- The games are not installed.
- An HP LaserJet III printer is installed on LPT1.
- The CONFIG.SYS and AUTOEXEC.BAT files are modified by Setup.
- After Setup is complete, Windows is restarted.

```
[sysinfo]
showsysinfo=yes

[configuration]
machine=ibm_compatible
display=vga
mouse=ps2mouse
network=lanman/01020000
keyboard=t4s0enha
language=enu
kblayout=nodll

[windir]
c:\windows

[userinfo]
"user's name"
"company name"

[dontinstall]
games

[options]

[printers]
"HP LaserJet III",LPT1:

[endinstall]
configfiles=modify
endopt=restart
```

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[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbfile kbdisplay kbappnote

KBSubcategory:

Additional reference words: appnote win31 3.10

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WG0667: Peer-to-Peer vs. Client-Server Networks

PSS ID Number: Q92451

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11

Microsoft has an Application Note that discusses the differences between the peer-to-peer and client-server networking models.

NOTE: The text for this Application Note was taken from the Windows for Workgroups Resource Kit.

You can obtain this Application Note from the following sources:

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Microsoft® Product Support Services Application Note (Text File)
WG0667: PEER-TO-PEER VS. CLIENT-SERVER NETWORKS

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Revision Date: 11/93
No Disk Included

The following information applies to Microsoft Windows™ for Workgroups versions 3.1 and 3.11.

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A COMPARISON OF CLIENT-SERVER AND PEER-TO-PEER NETWORKS

This application note discusses the differences between the peer-to-peer and client-server networking models.

NOTE: The text for this application note was taken from the Windows for Workgroups Resource Kit.

Part of a network's overall design includes a decision about how network resources will be shared and managed. Early networks used central file servers to manage access to shared files and printers. These servers were often workstations dedicated to sharing resources or running network file server-related applications (for example, database engines). Examples of network operating systems (NOSs) that support the central file server model include Microsoft LAN Manager and Novell® NetWare®. The peer-to-peer network model was developed more recently. Network workstations in a peer-to-peer model can access resources shared by another user and share resources on their local workstations to allow access by other members of their workgroup. Windows for Workgroups supports the peer-to-peer networking model.

The central file server model requires that all file sharing take place on the LAN server itself. That is, if the file server is the central repository of information, then all exchanges of information between workstations on a LAN must first pass through the file server. This model is commonly implemented in an environment where the workstations don't have the processing power or the resources capable of supporting networking server functionality. For example, the workstations may not have enough memory or may have small-capacity hard disks.

In the peer-to-peer networking model, each workstation (or at least one workstation) in a file-transfer scenario acts as both a client and a server. As a client, the workstation can access the network resources shared by another workstation. This model is commonly implemented in an environment where workstations have the processing

power and resources to provide network server functionality or where the cost of dedicating a workstation as a server is prohibitively high. The peer-to-peer model is more flexible than the central file server model because a workstation can directly access the shared resources of another workstation.

To illustrate the differences between the central file server model and the peer-to-peer networking model, let's say two workstations, Workstation A and Workstation B, want to share a document. The document was created on Workstation A and resides on Workstation A's hard disk.

In the central file server model, Workstation A must connect to the server, place the document on the server's hard disk, then inform Workstation B that the document is available. Workstation B can then connect to the server and access the document left there by Workstation A. In the meantime, unless Workstation A is working with the specified document directly on the file server (that is, making modifications to the version of the document that resides on the file server), the version of the document that may reside on Workstation A's hard disk will likely become out of sync with the version of the document Workstation B is now using.

In the peer-to-peer networking model, Workstation A simply grants Workstation B permission to access the directory where the files are located on Workstation A's hard disk. Workstation B can then directly connect to Workstation A and access the document. Another way to provide Workstation B with the document that Workstation A created is to have Workstation B give Workstation A access to a shared directory on Workstation B. Then Workstation A can copy the document from its hard disk to the shared directory on Workstation B--however, the latter procedure suffers from the same scenario as the central file server model where the versions of the documents may get out of sync. Since both workstations are considered to be peers, both support client and server functionality.

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KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.10 3.11

=====
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WG0668: Advanced Mail and Schedule+ Help Files and Demos

PSS ID Number: Q92494

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11
-

Microsoft has an Application Note that contains advanced Help files and graphical demonstrations that provide a detailed overview of standard features in Microsoft Mail and Schedule+. The Application Note contains the following files:

Microsoft Mail Help Files and Demonstrations

- CBTLIB3.DLL
- CLKLIB.DEX
- DEMOFX.DEX
- MSMAIL.HLP
- MSMAIL.LES
- PLAY.EXE

Microsoft Schedule+ Help Files and Demonstration

- SCHDPLUS.HLP
- SCHDPLUS.LES

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Microsoft® Product Support Services Application Note (Text File)
WG0668: ADVANCED MAIL AND SCHEDULE+ HELP FILES AND DEMOS
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Revision Date: 11/93
Disks Included

The following information applies to Microsoft Windows™ for
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Introduction

The enclosed WG0668 disks contain advanced help files and graphical
demos that provide a detailed overview of standard features in
Microsoft Mail and Schedule+.

The following information explains how to add the advanced help files
and demos to your current Windows for Workgroups Mail and Schedule+
applications and how to use the help files and demos.

To Install the Help Files and Demos

1. Quit Microsoft Windows.
2. Change to the Windows directory by typing the following lines at
the MS-DOS command prompt and pressing ENTER after each line

```
cd \  
cd \<windows>
```

where <windows> is the path to your Windows directory. For example:

```
cd \win31
```
3. Insert Disk 1 of the enclosed WG0668 disks in your floppy disk
drive.
4. Copy the help and demo files to the Windows directory by typing the
following at the MS-DOS command prompt and pressing ENTER

copy <drive>:*.*

where <drive> is the floppy disk drive containing the WG0668 disk.
For example:

copy b:*.*

5. Remove Disk 1 from your floppy disk drive and insert Disk 2.
6. Repeat step 4.

At this point, the files are in place and ready for access from within Windows for Workgroups Mail or Schedule+.

To Run the Advanced Help Files and Demos

-
1. Start Microsoft Windows.
 2. From Program Manager, choose Run from the File menu.
 3. In the Command Line box, type "winhelp.exe" (without the quotation marks).
 4. Choose the OK button. You are now in Windows Help.
 5. From the File menu, choose Open.
 6. From the File Name list box, select MSMAIL.HLP for Mail help or SCHDPLUS.HLP for Schedule+ help.
 7. Choose the OK button.

From the list of help topics, click the topic you want to learn more about (or use the TAB key to move to the topic and then press ENTER). Many of these topics contain demonstrations of Mail and Schedule+. You can access the demos by choosing the Demo button when available.

NOTE: Not all topics will have a demonstration.

Features Not Available in Windows for Workgroups Mail and Schedule+

While these help files provide many advanced examples and additional information, the files also outline a few features that are not available in the Windows for Workgroups versions of Mail and Schedule+. To obtain the full features of Mail 3.0 and Schedule+ 1.0, contact Microsoft Consumer Sales at (800) 426-9400. Listed below are the features mentioned in the help context that are not available in the versions of Mail and Schedule+ included with Windows for Workgroups:

- Postoffice-to-postoffice directory synchronization (multiple postoffices)
- Support for gateways to other mail systems
- An administrator utility to configure and administer the postoffice from any workstation on the network
- Support files for external postoffice mail transfer through a network or modem
- A spelling checker in Mail
- Shared groups in Mail

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KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 3.11 wfw wfwg

=====
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Using Norton Utilities with Windows 3.1

PSS ID Number: Q92727

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SUMMARY

=====

This article discusses incompatibilities between Norton Utilities and Windows 3.1.

MORE INFORMATION

=====

Disk Monitor

Norton Utilities Disk Monitor can cause problems with SMARTDrive if you are running Microsoft Windows operating system version 3.1. Turning off write-behind caching or removing Disk Monitor corrects these problems. If you try to write to the protected drive, you encounter an error and your system fails. If you want to write to and cache a protected drive, add the drive letter to the SMARTDRV command line in your AUTOEXEC.BAT file. For example, if drive D is protected by Disk Monitor, add the following line to your AUTOEXEC.BAT file:

```
SMARTDRV D
```

NUCONFIG

The program NUCONFIG.EXE that comes with Norton Utilities versions 6.x doesn't run correctly with Windows 3.1. This program configures NCACHE.EXE, which should not be used with Windows 3.1. You should use SMARTDRV.EXE or another cache that is Windows compatible.

NUCONFIG may appear to stop responding (hang) when run with Windows 3.1. In most cases, if you wait long enough, the program does return. This application may also cause a system integrity violation error.

Norton Command Center

The Norton Command Center (NCC) in Norton Utilities version 4.5 doesn't correctly reset the display if you are using 40-column mode. To work around this problem, issue the command again, or upgrade to Norton version 5.0 or later.

TIMEMARK

Norton TIMEMARK cannot keep track of time that has passed between the use of the Start parameter in one command prompt and the use of the Stop parameter in another command prompt in Windows 3.1 standard mode.

NCACHE

Norton Utilities Version 5.0 (DISKREET, NCACHE)

This program is incompatible with Windows 3.1 and may cause your system to fail. It is recommended that you upgrade to the most recent version of Norton Utilities to correct such problems.

Norton Utilities Version 6.01 (NCACHE)

Some versions of NCACHE may prevent you from setting up or starting Windows 3.1. When Windows is running in standard mode, your system may fail, especially if NCACHE is set up as an EMS cache. Setting up NCACHE as an EMS cache is not recommended. Setting up NCACHE as an XMS cache may correct this problem.

You may also encounter additional problems using NCACHE. New versions may correct these problems. For an updated version of NCACHE, contact Symantec Corporation. In the meantime, you can use SMARTDrive, which is provided with Windows 3.1.

Norton Utilities Version 6.01 (DISKMON)

The text below discusses information from the Symantec application note #4103 about Norton Utilities version 6.01 and Microsoft Windows operating system version 3.1.

1. NCACHE, the Norton disk caching software, may cause system lockups when Windows 3.1 is run in standard mode. Norton recommends configuring NCACHE for extended memory. If the problem continues, disable the Write cache. Consult your Norton manual for instructions.
2. NCACHE is incompatible with Windows 3.1 32-bit Disk Access. If using 32-bit Disk Access, then use SMARTDRV.EXE version 4.0.
3. The following error message will occur if you run Norton's Calibrate utility while SMARTDRV.EXE is caching the drive:

Disk Mapping Error

Disable SMARTDRV.EXE when using the Calibrate program.

4. Microsoft recommends not running Norton Disk Monitor, DISKMON.EXE, while Windows is running. It may cause a prolonged beeping noise.
5. Erase Protect is normally configured to use as much free hard drive space as necessary, this sometimes causes Windows to experience printing and temporary swap file problems, because of lack of space for temporary files. Norton recommends configuring Erase Protect not to protect files with the extensions of .TMP and .SWP, and limiting the size of the of Erase Protect to 2048. Consult your Norton manual for instructions.

Norton Shell

The Norton Shell should not be used to start Windows 3.1. Microsoft recommends starting Windows operating system version 3.1 from the command prompt or the AUTOEXEC.BAT file.

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KBCategory: kb3rdparty kbdisplay kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 3rdparty

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FastTips: Setup Questions & Answers for Windows 3.1

PSS ID Number: Q93356

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PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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This article contains the complete text of the "Setup Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft

FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WW0575: SETUP QUESTIONS & ANSWERS
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Revision Date: 12/92
No Disk Included

The following information applies to Microsoft Windows™ version 3.1.

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1. Q. What is the most common reason for unsuccessful installation of Microsoft Windows?
 - A. Terminate-and-stay-resident (TSR) programs loaded from the CONFIG.SYS and AUTOEXEC.BAT files are the most common cause of unsuccessful Windows installations. If you are having difficulty with Windows Setup, insert a system disk in your floppy disk drive and restart your computer. The system disk should contain CONFIG.SYS and AUTOEXEC.BAT files without any device drivers or TSR programs loaded, unless such items are needed to access the hard disk drive. If you use any special drivers for your hard disk drive, such as Disk Manager or Stacker™, make sure the drivers are in your new CONFIG.SYS and AUTOEXEC.BAT files and also on the system disk.
 2. Q. When Windows Setup attempts to switch from the MS-DOS-based portion of Setup to the Windows-based portion of the installation, the hourglass disappears and Setup hangs, or Windows exits to MS-DOS. Why is this happening?
 - A. Setup may stop responding if a corrupted SETUP.INF or SETUP.EXE file or an outdated version of one of these files is located in the WINDOWS or WINDOWS\SYSTEM directory. Search for SETUP.INF and SETUP.EXE in these directories and rename these files if you find them. (For example, rename SETUP.INF to SETUP.OLD.) After you rename the file or files, run the Windows Setup program again from the Windows disks.
 3. Q. Setup correctly identifies that I have a Video Seven™ video card; however, when I switch from the MS-DOS-based portion

of Setup to the Windows-based portion of Setup, my computer hangs. How can I correct this problem?

- A. The video drivers that ship with Windows 3.1 support most Video Seven video cards, but not those using the Headland Technology Video Seven HT-216 or HT-217 chip sets. If your card uses one of these chip sets, select standard VGA, rather than Video Seven, during Setup. If you need the additional resolution or color drivers for the card, contact Video Seven technical support.

KBCategory: kbfile kbfasttip kbdisplay kbappnote

KBSubcategory: win31

Additional reference words: appnote 3.10 ivrfax fasttips AWW31

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FastTips: Printing Questions & Answers for Windows 3.1

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3.10 3.11

WINDOWS

SUMMARY

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This article contains the complete text of the "Printing Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WW0576: PRINTING QUESTIONS & ANSWERS
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1. Q. Since I upgraded to Microsoft Windows operating system version 3.1, I have been experiencing printing problems that did not occur in Windows 3.0. What could be causing such problems?
 - A. Printing problems that did not occur with previous versions of Windows may indicate that your printer driver was not updated correctly when you installed Windows 3.1. To ensure your printer driver is updated correctly, reinstall it using the following three steps:
 1. In the Control Panel window, choose the Printers icon, select the printer driver, and choose the Remove button.
 2. In File Manager, move to the WINDOWS\SYSTEM directory. Select the printer driver filename and press the DEL key.
 3. Choose the Printers icon in the Control Panel window, choose the Add button, select your printer, and choose the Install button.

Note: Reinstalling the printer driver corrects approximately 90 percent of printing problems with TrueType® and third-party fonts.
2. Q. When I have newsletters printed at a shop that uses Linotronic™ printers, the shop tells me I must not be using the correct driver because the driver I'm using doesn't support "extra sizes" (oversized pages with space in the margins for crop marks and other notations). How can I correct this problem?
 - A. This problem usually occurs if you are using an older version of the Windows PostScript® driver that has limited functionality for printing to Linotronic printers and other imagesetters. Updated support files for Linotronic printers and the PostScript driver version 3.53 are now available from Microsoft. If you have a modem, you can download the updated driver from the Microsoft Download Service (MSDL) at (206) 936-6735. Download PSCRIP.EXE from the Windows Driver Library section of the MSDL.
3. Q. When I print in landscape mode on a Linotronic printer, the encapsulated PostScript (EPS) graphic portions of my document are rotated. How can I correct this problem?
 - A. If you are using the Linotronic printer driver (or another PostScript driver), try adding the following line to the [<ModelName,Port>] section of the WIN.INI file (the section that reads [Linotronic 200/230,LPT1], not the section that reads [PostScript,LPT1]):

```
LandscapeOrient=270
```
4. Q. My Hewlett-Packard® (HP[R]) LaserJet® II prints correctly in portrait mode; however, in landscape mode, it generates corrupted output. I experience this problem with all my Windows-based applications, including Microsoft Windows Write (which I use to determine whether the printing problem is caused by Windows or the application I am using). How can I correct

this problem?

- A. This problem is corrected in an updated Windows printer driver for HP LaserJet printers. If you have a modem, you can download this driver from the MSDL at (206) 936-6735. Download the file HPPCL.EXE from the Printer Driver section of the MSDL. You can obtain this driver on disk by calling Microsoft Consumer Sales at (800) 426-9400.

If you are using an earlier driver, this problem may be caused by setting the Form Length option on the LaserJet to a value greater than 60. On the front panel of the printer, change this setting to 60 using the following six steps:

1. Press the ON LINE key to take the printer off line.
 2. Press the MENU key five times until "FORM=..." appears on the display.
 3. Press the plus sign (+) or minus sign (-) key to adjust the setting to 60 lines.
 4. Press the ENTER key to select the change. An asterisk (*) should appear on the right side of the display.
 5. Press the MENU key once. "00 READY" should appear on the display; however, do not proceed until you complete step six.
 6. Press and hold down the CONTINUE/RESET key until "07 RESET" is displayed. You must select "07 RESET" to make the form length change take effect.
5. Q. Can I use TrueType fonts with my Hewlett-Packard DeskJet® 500C and 550C printers?
- A. Yes. You can use TrueType fonts with these printers as long as you use the version 3.0 Hewlett-Packard printer driver for the DeskJet 500C and 550C. To obtain the 3.0 DeskJet driver, call Hewlett-Packard at (303) 353-7650.
6. Q. Can I print in color using my Hewlett-Packard DeskJet 500C and 550C printers?
- A. If you use the version 3.0 DeskJet printer driver supplied by Hewlett-Packard, you can print in color on both the HP DeskJet 500C and 550C printers. To obtain the 3.0 DeskJet driver, call Hewlett-Packard at (303) 353-7650.
7. Q. I'm having difficulty getting any output from my PostScript printer. How should I troubleshoot this problem?
- A. Windows 3.1 ships with a special PostScript testing file called TESTPS.TXT, which is copied into the WINDOWS\SYSTEM directory when you install your PostScript printer in Windows. Use the MS-DOS COPY command to copy TESTPS.TXT to the PostScript printer's port by typing either

```
COPY C:\WINDOWS\SYSTEM\TESTPS.TXT COM<x>
```

-or-

```
COPY C:\WINDOWS\SYSTEM\TESTPS.TXT LPT<x>
```

Note: In these commands, <x> is equal to the port number.

If your printer is functioning correctly, a page with the settings for baud rate, data bits, parity, flow control, and so forth, is ejected. Use this information to correct the Windows Port settings in the Control Panel and the memory settings for the PostScript driver. If this page is not ejected, the problem may be with the printer itself. In this case, please refer to your printer documentation for troubleshooting steps or call your printer manufacturer.

8. Q. I updated to version 3.52 of the PostScript printer driver and now I receive the message "Offending Command" when I try to print to my IBM® Personal Pageprinter. When I use the same driver with other PostScript printers, I do not have this problem. What is causing this problem?

A. Version 3.52 generates the "Offending Command" error message on the following printers:

IBM Laser Printer 4019 PS17
IBM Laser Printer 4019 PS39
IBM Personal Pageprinter
IBM Personal Pageprinter II-30
IBM Personal Pageprinter II-31

To correct this problem, you must upgrade to the 3.53 version of the PostScript driver. If you have a modem, you can download the updated driver from the MSDL at (206) 936-6735. Download PSCRIP.EXE from the Windows Driver Library section of the MSDL.

9. Q. Why is the Network button unavailable in the Printers dialog box of the Control Panel?

A. The Network button is unavailable when any of the following conditions exists:

1. Network support has not been installed. (For example, the Network button is unavailable if you are on a Novell® NetWare® network but the Novell option was not selected when Windows Setup was run.) To correct such problems, choose the Windows Setup icon, select the appropriate network option, then restart Windows.
2. The network you are using does not support this option. (There is no workaround in such cases.)
3. A valid LPT port has not been selected. If you select a communications (COM) port or an invented port (such as LPTx.DOS or LPTx.OS2), the Network button is unavailable.

KBCategory: kbnetwork kbfasttip kbdisplay kb3rdparty kbfile kbappnote
KBSubcategory: win31
Additional reference words: appnote 3.10 ivrfax fast tips AWW31

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FastTips: Applications Questions & Answers for Windows 3.1

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PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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This article contains the complete text of the "Applications Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WW0577: APPLICATIONS QUESTIONS & ANSWERS
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Revision Date: 12/92
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1. Q. Since I upgraded from Microsoft Windows version 3.0 to 3.1, I can no longer use the object-linking-and-embedding (OLE) features in Microsoft Excel for Windows or Microsoft Word for Windows. What is causing this problem?
 - A. When you upgrade to Windows 3.1, Windows may not recognize the OLE database, which is named REG.DAT. If Windows cannot recognize REG.DAT, you cannot use OLE features in your Windows-based applications. To use OLE applications in Windows 3.1, you must update REG.DAT with the following five steps:
 1. From the Program Manager File menu, choose Run.
 2. In the Command Line box, type "regedit" (without the quotation marks) and choose the OK button to open the Registration Information Editor.
 3. From the File menu, choose Merge Registration File.
 4. Select the registration file that corresponds to the OLE server application you are using. (For example, if you are using Microsoft Publisher, choose MSPUB.REG.)
 5. Choose the OK button.
 2. Q. When I try to upgrade to Windows 3.1 using Digital Research® (DR) DOS version 6.0, I receive the error message "Standard Mode: Fault in MS-DOS Extender." Why is this error occurring?
 - A. Microsoft can ensure the stability of Windows 3.1 only when it is running on Microsoft MS-DOS or IBM® PC-DOS versions 3.1 or later. Digital Research has announced the availability of a software upgrade for running Windows with DR DOS; however,

Microsoft does not recommend using Windows 3.1 with DR DOS, either with or without the Digital Research software update. We cannot ensure the stability of Windows with DR DOS.

3. Q. When I try to run one of my MS-DOS-based applications, the MS-DOS screen briefly displays a message; but before I can read it, the Windows screen returns. Does this message tell me why my MS-DOS-based application cannot run?

A. This message may tell you why your application cannot run. To suspend the message so that you can read it, use the PIF Editor to create a program information file (PIF) for the application. Make sure the Close Window On Exit check box is not selected. (This forces any error messages to remain on the screen when you run your application.)

Try running the application using this new PIF. Read the message when it reappears and then try to correct the problem based on the error message information. After you correct the problem and want to resume normal work in your application, reopen the PIF using the PIF Editor and select the Close Window On Exit check box so that you do not have to quit the program manually each time you exit.

4. Q. My Windows-based applications run correctly under Windows 3.1, but my MS-DOS-based applications have display problems. (These programs run correctly under Windows 3.0.) I am using the standard Windows 3.1 VGA driver. How can I correct these problems?

A. The Windows 3.1 VGA video driver causes problems for some video cards (mostly older ones) when you are running MS-DOS-based applications in 386 enhanced mode. To work around this problem, use the following three steps:

1. Quit Windows.
2. Change to the WINDOWS directory.
3. Type "setup" (without the quotation marks). When the hardware options are displayed, select the VGA (Version 3.0) option.

Using the VGA (Version 3.0) option should correct this problem.

5. Q. Does SMARTDrive make my system run more slowly with Windows 3.1 than with 3.0?

A. SMARTDrive runs more slowly with double buffering than without it. To make SMARTDrive run faster with double buffering, try adding the /L switch to the SMARTDrive command line in AUTOEXEC.BAT. This switch forces SMARTDrive to load its buffer low (that is, into conventional memory).

Note: If your hard disk requires the use of double buffering, Windows places a SMARTDrive command in your CONFIG.SYS file as well as in your AUTOEXEC.BAT file. You must place the /L switch on the command line in your AUTOEXEC.BAT file.

6. Q. Why is the line "DEVICE=C:\WINDOWS\SMARTDRV.EXE /DOUBLE_BUFFER" in my CONFIG.SYS file and why can't I run Windows in 386 enhanced mode when I have a 386 computer with 4 megabytes (MB) of memory?

A. When you install Windows, Windows Setup tests to see if it can recognize the hard disk drive. If the hard disk drive uses a SCSI controller or a caching controller, Windows adds the line "DEVICE=C:\WINDOWS\SMARTDRV.EXE /DOUBLE_BUFFER" to the CONFIG.SYS file. Sometimes, double buffering may not be activated even though you have that line in the CONFIG.SYS file. If you have a controller and double buffering is not active, you

may be unable to run Windows in 386 enhanced mode. To force double buffering, add a plus sign to the end of the SMARTDRV.EXE line so that it reads as follows:

```
DEVICE=C:\WINDOWS\SMARTDRV.EXE /DOUBLE_BUFFER+
```

7. Q. I have an IBM PS/2® model 55 SX with a SCSI hard disk drive. Every time I try to boot Windows 3.1 in 386 enhanced mode, my machine stops responding (hangs). The Windows logo is displayed briefly, but then the screen goes blank. I added SMARTDrive with the /DOUBLE_BUFFER+ option, but it did not have any effect. How can I correct this problem?

A. Windows 3.1 has a switch called MCADMA designed specifically for the PS/2 model 55 SX. To correct this problem, disable the switch using the following two steps:

1. Edit the SYSTEM.INI file with a standard ASCII text editor.
2. Locate the [386Enh] section and add the line "MCADMA=OFF" (without the quotation marks).

Note: Do not use this switch with any computer other than the IBM PS/2 55 SX, even other PS/2 computers.

For more information on the MCADMA switch, please refer to the SYSINI.WRI file.

KBCategory: kbfile kbfasttip kbdisplay kbappnote

KBSubcategory: win31

Additional reference words: appnote 3.10 ivrfax fast tips AWW31

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FastTips: Usage Questions & Answers for Windows 3.1

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PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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This article contains the complete text of the "Usage Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

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Microsoft® Product Support Services Application Note (Text File)
WW0578: USAGE QUESTIONS & ANSWERS

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1. Q. How does holding down the SHIFT key affect Microsoft Windows startup and exit?
 - A. When you start Windows, if you hold down the SHIFT key after typing "WIN" (without the quotation marks) and pressing ENTER, the applications in the startup group do not load.

If you hold down the SHIFT key while you double-click the Control-menu box in Program Manager (as if you were trying to exit Windows), the Program Manager layout is saved without actually exiting Windows.
 2. Q. When I exit Windows on my IBM® PS/2® computer, or another computer that uses a mouse connected to an IBM PS/2-style mouse port, there seems to be a long delay before the MS-DOS prompt appears. How can I correct this problem?
 - A. This delay occurs most frequently on PS/2 models 56 and 57; however, it may also occur on models 70, 80, 90, and 95. To correct this problem, use the following two steps:
 1. Open the SYSTEM.INI file with a standard ASCII text editor, such as Microsoft Windows Notepad.
 2. Locate the [386Enh] section and add the following line:

```
InitPS2MouseAtExit=False
```


This line prevents Windows from attempting to reinitialize the PS/2-style mouse port prior to exiting to MS-DOS. While this does correct the initial problem, it may cause problems with some older MS-DOS-based applications that use the mouse.
 3. Q. When I try to start Windows, I receive the error message "Error Loading PROGMAN.EXE." What is causing this error and how can I correct it?
 - A. The following three conditions can cause this error message:
 1. The first cause is an incorrect or missing SHELL= line in the [boot] section of the SYSTEM.INI file.

To correct this problem, edit SYSTEM.INI with a standard ASCII text editor. Locate the SHELL= line in the [boot]

section and make sure it reads "SHELL=PROGMAN.EXE". Make sure you have only one PROGMAN.EXE file, that it is dated 3/10/92 or later, and that it is in the WINDOWS directory. If the correct PROGMAN.EXE is missing from the WINDOWS directory, use the EXPAND utility, which is installed in the WINDOWS directory on your hard disk during Setup, to expand the correct version of PROGMAN.EXE to the WINDOWS directory. To do this, type the following:

```
EXPAND A:\PROGMAN.EX_ C:\WINDOWS\PROGMAN.EXE
```

You should also make sure there is a line in the [boot] section that reads "SYSTEM.DRV=SYSTEM.DRV." If you have Adobe Type Manager® installed, the line should read "SYSTEM.DRV=ATMSYS.DRV."

2. The second cause of the "Error Loading PROGMAN.EXE" error is an incorrect version of the SHELL.DLL file.

To correct this problem, make sure you have only one file called SHELL.DLL, that it is dated 3/10/92 or later, and that it is located in the WINDOWS\SYSTEM directory.

If SHELL.DLL is missing or damaged, use the EXPAND utility to expand the correct version of SHELL.DLL to the WINDOWS\SYSTEM directory by typing the following:

```
EXPAND A:SHELL.DL_ C:\WINDOWS\SYSTEM\SHELL.DLL
```

3. The third cause of the "Error Loading PROGMAN.EXE" error is the presence of the VSafe virus-protection program in the CONFIG.SYS file.

To correct this problem, remove the VSAFE.SYS file from the CONFIG.SYS file and VSAFE.EXE from the LOAD= command in the WIN.INI file.

For more information on the VSafe virus-protection software, please contact Central Point Software.

4. Q. My Novell® NetWare® NWPOPUP.EXE messaging utility doesn't seem to be working correctly. I do not receive any messages until I exit Windows. What is causing this problem?
A. If you are running Windows in 386 enhanced mode and you have a version of the Novell NetWare NWPOPUP.EXE file dated earlier than 3/10/92 in your WINDOWS directory, the utility is loaded, but it cannot initialize properly under Windows 3.1. This problem also occurs if NWPOPUP.EXE is located in a directory before the WINDOWS directory entry in the PATH= statement in the AUTOEXEC.BAT file. In either case, you may need to add the following line to the [386Enh] section of your SYSTEM.INI file:

```
TimerCriticalSection=10000
```

This command increases the amount of time (specified in milliseconds) before the critical section is timed out.

5. Q. I am the system administrator for a Novell NetWare network. Most of my workstations run without any problems, but two of them cannot run in 386 enhanced mode; they run in standard mode only. However, if I do not log these workstations on to the network, they do run in 386 enhanced mode. What is causing this problem and how can I correct it?
A. This problem can be caused by incorrect network software drivers, an IRQ conflict, a RAM address conflict, or a base address conflict. To troubleshoot this problem, use the following four techniques:
 1. Read the NETWORKS.WRI file to determine the steps necessary to upgrade your current versions of IPX and NETX. If

necessary, contact your network card manufacturer for new low-level drivers.

2. Most machines do not support having two devices using the same IRQ simultaneously. Therefore, if you are using your network card on IRQ3 or IRQ4, you must either disable COM2 or COM1 (because COM1 uses IRQ4 and COM2 uses IRQ3) or reconfigure the network card for an available IRQ. On most machines, IRQ5 and IRQ2 are available (that is, no other hardware devices are attempting to use them).
 3. Many network cards use a RAM address in the upper memory area between 640 and 1024 kilobytes (K). If your card is using this range, exclude use of this range with EMM386.EXE or by adding an EMMEXCLUDE statement in the [386Enh] section of the SYSTEM.INI file. Some cards do not function correctly at the D000 address and need to be reconfigured for D800.
 4. Many hardware devices have base memory addresses that may conflict with an existing device, such as a COM port. Try reconfiguring the network card for an address of 300 hexadecimal (h) or greater.
6. Q. My network card does not register in the memory area between 640K and 1024K; therefore, I know I must manually exclude this range in the upper memory area (UMA). I placed an EMMEXCLUDE statement in the SYSTEM.INI file, but this doesn't seem to have any effect. How can I correct this problem?

- A. If you are using an upper memory block (UMB) provider, you must exclude it using its own exclude command because the provider has priority in the UMB area and overrides the EMMEXCLUDE switch. For example, if you are using EMM386.EXE and need to exclude the 32K of memory from D800 to DFFF, use the following command:

```
DEVICE=C:\WINDOWS\EMM386.EXE RAM X=D800-DFFF
```

If you are not using a UMA manager or UMB provider, the EMMEXCLUDE statement in the [386Enh] section of the SYSTEM.INI file should work correctly.

7. Q. I run numerous batch (.BAT) files on my computer. When I run some of these files from Windows, I receive the error message "Out of Environment Space." The same .BAT files run correctly outside Windows. What is causing this error?
- A. Windows 3.1 contains a switch called CommandEnvSize= that allows you to control the size of the MS-DOS environment for MS-DOS-based applications run from within Windows. Your .BAT file probably has overrun the available environment space. To increase the size of the MS-DOS environment, use the following two steps:
1. Edit the SYSTEM.INI file with a standard ASCII text editor, such as Microsoft Windows Notepad.
 2. Locate the [NonWindowsApp] section and add the line "CommandEnvSize=" (without the quotation marks). Assign a value between 160 and 32,768 following the equal sign. For more information on this switch, please refer to the SYSINI.WRI file.
8. Q. Why is the Advanced button in the Ports dialog box unavailable when I choose the Ports icon in Control Panel?
- A. If the Windows 3.1 COMM.DRV file is installed incorrectly, the Advanced button in the Ports dialog box is unavailable. If you upgrade from Windows 3.0 to 3.1 and you were previously using a third-party communications driver with Windows 3.0, the Windows

3.1 Setup program does not update the communications driver. To ensure your COMM.DRV file is installed correctly, do the following:

1. Make sure you have the following setting in the [boot] section of your SYSTEM.INI file:

```
COMM.DRV=COMM.DRV
```

If this does not correct the problem, check the COMM.DRV size and date in the SYSTEM directory. The file should be dated 3/10/92 and have a file size of 9280 bytes. If the date or size is incorrect, proceed with the next step.

2. Using the EXPAND utility, reinstall COMM.DRV from the Windows Setup disks to the WINDOWS\SYSTEM directory by typing the following:

```
EXPAND A:\COMM.DR_ C:\WINDOWS\SYSTEM\COMM.DRV
```

Note: COMM.DRV is found on Disk 1 for 3.5-inch disks and Disk 2 for 5.25-inch disks.

9. Q. Can I set up a permanent or temporary swap file on a stacked disk drive?

A. Windows 3.1 does not support the use of a permanent or temporary swap file on a stacked drive (that is, a drive on which you are running the Stacker[™] utility).

10. Q. I seem to be having some type of hardware or software conflict in my machine. What tools are available to help me determine information such as the BIOS version of the machine and what COM ports and IRQs are being used?

A. Windows 3.1 ships with the Microsoft Diagnostics (MSD) program. This tool is normally installed in your WINDOWS directory during Windows Setup. You can use MSD from within Windows; however, the most effective way to use it is to quit Windows and run MSD.EXE at the command prompt by typing the following:

```
C:\WINDOWS\MSD.EXE
```

KBCategory: kbnetwork kbfasttip kb3rdparty kbfile kbappnote

KBSubcategory: win31

Additional reference words: appnote 3.10 ivrfax fast tips AWW31

=====
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FastTips: Error Messages Questions & Answers for Windows 3.1

PSS ID Number: Q93364

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

SUMMARY

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This article contains the complete text of the "Error Messages Questions & Answers" fax script.

This fax script is available to customers who call the Microsoft FastTips Service for Operating Systems at (800) 936-4200.

MORE INFORMATION

=====

=====
Microsoft® Product Support Services Application Note (Text File)
WW0579: ERROR MESSAGES QUESTIONS & ANSWERS
=====

Revision Date: 12/92
No Disk Included

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-
1. Q. When I start File Manager, I receive the error message "Cannot read from drive I." After I choose the OK button to close the error message, File Manager displays all my drives, but I cannot access any files. What is causing this error?
 - A. If you are using MS-DOS version 4.x, a file named GRAPHICS.COM may be causing this error. To correct this problem, open your AUTOEXEC.BAT file and try removing the command line that specifies GRAPHICS.COM. The MS-DOS version 5.0 GRAPHICS.COM file does not cause this problem.
 2. Q. What should I do when I receive the "Inadequate DPMI server" error?
 - A. The error message "Inadequate DPMI server" is displayed if the files KRNL386.EXE and WIN386.EXE are from different versions of Windows. (Specifically, the error message occurs if one file is from Windows 3.0 and the other is from 3.1.) To determine if this is causing the problem, check the dates on the KRNL386.EXE and WIN386.EXE files. These files are located in the WINDOWS\SYSTEM directory. It is possible that older versions of these files may be in the PATH statement or in the WINDOWS directory; therefore, be sure to search all the directories listed in the PATH statement. If necessary, rename or delete old versions of these files and then use the EXPAND utility, which is located in the WINDOWS directory, to expand new copies of these files from the Windows Setup disks.

The "Inadequate DPMI server" error message may also appear if your system memory-configuration settings do not match the amount of memory the system actually has. The setting changes necessary depend on the type of hardware you have. For more information about changing these settings, please refer to your hardware documentation.

3. Q. When I switch to the command prompt from Windows, I receive the error message "Incorrect system version. Please install the 386 Enhanced section and run Setup again." What is causing this error and how can I correct it?

A. This error can be caused by either of the following two conditions:

1. An old WINOA386.MOD file is located in the WINDOWS directory or in the PATH statement. Delete the old file and use the EXPAND utility to expand an updated version from the Windows 3.1 disks by typing the following:

```
EXPAND A:\WINOA386.MO_ C:\WINDOWS\SYSTEM\WINOA386.MOD
```

2. In the SYSTEM.INI file, three lines specify what kind of video driver Windows uses when running in 386 enhanced mode. These lines are 386Grabber=, display.driv= (both of these are located in the [boot] section), and display= (which is located in the [386Enh] section). The "Incorrect system version" error message usually occurs if one of these entries is not consistent with the others.

To reset these drivers, use the following five steps:

1. Quit Windows. Change to the WINDOWS directory.
2. Type "setup" (without the quotation marks) and press ENTER.
3. Select the current Display option and press ENTER.
4. From the Display list box, select VGA (version 3 point 0) and press ENTER.
5. If you are prompted to use an existing driver, press the ESC key to load new drivers. (When you press ESC, you are prompted to insert the appropriate Windows Setup disk.)

4. Q. Why do I receive the error message "Call to Undefined Dynalink" when I am running Windows?

A. This error is usually caused by an outdated .DLL file located in the WINDOWS directory. The outdated file most often is TOOLHELP.DLL. To correct this problem, locate this file and rename it, then restart Windows. The correct version of TOOLHELP.DLL is located in the WINDOWS\SYSTEM directory, is dated 3/10/92, and has a size of 14,128 bytes. This problem can also occur with an earlier version of SHELL.DLL, OLECLI.DLL, OLESVR.DLL, and COMMDLG.DLL. All these files should be located in the WINDOWS\SYSTEM directory and should be dated 3/10/92.

The "Call to Undefined Dynalink" error message is also commonly caused by installing an older version of PrinterControl Panel in Windows. To correct this problem, contact LaserTools Corporation to obtain an updated version of PrinterControl Panel or for information on removing PrinterControl Panel from Windows.

KBCategory: kbfile kbfasttip kbdisplay kbappnote

KBSubcategory: win31

Additional reference words: appnote 3.10 ivrfax fast tips AWW31

=====
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WG0670: The Intel SOFTSET Utility

PSS ID Number: Q95139

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1

The Microsoft Product Support Services (PSS) Application Note titled "WG0670: The Intel SOFTSET Utility" contains the Intel SOFTSET utility, which is provided by Intel Corporation for use with its EtherExpress™ line of network adapter cards. This utility is used to configure the network interface card (NIC) and diagnose potential hardware problems.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WG0670

=====

=====

Microsoft® Product Support Services Application Note (Text File)
WG0670: THE INTEL® SOFTSET™ UTILITY

=====

Revision Date: 12/92
Disk Included

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INTRODUCTION

=====

The enclosed WG0670 disk contains the Intel SOFTSET utility, which is provided by Intel Corporation for use with its EtherExpress™ line of network adapter cards. This utility is used to configure the network interface card (NIC) and diagnose potential hardware problems. Microsoft does not provide this utility with Windows for Workgroups because SOFTSET is not normally required for the proper operation of Windows for Workgroups.

THE INTEL ETHEREXPRESS ETHERNET ADAPTERS

=====

The Intel EtherExpress adapters are software-configurable Ethernet cards. They contain no hardware jumpers, DIP switches, or other means for configuring the NIC. EtherExpress holds its settings in an erasable programmable read-only memory (EPROM) chip. These settings are dynamically adjustable. This means that regardless of the NIC's settings, you can override the adapter settings by using the software.

Windows for Workgroups adjusts the settings of the EtherExpress adapter during the boot of the host machine. For this reason, SOFTSET is not necessary for configuring EtherExpress with Windows for Workgroups and consequently is not included with the released product.

For example, EtherExpress has a default configuration of:

I/O Base	300h
IRQ	3
RAM	None

If you select IRQ 5 during Windows for Workgroups setup, this IRQ setting will override the programmed setting in the EtherExpress EPROM.

NOTE: Configuring the EtherExpress adapter with Windows for Workgroups will not change the settings on the NIC EPROM. The reconfiguration will take effect only after the Windows for Workgroups network device drivers have loaded.

ETHEREXPRESS ON AN EISA MACHINE

=====

Extended Industry Standard Architecture (EISA) machines attempt to determine what type of hardware is installed during their boot process. Because the EtherExpress adapter is not configured for Windows for Workgroups until its device drivers load, you can have EtherExpress installed in an EISA machine and have EtherExpress conflict with another NIC. While this does not impede the operation of Windows for Workgroups, the conflict will cause errors during the boot process of the EISA machine.

In this situation, using the Intel SOFTSET utility to change the settings of the EtherExpress adapter will help you bypass boot difficulties. By running SOFTSET, you can change the conflicting settings on EtherExpress to cause it to hold different settings at boot time. Again, this will not interfere with the operation of Windows for Workgroups.

RUNNING SOFTSET

=====

You cannot run SOFTSET if the EtherExpress adapter is in use. Therefore, no network drivers can be loaded when you run SOFTSET. The easiest way to configure EtherExpress with SOFTSET is by booting from a system (bootable) disk. To create a system disk, then boot your machine from it, and then run SOFTSET, do the following:

NOTE: Steps 1 and 2 are not necessary if you already have a system disk. If you have a system disk, place that disk in drive A and skip to step 3.

1. Insert a blank floppy disk in drive A.
2. To create a system disk, type the following at the MS-DOS command prompt and press enter:

```
format a: /s
```

3. With the system disk in drive A, reboot your machine.
4. Place the enclosed WG0670 disk in the appropriate drive.
5. Change to the drive that contains the WG0670 disk. Type the following at the MS-DOS command prompt and press enter:

```
softset
```

SOFTSET will present the following options:

Option	Description
-----	-----
Automatic setup	<p>When you select this option, SOFTSET will present two choices: the BNC and DIX connectors. If you are using one of the Microsoft starter kits, or add ons, you should probably choose BNC. Otherwise, you need to know what type of connector your machine is using to connect to the network.</p> <p>BNC connector = Coaxial cable, RG-58, or thinnet DIX connector = 15-pin connector, RG-11, RG-8, or thicknet</p>
Manual setup	<p>This option allows knowledgeable users to configure the EtherExpress adapter to values appropriate for their systems. Alterable settings are:</p> <p>I/O address Interrupt Connector type Force 8-bit operation Boot ROM address Amount of RAM to map RAM start address</p> <p>To change a value, use the arrow keys on the keyboard to highlight your selection and press enter.</p>
Run diagnostics	<p>There are two forms of diagnostics available under this option. Run Diagnostics On Board can be run on any machine containing an EtherExpress adapter. Run Diagnostics On Network and Set Up As Diagnostics Responder require at least two machines connected with the appropriate cabling.</p> <p>Run Diagnostics On Board allows you to test the Ethernet adapter itself for potential defects.</p> <p>Run Diagnostics On Network and Set Up As Diagnostics Responder allow you to test whether the media connecting the two machines that contain EtherExpress adapters is functional. This is particularly useful in configurations where the cabling or connectors are suspect in networking problems. Running these tests from a machine experiencing problems will help locate these problems.</p> <p>To perform this test, do the following steps:</p>

1. Select Run Diagnostics On Board to ensure that the Ethernet adapter itself is functioning correctly.
2. Install the EtherExpress adapter in two machines.
3. Connect the machines with the appropriate cabling.
4. Start SOFTSET on both machines.
5. On one machine, choose Set Up As Diagnostics Responder.
6. After this machine has been set up with this option, choose Run Diagnostics On Network on the second machine.

NOTE: If the SOFTSET diagnostics fail, repeat these steps after troubleshooting general network hardware issues.

View current configuration This option allows you to view the current settings of the EtherExpress adapter.

Save configuration to file This option allows a LAN administrator to save a configuration to a file for use with other EtherExpress adapters.

Load configuration from file Choosing this option allows you to load a configuration previously saved to disk. This can also be accomplished from the MS-DOS command line by using the following command

```
softset /load=<filename>
```

where filename is the name of the configuration file you want to load.

Exit SOFTSET Choose this option to quit SOFTSET.

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WG0670.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG0670.EXE, and click GO! Open the article, and click the button to download the file.
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KBCategory: kbnetwork kbfile kbappnote

KBSubcategory: wfw wfwg

Additional reference words: appnote wg31tlc 3.10

=====
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WG0673 (WFW 3.10): Novell NetWare Not Supported with ArcNet...

PSS ID Number: Q95140

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1
-

The Microsoft Product Support Services (PSS) Application Note titled "WG0673: Novell NetWare Not Supported with ArcNet Adapter Cards" explains why you cannot connect to a Novell NetWare server from your Microsoft Windows for Workgroups 3.10 workstation if you have an ArcNet network adapter card (also known as a network interface card, or NIC).

This information does not apply to later versions of Windows for Workgroups.

You can obtain this Application Note from the following sources:

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=====

=====
Microsoft Product Support Services Application Note (Text File)
WG0673: NOVELL® NETWARE® NOT SUPPORTED WITH ARCNET®
ADAPTER CARDS
=====

Revision Date: 01/93
No Disk Included

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INTRODUCTION

=====

This application note discusses why you cannot connect to a Novell NetWare server from your Microsoft Windows for Workgroups workstation if you have an ArcNet network adapter card (also known as a network interface card, or NIC).

For your reference, a glossary of network-related terms is located at the end of this document.

SUPPORTED PROTOCOLS AND NOVELL CONNECTIVITY

=====

Windows for Workgroups primarily supports two network protocols: NetBEUI (the protocol that Windows for Workgroups uses), and MSIPX, an NDIS-compliant IPX protocol stack supplied by Microsoft that allows Windows for Workgroups to communicate with Novell NetWare servers. With NetBEUI and MSIPX loaded concurrently, you can connect to NetBEUI-compliant servers and Novell NetWare servers from the same Windows for Workgroups workstation. If you are using an ArcNet network adapter card, however, this configuration does not work.

If you have an ArcNet card and you try to connect to a NetWare server from your Windows for Workgroups workstation, you will receive the following error message:

The network Novell NetWare cannot be added because Windows for Workgroups does not support this network with your ArcNet adapter.

This error is caused by an incompatibility between the NetWare ArcNet MAC driver and the Windows for Workgroups ArcNet MAC driver. This

incompatibility involves the packet fragmentation scheme Novell NetWare uses to transmit ArcNet data packets.

NetBEUI Encapsulated Ethernet Packets

NetBEUI, which conforms to the NDIS standard, supports Ethernet and token ring header formats, but not the ArcNet header format. NetBEUI therefore needs a special way to handle data packets it sends or receives across the ArcNet media. ArcNet provides a MAC driver that supports the NetBEUI protocol. When a Windows for Workgroups server sends data across the ArcNet media, NetBEUI attaches an Ethernet-type header to the data. The ArcNet MAC driver recognizes this header type, but before the data can travel on the ArcNet media, it needs to be packaged with an ArcNet header. The ArcNet MAC driver performs this function and sends the data packet across the media as an ArcNet packet. On the receiving end, the reverse process occurs: the ArcNet MAC driver receives the ArcNet data packet, replaces the ArcNet header with an Ethernet-type header, and passes it to NetBEUI. NetBEUI recognizes the packet and successfully passes it to the Windows for Workgroups client workstation.

Novell IPX Packet Fragmentation

The maximum packet size for an ArcNet data packet is 507 bytes of data following the header. The NetWare protocol requires a minimum data packet size of 576 bytes, enabling reads and writes of 512 bytes of data with 64 bytes of header information. Because of the difference in size between ArcNet and Novell data packets, Novell defined a scheme to transmit several consecutive ArcNet data packets in such a way that they could be reconstructed at the receiver into one data packet. This is referred to as packet fragmentation.

When a NetWare server sends data across the ArcNet media, the Novell IPX protocol, which supports the ArcNet header format, fragments the data and attaches a standard ArcNet header to each fragment. The Novell ArcNet MAC driver then transmits these data packets over the ArcNet media. When the packets are received at the Windows for Workgroups client workstation, the Microsoft ArcNet MAC driver converts the packet headers from ArcNet to Ethernet and passes them to the MSIPX protocol stack. MSIPX doesn't use a packet fragmentation scheme for Ethernet-type headers; therefore it assumes each packet with a separate header is complete. Because this isn't the case, the Windows for Workgroups client workstation can't interpret data sent by a Novell NetWare server over the ArcNet media.

ARCNET NETWORK INTERFACE CARDS: MANUFACTURERS AND SUPPORT

=====

There are currently two major manufacturers of ArcNet network cards: Thomas Conrad (TC), and Standard Microsystems Corporation (SMC). Both cards support the Novell NetWare IPX protocol and the LAN Manager NetBEUI protocol. They support NetBEUI by using encapsulated Ethernet, as described previously.

Standard Microsystems Corporation (SMC)

SMC cards are supported by Novell. (The PC130, PC220, and PS110 boards are documented in the "Novell Standard Microsystems ArcNet Supplement.")

The SMC ArcNet driver for NetWare ships with NetWare as the RX-Net driver. The SMC ArcNet driver for LAN Manager was written by DWB Associates and is now maintained directly by Microsoft.

Thomas Conrad (TC)

The TC ArcNet MAC drivers were written and are maintained by TC.

GLOSSARY

=====

header: A block of bytes preceding the data that identifies the type of data requesting transport across the network.

media access control (MAC) driver: MAC drivers, also known as network-adapter-card drivers, communicate directly with the network adapter card. The MAC driver moves incoming data from the network adapter card to the protocol stack and vice versa.

Network Device Interface Specification (NDIS): This specification, jointly developed by Microsoft and 3Com® in 1989, standardizes how the MAC driver communicates bidirectionally with the protocol stack. Prior to implementation of the NDIS standard, manufacturers of network adapter cards had to provide the protocol stack and the MAC driver functionality in one piece of software (called a monolithic stack). The NDIS standard enables network adapter card vendors to simply provide NDIS-conformant MAC drivers that are compatible with all NDIS-conformant protocol stacks.

protocol stack: The protocol stack implements the set of procedural rules, or protocols, used to communicate across the network.

This Application Note can be found in the Software/Data Library by searching on the word WG0673, the Q number of this article, or S13993. WG0673 was archived using the PKWARE file-compression utility.

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KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 WFW WFWG

=====
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WW0764: Updated SNDSYS.DRV for Single-Mode DMA Transfers

PSS ID Number: Q95354

Article last modified on 07-29-1996

PSS database name: WIN3X

1.00

WINDOWS

The information in this article applies to:

- Microsoft Windows Sound System version 1.0

Microsoft has an Application Note that contains an updated sound driver for use with Microsoft Windows Sound System version 1.0. This driver was created for use on computers with 386 or higher processors that exhibit problems with demand-mode direct memory access (DMA) transfers.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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=====
Microsoft Product Support Services Application Note (Text File)
WW0764: UPDATED SNDSYS.DRV FOR SINGLE-MODE DMA TRANSFERS
=====

Revision Date: 2/93
1 Disk Included

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Introduction

This application note contains an updated sound driver for use with Microsoft Windows Sound System version 1.0. This driver was created for use on computers with 386 or higher processors that exhibit problems with demand-mode direct memory access (DMA) transfers.

Symptoms of demand-mode DMA transfer problems may include:

- Compressed wave (.WAV) files produce only static when played.
- Uncompressed wave (.WAV) files produce some static when played.
- Wave (.WAV) files play at a rate of speed that is approximately twice the normal speed.

33 and 50 megahertz (MHz) machines using the Symphony chip set are known to exhibit all or some of the above symptoms.

The updated driver included with this application note changes the DMA mode used during data transfers to the Windows Sound System hardware. It allows the Windows Sound System software to perform single-mode DMA transfers.

By default, the Windows Sound System uses demand-mode DMA. This means that multibyte transfers can occur during a single data request cycle. Certain chip sets may have difficulty handling the timing of this cycle, sometimes causing multibyte transfers to work incorrectly. By using single-mode DMA, a single byte is transferred per data request cycle. This allows certain chip sets to function with the Windows Sound System hardware; however, it does reduce the bus bandwidth.

NOTE: If your chip set can only operate with single-mode DMA transfers, high bandwidth data formats (such as stereo, 16-bit 22 kilohertz [kHz], and 16-bit 44kHz) may cause pops and clicks when the bus is busy due to high network or disk activity. At this time, there is no software workaround for this problem. If you encounter this problem, contact your chip set manufacturer for a workaround and/or upgrade.

The WW0764 disk included with this application note contains one file: SNDSYS.DRV. This file replaces the file of the same name located in your Windows SYSTEM subdirectory.

To install the updated driver:

1. At the MS-DOS command prompt, type the following, and then press enter

```
cd \<windir>\system
```

where <windir> is the name of your Windows directory. If your Windows directory is called WINDOWS, type the following command:

```
cd \windows\system
```

2. Rename the existing file by typing:

```
ren sndsys.drv sndsys.old
```

3. Insert the enclosed WW0764 disk in your floppy disk drive.
4. At the MS-DOS command prompt, type the following, and then press enter

```
copy <drive:>\sndsys.drv <destination:>\windows\system
```

where <drive:> is the floppy disk drive containing the WW0764 disk and <destination:> is the drive where your Windows SYSTEM subdirectory resides. For example, if the WW0764 disk is in drive A and your Windows directory is called WINDOWS and is on drive C,

type
the following command:

```
copy a:\sndsys.drv c:\windows\system
```

5. Using a text editor, such as Microsoft Windows Notepad, add the following line to the [SNDSYS.DRV] section of your SYSTEM.INI file (usually located in the Windows directory):

```
SingleModeDMA=TRUE
```

NOTE: This line must be present in order for the updated driver to perform single-mode DMA transfers.

TO OBTAIN THIS APPLICATION NOTE

=====

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KBCategory: kbfile kbmm kbappnote kbfile
KBSubcategory: wss

Additional reference words: appnote 1.0 speed sound play symphony dma
d.m.a. scratchy scratch bad sound Appnote WW0764 SoftLib

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WG0768: Banyan VINES 4.11 Support

PSS ID Number: Q95409

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1
-

Microsoft has an Application Note that explains how to install Banyan VINES support for Windows for Workgroups version 3.1.

The Application Note provides the following information:

- How to install Banyan VINES
- How to use Windows for Workgroups on a VINES network
- How to upgrade your workstation to different versions of Banyan VINES
- How to solve common network problems

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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Microsoft® Product Support Services Application Note (Text File)
WG0768: BANYAN® VINES® 4.11 SUPPORT

=====

Revision Date: 2/93
1 Disk Included

The following information applies to Microsoft Windows™ for Workgroups version 3.1.

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INTRODUCTION

=====

This document describes how to install Banyan VINES support for Windows for Workgroups and is divided into four sections:

- "Installing VINES Support" describes how to run the ADDNETS.EXE file and how to add the VINES network to your list of compatible Windows for Workgroups networks.
- "Using Windows for Workgroups on a VINES Network" discusses network issues such as upgrading network software and connecting to network drives and printers.
- "Upgrading Network Software" describes how to upgrade your workstation to different versions of Banyan VINES.
- "Troubleshooting Tips" provides solutions to some common problems you may encounter.

INSTALLING VINES SUPPORT

=====

To install VINES support for Windows for Workgroups, first make sure you have the enclosed WG0768 disk and that it corresponds to your version of Banyan VINES.

To support Windows for Workgroups, your VINES network must be running version 4.11(5), 5.00(5), or 5.50(1) of the network software. If your network is running an earlier version, such as 4.10, you must first upgrade to a more recent version. If your network is running 5.00(6), you must first either reinstall version 5.00(5) or upgrade to 5.50(1). For more information, refer to the "Upgrading Network Software" below.

The WG0768 disk contains the ADDNETS.EXE file, which you need to run before you install VINES support for Windows for Workgroups. The ADDNETS.EXE file modifies the NETWORK.INF file and installs other network software.

Before you install VINES network support, you need to install Windows for Workgroups. Once you've installed Windows for Workgroups, use the following steps to install VINES support:

1. If you are running Windows for Workgroups, quit it and return to the MS-DOS command prompt.
2. Use a text editor to open your AUTOEXEC.BAT file and remove any VINES-specific commands (such as BAN, Z:LOGIN, and so forth).
3. Save your modified AUTOEXEC.BAT file.
4. Insert the WG0768 disk in your floppy disk drive.
5. At the MS-DOS command prompt, type the following and press enter:

```
<drive:>addnets [destination]
```

where <drive> is your floppy disk drive and [destination] is the path for your Windows for Workgroups directory.

NOTE: If Windows for Workgroups is in your PATH environment variable, you don't need to specify the destination. Also, if you are a network administrator and have installed Windows for Workgroups to a server by using Setup with the /A option, you can type the path to the shared server directory in place of the destination parameter to update that installation.

The Addnets installation program modifies the NETWORK.INF file with VINES-specific information and installs some updated driver files (WFVNET.DRV and WFWSETUP.CPL).

This completes the steps that must be performed at the MS-DOS command prompt. To add the VINES network to your list of compatible Windows for Workgroups networks, continue with the following steps:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.

The Network Settings dialog box appears.

4. Under Options, choose the Networks button.

The Compatible Networks dialog box appears.

5. Under Available Network Types, select either Banyan VINES 4.11(5), Banyan VINES 5.00(5), or Banyan VINES 5.50(1) (depending on your network version), and then choose the Add button.

The VINES network software files are copied to your local hard disk drive. If the WG0768 disk is not in your floppy disk drive, the system first prompts you to insert it.

6. Choose the OK button to close the Compatible Networks dialog box.

Control Panel displays a message indicating that the AUTOEXEC.BAT, PROTOCOL.INI, and SYSTEM.INI files have been modified. VINES-specific information has been added to these files. If you want to view them, use a text editor.

7. Choose the OK button again.

8. Remove the disk from your floppy disk drive, and then restart your workstation.

You must restart your workstation in order for the changes to take effect.

USING WINDOWS FOR WORKGROUPS ON A VINES NETWORK =====

Some distinctions between using Windows for Workgroups on a Banyan VINES network and using Windows 3.1 on a Banyan VINES network are described below.

PCCONFIG Modifications -----

Certain VINES files are copied to your Windows for Workgroups directory, including PCCONFIG.DB. If you have made modifications to the PCCONFIG.DB file located in your VINES directory, use the PCCONFIG program to make the same modifications (such as changing the Login Group Search list) to the PCCONFIG.DB file in your Windows for Workgroups directory.

Modifications for Token-Ring LAN Media -----

Currently, token-ring LANs are supported in Windows for Workgroups for

VINES 5.50(1). If your network runs an earlier version of VINES, such as VINES 4.11(5) or 5.00(5), only EtherNet LANs are supported. Updated releases are being developed to provide support for these versions of VINES but are not currently available.

If you are using token-ring media on a network running VINES 5.50(1), be sure to change the default LAN driver to NDIS Token-Ring. To do this, modify the PCCONFIG.DB file in your Windows for Workgroups directory using the PCCONFIG program. (For more information about PCCONFIG, see the previous section, "PCCONFIG Modifications," or refer to your Banyan VINES documentation.)

UPGRADING NETWORK SOFTWARE

=====

This section describes upgrade procedures for different network versions, modifications made to your AUTOEXEC.BAT file, and other issues you should be aware of when using Windows for Workgroups on a Banyan VINES network.

VINES 4.10 Networks

If your network runs VINES 4.10, upgrade to VINES 4.11(5) before installing support for Windows for Workgroups.

VINES 5.00(6) Networks

If your network runs VINES 5.00(6), install VINES support for 5.00(5) according to the installation instructions. When you are prompted to restart your workstation at the end of the installation procedure, do so.

After you restart your workstation, you will use the NEWREV command from the MS-DOS command prompt to upgrade to VINES 5.00(6). However, because the NEWREV program overwrites the PROTMAN.DOS and NDISBAN.COM files located in the Windows for Workgroups directory, you should back up the PROTMAN.DOS and NDISBAN.COM files to another directory before running NEWREV. After the upgrade is complete, copy the PROTMAN.DOS and NDISBAN.COM files back to the Windows for Workgroups directory, and then reboot your workstation again. This ensures that you are using the correct versions of these two files.

Upgrading Your Workstation

If you've upgraded your network server, use the following steps to upgrade your workstation:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.
The Network Settings dialog box appears.
4. Under Options, choose the Networks button.
The Compatible Networks dialog box appears.
5. Under Available Network Types, select your previous version of Banyan VINES, and then choose the Remove button.
6. Under Available Network Types, select the upgraded version of Banyan VINES, and then choose the Add button.
7. Choose the OK button.

You must restart Windows for Workgroups in order for the changes to take effect.

AUTOEXEC.BAT Modifications

Installing VINES support adds the following lines to the workstation's AUTOEXEC.BAT file:

```
ban /nc
ndisban
redirall
arswait
z:login
```

These lines should not be moved to other locations in the AUTOEXEC.BAT file.

NOTE: If you want to run the VINES LOGIN.EXE program locally, copy the file from drive Z, and remove the Z:LOGIN line from your AUTOEXEC.BAT file.

Connecting to a VINES Network Drive or Printer

When you connect to a network drive or network printer by using File Manager or Program Manager, a dialog box appears in which you can select a shared directory or printer in your workgroup. To connect to a VINES network drive or printer, choose the VINES button. The VINES Network Connection dialog box then appears.

Running Named Pipes Applications

Applications written to the Named Pipes application programming interface (API) cannot run with the VINES protocol in the Windows for Workgroups environment; however, these applications are supported by the Windows for Workgroups NetBEUI protocol.

Connecting to OS/2™-Based SQL Server Machines on VINES

SQL Server client applications running with Windows for Workgroups can connect to OS/2-based SQL Server machines on VINES networks by using the Network Integration Kit, which is available from Microsoft.

Routing Between LANs

Windows for Workgroups workstations must reside on the same physical LAN segment in order to make use of the Windows for Workgroups mail, scheduling, file-sharing, and print-sharing features. Windows for Workgroups does not use VINES routing capabilities.

Loading VINES into the High Memory Area

You can use memory managers to load VINES software components into the high memory area (HMA). Refer to your specific memory manager documentation for instructions on how to do this.

TROUBLESHOOTING TIPS

=====

This section provides solutions to some common problems you may encounter when running Windows for Workgroups on a Banyan VINES network.

Environment Variables Overwritten

When you install VINES support for Windows for Workgroups, the VINES LOGIN command is placed near the beginning of your AUTOEXEC.BAT file. PATH (and other environment variables) in your VINES user profile are overwritten by the environment variables in your AUTOEXEC.BAT file.

To work around this problem, either place all environment variables, including PATH, in your user profile only, or place all environment variables AFTER the LOGIN command in your AUTOEXEC.BAT file. If you want to add the user profile PATH environment variable to the PATH environment variable in your AUTOEXEC.BAT file, type "%PATH%" (without the quotation marks) after the LOGIN command at the end of your AUTOEXEC.BAT file. For example, the following statement appends the user profile PATH values (%PATH%) to the existing PATH values (C:\;C:\WINWG) in the AUTOEXEC.BAT file:

```
Path=c:\;c:\winwg;%path%
```

Cannot Access the VINES Network

If you cannot access the VINES network, make sure the SYSTEM.INI file includes the following lines:

```
network.drv=wfwnet.drv  
secondnet.drv=VINES.DRV
```

In a Windows for Workgroups environment, the NETWORK.DRV statement specifies the Windows for Workgroups network driver (WFWNED.DRV) and the SECONDNET.DRV statement specifies the VINES network driver (VINES.DRV).

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- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbnetwork kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 WFW WFWG
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WG0773: Banyan VINES 5.50 Support

PSS ID Number: Q95502

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1
-

Microsoft has an Application Note that explains how to install Banyan VINES support for Windows for Workgroups.

The Application Note provides the following information:

- How to install Banyan VINES
- How to use Windows for Workgroups on a VINES network
- How to upgrade your workstation to different versions of Banyan VINES
- How to solve common network problems

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
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INSTALLING VINES SUPPORT

=====

To install VINES support for Windows for Workgroups, first make sure you have the enclosed WG0773 disk and that it corresponds to your version of Banyan VINES.

To support Windows for Workgroups, your VINES network must be running version 4.11(5), 5.00(5), or 5.50(1) of the network software. If your network is running an earlier version, such as 4.10, you must first upgrade to a more recent version. If your network is running 5.00(6), you must first either reinstall version 5.00(5) or upgrade to 5.50(1). For more information, refer to the "Upgrading Network Software" section below.

The WG0773 disk contains the ADDNETS.EXE file, which you need to run before you install VINES support for Windows for Workgroups. The ADDNETS.EXE file modifies the NETWORK.INF file and installs other network software.

Before you install VINES network support, you need to install Windows for Workgroups. Once you've installed Windows for Workgroups, use the following steps to install VINES support:

1. If you are running Windows for Workgroups, quit it and return to the MS-DOS command prompt.
2. Use a text editor to open your AUTOEXEC.BAT file and remove any VINES-specific commands (such as BAN, Z:LOGIN, and so forth).
3. Save your modified AUTOEXEC.BAT file.
4. Insert the WG0773 disk in your floppy disk drive.
5. At the MS-DOS command prompt, type the following and press enter:

```
<drive:>addnets [destination]
```

where <drive> is your floppy disk drive and [destination] is the path for your Windows for Workgroups directory.

NOTE: If Windows for Workgroups is in your PATH environment variable, you don't need to specify the destination. Also, if you are a network administrator and have installed Windows for Workgroups to a server by using Setup with the /A option, you can type the path to the shared server directory in place of the destination parameter to update that installation.

The Addnets installation program modifies the NETWORK.INF file with VINES-specific information and installs some updated driver files (WFWNET.DRV and WFWSETUP.CPL).

This completes the steps that must be performed at the MS-DOS command prompt. To add the VINES network to your list of compatible Windows for Workgroups networks, continue with the following steps:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.

The Network Settings dialog box appears.

4. Under Options, choose the Networks button.

The Compatible Networks dialog box appears.

5. Under Available Network Types, select either Banyan VINES 4.11(5), Banyan VINES 5.00(5), or Banyan VINES 5.50(1) (depending on your network version), and then choose the Add button.

The VINES network software files are copied to your local hard disk drive. If the WG0773 disk is not in your floppy disk drive, the system first prompts you to insert it.

6. Choose the OK button to close the Compatible Networks dialog box.

Control Panel displays a message indicating that the AUTOEXEC.BAT, PROTOCOL.INI, and SYSTEM.INI files have been modified. VINES-specific information has been added to these files. If you want to view them, use a text editor.

7. Choose the OK button again.

8. Remove the disk from your floppy disk drive, and then restart your workstation.

You must restart your workstation in order for the changes to take effect.

USING WINDOWS FOR WORKGROUPS ON A VINES NETWORK =====

Some distinctions between using Windows for Workgroups on a Banyan VINES network and using Windows 3.1 on a Banyan VINES network are described below.

PCCONFIG MODIFICATIONS -----

Certain VINES files are copied to your Windows for Workgroups directory, including PCCONFIG.DB. If you have made modifications to the PCCONFIG.DB file located in your VINES directory, use the PCCONFIG program to make the same modifications (such as changing the Login Group Search list) to the PCCONFIG.DB file in your Windows for Workgroups directory.

MODIFICATIONS FOR TOKEN-RING LAN MEDIA -----

Currently, token-ring LANs are supported in Windows for Workgroups for VINES 5.50(1). If your network runs an earlier version of VINES, such as VINES 4.11(5) or 5.00(5), only EtherNet LANs are supported. Updated releases are being developed to provide support for these versions of VINES but are not currently available.

If you are using token-ring media on a network running VINES 5.50(1), be sure to change the default LAN driver to NDIS Token-Ring. To do this, modify the PCCONFIG.DB file in your Windows for Workgroups directory using the PCCONFIG program. (For more information about PCCONFIG, see the previous section, "PCCONFIG Modifications," or refer to your Banyan VINES documentation.)

UPGRADING NETWORK SOFTWARE =====

This section describes upgrade procedures for different network versions, modifications made to your AUTOEXEC.BAT file, and other issues you should be aware of when using Windows for Workgroups on a

Banyan VINES network.

VINES 4.10 NETWORKS

If your network runs VINES 4.10, upgrade to VINES 4.11(5) before installing support for Windows for Workgroups.

VINES 5.00(6) NETWORKS

If your network runs VINES 5.00(6), install VINES support for 5.00(5) according to the installation instructions. When you are prompted to restart your workstation at the end of the installation procedure, do so.

After you restart your workstation, you will use the NEWREV command from the MS-DOS command prompt to upgrade to VINES 5.00(6). However, because the NEWREV program overwrites the PROTMAN.DOS and NDISBAN.COM files located in the Windows for Workgroups directory, you should back up the PROTMAN.DOS and NDISBAN.COM files to another directory before running NEWREV. After the upgrade is complete, copy the PROTMAN.DOS and NDISBAN.COM files back to the Windows for Workgroups directory, and then reboot your workstation again. This ensures that you are using the correct versions of these two files.

UPGRADING YOUR WORKSTATION

If you've upgraded your network server, use the following steps to upgrade your workstation:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.

The Network Settings dialog box appears.

4. Under Options, choose the Networks button.

The Compatible Networks dialog box appears.

5. Under Available Network Types, select your previous version of Banyan VINES, and then choose the Remove button.
6. Under Available Network Types, select the upgraded version of Banyan VINES, and then choose the Add button.
7. Choose the OK button.

You must restart Windows for Workgroups in order for the changes to take effect.

AUTOEXEC.BAT MODIFICATIONS

Installing VINES support adds the following lines to the workstation's AUTOEXEC.BAT file:

```
ban /nc
ndisban
redirall
arswait
z:login
```

These lines should not be moved to other locations in the AUTOEXEC.BAT file.

NOTE: If you want to run the VINES LOGIN.EXE program locally, copy the file from drive Z, and remove the Z:LOGIN line from your AUTOEXEC.BAT file.

CONNECTING TO A VINES NETWORK DRIVE OR PRINTER

When you connect to a network drive or network printer by using File Manager or Program Manager, a dialog box appears in which you can select a shared directory or printer in your workgroup. To connect to a VINES network drive or printer, choose the VINES button. The VINES Network Connection dialog box then appears.

RUNNING NAMED PIPES APPLICATIONS

Applications written to the Named Pipes application programming interface (API) cannot run with the VINES protocol in the Windows for Workgroups environment; however, these applications are supported by the Windows for Workgroups NetBEUI protocol.

CONNECTING TO OS/2®-BASED SQL SERVER MACHINES ON VINES

SQL Server client applications running with Windows for Workgroups can connect to OS/2-based SQL Server machines on VINES networks by using the Network Integration Kit, which is available from Microsoft.

ROUTING BETWEEN LANS

Windows for Workgroups workstations must reside on the same physical LAN segment in order to make use of the Windows for Workgroups mail, scheduling, file-sharing, and print-sharing features. Windows for Workgroups does not use VINES routing capabilities.

LOADING VINES INTO THE HIGH MEMORY AREA

You can use memory managers to load VINES software components into the high memory area (HMA). Refer to your specific memory manager documentation for instructions on how to do this.

TROUBLESHOOTING TIPS

=====

This section provides solutions to some common problems you may encounter when running Windows for Workgroups on a Banyan VINES network.

ENVIRONMENT VARIABLES OVERWRITTEN

When you install VINES support for Windows for Workgroups, the VINES LOGIN command is placed near the beginning of your AUTOEXEC.BAT file. PATH (and other environment variables) in your VINES user profile are overwritten by the environment variables in your AUTOEXEC.BAT file.

To work around this problem, either place all environment variables, including PATH, in your user profile only, or place all environment variables AFTER the LOGIN command in your AUTOEXEC.BAT file. If you want to add the user profile PATH environment variable to the PATH environment variable in your AUTOEXEC.BAT file, type %PATH% after the LOGIN command at the end of your AUTOEXEC.BAT file. For example, the following statement appends the user profile PATH values (%path%) to the existing PATH values (C:\;C:\WINWG) in the AUTOEXEC.BAT file:

```
Path=c:\;c:\winwg;%path%
```

CANNOT ACCESS THE VINES NETWORK

If you cannot access the VINES network, make sure the SYSTEM.INI file includes the following lines:

```
network.drv=wfnnet.drv  
secondnet.drv=VINES.DRV
```

In a Windows for Workgroups environment, the NETWORK.DRV statement specifies the Windows for Workgroups network driver (WFWNET.DRV) and the SECONDNET.DRV statement specifies the VINES network driver (VINES.DRV).

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KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 WFW WFWG

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WG0772: Banyan VINES 5.00 Support

PSS ID Number: Q95503

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1

Microsoft has an Application Note that explains how to install Banyan VINES support for Windows for Workgroups version 3.1.

The Application Note provides the following information:

- How to install Banyan VINES
- How to use Windows for Workgroups on a VINES network
- How to upgrade your workstation to different versions of Banyan VINES
- How to solve common network problems

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
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Revision Date: 2/93
1 Disk Included

The following information applies to Microsoft Windows for Workgroups version 3.1.

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INSTALLING VINES SUPPORT
=====

To install VINES support for Windows for Workgroups, first make sure you have the enclosed WG0772 disk and that it corresponds to your version of Banyan VINES.

To support Windows for Workgroups, your VINES network must be running version 4.11(5), 5.00(5), or 5.50(1) of the network software. If your network is running an earlier version, such as 4.10, you must first upgrade to a more recent version. If your network is running 5.00(6), you must first either reinstall version 5.00(5) or upgrade to 5.50(1). For more information, refer to the "Upgrading Network Software" section below.

The WG0772 disk contains the ADDNETS.EXE file, which you need to run before you install VINES support for Windows for Workgroups. The ADDNETS.EXE file modifies the NETWORK.INF file and installs other network software.

Before you install VINES network support, you need to install Windows for Workgroups. Once you've installed Windows for Workgroups, use the following steps to install VINES support:

1. If you are running Windows for Workgroups, quit it and return to the MS-DOS command prompt.
2. Use a text editor to open your AUTOEXEC.BAT file and remove any VINES-specific commands (such as BAN, Z:LOGIN, and so forth).
3. Save your modified AUTOEXEC.BAT file.
4. Insert the WG0772 disk in your floppy disk drive.
5. At the MS-DOS command prompt, type the following and press enter:

```
<drive:>addnets [destination]
```

where <drive:> is your floppy disk drive and [destination] is the path for your Windows for Workgroups directory.

NOTE: If Windows for Workgroups is in your PATH environment variable, you don't need to specify the destination. Also, if you are a network administrator and have installed Windows for Workgroups to a server by using Setup with the /A option, you can type the path to the shared server directory in place of the destination parameter to update that installation.

The Addnets installation program modifies the NETWORK.INF file with VINES-specific information and installs some updated driver files (WFWNET.DRV and WFWSETUP.CPL).

This completes the steps that must be performed at the MS-DOS command prompt. To add the VINES network to your list of compatible Windows for Workgroups networks, continue with the following steps:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.

The Network Settings dialog box appears.

4. Under Options, choose the Networks button.

The Compatible Networks dialog box appears.

5. Under Available Network Types, select either Banyan VINES 4.11(5), Banyan VINES 5.00(5), or Banyan VINES 5.50(1) (depending on your network version), and then choose the Add button.

The VINES network software files are copied to your local hard disk drive. If the WG0772 disk is not in your floppy disk drive, the system first prompts you to insert it.

6. Choose the OK button to close the Compatible Networks dialog box.

Control Panel displays a message indicating that the AUTOEXEC.BAT, PROTOCOL.INI, and SYSTEM.INI files have been modified. VINES-specific information has been added to these files. If you want to view them, use a text editor.

7. Choose the OK button again.
8. Remove the disk from your floppy disk drive, and then restart your workstation.

You must restart your workstation in order for the changes to take effect.

USING WINDOWS FOR WORKGROUPS ON A VINES NETWORK =====

Some distinctions between using Windows for Workgroups on a Banyan VINES network and using Windows 3.1 on a Banyan VINES network are described below.

PCCONFIG MODIFICATIONS -----

Certain VINES files are copied to your Windows for Workgroups directory, including PCCONFIG.DB. If you have made modifications to the PCCONFIG.DB file located in your VINES directory, use the PCCONFIG program to make the same modifications (such as changing the Login Group Search list) to the PCCONFIG.DB file in your Windows for Workgroups directory.

MODIFICATIONS FOR TOKEN-RING LAN MEDIA -----

Currently, token-ring LANs are supported in Windows for Workgroups for VINES 5.50(1). If your network runs an earlier version of VINES, such as VINES 4.11(5) or 5.00(5), only Ethernet LANs are supported. Updated releases are being developed to provide support for these versions of VINES but are not currently available.

If you are using token-ring media on a network running VINES 5.50(1), be sure to change the default LAN driver to NDIS Token-Ring. To do this, modify the PCCONFIG.DB file in your Windows for Workgroups directory using the PCCONFIG program. (For more information about PCCONFIG, see the previous section, "PCCONFIG Modifications," or refer to your Banyan VINES documentation.)

UPGRADING NETWORK SOFTWARE

This section describes upgrade procedures for different network versions, modifications made to your AUTOEXEC.BAT file, and other issues you should be aware of when using Windows for Workgroups on a Banyan VINES network.

VINES 4.10 NETWORKS -----

If your network runs VINES 4.10, upgrade to VINES 4.11(5) before installing support for Windows for Workgroups.

VINES 5.00(6) NETWORKS -----

If your network runs VINES 5.00(6), install VINES support for 5.00(5) according to the installation instructions. When you are prompted to restart your workstation at the end of the installation procedure, do so.

After you restart your workstation, you will use the NEWREV command from the MS-DOS command prompt to upgrade to VINES 5.00(6). However, because the NEWREV program overwrites the PROTMAN.DOS and NDISBAN.COM files located in the Windows for Workgroups directory, you should back up the PROTMAN.DOS and NDISBAN.COM files to another directory before

running NEWREV. After the upgrade is complete, copy the PROTMAN.DOS and NDISBAN.COM files back to the Windows for Workgroups directory, and then reboot your workstation again. This ensures that you are using the correct versions of these two files.

UPGRADING YOUR WORKSTATION

If you've upgraded your network server, use the following steps to upgrade your workstation:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.
The Network Settings dialog box appears.
4. Under Options, choose the Networks button.
The Compatible Networks dialog box appears.
5. Under Available Network Types, select your previous version of Banyan VINES, and then choose the Remove button.
6. Under Available Network Types, select the upgraded version of Banyan VINES, and then choose the Add button.
7. Choose the OK button.
You must restart Windows for Workgroups in order for the changes to take effect.

AUTOEXEC.BAT MODIFICATIONS

Installing VINES support adds the following lines to the workstation's AUTOEXEC.BAT file:

```
ban /nc
ndisban
redirall
arswait
z:login
```

These lines should not be moved to other locations in the AUTOEXEC.BAT file.

NOTE: If you want to run the VINES LOGIN.EXE program locally, copy the file from drive Z, and remove the Z:LOGIN line from your AUTOEXEC.BAT file.

CONNECTING TO A VINES NETWORK DRIVE OR PRINTER

When you connect to a network drive or network printer by using File Manager or Program Manager, a dialog box appears in which you can select a shared directory or printer in your workgroup. To connect to a VINES network drive or printer, choose the VINES button. The VINES Network Connection dialog box then appears.

RUNNING NAMED PIPES APPLICATIONS

Applications written to the Named Pipes application programming interface (API) cannot run with the VINES protocol in the Windows for Workgroups environment; however, these applications are supported by the Windows for Workgroups NetBEUI protocol.

CONNECTING TO OS/2@-BASED SQL SERVER MACHINES ON VINES

SQL Server client applications running with Windows for Workgroups can connect to OS/2-based SQL Server machines on VINES networks by using

the Network Integration Kit, which is available from Microsoft.

ROUTING BETWEEN LANS

Windows for Workgroups workstations must reside on the same physical LAN segment in order to make use of the Windows for Workgroups mail, scheduling, file-sharing, and print-sharing features. Windows for Workgroups does not use VINES routing capabilities.

LOADING VINES INTO THE HIGH MEMORY AREA

You can use memory managers to load VINES software components into the high memory area (HMA). Refer to your specific memory manager documentation for instructions on how to do this.

TROUBLESHOOTING TIPS

=====

This section provides solutions to some common problems you may encounter when running Windows for Workgroups on a Banyan VINES network.

ENVIRONMENT VARIABLES OVERWRITTEN

When you install VINES support for Windows for Workgroups, the VINES LOGIN command is placed near the beginning of your AUTOEXEC.BAT file. PATH (and other environment variables) in your VINES user profile are overwritten by the environment variables in your AUTOEXEC.BAT file.

To work around this problem, either place all environment variables, including PATH, in your user profile only, or place all environment variables AFTER the LOGIN command in your AUTOEXEC.BAT file. If you want to add the user profile PATH environment variable to the PATH environment variable in your AUTOEXEC.BAT file, type %path% after the LOGIN command at the end of your AUTOEXEC.BAT file. For example, the following statement appends the user profile PATH values (%path%) to the existing PATH values (C:\;C:\WINWG) in the AUTOEXEC.BAT file:

```
Path=c:\;c:\winwg;%path%
```

CANNOT ACCESS THE VINES NETWORK

If you cannot access the VINES network, make sure the SYSTEM.INI file includes the following lines:

```
network.drv=wfwnet.drv  
secondnet.drv=VINES.DRV
```

In a Windows for Workgroups environment, the NETWORK.DRV statement specifies the Windows for Workgroups network driver (WFWNED.DRV) and the SECONDNET.DRV statement specifies the VINES network driver (VINES.DRV).

TO OBTAIN THIS APPLICATION NOTE

You can find WG0772.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG0772.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.



Get WG0772.EXE

**Press here to
copy
WG0772.EXE
to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WG0772.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbother kbfile kbapnote

KBSubcategory: wfw

Additional reference words: appnote win31 3.10 3.1 wfwg bvines

=====
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Trace Access Pack for Windows 3.0 and 3.1

PSS ID Number: Q99381

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a 3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a, 3.1, 3.11
-

SUMMARY

=====

Access Pack for the Microsoft Windows operating system is a software utility that provides features which make it easier for users with movement or hearing disabilities to use Microsoft Windows.

The latest version of Access Pack for Microsoft Windows replaces the version that shipped on the Windows 3.0 Supplemental Driver Library.

This article is divided into the following subsections:

- Product Overview - Describes Access and its development.
- Functions - Provides a brief description of each function provided in this package.
- Access Pack and Government Regulations - Describes the Government regulations that the package meets or exceeds.

- Specifications - Describes the product contents.
- System Requirements - Describes the minimum configuration that you need to use this product.
- Ordering Information - Describes ordering options for Access Pack.

MORE INFORMATION

=====

PRODUCT OVERVIEW

=====

The Microsoft Windows family of products is designed to make computers easier to use for everyone, including those users with disabilities. Access Pack for Microsoft Windows is a set of utilities that make it easier for users with motion-related disabilities to use the keyboard and mouse. Users who have hearing disabilities can use Access Pack to configure their system to provide visual feedback, rather than sounds.

Note: A machine with Access Pack installed can be used by those individuals who require its additional features and those who do not.

Access Pack for Microsoft Windows was developed through a cooperative effort with the Trace Research and Development (R&D) Center at the University of Wisconsin at Madison, with funding from the National Institute on Disability and Rehabilitation Research.

FEATURES

=====

Access Pack for Microsoft Windows contains the following features that make Windows systems more accessible for those with motion and hearing-related disabilities.

These features can be used alone or in combination to best suit your needs and environment. The features can also be customized to allow you to be most productive. In addition, once the Access Pack has been installed, you can access any feature without requiring special assistance. When all features are turned off, the computer uses its default configuration, and Access Pack is invisible if you do not require its functionality.

StickyKeys

Many software programs require you to press two or three keys simultaneously. This is impossible if you type with a headstick or mouthstick. StickyKeys allows you to press one key at a time and instructs Windows to respond as if the keys had been pressed simultaneously.

SlowKeys

The sensitivity of the keyboard can be a major problem, especially if you strike keys accidentally. SlowKeys instructs Windows to disregard keystrokes that are not held down for a certain period of time.

RepeatKeys

Most keyboards allow you to repeat a key just by holding it down. If you can't lift your fingers off the keyboard quickly enough, this can result in unintentionally repeated characters. RepeatKeys lets you adjust the repeat rate or disable it altogether.

BounceKeys

You may "bounce" keys, resulting in double strokes of the same key or other similar errors. BounceKeys instructs Windows to ignore unintended keystrokes.

MouseKeys

This feature lets you use the keyboard to control the cursor as a mouse would. You can thus select menus and commands, and perform other convenient mouse functions, from the keyboard. MouseKeys also helps to give you finer control than can a standard mouse can. Note that a mouse is not required for this feature to work.

ToggleKeys

ToggleKeys provide audio cues (high and low beeps) to tell you whether a toggle key is active or inactive. It applies to the CAPS LOCK, NUM LOCK and SCROLL LOCK keys.

SerialKeys

This feature, in conjunction with a communications aid interface device, allows you to use alternative input devices to control the computer as if you were using a standard keyboard and mouse.

SoundSentry

Windows emits a beep when it wants to signal you, but this is not useful if you have a hearing impairment or you work in a noisy environment. SoundSentry tells Windows to send a visual cue, such as a blinking title bar or screen flash, in addition to a beep. You can then see the message that may not have been heard.

TimeOut

TimeOut turns off Access Pack's functionality after the system has been idle for a certain period of time, and returns the system to its default configuration. This feature is useful on machines shared by multiple users.

ACCESS PACK AND GOVERNMENT REGULATIONS

=====

With Access Pack for Windows and third-party products that make Windows accessible to people with visual impairments and Microsoft's documentation in electronic form, Windows meets recommendations in the Government Services Administration guidelines relating to software accessibility. These guidelines were developed in response to section 508 of the Rehabilitation Act. This law was written to ensure accessibility for government employees with disabilities.

Access Pack for Windows can also help employers accommodate individuals with disabilities, as required under the Americans with Disabilities Act.

SPECIFICATION

=====

Access Pack consists of three keyboard drivers and a mouse driver that replace the standard Windows drivers. In addition, the package includes the following:

- The Access Utility (ACCESS.EXE) for controlling and customizing Access Pack functions
- Online documentation in both Microsoft Windows Write and formatted text file formats
- Online Help

Access Pack comes with the following files:

Filename	Contents
----------	----------

ACCESS.EXE	The Access Utility for customizing settings and viewing online help
ACCESSU.DLL	Access Pack library
ACCESS.TXT	Documentation in Windows Write format
ACCESS.WRI	Documentation as ASCII text format
ACCESS30.HLP	Help file for Windows 3.0
ACCESS31.HLP	Help file for Windows 3.1
IBMMKEYS.BMP	MouseKeys chart used by online help
SKWIN.BMP	SerialKeys chart used by online help
AP-KBD.DRV	Access Pack driver for standard keyboards
AP-KBDHP.DRV	Access Pack driver for HP keyboards
AP-KBDOL.DRV	Access Pack driver for Olivetti keyboards
AP-MOU.DRV	Access Pack driver for Microsoft or IBM mouse
INSTALL.TXT	Installation instructions
OEMSETUP.INF	Used for installing Access Pack
LICENSE.TXT	Windows Driver Library license agreement

SYSTEM REQUIREMENTS

=====

The Access Pack software is fully compatible with most Microsoft Windows 3.0 or 3.1 systems and with keyboards supported by Windows 3.0 or 3.1. It can also be used with a Microsoft Mouse, an IBM® PS/2® mouse or no mouse.

ORDERING INFORMATION

=====

Access Pack for Microsoft Windows is available on the Microsoft Windows Driver Library in the ACCP.EXE or ACCP.ZIP files. If you have a modem, you can download Windows Driver Library components from network services, various user-group bulletin boards (BBSs), including those on the Association of PC User Groups or APCUG network, and the Microsoft Download Service (MSDL).

The MSDL is available 7 days a week from 2:30 A.M. to 1:00 A.M. at (206) 936-MSDL.

For more information about the WDL, see the following articles in the Microsoft Knowledge Base.

ARTICLE-ID: Q135314
TITLE : Windows 95 Driver Library

ARTICLE-ID: Q82006
TITLE : Windows Driver Library Information

Modem settings are:

1200,n,8,1
2400,n,8,1
9600,n,8,1 (V.32, V.32bis, V.42, V.42bis)

Customers within the United States who do not have a modem can obtain disks by calling Microsoft Product Support Services at (206) 637-7098. Customers who have hearing disabilities can call the text telephone (TT or TDD) number at (206) 635-4948. Customers outside of the United States should contact the Microsoft subsidiary in their country. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbfile kbappnote kbtool kbhw

KBSubcategory: win30 win31 windrvr

Additional reference words: appnote 3.00 3.00a 3.10 MISC ACCP.EXE deaf handicap disability disabilities accessibility stickeykeys tt/tdd

=====
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WG0666: WFWG 3.10 Setup Information

PSS ID Number: Q99751

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1
-

Microsoft has an Application Note that discusses the installation requirements for Microsoft Windows for Workgroups, the differences between the setup programs for Windows for Workgroups and Microsoft Windows operating system version 3.1, new device drivers and files that ship with Windows for Workgroups, and the administrative setup options (the /A and /N switches). This Application Note is titled "WG0666: Setup Information."

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



Press here
to copy
WG0666.exe
to your
computer

THE TEXT OF WG0666

=====

=====
Microsoft® Product Support Services Application Note (Text File)
WG0666: SETUP INFORMATION

=====
Revision Date: 5/93
No Disk Included

The following information applies to Microsoft Windows™ for Workgroups version 3.1.

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INTRODUCTION

=====

This application note discusses installation requirements for
Microsoft Windows for Workgroups, the differences between the Setup
programs for Windows for Workgroups and Microsoft Windows operating
system version 3.1, new device drivers and files shipped with Windows
for Workgroups, and the administrative Setup options (the /A and /N
switches).

INSTALLATION REQUIREMENTS

=====

To install and use Windows for Workgroups you must be using MS-DOS
version 3.3 or later. To upgrade from a previous installation of
Windows, your Windows version must be 3.0 or later, and your Windows
files must be included in your PATH statement. (If you have a version
of Windows earlier than 3.0, you need to do a complete Windows for
Workgroups installation, not an upgrade.) If you want to preserve your
Program Manager groups and other existing Windows settings, you need
to install Windows for Workgroups in the directory of your current
Windows installation.

DISK SPACE REQUIREMENTS

=====

Windows for Workgroups requires approximately 4.5 megabytes (MB) more
disk space than Windows 3.1. The following table illustrates the disk
space requirements for the most common installation types.

Type of Installation	Windows 3.1	Windows for Workgroups 3.1
Full installation (286)	8.6 MB	13.8 MB
Upgrade 3.x (286)	5.2 MB	6.6 MB
Full installation (386)	9.5 MB	15.0 MB
Upgrade 3.x (386)	5.2 MB	10.0 MB
Network administrator (Setup /A)	15.3 MB	21.0 MB
Network setup (Setup /N)	.3 MB	1.2 MB

SUPPORTED NETWORKS

=====

The following networks are supported for use with Windows for
Workgroups:

- Microsoft Workgroup Client (all versions)
- Microsoft LAN Manager (version 2.1)
- Novell® NetWare® (all versions)

Before starting a shared copy of Windows for Workgroups that is
installed over one of these networks, please use the following

guidelines:

Novell NetWare Network

If you are running a shared copy of Windows for Workgroups on a Novell workstation, be sure to log on to the Novell server before starting Windows for Workgroups.

LAN Manager or Windows for Workgroups Network

If you are running a shared copy of Windows for Workgroups on a LAN Manager or Windows for Workgroups workstation, be sure to start the network workstation services before you start Windows for Workgroups. You can do this with the "net start workstation" command.

If you are using the Windows for Workgroups network drivers, you can start the workstation services automatically by placing either of the following entries in the [network] section of your SYSTEM.INI file:

AUTOSTART=FULL
AUTOSTART=BASIC

Setting AUTOSTART to FULL installs the enhanced network redirector. The enhanced redirector supports named pipes and LAN Manager application programming interface (API) functions.

Setting AUTOSTART to BASIC installs the basic network redirector, which uses less system memory but does not support named pipes.

Neither redirector supports network messaging services, or pop-up messages.

LAN Manager automatically installs the redirector based on entries in your AUTOEXEC.BAT and CONFIG.SYS files. These settings are specified in the LAN Manager network documentation.

NOTE: Setup adds the AUTOSTART switch for you if you are installing on a 286-based machine.

UNSUPPORTED NETWORKS
=====

The following networks that are supported under Windows 3.1 are not specifically supported in the Windows for Workgroups package. (Drivers for these networks are not shipped with Windows for Workgroups but might be available through your network vendor.)

No Network Installed
Artisoft LANtastic (all versions)
Banyan® VINES® (all versions)
DEC® Pathworks™ (all versions)
IBM® OS/2® LAN Server (all versions)
IBM PC-LAN Program (all versions)
Microsoft LAN Manager (version 2.0 and earlier)
Microsoft Networks or compatible (all versions)
TCS® 10Net (all versions)
3Com® 3+Share® (all versions)
3Com 3+Open™ (all versions)

Setup does not detect these networks, and therefore cannot notify you if they are installed on your system. Check with your network vendor to obtain the necessary drivers before you install Windows for Workgroups over any of these networks. Then, perform the procedure below.

Drivers that support using Banyan VINES and DEC Pathworks with Windows for Workgroups are available from Banyan Systems and Digital Equipment Corporation.

To use Windows for Workgroups with a different network

NOTE: This procedure won't be useful unless the drivers you obtained from your vendor are compatible with Windows for Workgroups.

1. Open Control Panel, and from the Settings menu, choose Network. (Or choose the Network icon.)
2. In the Network Settings dialog box, choose the Networks button. The Compatible Networks dialog box appears.
3. From the Available Network Types list, select Unlisted Or Updated Network, and then choose the Add button.

You will be prompted to insert the disk containing the network driver supplied by your vendor. When you insert the floppy disk, Setup installs the network driver. The new network should now appear in the Available Network Types group.

4. Select the network, and then choose the Add button. This adds the network to the Other Networks In Use list.
5. Choose the OK button twice to exit the Networks dialog boxes. Close Control Panel and then reboot your machine.

Important: To use the new driver(s), you must reboot your machine.

DIFFERENCES IN SETUP PROGRAMS FOR
WINDOWS 3.1 AND WINDOWS FOR WORKGROUPS 3.1
=====

This section discusses new features in the Windows for Workgroups Setup program, including network detection and dialog box changes.

NETWORK-DETECTION ISSUES
=====

- Setup no longer prompts for a network type. Setup always selects Windows for Workgroups as the network type.
- Windows for Workgroups Setup performs network card detection. If Setup fails to detect your network card, it prompts you to choose from a list of available network adapters.

DIFFERENCES IN DIALOG BOXES
=====

- Setup now asks for the computer name and the workgroup in the initial user name dialog box.
- After Setup completes printer installation, the Install New Network Adapter, Network Adapters, and Compatible Networks dialog boxes may appear, as the following table illustrates.

Dialog Box	Express Setup	Custom Setup
Install New Network Adapter	Conditional	Conditional
Network Adapters	No	Yes
Compatible Networks	Conditional	Yes

The Install New Network Adapter dialog box does not appear during either Express or Custom Setup if the Network Card Detection (NCD) utility detects your network card and you confirm the detected network card. Confirming the detected network card places a network adapter entry in PROTOCOL.INI. If you don't confirm the detected network card, then the Install New Network Adapter dialog box appears. If you are upgrading from a Workgroup Connection or LAN Manager 2.1 installation, there is already a valid network adapter entry in PROTOCOL.INI, and this dialog box is skipped.

The Compatible Networks dialog box does not appear during Express

Setup if you are upgrading from a LAN Manager 2.1 installation. Selecting a network in this dialog box places a multinet= entry in the [network] section of SYSTEM.INI. If Setup detects the existing LAN Manager 2.1 installation, Setup places the multinet= entry in SYSTEM.INI and therefore skips the Compatible Networks dialog box.

- The option to Restart Windows once Setup is complete is no longer available.

This is because in order to load or upgrade network drivers, you must reboot your machine.

DRIVERS AND FILES SHIPPED WITH WINDOWS FOR WORKGROUPS
=====

Setup does not delete drivers that were installed with Windows 3.1 but not shipped with Windows for Workgroups. The following table shows the drivers and files that are shipped with Windows 3.1 and Windows for Workgroups.

Driver or File	Windows 3.1	Windows for Workgroups
Quad video driver	Yes	No
ATI VIP video driver	Yes	No
82C441 video driver	Yes	No
ET 4000 video driver	No	Yes--however, Windows for Workgroups does not detect this display. You must manually select the driver.
Olivetti@/AT&T@	Yes	No
Keyboard Mouse driver		
MSCDEX CD-ROM driver and TBM12.COM file	Yes	Yes--updated. If there is an existing MSCDEX driver or TBM12.COM file, Setup copies the new driver and file to the Windows directory and modifies the AUTOEXEC.BAT file to point to the new (updated) driver and file.
WFWNET.DRV	No	Yes
VNETBIOS.386	No	Yes
VNETSUP.386	No	Yes
VREDIR.386	No	Yes
VSERVER.386	No	Yes
VBROWSE.386	No	Yes
VWC.386	No	Yes
NETAPI.DLL	No	Yes
PMSPL.DLL	No	Yes
NETDDE.EXE	No	Yes
NDDENB.DLL	No	Yes
WFWSETUP.CPL	No	Yes
NETWORK.INF	No	Yes
LM21DRV.UPD	No	Yes
WFWNET.HLP	No	Yes
CLIPSRV.EXE (ClipBook server)	No	Yes
CLIPBRD.EXE (ClipBook Viewer)	No	Yes
WINCHAT.EXE (Chat)	No	Yes
WINMETER.EXE (WinMeter)	No	Yes
MSMAIL.EXE (Mail)	No	Yes
SCHDPLUS.EXE (Schedule)	No	Yes
NETWATCH.EXE (NetWatcher)	No	Yes

MSHEARTS.EXE (Hearts)	No	Yes
CALENDAR.EXE (Calendar)	Yes	No
SSMYST.SCR (Mystify screen saver)	Yes	No
ARCHES.BMP (Arches wallpaper)	Yes	No
CHITZ.BMP (Chitz wallpaper)	Yes	No
FLOCK.BMP (Flock wallpaper)	Yes	No
MARBLE.BMP (Marble wallpaper)	Yes	No
TARTAN.BMP (Tartan wallpaper)	Yes	No
CHORD.WAV (Chord sound)	Yes	No
TADA.WAV (Trumpet sound)	Yes	No
APPS.HLP (Application Compatibility Help)	Yes	No
COMMCTRL.DLL	No	Yes
FRAMEWRK.DLL	No	Yes
MAILMGR.DLL	No	Yes
MAILSPL.EXE	No	Yes
MAPI.DLL	No	Yes
MSSF.S.DLL	No	Yes
PABNSP.DLL	No	Yes
DEMILAYR.DLL	No	Yes
SENDFILE.DLL	No	Yes
STORE.DLL	No	Yes
VFORMS.DLL	No	Yes
AB.DLL	No	Yes
NDDEAPI.DLL	No	Yes
VSHARE.386	No	Yes
VCD.386	Yes	Yes
VDMAD.386	Yes	Yes
VPICD.386	Yes	Yes
VPD.386	Yes	Yes

ADMINISTRATIVE SETUP OPTIONS (SETUP /A AND SETUP /N)
=====

You run Setup with the /A and /N options to configure a workstation to run Windows from a shared directory. Setup with the /A option (Administrative Setup) copies all the files from the Windows distribution disks to a single directory and marks them read only. This directory can then be used to install and run a shared copy of Windows. Setup /N sets up the shared copy of Windows.

In a stand-alone Windows 3.1 installation, the Windows directory and SYSTEM subdirectory are on your personal hard drive. In a shared Windows installation, the Windows directory can be located on the user's hard disk drive or on a network drive, and can be customized for each user. There is no SYSTEM subdirectory, as such, in a network installation; system files are typically located in a shared directory on a network server.

In Windows for Workgroups, as in Windows 3.1 running on a network, the personal Windows directory contains all files with .INI, .GRP, and .PIF extensions, as well as REG.DAT, WIN.COM, WINVER.EXE, and any MS-DOS device driver files. The personal Windows directory may also contain the MS-DOS network device drivers and the NET.EXE, MSIPX.COM, and NETX.COM files. (These files may also be copied to the root directory of the boot drive, as explained in the following section.) The shared directory contains all other Windows files.

WHERE SETUP PLACES NETWORK FILES

=====
The Windows 3.1 Setup program reads SETUP.INF to determine where to install files. SETUP.INF uses the file classifications "windir" and "sysdir" to refer to files that Setup installs in the Windows directory and SYSTEM subdirectory, respectively.

The Windows for Workgroups Setup program reads NETWORK.INF to determine where to install files. Setup places files with the windir classification in the personal Windows directory and files with the sysdir classification in a shared server directory. NETWORK.INF also uses two new file classifications, "netdir" and "devdir." Where Setup places these files depends on the type of installation.

Real-mode network device drivers (devdir files) are copied to the personal Windows directory on a local nonremovable, noncompressed drive. These include PROTMAN.DOS, PROTOCOL.INI, and WORKGRP.SYS. If the personal Windows directory is on a remote, removable, or compressed volume, then these files are copied to the root of the boot drive. These device drivers must be correctly referenced in CONFIG.SYS.

Real-mode network utilities and terminate-and-stay-resident (TSR) programs (netdir files) are copied to the personal Windows directory on a nonremovable hard disk. These include NET.EXE, MSIPX.COM, NETX.COM, and ROUTE.COM. If the personal Windows directory is on a remote or removable volume, these files are copied to the same directory as the devdir files. These utilities and TSRs must be correctly referenced in the AUTOEXEC.BAT file.

NOTE: If your personal Windows directory is on a remote volume, you still need to have your own hard disk drive to run Windows for Workgroups. Windows for Workgroups does not support diskless workstations or systems with no hard disk drive.

The following table illustrates where Setup places the netdir and devdir files for different installations.

Location of Windows Installation	Location of Netdir Files	Location of Devdir Files
Nonremovable hard disk drive	Windows	Windows
Compressed (nonremovable hard disk) drive	Windows	Root
Removable drive (for example, SCSI)	Root	Root
Remote drive (Setup /N)	Root	Root

SETUP /H (BATCH MODE SETUP)

=====
You can use Setup with the /H option to automate the Setup program. Windows for Workgroups and Windows 3.1 come with a system-settings template file called SETUP.SHH, which you can copy or modify to create a custom system-settings file. In addition to the settings specified in the Windows 3.1 template file, the Windows for Workgroups template file includes parameters for the computer name, workgroup, network card, protocol, and compatible network. The SETUP.SHH file is located on Windows for Workgroups 3.1 Disk 1 and is copied to the shared Windows for Workgroups directory when you run Setup /A. You can modify the template file with any text editor that can save unformatted text (ASCII) files.

For more information about batch mode setup, refer to Chapter 3 of the "Microsoft Windows for Workgroups Resource Kit."

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WG0666.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG0666.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WG0666.EXE



**Press here to
copy
WG0666.EXE
to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WG0666.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note mailed or faxed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbnetwork kbdisplay kbsound kb3rdparty kbfile kbappnote kbsetup

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.10 set up

=====
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Comprehensive List of WRK for Version 3.0 Doc Errors

PSS ID Number: Q101044

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a

SUMMARY

=====

This article contains a comprehensive list of documentation errors in the Microsoft Windows Resource for version 3.0. This article covers:

- WRK Incorrectly Describes Maximizing Memory for MS-DOS Applications
- Displaying SEA.BMP Bitmap Shipped with Windows Resource Kit
- Windows Resource Kit Displays File Manager Incorrectly
- WRK Says SETUP/P Instead of SETUP /P
- No Current Application Note for SMARTDrive Available
- Windows: Maximum Valid Size for .INI files
- Windows Resource Kit: PIF.INF Does Not Exist
- Redirecting One Parallel Port to Another

WRK Incorrectly Describes Maximizing Memory for MS-DOS Applications

On page 115 of the "Microsoft Windows Resource Kit" (WRK) guide, the steps that explain how to free up memory for MS-DOS-based applications apply to Windows-based applications, not to MS-DOS-based applications.

To increase the amount of memory available for an MS-DOS-based application, clear any terminate-and-stay-resident (TSR) programs, unneeded drivers, and so on. (Eliminate all programs and drivers that use and keep conventional memory before Windows loads.)

This information does not apply to later versions of Windows.

Displaying SEA.BMP Bitmap Shipped with Windows Resource Kit

The SEA.BMP file is a bitmap that comes with the Windows Resource Kit (WRK) when you install the Windows 3.0 Fish program. Page 181 of the "Microsoft Windows Resource Kit" guide shows how to set up the Windows 3.0 Fish program. However, step 13 simply states

13. SEA.BMP

with no reference explaining how to display it as a bitmap for Windows.

To display the SEA.BMP as wallpaper, refer to pages 155-156 in the "Microsoft Windows User's Guide" for version 3.0. Also, the SEA.BMP is displayed in the background example on page 181 of the "Windows Resource Kit" guide.

Windows Resource Kit Displays File Manager Incorrectly

Page 184 of the "Microsoft Windows Resource Kit" incorrectly displays a File Manager screen with open folders and split screen display. Windows 3.0 File Manager cannot do this. This is a feature of Windows 3.1 File Manager.

WRK Says SETUP/P Instead of SETUP /P

In the "Reconstructing Main Accessories and Games Groups" section on page 172 of the "Microsoft Windows Resource Kit" (WRK) guide for Windows 3.0, the following message is discussed:

Group file XXXX.GRP is invalid or damaged; reconstruct the group

In the next section, "Reconstruction Process," it incorrectly states that the command to rebuild the Main, Accessories, and Games groups is "SETUP/P" (without the quotation marks). The correct command is:

SETUP /P

There must be a space after the word "SETUP" or the command will be unsuccessful.

No Current Application Note for SMARTDrive Available

On page 103 of the "Microsoft Windows Resource Kit" (WRK) guide for Windows 3.0, under the "Configuring Windows 3.0" section, there is a documentation error referencing the "SMARTDrive Technical Data Application Note" available from Microsoft Product Support Services.

The application note described here is a reference to an old Application Note for Windows versions 2.x. This Application Note is no longer available.

The most current information about SMARTDRV.SYS is in the "Microsoft Windows User's Guide" for version 3.0, on pages 530-535 and 587-590.

Windows: Maximum Valid Size for .INI files

Page 89 of the "Microsoft Windows Resource Kit" (WRK) guide incorrectly states that the maximum size of the WIN.INI file is 32K.

The maximum valid size for .INI files is 64K. If the WIN.INI file exceeds 64K, the additional information will be ignored. This can result in Windows behaving unpredictably (for example, system configuration changes may not be implemented, fonts may be missing, printer information may be missing, and default information from applications may not be saved).

Some third-party applications may be unable to read .INI files, including the WIN.INI file, if the INI files are larger than 32K.

Windows Resource Kit: PIF.INF Does Not Exist

Pages 108 and 109 of "The Microsoft Windows Resource Kit" for version 3.0 incorrectly states that the Windows 3.0 Setup program uses a file called PIF.INF when setting up MS-DOS-based applications. The Setup program actually uses the SETUP.INF file. Windows 3.0 does not contain a file called PIF.INF.

Redirecting One Parallel Port to Another

The "Microsoft Windows Resource Kit" (WRK) guides for Windows version 3.0 provide erroneous examples of the MS-DOS MODE redirector command. Page 98 (or page 108 for the guide without the Windows Resource Kit update) for Windows 3.0 state the following:

...if you have a physical LPT1, but not an LPT3, and you execute
MODE LPT3=LPT1, output sent to LPT3 will be redirected to LPT1.

The MS-DOS MODE command can be used to redirect output from a parallel port to a serial communications port, but not to another parallel port. The following is an example of a valid command:

```
MODE LPT1=COM1
```

Redirecting output to a parallel port generates the following error message:

```
Invalid Parameter - =LPTx
```

A redirection of COM1 to LPT1 requires the use of a special buffer for which the MODE command would have to allocate space. The MS-DOS MODE command does not have this capability.

For more information on port redirection, query on the following words in the Microsoft Knowledge Base:

mode and redirect and port

KBCategory: kbref kbdocerr kbdisplay kbtool kbfile kbappnote
KBSubcategory: win30 winmem
Additional reference words: appnote 3.00 3.0 3.0a 3.00a documentation error
docerr doc err picture display WRK WRKIT 1.00 comprehensive

=====
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Adding Banyan VINES to Windows for Workgroups

PSS ID Number: Q101665

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1

SUMMARY

=====

Windows for Workgroups (WFWG) provides the functionality to work with Banyan VINES network versions 4.11(5), 5.00(5), and 5.50(1) or later. This allows a Banyan VINES client workstation to become a Windows for Workgroups workstation, thereby providing access to Banyan VINES servers and/or Windows for Workgroups servers.

This article contains the following sections:

- How to Obtain the Banyan VINES NDIS Drivers
- How to Install the Banyan VINES Drivers
- Changes Made By the Banyan VINES Drivers
- Banyan VINES Support for Token Ring with Windows for Workgroups

HOW TO OBTAIN THE BANYAN VINES NDIS DRIVERS

=====

To install VINES support for Windows for Workgroups, first make sure you have the correct version of Banyan VINES drivers available either in a directory on your hard disk or on a floppy disk.

These drivers can be obtained by ordering the appropriate Application Note from Microsoft Product Support Services or by obtaining the drivers from Banyan VINES.

Banyan VINES drivers for Microsoft Windows for Workgroups version 3.1 can be downloaded from the Banyan On-line Access service (BOA) at (508) 836-1834.

The files needed to be downloaded from BOA are:

VINES version 4.11(5)	V4115WFW.ZIP
VINES version 5.0(5)	V5005WFW.ZIP
VINES version 5.5(1)	V5051WFW.ZIP

HOW TO INSTALL THE BANYAN VINES DRIVERS

=====

To support Windows for Workgroups, your VINES network must be running version 4.11(5), 5.00(5), or 5.50(1) of the network software. If your

network is running an earlier version, such as 4.10, you must first upgrade to a more recent version. If your network is running 5.00(6), you must first either reinstall version 5.00(5) or upgrade to 5.50(1).

The Banyan directory or the floppy disk contains the ADDNETS.EXE file, which you need to run before you install VINES support for Windows for Workgroups. The ADDNETS.EXE file modifies the NETWORK.INF file and installs other network software.

Before you install VINES network support, you need to install Windows for Workgroups. Once you've installed Windows for Workgroups, use the following steps to install VINES support:

1. If you are running Windows for Workgroups, quit and return to the MS-DOS command prompt.
2. Use a text editor to open your AUTOEXEC.BAT file and remove any VINES-specific commands (such as BAN, Z:LOGIN, and so forth).
3. Save your modified AUTOEXEC.BAT file.
4. Insert the disk in your floppy disk drive that contains the Banyan drivers, or change to the directory where they are located.
5. At the MS-DOS command prompt, type the following and press ENTER

```
<drive:>addnets <destination>
```

where <drive> is your floppy disk drive and <destination> is the path for your Windows for Workgroups directory.

NOTE: If Windows for Workgroups is in your PATH environment variable, you don't need to specify the destination. Also, if you are a network administrator and have installed Windows for Workgroups to a server by using Setup with the /A option, you can type the path to the shared server directory in place of the destination parameter to update that installation.

The Addnets installation program modifies the NETWORK.INF file with VINES-specific information and installs some updated driver files (WFWNET.DRV and WFWSETUP.CPL).

This completes the steps that must be performed at the MS-DOS command prompt. To add the VINES network to your list of compatible Windows for Workgroups networks, continue with the following steps:

1. Start Windows for Workgroups.
2. In the Main group, choose the Control Panel icon.
3. In the Control Panel window, choose the Network icon.
The Network Settings dialog box appears.
4. Under Options, choose the Networks button.
The Compatible Networks dialog box appears.
5. Under Available Network Types, select either Banyan VINES 4.11(5), Banyan VINES 5.00(5), or Banyan VINES 5.50(1) (depending on your network version), and then choose the Add button.

If the VINES files are on a disk, the VINES network software files are copied to your local hard disk drive from the disk. If the disk is not in your floppy disk drive, the system first prompts you to insert it. If the files are on your hard disk drive, you must direct it to the appropriate directory.

6. Choose the OK button to close the Compatible Networks dialog box.
Control Panel displays a message indicating that the AUTOEXEC.BAT, PROTOCOL.INI, and SYSTEM.INI files have been modified. VINES-specific information has been added to these files. If you want to view them, use a text editor.

7. Choose the OK button again.
8. Remove the disk from your floppy disk drive (if any), and then restart your workstation.

You must restart your workstation to make the changes take effect.

CHANGES MADE BY THE BANYAN VINES DRIVERS
=====

The following additions are made when Banyan VINES connectivity is enabled in Windows for Workgroups:

AUTOEXEC.BAT
=====

CD <WFWG directory>

The above entry may include a drive letter before the directory name, which would cause the line to implement incorrectly. You may have to manually change the entry from

CD <DRIVE LETTER>:<WFWG DIRECTORY>

-to the following:

<drive letter>:
CD \<WFWG DIRECTORY>

BAN /NC

The above entry loads the VINES software into the computer's memory and connects the computer to a VINES network. The NC switch examines communications hardware in the computer without initializing it.

NDISBAN

This loads the NDIS-specific portion of the VINES software.

REDIRALL

This loads support for all versions of MS-DOS.

ARSWAIT (Address Resolution Server Wait)

This entry waits until your computer has been assigned a network address by a server. After it sees that your network has received a network address from the network, it exits and allows your computer to continue.

NOTE: Normally this function is built into the VINES native drivers, but NDIS requires this functionality to be added after the NDIS driver is loaded.

<Z>:LOGIN

This entry logs on to the network from the server (Z by default).

CONFIG.SYS
=====

LASTDRIVE=Y

PROTOCOL.INI
=====

```
[network.setup]
transport=ban$vines,BAN$VINES
  lana0=ms$ee16,1,ban$vines      <- ms$ee16 is used for the INTEL
                                   <- EtherExpress 16 network card
```

```
[Ban$Vines]
  drivervname=NDISBAN$
  bindings=ms$ee16
```

```
SYSTEM.INI
=====
```

```
[boot]
  secondnet.drv=vines.drv
```

```
[386Enh]
  secondnet=vvinesd.386
```

```
[network]
  multinet=vines500          <- vines411 or vines550 for
                             <- different VINES versions
```

If Microsoft LAN Manager connectivity is installed in addition to Banyan VINES, then the following line is changed in the SYSTEM.INI file:

```
[network]
  multinet=lanman,vines500
```

```
BANYAN VINES SUPPORT FOR TOKEN RING WITH WINDOWS FOR WORKGROUPS
=====
```

Token-Ring support for Banyan VINES drivers in Windows for Workgroups is available directly in version 5.50(1). For support of version 4.11(5) or version 5.00(5) on a token-ring local area network (LAN) with Windows for Workgroups, you must install a site-specific patch for token-ring support. Patches for these versions to support token-ring LANs are available from Banyan VINES.

To change the LAN driver in VINES version 5.50(1), do the following:

1. From the Windows directory, type "pcconfig" (without the quotation marks) and press ENTER. This brings up a Banyan VINES menu.
2. Select NETWORK CARD SETTINGS from the menu and then press ENTER. This brings up a list of network cards.
3. From the network card list, select NDIS TOKEN-RING, and then press the F10 key twice to save your changes and exit the Banyan setup program.
4. Reboot your computer to make the changes take effect.

For more information, call Banyan Systems at (508) 898-1000.

The products included here are manufactured by Banyan Systems, a vendor independent of Microsoft; we make no warranty, implied or otherwise, regarding these products' performance or liability.

KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 Banyan Vines WFW addnets

```
=====
Copyright Microsoft Corporation 1996.
```

WW0863: Fixing System Hangs with MS-DOS Apps & Novell NetWare

PSS ID Number: Q104551

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
-

If you run Novell NetWare with Microsoft Windows or Windows for Workgroups, your system may stop responding (hang) when you start an MS-DOS-based application or an MS-DOS command prompt. Microsoft has an Application Note, "System Hangs When Running MS-DOS-Based Applications with Novell NetWare," that provides troubleshooting steps and files that may correct the problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.

THE TEXT OF WW0863

=====
Microsoft® Product Support Services Application Note (Text File)
WW0863: SYSTEM HANGS WHEN RUNNING MS-DOS-BASED APPLICATIONS WITH
NOVELL® NETWARE®
=====

Revision Date: 1/94
1 Disk Included

The following information applies to Microsoft Windows™, version 3.1.

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CompuServe is a registered trademark of CompuServe, Inc.
NetWare is a registered servicemark and NetWare and Novell are registered trademarks of Novell, Inc.

Introduction

If you are running Novell NetWare when you start an MS-DOS-based application or an MS-DOS command prompt from Microsoft Windows or

Windows for Workgroups, the screen may turn black and leave the cursor flashing in the upper-left corner. If you have configured a program information file (.PIF) so that your MS-DOS-based application starts in a window, the screen is completely black; the flashing cursor does not appear when the system stops responding (hangs).

Cause

The following factors can contribute to this problem (in order of probability):

- Third-party device drivers or terminate-and-stay-resident (TSR) programs
- An incorrect system configuration
- A problem in VIPX.386
- A problem in the Windows 3.1 virtual timing driver (VTD)

This problem is uncommon and is difficult to reproduce since it is critical interrupt and/or timing dependent and generally occurs only on large networks with high traffic volumes, which generate many interrupts.

Resolution

To troubleshoot this problem, use the steps below. It is important to follow these steps in order and leave each change in place, even though one particular step alone may not correct the problem. Two or more independent problems may combine to cause the symptoms described above.

1. Remove or comment out all unnecessary commands from your CONFIG.SYS and AUTOEXEC.BAT files to prevent conflicts with third-party device drivers or TSR programs. (To comment out a line, type REM at the beginning of the line. After you make these changes, restart your machine.) Starting your machine with a minimal configuration is called a "clean boot." A clean boot is a basic troubleshooting step to test possible conflicts between Windows and various TSR programs and device drivers.

NOTE: Once you implement all the steps in this procedure and correct the problem, you can begin to undo the changes you made to clean boot your system. If the problem recurs, you can isolate the device driver, TSR, or application that is causing the problem.

2. Ensure your Startup group is empty, and comment out the LOAD= and RUN= lines in the [windows] section of the WIN.INI file. (To comment out a line, place a semicolon [;] at the beginning of the line.) After you make these changes, restart Windows.
3. In the [386Enh] section of the SYSTEM.INI file, set the InDOSPolling= setting as follows:

```
InDOSPolling=FALSE
```
4. Remove the TimerCriticalSection= setting from the [386Enh] section of the SYSTEM.INI file, then restart your system. If this doesn't correct the problem, reinsert the line as follows:

```
TimerCriticalSection=10000
```
5. Upgrade to version 3.32 or later of the Novell shell and Windows driver components available on Novell's CompuServe® NOVLIB forum as DOSUP7.ZIP. These components are also available through NetWire® and authorized Novell resellers.
6. Novell has updated and released a new VIPX.386 driver that is designed to correct a majority of the critical interrupt problems. Upgrade to version 1.15 or later of the Novell VIPX.386 driver,

which is included with this Application Note. To install the new VIPX.386, follow these steps:

- a. Rename or back up the old VIPX.386 file.
- b. Copy VIPX.386 from the enclosed WW0863 disk to your Windows SYSTEM subdirectory. For example, if you inserted the WW0863 disk in drive A and your Windows directory is called WINDOWS and is on drive C, type the following command at the MS-DOS command prompt and then press ENTER:

```
copy a:\vipx.386 c:\windows\system
```

- c. If you are using IBM® LAN Support, put the network card's IRQ in the [VIPX] section of your SYSTEM.INI file.
- d. Reboot the machine, and then load the ODI drivers.

You should also upgrade to version 2.11 or later of IPXODI.COM and version 2.02 or later of LSL.COM. These files are available on Novell's CompuServe NOVLIB forum in a self-extracting file called BSDUP2.EXE.

7. Reboot your system to see if the problem still occurs. If it does, go on to step 8.
8. The VTDA.386 file included with this application note is designed to fix a very small percentage of timer-related problems. To install VTDA.386, follow these steps:
 - a. Copy VTDA.386 from the enclosed WW0863 disk to your Windows SYSTEM subdirectory. For example, if you inserted the WW0863 disk in drive A and your Windows directory is called WINDOWS and is on drive C, type the following command at the MS-DOS command prompt and then press ENTER:

```
copy a:\vtda.386 c:\windows\system
```

- b. In a text editor, such as Microsoft Windows Notepad, open the SYSTEM.INI file (located in your Windows directory).
- c. In the [386Enh] section, change

```
device=*vtd
```

to:

```
device=vtda.386
```

- d. Save the file.
- e. Quit and then restart Windows.

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WW0863.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW0863.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WW0863.EXE



**Press here to
copy
WW0863.EXE
to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WW0863.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbnetwork kbfile kbappnote kb3rdparty

KBSubcategory: win31 wfw wfwg

Additional reference words: appnote 3.10 3.1 3.11

=====
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WG0904: Support for Novell NetWare 4.0

PSS ID Number: Q104632

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.1

Microsoft has an Application Note, "WG0904: Support for Novell® Netware® 4.0," that contains updated Windows for Workgroups files (NET.EXE, WORKGRP.SYS, VREDIR.386, and VBROWSE.386) and information about using these files with a Novell NetWare version 4.0 client configuration.

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THE TEXT OF WG0904

Microsoft® Product Support Services Application Note (Text File)
WG0904: SUPPORT FOR NOVELL® NETWARE® 4.0

=====
Revision Date: 9/93
1 Disk Included

The following information applies to Microsoft Windows™ for Workgroups, version 3.1.

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Introduction

This Application Note contains updated Windows for Workgroups files (NET.EXE, WORKGRP.SYS, VREDIR.386, and VBROWSE.386) and information about using these files with a Novell NetWare version 4.0 client configuration. Providing Windows for Workgroups support for NetWare 4.0 first requires proper installation of Novell's client software. If the setup steps described in this document do not function properly, contact Novell for more information. Microsoft can ensure connectivity between Windows for Workgroups and Novell NetWare only when you are running MSIPX.COM. If you cannot enable the open data-link interface (ODI) drivers using Novell's procedure (included with NetWare 4.0), call Novell Technical Support at (800) 638-9273.

Although the current specification of Windows for Workgroups is MSIPX, an exclusively NDIS-compliant protocol, Novell's ODINSUP.COM, allows NDIS protocol stacks to run unmodified over the ODI link support layer (LSL) and talk to an ODI LAN driver. Novell's LSL can be accessed by using the ODINSUP driver. Microsoft recommends using ODINSUP.COM version 1.22 with this Application Note. Novell makes this file available on its bulletin board service and in the Novell CompuServe® forum. The current filename is DOSUP7.ZIP. For more availability information, contact Novell or look on the Novell CompuServe forum.

When you use ODINSUP.COM with Windows for Workgroups and NetWare 4.0, the following configuration files are modified:

CONFIG.SYS
STARTNET.BAT or AUTOEXEC.BAT
NET.CFG
PROTOCOL.INI
SYSTEM.INI

Before You Begin

Since this configuration requires the Novell IPXODI drivers, set up your machines and connect to a Novell server from an MS-DOS command prompt using IPXODI.COM before proceeding with the setup instructions below. Be sure to back up your files so that you can restore your original configuration if necessary.

Setup Instructions

1. Install Windows for Workgroups with your network interface card (NIC) and with Novell NetWare as a secondary network.
2. Run the Novell NetWare 4.0 client installation program.
3. Edit the CONFIG.SYS file and remove or remark out (using the REM command) the following lines

```
device=c:\windows\<<drivename.xxx>  
device=c:\windows\msipx.sys
```

where <drivename.xxx> is the name of your NDIS network card driver. If you already have ODI connections, these entries are not present.

NOTE: The NetWare 4.0 installation program changes the LASTDRIVE= statement from drive P to drive Z. Leave this change intact.

4. By default, the NetWare 4.0 installation program creates a STARTNET.BAT file (from which the NetWare files are run) in the NWCLIENT subdirectory. You need to edit this file unless the NetWare drivers are to be loaded from the AUTOEXEC.BAT file (in which case, you need to make the same changes in the AUTOEXEC.BAT file). If these drivers are loading from the AUTOEXEC.BAT file, remove the @CALL STARTNET.BAT line, which the NetWare installation procedure inserts. When you are finished editing the STARTNET.BAT or AUTOEXEC.BAT file, it should read as follows:

Lines	Comments
SET NWLANGUAGE=ENGLISH	This is new under 4.0.
LSL	
ODI MAC driver for your NIC	For example, this line would read NE2000 if you have an Novell NE2000 NIC.
ODINSUP.COM	Manually add this driver from the DOSUP7.ZIP file.
C:\WINDOWS\NET START NETBIND	Make sure this line is in either your AUTOEXEC.BAT or STARTNET.BAT, depending on which one is used to start NetWare connectivity.
IPXODI	
VLM.EXE	This file replaces NETX.EXE in NetWare 4.0.

5. In the AUTOEXEC.BAT file, remove or remark out the following lines:

```
c:\windows\net start  
c:\windows\msipx.com
```

IMPORTANT: Steps 6 and 7 provide the changes made in the NET.CFG and PROTOCOL.INI files if you are using a Novell NE2000 NIC. If you are using a different card, many of the changes made will be specific to your NIC and therefore different than those below.

6. To use ODINSUP.COM with Windows for Workgroups 3.1, the NET.CFG file should appear as follows. Some of the settings below appear as

a result of the NetWare 4.0 installation program; you may need to manually edit others.

NOTE: If you were using ODINSUP.COM with NetWare 3.11, the 4.0 installation removes the changes that were made to the NET.CFG file. The final file should read as follows:

Lines	Comments
PB BUFFERS 7	This line is added.
PROTOCOL ODINSUP	This line exists if ODI is installed before you begin this procedure.
BIND NE2000	If you are using a NIC other than the NE2000, a different MAC driver appears here.
BUFFERED	
Link Driver NE2000	This line varies depending on the NIC you are using.
Port <XXX>	This line is set to the I/O base being used.
INT <XX>	This line is set to the IRQ being used. Both the Port and INT settings assume that the defaults are not being used. If the defaults are being used, these lines do not appear.
MEM <XXXXXX>	This line appears only if your NIC is memory address configurable.
Frame Ethernet_802.2	These frame types are required.
Frame Ethernet_802.3	
Frame Ethernet_II	
Frame Ethernet_SNAP	
Protocol IPX 0 Ethernet_802.3	
NetWare DOS Requester	
First Network Drive = F	This setting is new with NetWare 4.0 and is the reason LASTDRIVE no longer needs to be set to P.

7. To use ODINSUP.COM with Windows for Workgroups 3.1, the PROTOCOL.INI file should appear as follows. Some of the settings below appear as a result of the NetWare 4.0 installation program; you may need to manually edit others.

IMPORTANT: If you were using ODI with Windows for Workgroups before upgrading Novell NetWare to 4.0, this file does not require editing.

NOTE: To determine the correct MLID name, type the ODI NIC driver name at an MS-DOS command prompt.

Lines	Comments
[network.setup]	
version=0x3100	
netcard=NE2000,1,NE2000	Use the MLID name for this entry.
transport=ms\$netbeui,MS\$NETBEUI	
transport=IPX,IPX	
lana0=NE2000,1,ipx	Use the MLID name for this entry.
lana1=NE2000,1,ms\$netbeui	Use the MLID name for this entry.
[protman]	
DriverName=PROTMAN\$	
PRIORITY=MS\$NETBEUI	
[MS\$NETBEUI]	
DriverName=netbeui\$	

SESSIONS=10
NCBS=32
BINDINGS=NE2000 Use the MLID name for this entry.
LANABASE=1
[NE2000] Add this entire section or
convert it from the MS\$NE2000
section.
DRIVERNAME=NE2000 Use the MLID name for this entry.
IOBASE=0x300 This entry should match the
IOBASE setting in the NET.CFG
file.
INTERRUPT=11 This entry should match the
INTERRUPT setting in the NET.CFG
file.
[MS\$NE2000] Remark out this entire section by
placing a semicolon at the
beginning of each line, including
the section header.
[MS\$IPX] Remark out this entire section by
placing a semicolon at the
beginning of each line, including
the section header.
[IPX] Add this section.
DRIVERNAME=IPX\$
MediaType=Novell/Ethernet This section will vary depending
on the transceiver type.
BINDINGS=NE2000 Use the MLID name for this entry.

8. Make the following changes in the SYSTEM.INI file:

In the [boot] section of the SYSTEM.INI file, the Novell NetWare
4.0 installation changes the line

```
network.drv=wfwnet.drv
```

to read:

```
network.drv=netware.drv
```

Simply change the NETWORK.DRV line so that it reads as follows:

```
network.drv=wfwnet.drv
```

NOTE: Do not change the SECONDNET.DRV=NETWARE.DRV setting.

After you make these changes, update your Windows for Workgroups
installation with the four files on the enclosed WG0904 disk:
NET.EXE, WORKGRP.SYS, VREDIR.386, and VBROWSE.386. Copy NET.EXE and
WORKGRP.SYS to the Windows directory. Copy VREDIR.386 and
VBROWSE.386 to the Windows SYSTEM subdirectory. For example, if you
insert the WG0904 disk in drive A and your Windows directory and
Windows SYSTEM subdirectory are C:\WINDOWS and C:\WINDOWS\SYSTEM,
respectively, type the following commands at an MS-DOS command
prompt, pressing ENTER after each line:

```
copy a:\net.exe c:\windows  
copy a:\workgrp.sys c:\windows  
copy a:\*.386 c:\windows\system
```

9. Reboot and restart Windows for Workgroups.

For more information concerning ODINSUP.COM, call Novell Technical
Support.

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WG0904.EXE, a self-extracting file, on the following

services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon.
Click Knowledge Base, and select the product.
Enter kbfile WG0904.EXE, and click GO!
Open the article, and click the button to download the file.
- Internet (anonymous FTP)
ftp ftp.microsoft.com
Change to the Softlib/Mslfiles folder.
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- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
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KBCategory: kbnetwork kbfile kbappnote kbsetup kb3rdparty

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.1 3.10

=====
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WFWG Err: ODINSUP Requires BUFFERED Switch in NET.CFG File

PSS ID Number: Q105040

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

-Microsoft Windows For Workgroups version 3.1

SYMPTOMS

=====

When you are running Microsoft Windows for Workgroups version 3.1 with Novell NetWare ODI connectivity, you may receive the following

message:

ODINSUP requires the switch BUFFERED in NET.CFG file to function correctly. Press any key to continue.

You may receive this message even if you include the BUFFERED line in your NET.CFG file.

CAUSE
=====

If the BUFFERED line in the NET.CFG file is not indented under the PROTOCOL ODINSUP section, it is not processed correctly, resulting in the above error message.

RESOLUTION
=====

The PROTOCOL ODINSUP section of the NET.CFG file should read as follows:

```
PROTOCOL ODINSUP
    BIND <NE2000> (where <NE2000> is the network adapter ODI driver)
    BUFFERED
```

MORE INFORMATION
=====

Novell NetWare version 4.0 requires the Novell ODI drivers to function properly. For more information regarding Novell NetWare version 4.0 and Microsoft Windows for Workgroups version 3.1, query on the following words in the Microsoft Knowledge Base:

appnote and wg0904

For more information concerning ODI support under Microsoft Windows for Workgroups version 3.1, query on the following words in the Microsoft Knowledge Base:

buffered and faxme

KBCategory: kbnetwork kbfile kbappnote kbsetup kb3rdparty
KSubcategory: wfw wfw
Additional reference words: appnote NETWARE 4.0

=====
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Cannot Run 32-Bit File Access with NE2000 ODI Driver

PSS ID Number: Q106140

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

SYMPTOMS
=====

When you load the Novell NE2000.COM ODI driver and use 32-bit file access with the real-mode mapper (RMM.D32), you may experience a five- second

delay when loading applications from the Windows GUI interface. (This delay does not occur when loading MS-DOS-based applications from an MS-DOS virtual machine [VM].) This may also cause Windows for Workgroups to load more slowly.

CAUSE
=====

This delay occurs because the NE2000.COM driver is causing RMM.D32 to generate a time-out, and the time-out value is hard coded to be five seconds. Once the application loads, it then runs as fast as it should because it has been stored in cache memory (VCACHE.386).

This problem is in the NE2000.COM MLID and only occurs when IPXODI, which is needed to access NetWare servers, is loaded.

The NE2000 MLIDs known to cause this problem are from the Novell DOSUP7 client files dated 1/18/93, DOSUP8 client files dated 7/30/93, and version 1.34 dated 6/3/91.

RESOLUTION
=====

To correct this problem, obtain Microsoft Application Note "WG0973: RMM.D32 Corrects 5-Second Delay When Starting Applications." For more information on this Application Note, query on the following words in the Microsoft Knowledge Base:

wg0973 and appnote

KBCategory: kbnetwork kbfile kbappnote kbhw kb3rdparty kbprb

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.11 vfat RMM Slow idle scsi unsupported

incompatible hangs locks

=====
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System Slows After 32-Bit File Access Is Enabled

PSS ID Number: Q106266

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

SYMPTOMS
=====

Your system seems slower after you enable 32-bit file access.

CAUSE
=====

Enabling 32-bit file access can result in slower system performance in the following situations:

- VFAT is unable to mount.

This can happen as a result of one or more of the following problems (note that the numbers below correspond to the numbered steps in the "VFAT is Unable to Mount" subsection of this article):

1. The real-mode network redirector has been loaded into memory.
 2. A memory-resident program or device driver has a file open while Windows loads.
 3. The drive is involved in a SUBST, ASSIGN, or JOIN action. Because of the way they alter apparent disk characteristics, the SUBST.EXE, ASSIGN.COM, and JOIN.EXE programs are not compatible with installable file systems (IFS), such as 32-bit file access. These utilities can't be used if 32-bit file access is enabled.
 4. The cache size selected is too large or invalid.
 5. Required components are missing, corrupted, or not in the specified directory.
- Windows for Workgroups version 3.11 is in a low-memory situation after enabling VFAT.

Running VFAT/VCACHE with SMARTDrive may place Windows for Workgroups into a low-memory situation because memory used by SMARTDrive is not available to VCACHE.386 and vice-versa. Since VCACHE.386 provides the caching on VFAT-enabled drives and network drives, while SMARTDrive caches CD-ROM drives and floppy disk drives, it is possible that systems with too large a percentage of memory allocated to caching have some performance reduction.

WORKAROUND =====

Low-Memory Situation -----

If you are in a low-memory situation (that is, you are running both SMARTDrive and VFAT), make sure that the amount of memory allocated to SMARTDrive's WinCacheSize and the cache size allocated to VCACHE.386 do not exceed roughly 30 percent of total system RAM.

For example, on a machine with 4 megabytes (MB) RAM, if you have allocated 1024 kilobytes (K) to VCACHE, set the SMARTDrive WinCacheSize to 128K. To do this, use a command similar to the following

```
c:\windows\smartdrv.exe <1024> <128>
```

where <1024> is the InitCacheSize (the cache size at MS-DOS) and <128> is the size of the cache in Windows.

VFAT Is Unable to Mount -----

If VFAT is unable to mount, try the following:

1. You can unload the real-mode network redirector by typing "net stop" (without the quotation marks) at the MS-DOS command prompt before starting Windows for Workgroups.
2. To ensure that no device driver or terminate-and-stay-resident (TSR) program has any files open upon entering Windows for Workgroups, clean start the machine.

For more information on clean start configurations for Windows for Workgroups version 3.11, query on the following words in the Microsoft Knowledge Base:

wfw and clean and start

3. Do not use the SUBST, ASSIGN, or JOIN utilities with 32-bit file access enabled. If you must use one of these utilities, disable 32-bit access first.

4. Verify that the cache size selected is valid. For more information, see the "Low-Memory Situation" section above.
5. The components used by VFAT vary depending on the system's hard disk drive (HD) controller type and whether or not disk compression (such as DoubleSpace, DriveSpace, or Stac Electronics Stacker) is used. If you suspect the components are missing, corrupted, or not in the specified directory, verify the components files sizes, or re-expand them from your original Windows for Workgroups version 3.11 disks.

File	Size	
IOS.386	28,352	
RMM.D32	11,894	
RMM.D32	11,473	(version of RMM.D32 included with Microsoft PSS Application Note WG0973)
VCACHE.386	9,862	
VFAT.386	32,925	
VXDLLDR.386	5,678	

NOTE: VFAT cannot load on a volume compressed with MS-DOS 6.0 DoubleSpace. This problem was resolved in MS-DOS 6.2 and later.

IMPORTANT: The SYSTEM.INI file entries shown in the examples below are made by Control Panel and do not require manual editing. These examples are provided to show the component files involved and to aid in troubleshooting. You should avoid manually editing your SYSTEM.INI file.

Example 1: Uncompressed WD 1003 Compatible Drive

Western Digital 1003 or ST506 compatible drives without compression require the following entries in the [386Enh] section of the SYSTEM.INI file:

```
[386Enh]
device=*BLOCKDEV
device=*PAGEFILE
device=*int13
device=*wdctrl
device=vcache.386
device=vfat.386
```

All entries marked with an asterisk (*) are contained in the WIN386.EXE file. All files should be located in your Windows SYSTEM subdirectory unless otherwise noted.

Example 2: Compressed or Not WD 1003-Compatible Drive

If the drive is compressed, or if another hard disk in the machine is not WD 1003 compatible, then the line "device=*BLOCKDEV" should be replaced with the following:

```
device=IOS.386
device=VXDLLDR.386.
```

In addition, the real mode mapper (RMM.D32) must exist in the Windows SYSTEM subdirectory.

Example 3: Not WD 1003-Compatible Drive

If 32-bit disk access cannot be used by a particular hard disk controller (because it is not WD 1003 compatible), the VFAT entries for the SYSTEM.INI file's [386Enh] section should include the following:

```
[386Enh]
device=*PAGEFILE
```

device=vcache.386
device=vfat.386
device=IOS.386
device=VXDLDLDR.386

Again, RMM.D32 must exist in the Windows SYSTEM directory.

MORE INFORMATION
=====

VFAT is a 32-bit virtual MS-DOS file allocation table (FAT) file system and can only mount on hard disk volumes. If 32-bit disk access drivers are not available for a particular hard disk controller, additional handling of INT 13h calls is required. The IOS.386, VXDLDLDR.386, and RMM.D32 files provide this functionality and allow VFAT/VCACHE to work on these drives. (Drives affected include most SCSI and ESDI drives, a few IDE drives, and compressed volumes residing on any type of hard disk.)

32-bit disk access drivers may also be provided by an original equipment manufacturer (OEM) to work with a specific hard disk controller, replacing Microsoft's *WDCTRL. As a troubleshooting step, these drivers should be temporarily disabled and IOS.386, VXDLDLDR.386, and RMM.D32 should be used instead.

KBCategory: kbtool kbtshoot kbfile kbappnote

KBSubcategory:

Additional reference words: appnote dblspace wfw wfwg 3.11 fastdisk slow slower slows tshoot

=====
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WG0949: Windows for Workgroups 3.11 Setup Information

PSS ID Number: Q106511

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note titled "Setup Information" (WG0949) for Microsoft Windows for Workgroups version 3.11.

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WG0949: SETUP INFORMATION
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Revision Date: 6/94
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INTRODUCTION
=====

This Application Note discusses installation requirements for Microsoft Windows for Workgroups version 3.11, the differences between the Setup programs for Windows for Workgroups 3.11 and Microsoft Windows operating system 3.1, new device drivers and files that ship with Windows for Workgroups, and the Setup options /A, /N, and /H.

INSTALLATION REQUIREMENTS
=====

To install and use Windows for Workgroups 3.11, you must be using MS-DOS version 3.3 or later. To upgrade from a previous installation of Windows, your Windows version must be 3.1 or later, and your Windows files must be included in your PATH statement. (If you have a version of Windows earlier than 3.1, you need to do a complete Windows for Workgroups installation, not an upgrade.) If you want to preserve your Program Manager groups and other existing Windows settings, you need to install Windows for Workgroups in the directory of your current Windows installation.

DISK SPACE REQUIREMENTS

=====

Windows for Workgroups 3.11 requires approximately 4.5 megabytes (MB) more disk space than Windows 3.1. The following table illustrates the disk space requirements for the most common installation types.

Type of Installation	Windows 3.1	Windows for Workgroups 3.11
Full installation (286)	8.6 MB	Not Available
Upgrade 3.x (286)	5.2 MB	Not Available
Full installation (386)	9.5 MB	18.0 MB
Upgrade 3.x (386)	5.2 MB	9.0 MB
Network administrator (setup /A)	15.3 MB	21.0 MB
Network setup (setup /N)	.3 MB	1.2 MB

SUPPORTED NETWORKS

=====

The following networks are supported for use with Windows for Workgroups 3.11:

- Artisoft® LANtastic® (versions 3.x, 4.x, and 5.x)
- Banyan® VINES® (versions 4.11, 5.0, and 5.52)
- BW-NFS (version 3.0)
- DEC® Pathworks™ (versions 4.0, 4.1, and later)
- IBM® OS/2® Lan Server (versions 1.2, 1.3, 1.3 CSD, and 2.0 without API)
- Microsoft LAN Manager (version 2.1)
- Microsoft Windows Network
- Microsoft Windows NT™ (version 3.1)
- Microsoft Workgroup Client (all versions)
- Novell® NetWare® (versions 3.x, 4.0, and later)
- Sun Microsystems® PC-NFS® (version 5)
- TCS® 10Net (versions 4.1x, 4.2, and 5.0)

Before you run a shared copy of Windows for Workgroups that is installed over one of these networks, read the following guidelines. For some networks, you need to take some preliminary steps before running a shared copy of Windows for Workgroups.

Novell NetWare Network

If you are running a shared copy of Windows for Workgroups on a Novell workstation, be sure to log on to the Novell server before starting Windows for Workgroups.

Microsoft LAN Manager and Windows for Workgroups

Before you run a shared copy of Windows for Workgroups on a LAN Manager or Windows for Workgroups workstation, be sure to start the network workstation services. You can do this with the NET START WORKSTATION command.

If you are using the Windows for Workgroups network drivers, you can start the workstation services automatically by placing one of the following entries in the [Network] section of your SYSTEM.INI file:

```
autostart=full  
autostart=basic
```

Setting AUTOSTART to FULL installs the enhanced network redirector. The enhanced redirector supports named pipes and LAN Manager application programming interface (API) functions.

Setting AUTOSTART to BASIC installs the basic network redirector, which uses less system memory but does not support named pipes.

Neither redirector supports network messaging services or pop-up

messages.

LAN Manager automatically installs the redirector based on entries in your AUTOEXEC.BAT and CONFIG.SYS files. These settings are specified in the LAN Manager network documentation.

NOTES

- With Windows for Workgroups 3.11, you can connect to and use files, directories, and printers that are shared on a Microsoft Windows NT or a Microsoft LAN Manager server. To view the name of a LAN Manager server, at least one computer on the network must have a workgroup name that matches the name of the primary domain of the LAN Manager server.
- Unlike in version 3.1, if you are running a shared copy of Windows for Workgroups 3.11, you cannot share your workstation's resources once you have started the real mode redirector.

Using Windows for Workgroups with a Different Network Operating System

In addition to the Windows for Workgroups 3.11 network functionality, you can install Windows support for a third-party network operating system. The network operating systems currently supported are:

- Banyan VINES (versions 4.11, 5.00, and 5.52)
- BW-NFS (version 3.0)
- Novell NetWare Shell (versions 3.x and 4.x)
- Sun Microsystems PC-NFS (version 5.0)

No third-party files are included with Windows for Workgroups 3.11. You must obtain all third-party network operating system files from your network vendor. You must install the third-party network operating system before you select the Windows support option.

NOTE: This procedure is not useful unless the drivers you obtain from your vendor are compatible with Windows for Workgroups.

To use Windows for Workgroups with a different network:

1. In the Network group in Program Manager, choose the Network Setup icon.
2. In the Network Setup dialog box, choose the Networks button.

The Compatible Networks dialog box appears.

3. Select the Other option button under the heading "You can install Windows support for an additional network" and then select the network you want to set up. If that network does not appear in the list, select Unlisted Or Updated Network.

You are then prompted to insert the disk containing the network driver supplied by your vendor. After you insert the floppy disk in your drive, Setup installs the network driver. The new network should then appear in the Available Network Types group.

4. Select your network and choose the Add button.

This adds the network to the Other Networks In Use list.

5. Choose the OK button twice to exit the Network dialog boxes.

IMPORTANT: To use the new driver(s), you must reboot your machine.

INSTALLING WINDOWS SUPPORT FOR A THIRD-PARTY NETWORK ONLY

=====

You can install Windows support for a third-party network only; however, you lose Windows for Workgroups peer-to-peer functionality if you do so. You can install support for the following networks:

- Artisoft LANtastic (versions 3.x, 4.x, and 5.x)
- Banyan VINES (versions 4.11, 5.0, and 5.52)

- BW-NFS (version 3.0)
- DEC Pathworks (versions 4.0, 4.1, or later)
- IBM OS/2 Lan Server (versions 1.2, 1.3, 1.3 CSD, and 2.0 without API)
- Microsoft Windows Network (version 3.11 Basic)
- Novell NetWare (versions 3.x, 4.0, and later)
- Sun Microsystems PC-NFS (version 5)
- TCS 10Net (versions 4.1x, 4.2, and 5.0)

DIFFERENCES IN SETUP PROGRAMS FOR
=====

WINDOWS 3.1 AND WINDOWS FOR WORKGROUPS 3.11

=====

This section discusses new features in the Windows for Workgroups Setup program, including network detection and dialog box changes.

NETWORK DETECTION

=====

- Windows for Workgroups 3.11 Setup performs network card detection. If Setup fails to detect your network card, it prompts you to choose from a list of available network adapters.
- After a failed installation attempt, you can also force Setup to perform network card detection by using the /F switch (setup /F).
- You can select No Network as a network type during Setup.

DIALOG BOXES

=====

- Windows for Workgroups Setup 3.11 asks for the computer name and the workgroup in the initial user name dialog box.
- After Setup completes printer installation, the Install New Network Adapter, Network Adapters, and Compatible Networks dialog boxes may appear, as the following table illustrates.

Dialog box	Express Setup	Custom Setup
Install New Network Adapter	Conditional	Conditional
Network Adapters	No	Yes
Compatible Networks	Conditional	Yes

The Install New Network Adapter dialog box does not appear during either Express or Custom Setup if the Network Card Detection (NCD) utility detects your network card and you confirm the detected network card. Confirming the detected network card places a network adapter entry in the PROTOCOL.INI file. If you don't confirm the detected network card, the Install New Network Adapter dialog box appears. If you are upgrading from a Workgroup Connection or LAN Manager 2.1 installation, there is already a valid network adapter entry in the PROTOCOL.INI file, and this dialog box is skipped.

The Compatible Networks dialog box does not appear during Express Setup if you are upgrading from a LAN Manager 2.1 installation. Selecting a network in this dialog box places a multinet= entry in the [Network] section of the SYSTEM.INI file. If Setup detects the existing LAN Manager 2.1 installation, Setup places the multinet= entry in the SYSTEM.INI file and therefore skips the Compatible Networks dialog box.

- Once Setup is complete, the option to restart Windows is no longer available. (To load or upgrade network drivers, you must reboot your machine.)

SETUP OPTIONS (SETUP /A, SETUP /N, AND SETUP /H)

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SETUP /A AND SETUP /N

=====

You run Setup with the /A and /N options to configure a workstation to run Windows from a shared directory. Administrative Setup (setup /A) copies all the files from the Windows distribution disks to a single directory and marks them as read-only. This directory can then be used to install and run a shared copy of Windows. Setup /N sets up the shared copy of Windows.

In a stand-alone Windows 3.1 installation, the Windows directory and SYSTEM subdirectory are on your personal hard disk drive. In a shared Windows installation, the Windows directory can be located on the user's hard disk drive or on a network drive, and can be customized for each user. There is no SYSTEM subdirectory, as such, in a network installation; system files are typically located in a shared directory on a network server.

In Windows for Workgroups 3.11, as in Windows 3.1 running on a network, the personal Windows directory contains all files with .INI, GRP, and .PIF extensions, as well as REG.DAT, WIN.COM, WINVER.EXE, and any MS-DOS device driver files. The personal Windows directory may also contain the MS-DOS network device drivers and the NET.EXE, MSIPX.COM, and NETX.COM files. (These files may also be copied to the root directory of the boot drive, as explained in the following section.) The shared directory contains all other Windows files.

NOTE: If you are setting up a third-party network operating system under Windows for Workgroups, you must place the necessary files provided by the third-party network operating system manufacturer in the shared Windows directory created by the setup /a command. When you run setup /n, Setup does not prompt you for these files.

Where Setup Places Network Files

The Windows 3.1 Setup program reads the SETUP.INF file to determine where to install files. SETUP.INF uses the file classifications WINDIR and SYSDIR to refer to files that Setup installs in the Windows directory and SYSTEM subdirectory, respectively.

The Windows for Workgroups 3.11 Setup program reads the NETWORK.INF file to determine where to install files. Setup places files with the windir classification in the personal Windows directory and files with the sysdir classification in a shared server directory. NETWORK.INF also uses two new file classifications, NETDIR and DEVDIR. Where Setup places these files depends on the type of installation.

Real-mode network device drivers (devdir files) are copied to the personal Windows directory on a local nonremovable, noncompressed drive. These include PROTMAN.DOS, PROTOCOL.INI, and WORKGRP.SYS. If the personal Windows directory is on a remote, removable, or compressed volume, then these files are copied to the root of the boot drive. These device drivers must be correctly referenced in the CONFIG.SYS file.

Real-mode network utilities and terminate-and-stay-resident (TSR) programs (netdir files) are copied to the personal Windows directory on a nonremovable hard disk. These include NET.EXE, MSIPX.COM, NETX.COM, and ROUTE.COM. If the personal Windows directory is on a remote or removable volume, these files are copied to the same directory as the devdir files. These utilities and TSRs must be correctly referenced in the AUTOEXEC.BAT file.

NOTE: If your personal Windows directory is on a remote volume, you still must have your own hard disk drive to run Windows for Workgroups. Windows for Workgroups does not support diskless workstations or systems without hard disk drives.

The following table illustrates where Setup places the netdir and devdir files for different installations.

Location of	Location of
-------------	-------------

Location of Windows installation	netdir files	devdir files
Nonremovable hard disk drive	Windows	Windows
Compressed nonremovable hard disk drive	Windows	Root
Removable drive (for example, SCSI)	Root	Root
Remote drive (setup /N)	Root	Root

BATCH MODE SETUP (SETUP /H)

=====

You can use Setup with the /H option to automate the Setup program. Windows for Workgroups 3.11 and Windows 3.1 come with a system-settings template file called SETUP.SHH, which you can copy or modify to create a custom system-settings file. In addition to the settings specified in the Windows 3.1 template file, the Windows for Workgroups template file includes parameters for the computer name, workgroup, network card, protocol, and compatible network. The SETUP.SHH file is located on Windows for Workgroups 3.11 Disk 1 and is copied to the shared Windows for Workgroups directory when you run setup /A. You can modify the template file with any text editor that can save unformatted text (ASCII) files.

For more information about batch mode setup, refer to Chapter 3 of the Microsoft Windows for Workgroups "Resource Kit."

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WG0949.TXT, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG0949.TXT, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WG0949.TXT



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WG0949.TXT
to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WG0949.TXT

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note faxed or mailed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed or faxed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information

Center at (206) 936-8661.

KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote wfwg 3.11

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Comprehensive List of WFWG 3.11 "User's Guide" Doc Errors

PSS ID Number: Q107538

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

SUMMARY

=====

This article contains information on the documentation errors in the Microsoft Windows for Workgroups 3.11 "User's Guide." The following topics are covered:

- Incorrect Application Note Reference in Appendix B
- Appendix E Incorrectly Implies you can Share Resources from MS-DOS

MORE INFORMATION

=====

Incorrect Application Note Reference in Appendix B

The "User's Guide" incorrectly states the following on page 5 of Appendix B:

For more information relating to customizing Windows for Workgroups for people with disabilities, see Application Note WW0787.

Application Note WW0787 covers customizing Windows 3.1 for people with disabilities. Application Note WG0788 covers customizing Windows for Workgroups for people with disabilities.

Appendix E Incorrectly Implies you can Share Resources from MS-DOS

Appendix E states the following:

If you cannot use the network features of connecting to and sharing resources while running Windows for Workgroups, or you need to use the network features before starting Windows, you can start the network from MS-DOS.

While you can start the network from MS-DOS and connect to resources, you cannot share resources from MS-DOS.

KBCategory: kbref kbdocerr kbfile kbappnote

KBSubcategory:

Additional reference words: appnote wfw wfwg 3.11 docerr doc err
documentation error errors workgroup add-on comprehensive

=====
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WG0788: Customizing WFWG 3.11 for Individuals w/ Disabilities

PSS ID Number: Q107556

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11

This Application Note, "Customizing Windows for Workgroups for Individuals with Disabilities" (WG0788) provides information about products and services available for computer users with special needs:

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



**Press here
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THE TEXT OF WG0788

=====
Microsoft® Product Support Services Application Note (Text File)
WG0788: CUSTOMIZING WINDOWS™ FOR WORKGROUPS FOR INDIVIDUALS
WITH DISABILITIES

=====
Revision Date: 5/94
No Disk Included

The following information applies to Microsoft Windows for Workgroups, versions 3.1 and 3.11.

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CUSTOMIZING WINDOWS FOR WORKGROUPS FOR INDIVIDUALS
=====

WITH DISABILITIES
=====

This Application Note provides information about the following products and services available for computer users with special needs:

- Support services for people who are deaf or hard-of-hearing
- Access Pack for Microsoft Windows, a product that makes Windows more accessible for people with movement or hearing disabilities
- Keyboard layouts designed for people who type with a single hand or wand
- Microsoft Mouse driver version 9.0
- Microsoft documentation on audio cassettes and floppy disks
- Products available for individuals who are blind or have low vision
- Help installing Windows for Workgroups
- Customizing Windows for Workgroups without additional hardware or software
- More information about products and services for people with disabilities

NOTE: The information in this Application Note applies to Windows for Workgroups users in the United States only. If you are outside the United States, your Windows for Workgroups package contains a subsidiary information card listing product support telephone numbers and addresses. Contact your subsidiary to find out whether the types of products and services described in this Application Note are available in your area.

MICROSOFT SUPPORT SERVICES FOR PEOPLE WHO ARE DEAF OR HARD-OF-HEARING
=====

Through text telephone (TT/TDD) services, Microsoft provides people who are deaf or hard-of-hearing with the same technical product support and customer service as hearing customers.

For sales information and nontechnical customer service, you can contact Microsoft Consumer Sales on a text telephone at (800) 892-5234 between 6:30 A.M. and 5:30 P.M. Pacific time. For technical assistance, you can contact Microsoft Product Support Services (PSS) on a text telephone at (206) 635-4948 between 6:00 A.M. and 6:00 P.M. Pacific time. Microsoft support services are subject to Microsoft prices, terms, and conditions in place at the time the service is used.

ACCESS PACK FOR MICROSOFT WINDOWS
=====

Microsoft distributes Access Pack for Microsoft Windows, which provides people who have movement or hearing disabilities with better access to computers running Windows or Windows for Workgroups. With

Access Pack for Microsoft Windows, you can configure your Windows system to do the following:

- Allow easier use of SHIFT, CTRL, and ALT key combinations for people who type with a single finger, a mouthstick, or a wand.
- Ignore accidental key presses.
- Adjust or disable the rate at which a character is repeated on the screen when you hold down a key.
- Prevent extra characters if you unintentionally press a key more than once.
- Allow you to use the keyboard to control the mouse cursor.

NOTE: If you use this feature with Microsoft Paintbrush, your system stops responding (hangs). To work around this problem, use Paintbrush keyboard commands. For more information, run Paintbrush and press F1--each specific task help topic has information on the keyboard equivalent for the mouse action.

- Allow you to use an alternate input device to control the computer's keyboard and mouse.
- Provide a visual cue when a computer makes sounds.
- Enable you to turn off these services for people who do not need them.

Access Pack for Microsoft Windows, which was developed by the Trace R&D Center at the University of Wisconsin at Madison, is available on the Microsoft Windows Driver Library in the file ACCP.EXE.

If you have a modem, you can download Windows Driver Library components from network services, various user-group bulletin board services (BBSs) (including BBSs on the Association of PC User Groups [APCUG] network), and the Microsoft Download Service (MSDL). The MSDL is available seven days a week from 2:30 A.M. to 1:00 A.M. at (206) 936-MSDL (936-6735). The modem settings are:

1200,n,8,1
2400,n,8,1
9600,n,8,1 (V.32, V.32bis, V.42, V.42bis)
14,400,n,8,1 (V.32, V.32bis, V.42, V.42bis)

NOTE: If you cannot connect at 14,400, lower the bits per second to 9600 and try again.

For more information about the WDL, see the following articles in the Microsoft Knowledge Base.

ARTICLE-ID: Q135314
TITLE : Windows 95 Driver Library

ARTICLE-ID: Q82006
TITLE : Windows Driver Library Information

Customers who do not have a modem can obtain disks by calling PSS at (206) 637-7098 (voice telephone) or (206) 635-4948 (text telephone).

KEYBOARD LAYOUTS FOR SINGLE-HANDED COMPUTER USERS =====

Microsoft distributes software to modify your keyboard layout. These keyboard layouts can be useful for people who have difficulty using the standard QWERTY layout. You can use this software to change your keyboard configuration without adjusting your physical keyboard.

Windows for Workgroups has built-in support for the two-handed Dvorak keyboard layout, which may be useful for preventing or coping with some types of repetitive motion injuries associated with typing. To use this layout, choose the International icon in Control Panel. Two additional layouts are designed for people who type with the left hand

only or with the right hand only. These layouts can also be useful for people who type with a single finger or a wand.

The single-handed layouts are included with the PSS Application Note GA0650, "Dvorak Keyboard Layouts." If you have a modem, you can download GA0650 from the network services listed in the previous section. The filename is GA0650.ZIP, except on MSDL, where this Application Note is available in the self-extracting file GA0650.EXE.

Customers who do not have a modem can obtain GA0650 by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800) 892-5234 (text telephone).

MICROSOFT MOUSE DRIVER VERSION 9.0
=====

If you have trouble seeing the mouse when you are moving it and you are using the Microsoft Mouse or the Microsoft BallPoint® Mouse, you can upgrade to version 9.0 of the Microsoft Mouse driver. The optional utilities included with the 9.0 Microsoft Mouse driver offer the following features:

- Larger pointer sizes--You can choose a small, medium, or large pointer size.
- Larger I-beam pointer--The I-beam pointer is larger than the regular I-beam.
- Pointer growth--You can make the pointer increase to the large pointer size when you begin to move the mouse.
- Cursor color choice--You can choose a white, black, or transparent mouse pointer.
- Snap-To--You can configure the mouse pointer to jump to the default button when a dialog box opens.
- Locate--You can make the mouse pointer jump to the middle of the screen when you press a specified control key and mouse button.
- Sensitivity--You can independently adjust the vertical and horizontal sensitivity. This can be useful for people whose control or range differs for vertical and horizontal movement.
- Orientation--You can customize the mouse orientation. This can be useful for people who need or want to hold the mouse at a particular angle.

NOTE: Mouse driver version 9.0 and the optional utilities mentioned above are included with Microsoft Mouse version 2.0.

If you own a Microsoft Mouse, you can order the version 9.0 driver by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800) 892-5234 (text telephone). There is a charge for the version 9.0 driver.

DOCUMENTATION ON AUDIO CASSETTES AND FLOPPY DISKS
=====

People who cannot use printed documentation can obtain many of Microsoft's publications from Recording for the Blind, Inc. (RFB). RFB distributes these documents on audio cassettes and floppy disks to registered members of its distribution service. RFB's collection contains more than 80,000 titles, including Microsoft product documentation and books from Microsoft Press. You can contact Recording for the Blind at the following address and phone and fax numbers:

Recording for the Blind, Inc.
20 Roszel Road
Princeton, NJ 08540

(800) 221-4792 Voice telephone

(609) 987-8116 Fax

PRODUCTS FOR INDIVIDUALS WHO ARE BLIND OR HAVE LOW VISION
=====

If you are blind or have low vision, many products are available to help you use Windows. For persons with low vision, there are several screen-enlargement utilities. For blind individuals, there are screen readers that provide alternative output by synthesized voice or refreshable Braille displays.

For more information on the products available, see the "Getting More Information" section of this Application Note. For more information about customizing Windows for Workgroups for individuals with low vision, see the "Customizing Windows for Workgroups Without Additional Hardware or Software" section below.

HELP INSTALLING WINDOWS FOR WORKGROUPS
=====

Individuals who rely on some types of accessibility software may have difficulty installing Windows for Workgroups because the accessibility software is not loaded during the graphical portion of Setup. If this presents a problem, you can bypass the graphical portion of Setup by using the /h switch. The /h switch allows you to specify a text file that provides answers to all the questions that you would be prompted for during the graphical portion of Setup. For example, if you create a text file called MYSETUP.SHH, you would then run Setup with the following command:

```
a:\setup /h:c:\mysetup.shh
```

For more information on the format of the setup response file, see the SETUP.SHH file provided on your Windows for Workgroups installation disks.

CUSTOMIZING WINDOWS FOR WORKGROUPS WITHOUT
=====

ADDITIONAL HARDWARE OR SOFTWARE
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There are many ways you can adjust the appearance and behavior of Windows for Workgroups to suit varying eyesight and motor skills without any additional software or hardware. For example, by changing settings in your WIN.INI and SYSTEM.INI files, you can control screen colors, font sizes, and mouse behavior. You can change these settings in Control Panel or by directly modifying the files. The following sections describe how to identify which settings to modify to achieve the desired results and how to safely modify the WIN.INI, SYSTEM.INI, and other Windows initialization files.

Modifying Initialization Files
=====

Windows initialization files (.INIs) contain information about your system environment. For example, the WIN.INI file contains settings about your Windows environment, and the SYSTEM.INI file contains settings that tell Windows about your system's hardware needs. MSMAIL.INI and SCHEDPLUS.INI contain settings that control the appearance of text and screen colors within the Mail and Schedule+ applications.

You can configure Windows and Windows-based applications to meet your needs and preferences by modifying the information stored in these files. For more information about WIN.INI and SYSTEM.INI, refer to the WININI.WRI and SYSINI.WRI files located in your Windows directory. You can print or view these files from Microsoft Windows Write.

IMPORTANT: Errors made when editing initialization files can lead to undesirable results when you run Windows. Before changing any

entry, make a backup copy of your original file. Also, some text editors can damage characters that have ANSI values greater than 127. To avoid these problems, we recommend that you use Control Panel or Setup whenever possible to make changes. If you must edit the file, use a text editor such as Microsoft Windows Notepad, System Configuration Editor (SYSEDIT.EXE), or MS-DOS Editor.

To change .INI file entries with a text editor:

1. Create a backup copy of the .INI file you want to edit. For example, run File Manager and copy WIN.INI to WIN.BAK.
2. Open the .INI file with a text editor, such as Notepad.
3. Edit the specific entries and save the file.
4. Restart Windows so that the changes take effect.

The next five sections of this Application Note discuss the initialization file entries you can change to achieve the specific results you want. Many of the initialization file entries discussed below are not present in the WIN.INI file by default but you can easily add them with a text editor.

Changing Colors

- If you have trouble differentiating the system colors, or if they cause eyestrain, you can adjust them in the Colors dialog box of Control Panel.
- If you have trouble reading full-screen messages displayed by Windows in 386 enhanced mode, you can adjust the colors by using the MessageBackColor and MessageTextColor entries in the [386Enh] section of the SYSTEM.INI file. For example, the following entries generate bright yellow text on a black background in message screens (such as the screen that appears when you press CTRL+ALT+DEL):

```
MessageTextColor=E
MessageBackColor=0
```

The following table defines the color values you can use for the MessageBackColor and MessageTextColor entries:

0 - Black	4 - Red	8 - Gray	C - Bright red
1 - Blue	5 - Magenta	9 - Bright blue	D - Bright magenta
2 - Green	6 - Yellow/brown	A - Bright green	E - Bright yellow
3 - Cyan	7 - White	B - Bright cyan	F - Bright white

- If the desktop pattern or wallpaper causes eyestrain, you can adjust them in the Desktop dialog box of Control Panel.
- If you have trouble differentiating the colors used by Windows Help, you can adjust them by using the IFJumpColor, IFPopupColor, JumpColor, MacroColor, and PopupColor entries in the [Windows Help] section of the WIN.INI file. The syntax for these entries is

```
<entry>=red <value> green <value> blue <value>
```

where the <value> is a number from 000 to 999, with 999 giving the highest intensity. You must include three digits for each value, and you must include each color value. You can experiment with this setting to create a color that works best for you. The following table lists some colors you can work with:

Setting	Resulting color
---------	-----------------

000 000 999	Blue
000 999 000	Green
999 000 000	Red
999 999 000	Yellow

999 000 999 Magenta

For more information on these entries, see the WININI.WRI file in your Windows directory.

Changing Fonts

- If you have trouble reading the Windows for Workgroups system fonts (which are used to display window titles, menus, and dialog boxes), you can increase the font size using the FIXEDFON.FON, FONTS.FON, and OEMFONTS.FON entries in the [boot] section of the SYSTEM.INI file. However, you should replace the default fonts only with other system font files supplied with Windows for Workgroups. These fonts include 8514FIX.FON, 8514SYS.FON, and 8514OEM.FON.

For example, if you are using a VGA video driver, your .FON files are probably set as follows:

```
fixedfon.fon=vgafix.fon
fonts.fon=vgasys.fon
oemfonts.fon=vgaoem.fon
```

To increase the size of the system font, expand 8514FIX.FON, 8514SYS.FON, and 8514OEM.FON from the original Windows for Workgroups disks to your Windows program directory (usually C:\WINDOWS). For example, type the following command at the MS-DOS command prompt, and then press ENTER:

```
expand a:\8514fix.fo_ c:\windows\system\8514fix.fon
```

Then, edit the [boot] section of your SYSTEM.INI file to read:

```
fixedfon.fon=8514FIX.FON
fonts.fon=8514SYS.FON
oemfonts.fon=8514OEM.FON
```

WARNING: Do not use font files other than the system .FON fonts supplied with Windows for Workgroups. For example, you cannot use TrueType® (.TTF) fonts.

- If you have trouble reading the titles of icons, you can adjust the appearance of these titles with the IconTitleFaceName and IconTitleSize entries in the [desktop] section of the WIN.INI file. For example:

```
[desktop]
IconTitleFaceName=Arial
IconTitleSize=12
```

- If you have trouble reading small fonts used by some applications and do not want to install a screen enlarger utility, you can restrict the fonts available to Windows-based applications by removing the fonts you do not want in the Fonts dialog box of Control Panel. You do not need to actually delete the font files. If you remove all the fonts, only the system fonts remain available to applications.

NOTE: You may also need to adjust the icon spacing in the Desktop dialog box of Control Panel and choose Arrange Icons from the Window menu in Program Manager to make all your icon titles visible.

- If you have trouble reading the file and directory names in File Manager, you can adjust the font settings by choosing Font from the Options menu.
- If you have trouble locating the text-selection cursor (also known as the caret or insertion bar) in your applications, you can adjust the rate at which it flashes. To do this, choose the Desktop icon in Control Panel.

Changing Schedule+ and Mail Settings

- If you have trouble reading the text in Schedule+, you can adjust the fonts and colors by choosing Display from the Options menu.
- If you have trouble reading the text in Microsoft Mail, you can adjust the fonts using the FixedFont, NormalFont, and PrintFont entries in the [Microsoft Mail] section of the MSMAIL.INI file, which is located in your Windows for Workgroups directory. Each entry has four parts separated by commas: the font name, point size, a flag for bold, and a flag for italic. To switch between the normal font and the fixed font, choose Change Font from the View menu. Each entry is described separately in the following paragraphs.
- FixedFont=<facename>, <size>, 0|1, 0|1

The above entry identifies a fixed-pitch font you can substitute for the one supplied with Microsoft Mail. This font serves as an alternative to the Microsoft Mail default (Helvetica 10 point). This entry affects only the message body text, not the message envelope text or folder lists. In Windows for Workgroups Mail, the default is Courier New, 9, 0, 0 (Courier New, 9-point, not bold, not italic).
- NormalFont=<facename>, <size>, 0|1, 0|1

The above entry identifies the proportionally spaced default font used to display Mail messages. This entry affects only the message body text, not the message envelope text or folder lists. The default value is Helv, 10, 0, 0.
- PrintFont=<facename>, <size>, 0|1, 0|1

The above entry identifies the default proportionally spaced font used to print Mail messages. The default value is Helv, 10, 0, 0.

Changing Mouse Behavior

- If you have difficulty controlling the Microsoft Mouse, you can adjust its speed in the Mouse dialog box of Control Panel.
- If you have trouble seeing the mouse when you are moving it, you can try using the Mouse Trails feature in the Mouse dialog box of Control Panel. If your third-party video driver does not support the Mouse Trails option, contact your video card vendor for more information.
- If you have trouble double-clicking the mouse, you can adjust the sensitivity using the Double-Click Speed setting in the Mouse dialog box of Control Panel. You can further adjust the double-click functionality by adding the DoubleClickHeight and DoubleClickWidth entries to the [Windows] section of the WIN.INI file. For example, if you add the following entries to your WIN.INI file and restart your computer, you no longer have to hold the mouse in exactly the same location when you double-click:

```
DoubleClickHeight=30
DoubleClickWidth=30
```
- If you have trouble positioning the mouse on window frames so that you can adjust the size of the windows, you can increase the window border width setting in the Desktop dialog box of Control Panel.

Changing Keyboard Behavior

- If you have trouble using the keyboard because of the speed at which it repeats or the delay time before it begins repeating, you

can adjust these settings in the Keyboard dialog box of Control Panel. (You can adjust keyboard settings even further using Access Pack for Microsoft Windows, which is described later on in this Application Note.)

If you cannot use Control Panel to adjust the keyboard, you can adjust the corresponding KeyboardDelay and KeyboardSpeed entries in the [Windows] section of the WIN.INI file. KeyboardDelay establishes how much time elapses after you hold down a key before the key starts to repeat (the default is 2 milliseconds). KeyboardSpeed establishes how much time elapses between repetitions of a character on the display when you hold down a keyboard key (the default is 31 milliseconds).

- You can use Windows Recorder to automate common tasks. For more information about using Recorder, run Recorder and choose Contents from the Help menu to open Recorder Help.
- You can use two methods to reduce the number of keystrokes required to switch between applications. You can use Task List to display a list of all applications currently running, or you can assign a shortcut key to each application. Task List can be invoked by pressing CTRL+ESC, or by choosing Switch To from any application's Control menu. Application shortcut keys can be assigned by creating an icon for the application in Program Manager and using the Properties command on the File menu. For more information on Task List and shortcut keys, see the "Microsoft Windows for Workgroups User's Guide."

GETTING MORE INFORMATION

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Information from Microsoft

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For more information on Microsoft products and services for people with disabilities, contact Microsoft Consumer Sales at one of the following numbers:

(800) 426-9400	Voice telephone
(800) 892-5234	Text telephone

Third-Party Product Information

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The Trace R&D Center at the University of Wisconsin-Madison produces a book and a compact disc (CD) that describe products that help people with disabilities use computers. The book is titled "ResourceBook" and contains nearly 500 pages of descriptions and photographs of approximately 2,000 aids. The CD provides a database of more than 12,000 products and other information for people with disabilities. It is issued twice a year and is also available in many public libraries. You can contact the Trace R&D Center at the following address and phone and fax numbers:

Trace R&D Center	
S-151 Waisman Center	
1500 Highland Avenue	
Madison, WI 53705-2280	
(608) 263-2309	Voice telephone
(608) 263-5408	Text telephone
(608) 262-8848	Fax

Assistive Technology Programs

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For general information and recommendations about how computers can help specific individuals, customers should consult a trained evaluator who can best match the individual's needs with the available

solutions. An assistive technology program in your area can provide referrals to programs and services available to you. To locate the assistive technology program nearest you, contact the Center for Developmental Disabilities at the following address and phone and fax numbers:

National Information System
Center for Developmental Disabilities
University of South Carolina
Benson Building
Columbia, SC 29208

(800) 922-9234, Voice or text telephone, outside South Carolina
extension 301
(800) 922-1107 Voice or text telephone, in South Carolina
(803) 777-6222 Voice or text telephone, outside the United States
(803) 777-6058 Fax

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- Internet (anonymous FTP)
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Change to the Softlib/Mslfiles folder.
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ARTICLE-ID: Q119591
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KBCategory: kbfile kbdisplay kbappnote kbtlc

KBSubcategory: wfw wfwg

Additional reference words: 3.10 3.11 311 wg31t1lc wg311t1lc accesspack

=====

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WG0971: NDIS2SUP.386 Corrects Problems Restarting WFWG

PSS ID Number: Q109447

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note, "WG0971: NDIS2SUP.386 Corrects Problems Restarting Windows for Workgroups on Token Ring Machines."

If you have problems quitting and then restarting Windows for Workgroups version 3.11 on systems using the NDIS version 2 IBM token ring driver, IBMTOK.DOS, this Application Note may help. The WG0971 disk included with this Application Note contains a new NDIS 2.0/3 support layer file, NDIS2SUP.386, to correct these problems.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

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Microsoft® Product Support Services Application Note (Text File)
WG0971: NDIS2SUP.386 CORRECTS PROBLEMS RESTARTING WINDOWS FOR
WORKGROUPS ON TOKEN RING MACHINES
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Revision Date: 12/93
1 Disk Included

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Introduction

You may have problems quitting Windows for Workgroups version 3.11 on systems using the NDIS version 2 IBM® token ring driver (IBMTOK.DOS). If you run, quit, and then restart Windows for Workgroups (without restarting the computer), the computer usually stops responding (hangs). With this driver, you may also notice that your video display is reset after you quit Windows for Workgroups. For example, if your video display is set to 50-line mode before you run Windows for Workgroups, it may be reset to 25-line mode after you quit.

The WG0971 disk included with this Application Note contains a new NDIS 2.0/3 support layer file (NDIS2SUP.386) to correct these problems.

To install the new NDIS2SUP.386 file

1. Insert the enclosed WG0971 disk in the appropriate floppy disk drive.
2. To copy the file to the Windows SYSTEM directory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\ndis2sup.386 <destination>
```

where <drive> is the floppy disk drive containing the WG0971 disk and <destination> is the drive and directory of your Windows SYSTEM directory.

For example, if the WG0971 disk is in drive A and your Windows directory is C:\WINDOWS, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\ndis2sup.386 c:\windows\system
```

STATUS

=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

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KBCategory: kbnetwork kbdisplay kbfile kbappnote kbsetup

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.11

=====
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WG0970: VNETBIOS.386 Corrects Real-Mode Transport Problems

PSS ID Number: Q109448

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note, "WG0970: VNETBIOS.386 Corrects Real-Mode Transport Problems," that corrects problems you may experience if you run multiple real-mode transports with Windows for Workgroups when the protected-mode redirector (VREDIR.386) and the protected-mode server (VSERVER.386) are loaded.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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Microsoft® Product Support Services Application Note (Text File)
WG0970: VNETBIOS.386 CORRECTS REAL-MODE TRANSPORT PROBLEMS
=====

Revision Date: 1/94
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Introduction

If you run multiple real-mode transports with Windows for Workgroups
when the protected-mode redirector (VREDIR.386) and the protected-
mode server (VSERVER.386) are loaded, you eventually run out of
network control blocks (NCBs). As a result, you receive the following
error message:

Too many outstanding commands.

The updated VNETBIOS.386 file included with this Application Note
corrects this problem by allotting more hardware control blocks
(HCBs).

To install the updated VNETBIOS.386 file

1. Insert the enclosed WG0970 disk in the appropriate floppy disk
drive. Copy VNETBIOS.386 to your Windows SYSTEM subdirectory using
the following command

copy <drive>:\vnetbios.386 <destination>

where <drive> is the floppy disk drive containing the WG0970 disk
and <destination> is the drive and directory of your Windows SYSTEM
subdirectory.

For example, if the WG0970 disk is in drive A, and your Windows
directory is C:\WINDOWS, type the following at the MS-DOS command

prompt and then press ENTER:

```
copy a:\vnetbios.386 c:\windows\system
```

2. Open the SYSTEM.INI file in Microsoft Windows for Workgroups Notepad, and edit the Network= entry by changing *vnetbios to vnetbios.386. For example, change

```
Network=*vnetbios,*vwc,vnetsup.386,vredir.386,vserver.386
```

to:

```
Network=vnetbios.386,*vwc,vnetsup.386,vredir.386,vserver.386
```

3. Add the following line to the [386Enh] section:

```
NumHCBS=32
```

The default for NumHCBS is 32. If you are using DEC® Pathworks™, you must increase this value to 64 to avoid running out of NCBS. If other installed network components are using a lot of NCBS, you may need to use a value higher than 64. The NumHCBS entry has no hard-coded limit, but it is limited by memory. You shouldn't need to set NumHCBS higher than 96.

4. Save the SYSTEM.INI file, and then quit and restart Windows.

STATUS

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Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

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[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbnetwork kbfile kbappnote kbsetup

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.1 3.11

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WG0974: VKDA.386 Corrects Keyboard Problems

PSS ID Number: Q109561

Article last modified on 12-31-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note, "WG0974: VKDA.386 Corrects Keyboard Problems"

When you start Windows for Workgroups version 3.11 on certain computers, your system may stop responding (hang) at the password dialog box or in Program Manager (if you set your password to null during Setup). Application Note WG0974 contains a new virtual keyboard driver to correct this problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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Microsoft® Product Support Services Application Note (Text File)
WG0974: VKDA.386 CORRECTS KEYBOARD PROBLEMS

=====
Revision Date: 8/94
1 Disk Included

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SYMPTOMS
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When you start Windows for Workgroups version 3.11, your system may stop responding (hang) at the password dialog box or in Program Manager if you set your password to null during Setup. The WG0974 disk included with this Application Note contains a new virtual keyboard driver that corrects this problem for the following computers:

Manufacturer	Model(s)
Acer America	Pac 150, 1100LX Portable
Advent Corporation	Machines using Blue Lightning chip set
Ambra Corporation	Machines using Blue Lightning chip set, including B466DL, B466TL, D466DL, D466TL, and D466BL
AST®	Ascentia 900N 486/75 laptop
Compaq	All Aero™ machines, LTE Elite™ 4/50 or 75CX
Compudyne	Specific models unknown
Crystal Data Systems	486 machines
DEC™	316 SX, 320 SX
GRiD® Systems	320S with Tandy®/Phoenix BIOS V 1.10
GTSI	0783 486 SX/25 (SFA and desktop)
IBM®	Valuepoint PS/2® 450TX2/D machine types

	6382, 6384, and 0783
KLH	computers
Tandy	2500 SX/20, 2500 SX/25, 2500 SX/33, and 4020
Twinhead	486/33, Superset 590 386/25
Victor	300 SX/33 and 400 SX

NOTE: Machines manufactured by Compaq after April 1, 1994, that ship with Windows 3.1 come preinstalled with a virtual keyboard driver (VKD) that corrects this problem. Upgrading to Windows for Workgroups 3.11 leaves this VKD in place and allows the keyboard to work properly. However, if you install Windows for Workgroups 3.11 to a new directory, the keyboard stops functioning. If you perform such an installation, you must manually install the new VKD.

CAUSE

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The keyboard controllers in these machines generate unnecessary interrupts each time a key is pressed and released. The keyboard stops responding because the Windows for Workgroups 3.11 VKD, unlike the Windows 3.1 VKD, does not ignore these extra interrupts.

RESOLUTION

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To correct this problem, use one of the following methods:

- Install the new VKDA.386 file provided with this Application Note.
- or-
- Install the Microsoft Mouse version 9.x driver. The replacement VKD that comes with this software (MOUSEVKD.386) handles the extra interrupts generated by the keyboards.

NOTE: You may also be able to download a new VKD from the your computer manufacturer's bulletin board service (BBS). For example, SP0738.ZIP, which is available on the COMPAQ® BBS, contains a new VKD that corrects this problem. Contact your computer manufacturer to see if an updated driver is available.

To install the new VKDA.386 file

1. Insert the enclosed WG0974 disk in the appropriate floppy disk drive.
2. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\vkda.386 <destination>
```

where <drive> is the floppy disk drive containing the WG0974 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG0974 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\vkda.386 c:\windows\system
```

3. Use a text editor to edit the keyboard= entry in the [386Enh] section of the SYSTEM.INI file. Change

```
keyboard=*vkd
```

to:

```
keyboard=c:\windows\system\vkda.386
```

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KBCategory: kbhw kbfile kbappnote kb3rdparty

KBSubcategory: wfw wfwg windrvr

Additional reference words: appnote hangs freezes lockup locks up Contura Aero enhanced

=====
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WG0973: RMM.D32 Corrects 5-Second Delay When Starting Apps

PSS ID Number: Q109562

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

Microsoft has an Application Note, WG0973: RMM.D32 Corrects Five-Second Delay When Starting Windows-Based Applications.

If you have 32-bit file access enabled and you have an MSIPX or a Novell NE2000.COM ODI driver and IPXODI configuration, you may experience a delay when you start a Windows-based application under Windows for Workgroups 3.11. The RMM.D32 file included with this Application Note may correct the problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
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Microsoft® Product Support Services Application Note (Text File)
WG0973: RMM.D32 CORRECTS FIVE-SECOND DELAY
WHEN STARTING WINDOWS™-BASED APPLICATIONS

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Revision Date: 1/94
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Introduction

When you start a Windows-based application under Windows for Workgroups 3.11, you may experience a five-second delay before any disk activity occurs and the application begins to load. This delay occurs if you have 32-bit file access enabled and you are using one of the following network configurations:

MSIPX
Novell® NE2000.COM ODI driver and IPXODI

NOTE: Microsoft has confirmed this problem occurs with version 1.34 of the NE2000 multiple link interface device (MLID) driver (dated 6/3/91) and the versions included in the Novell DOSUP7 and DOSUP8 client files (dated 1/18/93 and 7/30/93, respectively).

This delay is caused by the 32-bit file access real-mode mapper (RMM.D32) timing out. Once the application loads, it runs at normal speed because it is now stored in the 32-bit disk cache (VCACHE.386).

You can work around this delay by disabling 32-bit file access or by installing the updated RMM.D32 file contained on the WG0973 disk included with this Application Note. The updated RMM.D32 file is not hard-coded for a five-second time-out. Instead, it has a one-second default time-out and can be configured using the RMMTimeout= entry in the SYSTEM.INI file.

To install the updated RMM.D32 file

Insert the enclosed WG0973 disk in the appropriate floppy disk drive. Copy RMM.D32 to your Windows SYSTEM subdirectory using the following command

```
copy <drive>:\rmm.d32 <destination>
```

where <drive> is the floppy disk drive containing the WG0973 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory. For example, if your WG0973 disk is in drive A, and your Windows directory is C:\WINDOWS, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\rmm.d32 c:\windows\system
```

Configuring the RMM.D32 Time-Out Setting

To change the one-second default time-out value for the updated RMM.D32 file, open your SYSTEM.INI file in Microsoft Windows for Workgroups Notepad, locate the [386Enh] section, and add the RMMTimeout= entry setting (which is expressed in milliseconds). For example, to increase the time-out for RMM.D32 to two seconds, add the following entry to the [386Enh] section of your SYSTEM.INI file:

```
RMMTimeout=2000
```

To decrease the time-out for RMM.D32 to half a second, change the setting as follows:

```
RMMTimeout=500  
-----
```

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WG0973.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon.

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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbnetwork kb3rdparty kbfile kbappnote kbenv

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.11 vfat

=====
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Pentium-Based Machine Hangs with Communication Applications

PSS ID Number: Q110568

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
 - Microsoft Windows for Workgroups versions 3.1, 3.11
-

SYMPTOMS

=====

Pentium-based machines with a peripheral component interface (PCI) bus and a 16550 UART chip stop responding (hang) or exhibit other unexpected behavior when you use communication applications, such as Microsoft At Work PC Fax or Microsoft Terminal.

In some cases, you may be able to run the software successfully once but then experience problems when you try to run it a second time (before Windows is restarted).

CAUSE

=====

The PCI bus uses a new universal asynchronous receiver transmitter (UART) chip that identifies itself as a 16550 chip but does not handle the 16-bit buffer the same way that the 16550 UART chip does.

These problems occur if there is data in the chip when the serial communications application attempts to open the communications port. A problem with the chip implementation causes the chip to become trapped in a mode in which data is always detected in its FIFO buffer.

RESOLUTION

=====

To correct this problem under Windows for Workgroups 3.11, obtain the updated SERIAL.386 file included with PSS Application Note WG1001: Updated SERIAL.386 Driver for Windows for Workgroups.

For more information about WG1001, query on the following words in the Microsoft Knowledge Base:

wg1001 and appnote

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KBCategory: kbhw kbfile kbappnote kb3rdparty

KBSubcategory: win31 wfw wfwg ras awfax

Additional reference words: appnote 3.11 3.10 3.1 gateway2000 exit restarted

gateway Dell XPS AMI motherboard kit machine built-in com comm port ports NEC Image 466ES PCs print Remote Access Services

=====

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WW0981: Windows 3.11 Refresh Files

PSS ID Number: Q111233

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.10, 3.11

Microsoft has an Application Note, "WW0981: Windows 3.11 Refresh Files" that includes updated versions of eight core Windows 3.10 files and two procedures for updating these files to version 3.11. You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
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Microsoft® Product Support Services Application Note (Text File)
WW0981: WINDOWS™ 3.11 REFRESH FILES
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Revision Date: 3/94
1 Disk Included

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ADDENDUM TO THE MICROSOFT SOFTWARE LICENSE AGREEMENT
FOR MICROSOFT WINDOWS OPERATING SYSTEM VERSION 3.10
=====

The files provided in this Application Note are intended to replace
the corresponding files provided with Microsoft Windows 3.10. Upon
installation, these files become a part of the Windows operating
system and are subject to the same license terms and conditions as the
Windows 3.10 product you previously acquired from Microsoft
Corporation. Any other use of these files is prohibited.

MICROSOFT WINDOWS VERSION 3.11 FILES
=====

This Application Note includes updated versions of eight core Windows
3.10 files. To update these files to version 3.11, follow the
procedure below that is appropriate to your configuration.

NOTE: This update to Microsoft Windows 3.10 has been tested by

Microsoft in the MS-DOS/Windows environment only. We recommend that users of IBM® OS/2® for Windows contact IBM's support facilities for advice on how to proceed.

To update a local installation of Windows 3.10 to Windows 3.11

1. Quit Microsoft Windows.
2. Create a backup directory. For example, to create a backup directory off the root of drive C, type MD C:\BACKUP at the MS-DOS command prompt and then press ENTER.
3. Copy the files listed below from your Windows SYSTEM subdirectory to the backup directory or a floppy disk.

COMMDLG.DLL
GDI.EXE
KRNL386.EXE
PSCRIPT.DRV
SHELL.DLL
UNIDRV.DLL
USER.EXE

NOTE: After you copy the new USER.EXE file to your Windows SYSTEM subdirectory, your registered user and company name will be blank.

To do this, use the following syntax

```
copy <drive>:\<windir>\system\<filename> <drive>:\<backdir>
```

where <drive> is your hard disk drive, <windir> is your Windows directory, <filename> is the file you are copying, and <backdir> is your backup directory.

For example, if your hard disk drive is C, your Windows directory is named WINDOWS, your backup directory is called BACKUP, and you are copying COMMDLG.DLL, type the following:

```
copy c:\windows\system\commdlg.dll c:\backup
```

Repeat this command for the remaining files.

4. Insert the enclosed WW0981 disk in the appropriate floppy disk drive. At the MS-DOS command prompt, type the following and then press ENTER

```
copy <drive>:\*.* <destination>
```

where <drive> is your floppy disk drive and <destination> is your Windows SYSTEM subdirectory.

For example:

```
copy a:\*.* c:\windows\system
```

5. If you use Novell® NetWare® connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file, which is located in your Windows directory.
 - b. In the [386Enh] section, change device=*vtd to device=vtda.386.
 - c. Save the file and quit the text editor.

To update a network installation of Windows 3.10 to Windows 3.11

1. Determine the location of your SYSTEM.INI file and the network share that contains your shared Windows files. For example, if the network drive containing your Windows program files is Q, the location of your shared Windows files may be Q:\WINSHARE and your user directory may be Q:\USER\<YOURNAME> (or your user directory may be located on your local hard disk drive).
2. Quit Microsoft Windows.

3. Create a backup directory. For example, to create a backup directory off the root of drive C, type MD C:\BACKUP at the MS-DOS command prompt and then press ENTER.
4. Copy the following files from the network share to the backup directory on your hard disk drive using the following syntax at the MS-DOS command prompt and then press ENTER

```
copy <netdrive>:\<netshare>\<filename> <harddrive>:\<backdir>
```

where <netdrive> is the network drive, <netshare> is the network share containing your SYSTEM.INI file, <filename> is the file you are copying, <harddrive> is your hard disk drive, and <backdir> is your backup directory.

For example, if your network drive is Q, the network share is WINSHARE, the file you want to copy is COMMDLG.DLL, your hard disk drive is C, and your backup directory is called BACKUP, type the following:

```
copy q:\winshare\commdlg.dll c:\backup
```

Repeat this command for the remaining files:

```
COMMDLG.DLL  
GDI.EXE  
KRNL386.EXE  
PSCRIPT.DRV  
SHELL.DLL  
UNIDRV.DLL  
USER.EXE
```

5. Remove the read-only file attributes on the shared Windows files using the MS-DOS ATTRIB command.
6. Insert the enclosed WW0981 disk in the appropriate floppy disk drive. At the MS-DOS command prompt, type the following and then press ENTER

```
copy <drive>:\*.* <destination>
```

where <drive> is your floppy disk drive and <destination> is the network drive and share.

For example:

```
copy a:\*.* q:\winshare
```

7. Reset the read-only file attributes on the shared Windows files using the MS-DOS ATTRIB command.
8. If you use Novell NetWare connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file.
 - b. In the [386Enh] section, change device=*vtd to device=vtda.386.
 - c. Save the file and quit the text editor.

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KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 3.11 win31

=====
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WFWG 3.11: 3C509 MLID May Cause Lost Connections and Hangs

PSS ID Number: Q111712

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

SYMPTOMS

=====

If you use the 3COM EtherLink III (3C509) network interface card (NIC) and the 3COM ODI MLID (3C509.COM or 3C5x9.COM) with Windows for Workgroups version 3.11 and Novell NetWare is installed as your secondary network, you may encounter the following problems:

- Copying large blocks of data across the network cause the computer to stop responding (hang).
- The computer inadvertently loses network connections.

CAUSE

=====

The 3C509 NIC has a 4-kilobyte (K) FIFO buffer. This allows 2K to receive and 2K to transmit. If more information than this is passed through the card at one time, that information is lost.

In addition, the 3C509 uses approximately 88 percent of the CPU's resources when it is transmitting.

RESOLUTION

=====

Microsoft, in joint effort with 3COM has developed an Application Note (WG1004) to correct this problem. This Application Note provides an updated MSODISUP.386 file. For more information, query on the following words in the Microsoft Knowledge Base:

appnote and msodisup.386 and WG1004

As a temporary workaround for this problem, try one of the following:

- Use the IPX Monolithic driver.
- or-
- Use only the NDIS 3 drivers that ship with Windows for Workgroups 3.11.
- or-
- Use NetBEUI as your only protocol.
- or-
- With the "IPX/SPX Compatible Transport with NetBIOS" set as the default protocol, place the following setting in the [Networks] section of the SYSTEM.INI file:

```
[Networks]
SlowLANAS=0
```

- or-
- If you installed Windows for Workgroups 3.11 over Windows for Workgroups version 3.1, use the MSIPX protocol from Windows for Workgroups 3.1.

KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.11 wfw wfwg

=====
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WG0988: IBMTOK.386 Corrects Problems with Exiting WFWG

PSS ID Number: Q111796

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

Microsoft has an Application Note, "WG0988: IBMTOK.386 Corrects Problems with Exiting Windows for Workgroups."

The WG0988 disk included with this Application Note contains a new IBMTOK.386 driver that corrects the following problems:

- A stack overflow error message occurs when you exit Windows for Workgroups.
- Your system stops responding (hangs) when you exit Windows for Workgroups.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
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WG0988: IBMTOK.386 CORRECTS PROBLEMS WITH EXITING
WINDOWS FOR WORKGROUPS
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Revision Date: 2/94
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Introduction

When you use the Windows for Workgroups version 3.11 IBMTOK.386 driver, you may experience the following problems:

- A stack overflow error message occurs when you exit Windows for Workgroups.
- Your system stops responding (hangs) when you exit Windows for

Workgroups.

The WG0988 disk included with this Application Note contains a new IBMTOK.386 driver to correct these problems. The new driver allows the MCA IBM® token ring card to correctly disengage from the network ring when the network interface card (NIC) is set for IRQ 2.

To install the new IBMTOK.386 file

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed IBMTOK.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:<path>\ibmtok.386 ibmtok.old
```

where <drive>:<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\ibmtok.386 ibmtok.old
```

3. Insert the enclosed WG0988 disk in the appropriate floppy disk drive.
4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\ibmtok.386 <destination>
```

where <drive> is the floppy disk drive containing the WG0988 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG0988 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\ibmtok.386 c:\windows\system
```

STATUS
=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

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KBCategory: kbappnote kbother kbfile

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.1 3.10 WFWG hang

=====
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WG0991: Updated NE2000.386 Allows WFWG to Start Correctly

PSS ID Number: Q111797

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

When you use the Windows for Workgroups version 3.11 NE2000.386 driver, your system may stop responding (hang) when you try to start Windows for Workgroups. The WG0991 disk included with this Application Note contains an updated NE2000.386 driver to correct this problem. Microsoft has an Application Note, "WG0991: Updated NE2000.386 Allows Windows for Workgroups to Start Correctly," to correct this problem. You can obtain this Application Note from the following sources:

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WG0991: UPDATED NE2000.386 ALLOWS WINDOWS FOR WORKGROUPS
TO START CORRECTLY
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Revision Date: 2/94
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Introduction

When you use the Windows for Workgroups version 3.11 NE2000.386 driver with a Novell NE/2 network interface card (NIC), your system may stop responding (hang) when you try to start Windows for Workgroups.

The WG0991 disk included with this Application Note contains an updated NE2000.386 driver to correct this problem.

To install the updated NE2000.386 file

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed NE2000.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:<path>\ne2000.386 ne2000.old
```

where <drive>:<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\ne2000.386 ne2000.old
```

3. Insert the enclosed WG0991 disk in the appropriate floppy disk drive.
4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\ne2000.386 <destination>
```

where <drive> is the floppy disk drive containing the WG0991 disk and <destination> is the drive and directory of your Windows SYSTEM

subdirectory.

For example, if the WG0991 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\ne2000.386 c:\windows\system
```

STATUS
=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

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KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.1 3.10 WFWG appnote

=====
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WG0992: Updated Files for Microsoft At Work PC FAX 1.0

PSS ID Number: Q111798

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note titled "WG0992: Updated Files for Microsoft At Work PC Fax Version 1.0" available. The disk included with this Application Note corrects the following problems:

- Slow performance when you are using a shared fax device.
- Extended characters are not rendered on cover pages.
- The redial level cannot be set from the EFAXPUMP.INI file.
- Microsoft At Work PC Fax stops responding (hangs) when the EFAXPUMP.INI file becomes too large.
- Timing problems occur when you send a fax in facsimile format from an application that does not support running multiple instances during printing.
- Shared CAS modems fail when capability is set to RES_SUPER_SUPER.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
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- Microsoft FastTips Technical Library
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Microsoft® Product Support Services Application Note (Text File)
WG0992: UPDATED FILES FOR MICROSOFT AT WORK™ PC FAX VERSION 1.0

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Revision Date: 2/94
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Introduction

The WG0992 disk included with this Application Note contains updated files for Microsoft At Work PC Fax version 1.0. The updated files correct the following problems:

- Slow performance when you are using a shared fax device.

Now when you use a shared fax device, you receive better performance because At Work PC Fax polls from the client only when pending fax jobs are on the server.

- Extended characters are not rendered on cover pages.
- The redial level cannot be set from the EFAXPUMP.INI file.

You can now set the RedialLevel=<n> entry in the [EfaxPump] section of the EFAXPUMP.INI file. If RedialLevel is not set, or is set to 0 (zero), Microsoft At Work PC Fax redials only when the line is busy. If RedialLevel is set to 1, Microsoft At Work PC Fax redials when any dial failure occurs (for example, the line is busy, the other party does not answer, or there is no dial tone).

- Microsoft At Work PC Fax stops responding (hangs) when the EFAXPUMP.INI file becomes too large.

Previously, Microsoft At Work PC Fax would hang when the EFAXPUMP.INI file reached approximately 55 kilobytes in size. Microsoft At Work PC Fax now displays a warning message when the EFAXPUMP.INI file becomes too large.

- Timing problems occur when you send a fax in facsimile format from an application that does not support running multiple instances during printing.

Microsoft At Work PC Fax now recognizes the [PCFaxCompatibility] section in the WIN.INI file. This allows Microsoft At Work PC Fax to keep track of applications that do not support running multiple instances during printing. The format of the [PCFaxCompatibility] section is as follows

```
[PCFaxCompatibility]
<AppExeName>=0x0001
```

where <AppExeName> is the application's filename (without its extension).

- Shared CAS modems fail when capability is set to RES_SUPER_SUPER.

Previously, a shared CAS modem would return the unsupported capabilities resolution RES_SUPER_SUPER to the client. Shared CAS fax modems no longer return capabilities to the fax client since these are needed only by the shared fax server.

To install the updated Microsoft At Work PC Fax files

1. Quit Windows for Workgroups.
2. Insert the enclosed WG0992 disk in the appropriate floppy disk

drive.

3. To copy the files to the Windows directory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\*.dll <destination>
```

where <drive> is the floppy disk drive containing the WG0992 disk and <destination> is your Windows drive and directory.

For example, if the WG0992 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\*.dll c:\windows
```

STATUS
=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WG0992.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG0992.EXE, and click GO! Open the article, and click the button to download the file.

- Internet (anonymous FTP)
ftp ftp.microsoft.com
Change to the Softlib/Mslfiles folder.
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Dial (206) 936-6735 to connect to MSDL
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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note mailed or faxed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbtool kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.11 WFWG appnote awfax efax

=====
Copyright Microsoft Corporation 1996.

AWFAX Hangs When Faxing a Microsoft Works for Windows Document

PSS ID Number: Q111880

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

SYMPTOMS

=====

When you try to send a Microsoft Works version 3.0 for Windows document using Microsoft At Work PC Fax while Works for Windows is running, the machine stops responding (hangs).

CAUSE

=====

This problem occurs because Microsoft At Work PC Fax calls a ShellExecute routine for the Microsoft Works for Windows document while Works for Windows is still running. ShellExecute launches a new instance of Works for Windows and returns this instance to Microsoft At Work PC Fax. The new instance of Works for Windows discovers the previous instance and terminates after requesting that the previous instance prints on its behalf. Microsoft At Work PC Fax waits for the instance generated by ShellExecute to begin printing; therefore, the machine hangs.

WORKAROUND

=====

To work around this problem, do one of the following:

- Obtain the updated Microsoft At Work PC Fax drivers now available, and add the following lines to your WIN.INI file:

```
[PCFaxCompatibility]
MSWORKS=1
```

For more information about obtaining the updated Microsoft At Work PC Fax files, query on the following words in the Microsoft Knowledge Base:

wg0992 and appnote

-or-

- If you want to send the document in facsimile format, use the print method (that is, choose Print from the File menu in Works for Windows and select the Microsoft At Work PC Fax printer driver).

-or-

- If you are attaching a Works for Windows document to a Microsoft Mail message, make sure that Works for Windows is not already running.

KBCategory: kbtool kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.11 efax awfax wfw wfwg msworks
w_works

=====
Copyright Microsoft Corporation 1996.

WG0990: ELNK3.386 Corrects System Hangs (Non-802.3 Packets)

PSS ID Number: Q111980

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note titled "WG0990: ELNK3.386 Corrects Problem with Systems that Hang with Non-802.3 Packets."

When you use the Windows for Workgroups version 3.11 ELNK3.386 driver, your system may stop responding (hang) when it encounters non-802.3 packets. This problem typically occurs on extremely congested networks that contain a variety of packet types, especially non-NetBEUI packets. This Application Note includes a disk that corrects this problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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=====
Microsoft® Product Support Services Application Note (Text File)
WG0990: ELNK3.386 CORRECTS PROBLEM WITH SYSTEMS THAT HANG
WITH NON-802.3 PACKETS
=====

Revision Date: 2/94
1 Disk Included

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Introduction

When you use the Windows for Workgroups version 3.11 ELNK3.386 driver, your system may stop responding (hang) when it encounters non-802.3 packets. This problem typically occurs on extremely congested networks that contain a variety of packet types, especially non-NetBEUI packets.

The WG0990 disk included with this Application Note contains a new ELNK3.386 driver to correct this problem. The new driver correctly handles unknown packet types in heavy network traffic situations.

To install the new ELNK3.386 file

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed ELNK3.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:<path>\elnk3.386 elnk3.old
```

where <drive>:<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\elnk3.386 elnk3.old
```

3. Insert the enclosed WG0990 disk in the appropriate floppy disk drive.
4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\elnk3.386 <destination>
```

where <drive> is the floppy disk drive containing the WG0990 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG0990 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\elnk3.386 c:\windows\system
```

STATUS
=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new

information here in the Microsoft Knowledge Base as it becomes available.

TO OBTAIN THIS APPLICATION NOTE

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You can find WG0990.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon.
Click Knowledge Base, and select the product.
Enter kbfile WG0990.EXE, and click GO!
Open the article, and click the button to download the file.
- Internet (anonymous FTP)
ftp ftp.microsoft.com
Change to the Softlib/Mslfiles folder.
Get WG0990.EXE



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KBCategory: kbnetwork kbfile kbappnote kbhw

KBSubcategory: wfw wfwg

Additional reference words: appnote 3.1 3.10 3c509 elink Etherlink III card 3Com

=====

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WG1002: SCHEDMSG.DLL Corrects French Headers

PSS ID Number: Q112024

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

Microsoft has an Application Note, " WG1002: Microsoft Mail 3.2 SCHEDMSG.DLL Corrects French Headers in Windows for Workgroups Mail.

When you reply to a reply from a Windows for Workgroups 3.11 Schedule+ meeting request, the header information may be converted to French. This Application Note includes a disk that corrects this problem.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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Microsoft® Product Support Services Application Note (Text File)
WG1002: MICROSOFT MAIL 3.2 SCHEDMSG.DLL CORRECTS FRENCH HEADERS
IN WINDOWS™ FOR WORKGROUPS MAIL

=====

Revision Date: 2/94
1 Disk Included

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INTRODUCTION

=====

When you reply to a reply from a Windows for Workgroups 3.11 Schedule+ meeting request, the header information may be converted to French. For example, the header appears as follows:

De: <User B>
A: <User A>
Date d'envoi: <ddddddddd, mmmmmmmm dd, yyyy, hh:mmPM/AM>
Objet: YES: <Subject text>

Microsoft Mail v3.0 IPM.Microsoft Schedule.MtgRespP
To: <User A>
Date Sent: <yyyy-mm-dd, hh:mm>
P riode: <ddd, mmm dd, yyyy, hh:mmPM/AM - hh:mmPM/AM>
Subject: YES: <Subject text>

The WG1002 disk included with this Application Note contains the SCHEDMSG.DLL file from Microsoft Mail version 3.2. Using this file with Windows for Workgroups version 3.11 Mail and Schedule+ corrects the problem noted above.

To install the updated SCHEDMSG.DLL file

-
1. Quit Windows for Workgroups.
 2. Make a backup copy of the currently installed SCHEDMSG.DLL file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:\<path>\schedmsg.dll schedmsg.old
```

where <drive>:\<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\schedmsg.dll schedmsg.old
```

3. Insert the enclosed WG1002 disk in the appropriate floppy disk drive.
4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\<drive>\<destination>
```

where <drive> is the floppy disk drive containing the WG1002 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG1002 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\<drive>\<drive>\<destination> c:\windows\system
```

STATUS

=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

TO OBTAIN THIS APPLICATION NOTE

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You can find WG1002.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG1002.EXE, and click GO!
Open the article, and click the button to download the file.

- Internet (anonymous FTP)
ftp ftp.microsoft.com
Change to the Softlib/Mslfiles folder.
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KBCategory: kbother kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.1 3.10 WFWG appnote

=====
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WW1000: Updated VSHARE.386 for Windows/Windows for Workgroups

PSS ID Number: Q112025

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
- Microsoft Windows for Workgroups versions 3.1, 3.11

Microsoft has an Application Note titled "Updated VSHARE.386 for Windows and Windows for Workgroups" (WW1000). The WW1000 disk included with this Application Note contains VSHARE.386 version 3.11.0.402. This version of VSHARE.386 is compatible with Microsoft Windows version 3.1 and Windows for Workgroups versions 3.1 and 3.11.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
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For complete information, see the "To Obtain This Application Note" section at the end of this article.



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Microsoft® Product Support Services Application Note (Text File)
WW1000: UPDATED VSHARE.386 FOR WINDOWS® AND WINDOWS FOR WORKGROUPS

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Revision Date: 3/95
1 Disk Included

The following information applies to Microsoft Windows and Windows for Workgroups, versions 3.1 and 3.11.

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INTRODUCTION

The WW1000 disk included with this Application Note contains VSHARE.386 version 3.11.0.402. This version of VSHARE.386 is compatible with Microsoft Windows version 3.1 and Windows for Workgroups versions 3.1 and 3.11.

NOTE: Microsoft Office versions 4.2 and 4.3 install version 3.11.0.401 of VSHARE.386.

The version of VSHARE.386 included with this Application Note differs from the version included with Windows for Workgroups 3.11 (version 3.11.0.300) in the following ways:

- The version of VSHARE.386 included with this Application Note supports Windows version 3.1.
- The version of VSHARE.386 included with this Application Note corrects a problem that can cause Windows for Workgroups 3.11 to stop responding (hang) when you start your computer.

USING VSHARE.386

If you are using applications that support OLE 2.0, you must run either SHARE.EXE or VSHARE.386. VSHARE.386 eliminates the need to run SHARE.EXE when you run Windows 3.1 or Windows for Workgroups in 386 enhanced mode. If you run Windows 3.1 in standard mode, you must run SHARE.EXE. If you run applications that are not compatible with SHARE.EXE and you are running Windows 3.1 in 386 enhanced mode, the applications may work with VSHARE.386 instead of SHARE.EXE.

INSTALLING THE UPDATED VSHARE.386 FILE

To install VSHARE.386 version 3.11.0.402, follow these steps:

1. Quit Windows.
2. If you received a disk with this Application Note, insert the disk in the appropriate floppy disk drive.

If you downloaded this Application Note from an online service, skip to step 3. This procedure assumes that you have already downloaded and extracted the compressed file.

3. At the MS-DOS command prompt, type the following command and then press ENTER

```
copy <source>:\vshare.386 <location>
```

where <source> is either the letter of your floppy disk drive or the directory containing the file you downloaded from online services, and <location> is the path to your Windows\SYSTEM subdirectory. For example, if you are installing from a floppy disk that you inserted in drive A, and C:\WINDOWS\SYSTEM is the path to your Windows\SYSTEM subdirectory, type:

```
copy a:\vshare.386 c:\windows\system
```

Or, for example, if you downloaded the WW1000.EXE file from online services to C:\DOWNLOAD and C:\WINDOWS\SYSTEM is the path to your Windows\SYSTEM subdirectory, type:

```
copy c:\download\vshare.386 c:\windows\system
```

4. Use any text editor (such as MS-DOS Editor) to edit the AUTOEXEC.BAT file. Remove the SHARE.EXE command from the AUTOEXEC.BAT file and then save and close the file.
5. Edit the [386Enh] section of the SYSTEM.INI file to add the following line:

```
device=vshare.386
```

6. Save and then close the SYSTEM.INI file.
7. Restart your computer.

TO OBTAIN THIS APPLICATION NOTE

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You can find WW1000.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW1000.EXE, and click GO!
Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbother kbfile kbappnote

KBSubcategory:

Additional reference words: appnote wfw wfwg 3.10 appnote word6

=====
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WG1004: MSODISUP.386 Fixes Problems Using 3Com ODI MLIDs

PSS ID Number: Q112161

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

Microsoft has an Application Note titled "WG1004: Updated MSODISUP File Corrects Problems Using 3Com 3c509 and 3c5x9 ODI MLIDs," which corrects system hangs and lost network connection problems that can occur if you are using a 3Com ODI MLID with Windows for Workgroups and the EtherLink III network interface card (NIC).

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.

THE TEXT OF WG1004

=====
Microsoft® Product Support Services Application Note (Text File)
WG1004: UPDATED MSODISUP FILE CORRECTS PROBLEMS
USING 3COM® 3C509 AND 3C5X9 ODI MLIDS
=====

Revision Date: 3/94
1 Disk Included

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Introduction

If you use the 3Com EtherLink® III (3c509) network interface card (NIC) and a 3Com ODI MLID (3C509.COM or 3C5X9.COM) with Windows for Workgroups version 3.11 and Novell® NetWare® is installed as your secondary network, your system may:

- Stop responding (hang) when you copy large files across the network.
- or-
- Inadvertently lose network connections.

The WG1004 disk included with this Application Note contains an updated MSODISUP.386 file that corrects both of these problems. The updated file correctly adjusts the counter for the number of outstanding packets to be copied off the NIC after the MLID fails to copy an incoming packet off the NIC.

The updated file allows you to successfully use multiple 3Com NICs with Windows for Workgroups. The updated file ensures that all adapter names are available for binding when multiple ODI drivers are loaded. For example, you can now have the 3c503 and 3c509 drivers loaded so that you can run two NICs on separate networks or send one protocol to one NIC and a different protocol to another NIC.

NOTE: Although you can use multiple different NICs, you cannot use more than one of the same NIC. For example, you can use a 3c503 NIC and a 3c509 NIC, but you cannot use two 3c503 NICs.

The WG1004 disk included with this Application Note contains an updated

NETWORK.INF file that corrects binding entry errors with the 3Com EtherLink III 3c5x9 driver. The updated NETWORK.INF uses MLID=*:3C5X9.COM instead of MLID=*:3C509.COM.

To install the updated files

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed MSODISUP.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:<path>\msodisup.386 msodisup.old
```

where <drive>:<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\msodisup.386 msodisup.old
```

3. Repeat step 2, but substitute NETWORK.INF for MSODISUP.386 and NETWORK.OLD for MSODISUP.OLD. For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\network.inf network.old
```

4. Insert the enclosed WG1004 disk in the appropriate floppy disk drive.
5. To copy the MSODISUP.386 and NETWORK.INF files to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:*.* <destination>
```

where <drive> is the floppy disk drive containing the WG1004 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG1004 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:*.* c:\windows\system
```

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You can find WG1004.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG1004.EXE, and click GO! Open the article, and click the button to download the file.

- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WG1004.EXE



**Press here to
copy
WG1004.EXE
to your
computer.**

- Microsoft Download Service (MSDL)
Dial (206) 936-6735 to connect to MSDL
Download WG1004.EXE

For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

- You can have this Application Note mailed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.11 wfwg wfw

=====
Copyright Microsoft Corporation 1996.

WG1001: Updated SERIAL.386 Driver for WFWG

PSS ID Number: Q112300

Article last modified on 09-13-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
-

Microsoft has an Application Note, "WG1001: Updated SERIAL.386 Driver for Windows for Workgroups.

When you use Windows for Workgroups version 3.11 with serial communications software, you may experience the following problems:

- If you are using a Pentium-based machine with a 16550 UART chip, your system stops responding (hangs) if there is data in the chip when the serial communications application attempts to open the communications port.
- When you are using communications software, you may be able to make one connection after starting Windows for Workgroups, but any subsequent connections fail and may hang your system.

The WG1001 disk included with this Application Note contains an updated SERIAL.386 driver that corrects both of these problems.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WG1001

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=====
Microsoft® Product Support Services Application Note (Text File)
WG1001: UPDATED SERIAL.386 DRIVER FOR WINDOWS™ FOR WORKGROUPS
=====

Revision Date: 9/96
1 Disk Included

The following information applies to Microsoft Windows for Workgroups, version 3.11.

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Introduction

When you use Windows for Workgroups version 3.11 with serial communications software, you may experience the following problems:

- If you are using a Pentium™-based machine with a 16550 UART chip, your system stops responding (hangs) if there is data in the chip when the serial communications application attempts to open the communications port.

A problem with the 16550 UART implementation causes the chip to become trapped in a mode in which data is always detected in its FIFO buffer.

- When you are using communications software, you may be able to make one connection after starting Windows for Workgroups, but any subsequent connections fail and may hang your system.

This problem occurs when SERIAL.386 sends an extra NUL character through the port when the communications software calls the CloseComm application program interface (API) function. While this does not normally cause problems, your second connection may fail with some modems.

The WG1001 disk included with this Application Note contains an updated SERIAL.386 driver that corrects both of these problems.

To install the updated SERIAL.386 file

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed SERIAL.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive>:<path>\serial.386 serial.old
```

where <drive>:<path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\serial.386 serial.old
```

3. Insert the enclosed WG1001 disk in the appropriate floppy disk drive.
4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

copy <drive>:\serial.386 <destination>

where <drive> is the floppy disk drive containing the WG1001 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG1001 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

copy a:\serial.386 c:\windows\system

STATUS
=====

Microsoft has confirmed this to be a problem in Microsoft Windows for Workgroups version 3.11. We are researching this problem and will post new information here in the Microsoft Knowledge Base as it becomes available.

TO OBTAIN THIS APPLICATION NOTE
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You can find WG1001.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG1001.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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- Microsoft Download Service (MSDL)
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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
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- You can have this Application Note mailed to you from the automated Microsoft FastTips Technical Library, which you can call 24 hours a day, 7 days a week at (800) 936-4200. NOTE: The FastTips Technical Library is available only to customers within the U.S. and Canada.
- If you are unable to access the source(s) listed above, you can have this Application Note mailed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbother kbfile kbappnote

KBSubcategory: wfw

Additional reference words: appnote 3.1 3.10 WFWG appnote wincomm

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WW0787: Customizing Win 3.1/3.11 for Individ w/ Disabilities

PSS ID Number: Q112437

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.1

Microsoft has an Application Note, "WW0787: Customizing Windows 3.1 for Individuals with Disabilities.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW0787
=====

Microsoft® Product Support Services Application Note (Text File)
WW0787: CUSTOMIZING WINDOWS™ 3.1 AND 3.11 FOR INDIVIDUALS
WITH DISABILITIES
=====

Revision Date: 5/94
No Disk Included

The following information applies to Microsoft Windows, versions 3.1 and 3.11.

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CUSTOMIZING WINDOWS FOR INDIVIDUALS WITH DISABILITIES

This Application Note provides information about the following products and services available for computer users with disabilities:

- Support services for people who are deaf or hard-of-hearing
- Access Pack for Microsoft Windows, a product that makes Windows more accessible for people with movement or hearing disabilities
- Keyboard layouts designed for people who type with a single hand or wand
- Microsoft Mouse driver version 9.0
- Microsoft documentation on audio cassettes and floppy disks
- Products available for individuals who are blind or have low vision
- Help installing Windows
- Customizing Windows without additional hardware or software
- More information about products and services for people with disabilities

NOTE: The information in this Application Note applies to Windows users in the United States only. If you are outside the United States, your Windows package contains a subsidiary information card listing product support telephone numbers and addresses. Contact your subsidiary to find out whether the types of products and services described in this Application Note are available in your area.

MICROSOFT SUPPORT SERVICES FOR PEOPLE WHO ARE DEAF OR HARD-OF-HEARING

Through text telephone (TT/TDD) services, Microsoft provides people who are deaf or hard-of-hearing with the same technical product support and customer service as hearing customers.

For sales information and nontechnical customer service, you can contact Microsoft Consumer Sales on a text telephone at (800) 892-5234 between 6:30 A.M. and 5:30 P.M. Pacific time. For technical assistance, you can contact Microsoft Product Support Services (PSS) on a text telephone at (206) 635-4948 between 6:00 A.M. and 6:00 P.M. Pacific time. Microsoft support services are subject to Microsoft prices, terms, and conditions in place at the time the service is used.

ACCESS PACK FOR MICROSOFT WINDOWS

Microsoft distributes Access Pack for Microsoft Windows, which provides people who have movement or hearing disabilities with better access to computers running Windows. With Access Pack for Microsoft Windows, you can configure your Windows system to do the following:

- Allow easier use of SHIFT, CTRL, and ALT key combinations for people who type with a single finger, a mouthstick, or a wand.
- Ignore accidental key presses.
- Adjust or disable the rate at which a character is repeated on the screen when you hold down a key.

- Prevent extra characters if you unintentionally press a key more than once.
- Allow you to use the keyboard to control the mouse cursor.
NOTE: If you use this feature with Microsoft Paintbrush, your system stops responding (hangs). To work around this problem, use Paintbrush keyboard commands. For more information, run Paintbrush and press F1--each specific task help topic has information on the keyboard equivalent for the mouse action.
- Allow you to use an alternate input device to control the computer's keyboard and mouse.
- Provide a visual cue when a computer makes sounds.
- Enable you to turn off these services for people who do not need them.

Access Pack for Microsoft Windows, which was developed by the Trace R&D Center at the University of Wisconsin at Madison, is available on the Microsoft Windows Driver Library in the file ACCP.EXE.

The Microsoft Windows Driver Library (WDL) is available on online services. For more information about the WDL, see the following articles in the Microsoft Knowledge Base.

ARTICLE-ID: Q135314
TITLE : Windows 95 Driver Library

ARTICLE-ID: Q82006
TITLE : Windows Driver Library Information

The MSDL is available seven days a week from 2:30 A.M. to 1:00 A.M. at (206) 936-MSDL (936-6735). The modem settings are:

1200,n,8,1
2400,n,8,1
9600,n,8,1 (V.32, V.32bis, V.42, V.42bis)
14,400,n,8,1 (V.32, V.32bis, V.42, V.42bis)

NOTE: If you cannot connect with 14,400, lower the bits per second to 9600 and try again.

Customers who do not have a modem can obtain disks by calling PSS at (206) 637-7098 (voice telephone) or (206) 635-4948 (text telephone).

KEYBOARD LAYOUTS FOR SINGLE-HANDED COMPUTER USERS
=====

Microsoft distributes software to modify your keyboard layout. These keyboard layouts can be useful for people who have difficulty using the standard QWERTY layout. You can use these drivers to change your keyboard configuration without adjusting your physical keyboard.

Windows has built-in support for the two-handed Dvorak keyboard layout, which may be useful for preventing or coping with some types of repetitive motion injuries associated with typing. To use this layout, choose the International icon in Control Panel. Two additional layouts are designed for people who type with the left hand only or with the right hand only. These layouts can also be useful for people who type with a single finger or a wand.

The single-handed layouts are included with the PSS Application Note GA0650, "Dvorak Keyboard Layouts." If you have a modem, you can download GA0650 from the network services listed in the previous section. The filename is GA0650.ZIP, except on MSDL, where this Application Note is available in the self-extracting file GA0650.EXE.

Customers who do not have a modem can obtain GA0650 by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800) 892-5234 (text telephone).

MICROSOFT MOUSE DRIVER VERSION 9.0

=====

If you have trouble seeing the mouse when you are moving it and you are using the Microsoft Mouse or the Microsoft BallPoint® Mouse, you can upgrade to version 9.0 of the Microsoft Mouse driver. The optional utilities included with the 9.0 Microsoft Mouse driver offer the following features:

- Larger pointer sizes--You can choose a small, medium, or large pointer size.
- Larger I-beam pointer--The I-beam pointer is larger than the regular I-beam.
- Pointer growth--You can make the pointer increase to the large pointer size when you begin to move the mouse.
- Cursor color choice--You can choose a white, black, or transparent mouse pointer.
- Snap-To--You can configure the mouse pointer to jump to the default button when a dialog box opens.
- Locate--You can make the mouse pointer jump to the middle of the screen when you press a specified control key and mouse button.
- Sensitivity--You can independently adjust the vertical and horizontal sensitivity. This can be useful for people whose control or range differs for vertical and horizontal movement.
- Orientation--You can customize the mouse orientation. This can be useful for people who need or want to hold the mouse at a particular angle.

NOTE: Mouse driver version 9.0 and the optional utilities mentioned above are included with Microsoft Mouse version 2.0.

If you own a Microsoft Mouse, you can order the version 9.0 driver by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800) 892-5234 (text telephone). There is a charge for the version 9.0 driver.

DOCUMENTATION ON AUDIO CASSETTES AND FLOPPY DISKS

=====

People who cannot use printed documentation can obtain many of Microsoft's publications from Recording for the Blind, Inc. (RFB). RFB distributes these documents on audio cassettes and floppy disks to registered members of its distribution service. RFB's collection contains more than 80,000 titles, including Microsoft product documentation and books from Microsoft Press. You can contact Recording for the Blind at the following address and phone and fax numbers:

Recording for the Blind, Inc.
20 Roszel Road
Princeton, NJ 08540

(800) 221-4792 Voice telephone
(609) 987-8116 Fax

PRODUCTS FOR INDIVIDUALS WHO ARE BLIND OR HAVE LOW VISION

=====

If you are blind or have low vision, many products are available to help you use Windows. For persons with low vision, there are several screen-enlargement utilities. For blind individuals, there are screen readers that provide alternative output by synthesized voice or refreshable Braille displays.

For more information on the products available, see the "Getting More Information" section of this Application Note. For more information

about customizing Windows for individuals with low vision, see the "Customizing Windows Without Additional Hardware or Software" section below.

HELP INSTALLING WINDOWS
=====

Individuals who rely on some types of accessibility software may have difficulty installing Windows because the accessibility software is not loaded during the graphical portion of Setup. If this presents a problem, you can bypass the graphical portion of Setup by using the /h switch. The /h switch allows you to specify a text file that provides answers to all the questions that you would be prompted for during the graphical portion of Setup. For example, if you create a text file called MYSETUP.SHH, you would then run Setup with the following command:

```
a:\setup /h:c:\mysetup.shh
```

For more information on the format of the setup response file, see the SETUP.SHH file provided on your Windows installation disks.

CUSTOMIZING WINDOWS WITHOUT ADDITIONAL HARDWARE OR SOFTWARE
=====

There are many ways you can adjust the appearance and behavior of Windows to suit varying eyesight and motor skills without any additional software or hardware. For example, by changing settings in your WIN.INI and SYSTEM.INI files, you can control screen colors, font sizes, and mouse behavior. You can change these settings in Control Panel or by directly modifying the files. The following sections describe how to identify which settings to modify to achieve the desired results and how to safely modify the WIN.INI, SYSTEM.INI, and other Windows initialization files.

Modifying Initialization Files
=====

Windows initialization files (.INIs) contain information about your system environment. For example, the WIN.INI file contains settings about your Windows environment, and the SYSTEM.INI file contains settings that tell Windows about your system's hardware needs.

You can configure Windows and Windows-based applications to meet your needs and preferences by modifying the information stored in these files. For more information about WIN.INI and SYSTEM.INI, refer to the WININI.WRI and SYSINI.WRI files located in your Windows directory. You can print or view these files from Microsoft Windows Write.

IMPORTANT: Errors made when editing initialization files can lead to undesirable results when you run Windows. Before changing any entry, make a backup copy of your original file. Also, some text editors can damage characters that have ANSI values greater than 127. To avoid these problems, we recommend that you use Control Panel or Setup whenever possible to make changes. If you must edit the file, use a text editor such as Microsoft Windows Notepad, System Configuration Editor (SYSEDIT.EXE), or MS-DOS Editor.

To change .INI file entries with a text editor:

1. Create a backup copy of the .INI file you want to edit. For example, run File Manager and copy WIN.INI to WIN.BAK.
2. Open the .INI file with a text editor, such as Notepad.
3. Edit the specific entries and save the file.
4. Restart Windows so that the changes take effect.

The next four sections of this Application Note discuss the initialization file entries you can change to achieve the specific results you want. Many of the initialization file entries discussed

below are not present in the WIN.INI file by default but you can easily add them with a text editor.

Changing Colors

- If you have trouble differentiating the system colors, or if they cause eyestrain, you can adjust them in the Colors dialog box of Control Panel.
- If you have trouble reading full-screen messages displayed by Windows in 386 enhanced mode, you can adjust the colors by using the MessageBackColor and MessageTextColor entries in the [386Enh] section of the SYSTEM.INI file. For example, the following entries generate bright yellow text on a black background in message screens (such as the screen that appears when you press CTRL+ALT+DEL):

```
MessageTextColor=E
MessageBackColor=0
```

The following table defines the color values you can use for the MessageBackColor and MessageTextColor entries:

0 - Black	4 - Red	8 - Gray	C - Bright red
1 - Blue	5 - Magenta	9 - Bright blue	D - Bright magenta
2 - Green	6 - Yellow/brown	A - Bright green	E - Bright yellow
3 - Cyan	7 - White	B - Bright cyan	F - Bright white

- If the desktop pattern or wallpaper causes eyestrain, you can adjust them in the Desktop dialog box of Control Panel.
- If you have trouble differentiating the colors used by Windows Help, you can adjust them by using the IFJumpColor, IFPopupColor, JumpColor, MacroColor, and PopupColor entries in the [Windows Help] section of the WIN.INI file. The syntax for these entries is

```
<entry>=red <value> green <value> blue <value>
```

where the <value> is a number from 000 to 999, with 999 giving the highest intensity. You must include three digits for each value, and you must include each color value. You can experiment with this setting to create a color that works best for you. The following table lists some colors you can work with:

Setting	Resulting color
---------	-----------------

000 000 999	Blue
000 999 000	Green
999 000 000	Red
999 999 000	Yellow
999 000 999	Magenta

For more information on these entries, see the WININI.WRI file in your Windows directory.

Changing Fonts

- If you have trouble reading the Windows system fonts (which are used to display window titles, menus, and dialog boxes), you can increase the font size using the FIXEDFON.FON, FONTS.FON, and OEMFONTS.FON entries in the [boot] section of the SYSTEM.INI file. However, you should replace the default fonts only with other system font files supplied with Windows. These fonts include 8514FIX.FON, 8514SYS.FON, and 8514OEM.FON.

For example, if you are using a VGA video driver, your .FON files are probably set as follows:

```
fixedfon.fon=vgafix.fon
```

```
fonts.fon=vgasys.fon
oemfonts.fon=vgaOEM.fon
```

To increase the size of the system font, expand 8514FIX.FON, 8514SYS.FON, and 8515OEM.FON from the original Windows disks to your Windows program directory (usually C:\WINDOWS). For example, type the following command at the MS-DOS command prompt, and then press ENTER:

```
expand a:\8514fix.fo_ c:\windows\system\8514fix.fon
```

Then, edit the [boot] section of your SYSTEM.INI file to read:

```
fixedfon.fon=8514FIX.FON
fonts.fon=8514SYS.FON
oemfonts.fon=8514OEM.FON
```

WARNING: Do not use font files other than the system .FON fonts supplied with Windows. For example, you cannot use TrueType® (.TTF) fonts.

- If you have trouble reading the titles of icons, you can adjust the appearance of these titles with the IconTitleFaceName and IconTitleSize entries in the [desktop] section of the WIN.INI file. For example:

```
[desktop]
IconTitleFaceName=Arial
IconTitleSize=12
```

- If you have trouble reading small fonts used by some applications and do not want to install a screen enlarger utility, you can restrict the fonts available to Windows-based applications by removing the fonts you do not want in the Fonts dialog box of Control Panel. You do not need to actually delete the font files. If you remove all the fonts, only the system fonts remain available to applications.

NOTE: You may also need to adjust the icon spacing in the Desktop dialog box of Control Panel and choose Arrange Icons from the Window menu in Program Manager to make all your icon titles visible.

- If you have trouble reading the file and directory names in File Manager, you can adjust the font settings by choosing Font from the Options menu.
- If you have trouble locating the text-selection cursor (also known as the caret or insertion bar) in your applications, you can adjust the rate at which it flashes. To do this, choose the Desktop icon in Control Panel.

Changing Mouse Behavior

- If you have difficulty controlling the Microsoft Mouse, you can adjust its speed in the Mouse dialog box of Control Panel.
- If you have trouble seeing the mouse when you are moving it, you can try using the Mouse Trails feature in the Mouse dialog box of Control Panel. If your third-party video driver does not support the Mouse Trails option, contact your video card vendor for more information.
- If you have trouble double-clicking the mouse, you can adjust the sensitivity using the Double-Click Speed setting in the Mouse dialog box of Control Panel. You can further adjust the double-click functionality by adding the DoubleClickHeight and DoubleClickWidth entries to the [Windows] section of the WIN.INI file. For example, if you add the following entries to your WIN.INI file and restart your computer, you no longer have to hold the

mouse in exactly the same location when you double-click:

DoubleClickHeight=30
DoubleClickWidth=30

- If you have trouble positioning the mouse on window frames so that you can adjust the size of the windows, you can increase the window border width setting in the Desktop dialog box of Control Panel.

Changing Keyboard Behavior

- If you have trouble using the keyboard because of the speed at which it repeats or the delay time before it begins repeating, you can adjust these settings in the Keyboard dialog box of Control Panel. (You can adjust keyboard settings even further using Access Pack for Microsoft Windows, which is described on page later in this Application Note.)

If you cannot use Control Panel to adjust the keyboard, you can adjust the corresponding KeyboardDelay and KeyboardSpeed entries in the [Windows] section of the WIN.INI file. KeyboardDelay establishes how much time elapses after you hold down a key before the key starts to repeat (the default is 2 milliseconds). KeyboardSpeed establishes how much time elapses between repetitions of a character on the display when you hold down a keyboard key (the default is 31 milliseconds).

- You can use Windows Recorder to automate common tasks. For more information about using Recorder, run Recorder and choose Contents from the Help menu to open Recorder Help.
- You can use two methods to reduce the number of keystrokes required to switch between applications. You can use Task List to display a list of all applications currently running, or you can assign a shortcut key to each application. Task List can be invoked by pressing CTRL+ESC, or by choosing Switch To from any application's Control menu. Application shortcut keys can be assigned by creating an icon for the application in Program Manager and using the Properties command on the File menu. For more information on Task List and shortcut keys, see the "Microsoft Windows User's Guide."

GETTING MORE INFORMATION

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Information from Microsoft

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For more information on Microsoft products and services for people with disabilities, contact Microsoft Consumer Sales at one of the following numbers:

(800) 426-9400	Voice telephone
(800) 892-5234	Text telephone

Third-Party Product Information

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The Trace R&D Center at the University of Wisconsin-Madison produces a book and a compact disc (CD) that describe products that help people with disabilities use computers. The book is titled "ResourceBook" and contains nearly 500 pages of descriptions and photographs of approximately 2,000 aids. The CD provides a database of more than 12,000 products and other information for people with disabilities. It is issued twice a year and is also available in many public libraries. You can contact the Trace R&D Center at the following address and phone and fax numbers:

Trace R&D Center
S-151 Waisman Center

1500 Highland Avenue
Madison, WI 53705-2280

(608) 263-2309 Voice telephone
(608) 263-5408 Text telephone
(608) 262-8848 Fax

Assistive Technology Programs

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For general information and recommendations about how computers can help specific individuals, customers should consult a trained evaluator who can best match the individual's needs with the available solutions. An assistive technology program in your area can provide referrals to programs and services available to you. To locate the assistive technology program nearest you, contact the Center for Developmental Disabilities at the following address and phone and fax numbers:

National Information System
Center for Developmental Disabilities
University of South Carolina
Benson Building
Columbia, SC 29208

(800) 922-9234, Voice or text telephone, outside South Carolina extension 301
(800) 922-1107 Voice or text telephone, in South Carolina
(803) 777-6222 Voice or text telephone, outside the United States
(803) 777-6058 Fax

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- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
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ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbfile kbdisplay kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 appnote

=====

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WW0786: Customizing Win 3.0 for Individuals with Disabilities

PSS ID Number: Q112438

Article last modified on 07-29-1996

PSS database name: WIN3X

3.00 3.00a

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.0, 3.0a
-

Microsoft has an Application Note, "WW0786: Customizing Windows 3.0 for Individuals with Disabilities.

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THE TEXT OF WW0786

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=====

Microsoft® Product Support Services Application Note (Text File)
WW0786: CUSTOMIZING WINDOWS™ 3.0 FOR INDIVIDUALS WITH DISABILITIES

=====

Revision Date: 5/94
No Disk Included

The following information applies to Microsoft Windows, version 3.0.

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CUSTOMIZING WINDOWS FOR INDIVIDUALS WITH DISABILITIES
=====

This Application Note provides information about the following products and services available for computer users with special needs:

- Support services for people who are deaf or hard-of-hearing
- Access Pack for Microsoft Windows, a product that makes Windows more accessible for people with movement or hearing disabilities
- Keyboard layouts designed for people who type with a single hand or wand
- Microsoft Mouse driver version 9.0
- Microsoft documentation on audio cassettes and floppy disks
- Products available for individuals who are blind or have low vision
- Customizing Windows without additional hardware or software
- More information about products and services for people with disabilities

NOTE: The information in this Application Note applies to Windows users in the United States only. If you are outside the United States, your Windows package contains a subsidiary information card listing product support telephone numbers and addresses. Contact your subsidiary to find out whether the types of products and services described in this Application Note are available in your area.

MICROSOFT SUPPORT SERVICES FOR PEOPLE WHO ARE DEAF OR HARD-OF-HEARING
=====

Through text telephone (TT/TDD) services, Microsoft provides people who are deaf or hard-of-hearing with the same technical product support and customer service as hearing customers.

For sales information and nontechnical customer service, you can contact Microsoft Consumer Sales on a text telephone at (800) 892-5234 between 6:30 A.M. and 5:30 P.M. Pacific time. For technical assistance, you can contact Microsoft Product Support Services (PSS) on a text telephone at (206) 635-4948 between 6:00 A.M. and 6:00 P.M. Pacific time. Microsoft support services are subject to Microsoft prices, terms, and conditions in place at the time the service is used.

ACCESS PACK FOR MICROSOFT WINDOWS
=====

Microsoft distributes Access Pack for Microsoft Windows, which provides people who have movement or hearing disabilities with better access to computers running Windows. With Access Pack for Microsoft Windows, you can configure your Windows system to do the following:

- Allow easier use of SHIFT, CTRL, and ALT key combinations for people who type with a single finger, a mouthstick, or a wand.

- Ignore accidental key presses.
- Adjust or disable the rate at which a character is repeated on the screen when you hold down a key.
- Prevent extra characters if you unintentionally press a key more than once.
- Allow you to use the keyboard to control the mouse cursor.
NOTE: If you use this feature with Microsoft Paintbrush, your system stops responding (hangs). To work around this problem, use Paintbrush keyboard commands. For more information, run Paintbrush and press F1--each specific task help topic has information on the keyboard equivalent for the mouse action.
- Allow you to use an alternate input device to control the computer's keyboard and mouse.
- Provide a visual cue when a computer makes sounds.
- Enable you to turn off these services for people who do not need them.

Access Pack for Microsoft Windows, which was developed by the Trace R&D Center at the University of Wisconsin at Madison, is available on the Microsoft Windows Driver Library in the file ACCP.EXE.

The Microsoft Windows Driver Library (WDL) is available on online services. For more information about the WDL, see the following articles in the Microsoft Knowledge Base.

ARTICLE-ID: Q135314
TITLE : Windows 95 Driver Library

ARTICLE-ID: Q82006
TITLE : Windows Driver Library Information

The MSDL is available seven days a week from 2:30 A.M. to 1:00 A.M. at (206) 936-MSDL (936-6735). The modem settings are:

1200,n,8,1
2400,n,8,1
9600,n,8,1 (V.32, V.32bis, V.42, V.42bis)
14,400,n,8,1 (V.32, V.32bis, V.42, V.42bis)

NOTE: If you cannot connect with 14,400, lower the bits per second to 9600 and try again.

Customers who do not have a modem can obtain disks by calling PSS at (206) 637-7098 (voice telephone) or (206) 635-4948 (text telephone).

KEYBOARD LAYOUTS FOR SINGLE-HANDED COMPUTER USERS =====

Windows has built-in support for the two-handed Dvorak keyboard layout, which may be useful for preventing or coping with some types of repetitive motion injuries associated with typing. To use this layout, choose the International icon in Control Panel.

Two additional layouts are designed for people who type with the left hand only or with the right hand only. These layouts can also be useful for people who type with a single finger or a wand. Since these layout are not compatible with Windows 3.0, you need to update to a later version of Windows before installing them. The single-handed layouts are included with the PSS Application Note GA0650, "Dvorak Keyboard Layouts." If you have a modem, you can download GA0650 from the network services listed in the previous section. The filename is GA0650.ZIP, except on MSDL, where this Application Note is available in the self-extracting file GA0650.EXE.

Customers who do not have a modem can obtain GA0650 by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800)

892-5234 (text telephone).

MICROSOFT MOUSE DRIVER VERSION 9.0
=====

If you have trouble seeing the mouse when you are moving it and you are using the Microsoft Mouse or the Microsoft BallPoint® Mouse, you can upgrade to version 9.0 of the Microsoft Mouse driver.

The optional utilities included with the 9.0 Microsoft Mouse driver offer the following features:

- Larger pointer sizes--You can choose a small, medium, or large pointer size.
- Larger I-beam pointer--The I-beam pointer is larger than the regular I-beam.
- Pointer growth--You can make the pointer increase to the large pointer size when you begin to move the mouse.
- Cursor color choice--You can choose a white, black, or transparent mouse pointer.
- Snap-To--You can configure the mouse pointer to jump to the default button when a dialog box opens.
- Locate--You can make the mouse pointer jump to the middle of the screen when you press a specified control key and mouse button.
- Sensitivity--You can independently adjust the vertical and horizontal sensitivity. This can be useful for people whose control or range differs for vertical and horizontal movement.
- Orientation--You can customize the mouse orientation. This can be useful for people who need or want to hold the mouse at a particular angle.

NOTE: Mouse driver version 9.0 and the optional utilities mentioned above are included with Microsoft Mouse version 2.0.

If you own a Microsoft Mouse, you can order the version 9.0 driver by calling Microsoft Consumer Sales at (800) 426-9400 (voice telephone) or (800) 892-5234 (text telephone). There is a charge for these drivers.

DOCUMENTATION ON AUDIO CASSETTES AND FLOPPY DISKS
=====

People who cannot use printed documentation can obtain many of Microsoft's publications from Recording for the Blind, Inc. (RFB). RFB distributes these documents on audio cassettes and floppy disks to registered members of its distribution service. RFB's collection contains more than 80,000 titles, including Microsoft product documentation and books from Microsoft Press. You can contact Recording for the Blind at the following address and phone and fax numbers:

Recording for the Blind, Inc.
20 Roszel Road
Princeton, NJ 08540

(800) 221-4792 Voice telephone
(609) 987-8116 Fax

PRODUCTS FOR INDIVIDUALS WHO ARE BLIND OR HAVE LOW VISION
=====

If you are blind or have low vision, many products are available to help you use Windows. For persons with low vision, there are several screen-enlargement utilities. For blind individuals, there are screen readers that provide alternative output by synthesized voice or refreshable Braille displays. Screen readers for Windows 3.0 are not

available. If you need this type of product to use Windows, you need to upgrade to Windows 3.1 or Windows for Workgroups version 3.1.

For more information on the products available, see the "Getting More Information" section of this Application Note. For more information about customizing Windows for individuals with low vision, see the following section.

CUSTOMIZING WINDOWS 3.0 WITHOUT ADDITIONAL HARDWARE OR SOFTWARE =====

There are many ways you can adjust the appearance and behavior of Windows to suit varying eyesight and motor skills without any additional software or hardware. For example, by changing settings in your WIN.INI and SYSTEM.INI files, you can control screen colors, font sizes, and mouse behavior. You can change these settings in Control Panel or by directly modifying the files. The following sections describe how to identify which settings to modify to achieve the desired results and how to safely modify the WIN.INI, SYSTEM.INI, and other Windows initialization files.

Modifying Initialization Files =====

Windows initialization files (.INIs) contain information about your system environment. For example, the WIN.INI file contains settings about your Windows environment, and the SYSTEM.INI file contains settings that tell Windows about your system's hardware needs.

You can configure Windows and Windows-based applications to meet your needs and preferences by modifying the information stored in these files. For more information about WIN.INI and SYSTEM.INI, refer to the WININI.TXT, WININI2.TXT, SYSINI.TXT, SYSINI2.TXT, and SYSINI3.TXT files located in your Windows directory. You can print or view these files from Microsoft Windows Notepad.

IMPORTANT: Errors made when editing initialization files can lead to undesirable results when you run Windows. Before changing any entry, make a backup copy of your original file. Also, some text editors can damage characters that have ANSI values greater than 127. To avoid these problems, we recommend that you use Control Panel or Setup whenever possible to make changes. If you must edit the file, use a text editor such as Microsoft Windows Notepad, System Configuration Editor (SYSEDIT.EXE), or MS-DOS Editor.

To change .INI file entries with a text editor:

1. Create a backup copy of the .INI file you want to edit. For example, run File Manager and copy WIN.INI to WIN.BAK.
2. Open the .INI file with a text editor, such as Notepad.
3. Edit the specific entries and save the file.
4. Restart Windows so that the changes take effect.

The next four sections of this Application Note discuss the initialization file entries you can change to achieve the specific results you want. Many of the initialization file entries discussed below are not present in the WIN.INI file by default but you can easily add them with a text editor.

Changing Colors -----

- If you have trouble differentiating the system colors, or if they cause eyestrain, you can adjust them in the Colors dialog box of Control Panel.
- If the desktop pattern or wallpaper causes eyestrain, you can adjust them in the Desktop dialog box of Control Panel.

- If you have trouble differentiating the colors used by Windows Help, you can adjust them by using the IFJumpColor, IFPopupColor, JumpColor, MacroColor, and PopupColor entries in the [Windows Help] section of the WIN.INI file. The syntax for these entries is

```
<entry>=red <value> green <value> blue <value>
```

where the <value> is a number from 000 to 999, with 999 giving the highest intensity. You must include three digits for each value, and you must include each color value. You can experiment with this setting to create a color that works best for you. The following table lists some colors you can work with:

Setting	Resulting color
000 000 999	Blue
000 999 000	Green
999 000 000	Red
999 999 000	Yellow
999 000 999	Magenta

Changing Fonts

- If you have trouble reading the Windows system fonts (which are used to display window titles, menus, and dialog boxes), you can increase the font size using the FIXEDFON.FON, FONTS.FON, and OEMFONTS.FON entries in the [boot] section of the SYSTEM.INI file. However, you should replace the default fonts only with other system font files supplied with Windows. These fonts include 8514FIX.FON, 8514SYS.FON, and 8514OEM.FON.

For example, if you are using a VGA video driver, your .FON files are probably set as follows:

```
fixedfon.fon=vgafix.fon  
fonts.fon=vgasys.fon  
oemfonts.fon=vgaoem.fon
```

To increase the size of the system font, expand 8514FIX.FON, 8514SYS.FON, and 8514OEM.FON from the original Windows disks to your Windows program directory (usually C:\WINDOWS). For example, type the following command at the MS-DOS command prompt, and then press ENTER:

```
expand a:\8514fix.fon c:\windows\system\8514fix.fon
```

Then, edit the [boot] section of your SYSTEM.INI file to read:

```
fixedfon.fon=8514FIX.FON  
fonts.fon=8514SYS.FON  
oemfonts.fon=8514OEM.FON
```

WARNING: Do not use font files other than the system .FON fonts supplied with Windows.

- If you have trouble reading small fonts used by some applications, you can restrict the fonts available to Windows-based applications by removing the fonts you do not want in the Fonts dialog box of Control Panel. You do not need to actually delete the font files. If you remove all the fonts, only the system fonts remain available to applications.

NOTE: You may also need to adjust the icon spacing in the Desktop dialog box of Control Panel and choose Arrange Icons from the Window menu in Program Manager to make all your icon titles visible.

- If you have trouble locating the text-selection cursor (also known as the caret or insertion bar) in your applications, you can adjust the rate at which it flashes. To do this, choose the Desktop icon

in Control Panel.

Changing Mouse Behavior

- If you have difficulty controlling the Microsoft Mouse, you can adjust its speed in the Mouse dialog box of Control Panel.
- If you have trouble positioning the mouse on window frames so that you can adjust the size of the windows, you can increase the window border width setting in the Desktop dialog box of Control Panel.

Changing Keyboard Behavior

- If you have trouble using the keyboard because of the speed at which it repeats, you can adjust this setting in the Keyboard dialog box of Control Panel. (You can adjust keyboard settings even further using Access Pack for Microsoft Windows, which is described later on in this Application Note.)

KeyboardSpeed establishes how much time elapses between repetitions of a character on the display when you hold down a keyboard key (the default is 31 milliseconds).

- You can use Windows Recorder to automate common tasks. For more information about using Recorder, run Recorder and choose Contents from the Help menu to open Recorder Help.
- You can use two methods to reduce the number of keystrokes required to switch between applications. You can use Task List to display a list of all applications currently running, or you can assign a shortcut key to each MS-DOS-based application (as long as Windows is running in 386 enhanced mode). Task List can be invoked by pressing CTRL+ESC, or by choosing Switch To from any application's Control menu. Application shortcut keys for MS-DOS-based applications can be assigned by creating a .PIF file for the application only when Windows 3.0 is running in 386 enhanced mode. For more information on Task List and shortcut keys, see the "Microsoft Windows User's Guide."

GETTING MORE INFORMATION

=====

Information from Microsoft

=====

For more information on Microsoft products and services for people with disabilities, contact Microsoft Consumer Sales at one of the following numbers:

(800) 426-9400	Voice telephone
(800) 892-5234	Text telephone

Third-Party Product Information

=====

The Trace R&D Center at the University of Wisconsin-Madison produces a book and a compact disc (CD) that describe products that help people with disabilities use computers. The book is titled "ResourceBook" and contains nearly 500 pages of descriptions and photographs of approximately 2,000 aids. The CD provides a database of more than 12,000 products and other information for people with disabilities. It is issued twice a year and is also available in many public libraries. You can contact the Trace R&D Center at the following address and phone and fax numbers:

Trace R&D Center
S-151 Waisman Center
1500 Highland Avenue
Madison, WI 53705-2280

(608) 263-2309 Voice telephone
(608) 263-5408 Text telephone
(608) 262-8848 Fax

Assistive Technology Programs

=====

For general information and recommendations about how computers can help specific individuals, customers should consult a trained evaluator who can best match the individual's needs with the available solutions. An assistive technology program in your area can provide referrals to programs and services available to you. To locate the assistive technology program nearest you, contact the Center for Developmental Disabilities at the following address and phone and fax numbers:

National Information System
Center for Developmental Disabilities
University of South Carolina
Benson Building
Columbia, SC 29208

(800) 922-9234, Voice or text telephone, outside South Carolina extension 301
(800) 922-1107 Voice or text telephone, in South Carolina
(803) 777-6222 Voice or text telephone, outside the United States
(803) 777-6058 Fax

KBCategory: kbfile kbdisplay kbappnote

KBSubcategory: wfw wfwg win30

Additional reference words: appnote 3.0 3.00 3.0a 3.00a appnote

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Reinstalling Windows 3.10 Files over Windows 3.11

PSS ID Number: Q112551

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11

SUMMARY

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This article describes how reconfigure your Windows 3.11 installation to run Windows 3.10 using your original Windows 3.10 disks. If you do not have these disks available, contact Microsoft Product Support Services (PSS) and order Application Note WW1007, "Installing Windows 3.10 Files over Windows 3.11."

MORE INFORMATION

=====

To install Windows 3.10 files over a local installation of Windows 3.11:

1. Quit Microsoft Windows.

2. Create a backup directory. For example, to create a backup directory off the root of drive C, type "md c:\backup" (without the quotation marks) at the MS-DOS command prompt and then press ENTER.
3. Copy the files listed below from your Windows SYSTEM subdirectory to the backup directory or a floppy disk.

COMMDLG.DLL
GDI.EXE
KRNL386.EXE
PSCRIPT.DRV
SHELL.DLL
UNIDRV.DLL
USER.EXE

To do this, use the following syntax

```
copy <drive>:\<windir>\system\<filename> <drive>:\<backdir>
```

where <drive> is your hard disk drive, <windir> is your Windows directory, <filename> is the file you are copying, and <backdir> is your backup directory.

For example, if your hard disk drive is C, your Windows directory is named WINDOWS, you are copying COMMDLG.DLL, and your backup directory is named C:\BACKUP, type the following:

```
copy c:\windows\system\commdlg.dll c:\backup
```

Repeat this command for the remaining files.

4. Using the table at the end of this article, insert the appropriate disks, one by one, and expand the following files to your Windows SYSTEM subdirectory.

COMMDLG.DL_
GDI.EX_
KRNL386.EX_
PSCRIPT.DR_
UNIDRV.DL_
SHELL.DL_
USER.EX_

For example, insert Disk 4 of the 3.5 inch, 1.44-megabyte (MB) disk set and type the following at the MS-DOS command prompt:

```
expand a:\commdlg.dl_ c:\windows\system\commdlg.dll
```

PSCRIPT.DR_ should be expanded to PSCRIPT.DRV, .DL_ files should be expanded to .DLL, and .EX_ files should be expanded to .EXE.

NOTE: After you copy the new USER.EXE file to your Windows SYSTEM subdirectory, your registered user and company name will be blank.

5. If you use Novell NetWare connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file, which is located in your Windows directory.
 - b. In the [386Enh] section, change DEVICE=VTDA.386 to DEVICE=*VTD.
 - c. Save the file and quit the text editor.

To install Windows 3.10 files over a network installation of Windows 3.11:

1. Determine the location of your SYSTEM.INI file and the network share that contains your shared Windows files. For example, if the network drive containing your Windows program files is Q, the location of your shared Windows files may be Q:\WINSHARE and your user directory may be Q:\USER\YOURNAME (or your user directory may be located on your local hard disk drive).
2. Quit Microsoft Windows.
3. Create a backup directory. For example, to create a backup directory off

the root of drive C, type MD C:\BACKUP at the MS-DOS command prompt and then press ENTER.

4. Copy the following files from the network share to the backup directory on your hard disk drive using the following syntax at the MS-DOS command prompt and then press ENTER.

```
copy <netdrive>:\<netshare>\<filename> <harddrive>:\<backdir>
```

where <netdrive> is the network drive, <netshare> is the network share containing your SYSTEM.INI file, <filename> is the file you are copying, <harddrive> is your hard disk drive, and <backdir> is your backup directory.

For example, if your network drive is Q, the network share is WINSHARE, the file you want to copy is COMMDLG.DLL, your hard disk drive is C, and your backup directory is named C:\BACKUP, type the following:

```
copy q:\winshare\commdlg.dll c:\backup
```

Repeat this command for the remaining files:

```
COMMDLG.DLL  
GDI.EXE  
KRNL386.EXE  
PSCRIPT.DRV  
UNIDRV.DLL  
SHELL.DLL  
USER.EXE
```

5. Remove the read-only file attributes on the shared Windows files using the MS-DOS ATTRIB command.
6. Using the table at the end of this article, insert the appropriate disks, one by one, and expand the following files to the network drive and share that contains your Windows files:

```
COMMDLG.DL_  
GDI.EX_  
KRNL386.EX_  
PSCRIPT.DR_  
UNIDRV.DL_  
SHELL.DL_  
USER.EX_
```

For example, insert Disk 4 of the 5.25-inch, 1.2-MB disk set and type the following at the MS-DOS command prompt:

```
expand a:\commdlg.dl_ q:\winshare\commdlg.dll
```

PSCRIPT.DR_ should be expanded to PSCRIPT.DRV, .DL_ files should be expanded to .DLL, and .EX_ files should be expanded to .EXE.

NOTE: After you copy the new USER.EXE file to your Windows SYSTEM subdirectory, your registered user and company name will be blank.

7. Reset the read-only file attributes on the shared Windows files using the MS-DOS ATTRIB command.
8. If you use Novell NetWare connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file.
 - b. In the [386Enh] section, change DEVICE=VTDA.386 to DEVICE=*VTD.
 - c. Save the file and quit the text editor.

DISK LOCATION OF FILES TO EXPAND

=====

	Disk Number		
Filename	5.25-inch, 1.2-MB	3.5-inch, 1.44-MB	3.5-inch, 720K

COMMDLG.DL_	4	4	10
GDI.EX_	1	1	3
KRNL386.EX_	2	2	4
PSCRIPT.DR_	7	6	11
SHELL.DL_	5	4	8
UNIDRV.DL_	7	6	12
USER.EX_	3	2	2

KBCategory: kbnetwork kb3rdparty kbfile kbappnote kbsetup

KBSubcategory: win31

Additional reference words: appnote 3.10 3.11

=====
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WW1007: Installing Windows 3.10 Files over Windows 3.11

PSS ID Number: Q112557

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.11

Microsoft has an Application Note titled "Installing Windows 3.10 Files over Windows 3.11" (WW1007) available. The disk included with this Application Note includes the Windows 3.10 versions of seven core Windows files. To replace your Windows 3.11 versions of these files, follow the procedure below that is appropriate to your configuration.

You can obtain this Application Note from Microsoft Product Support Services.

For complete information, see the "To Obtain This Application Note" section at the end of this article.

THE TEXT OF WW1007

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Microsoft® Product Support Services Application Note (Text File)
WW1007: INSTALLING WINDOWS™ 3.10 FILES OVER WINDOWS 3.11

=====
Revision Date: 3/94
1 Disk Included

The following information applies to Microsoft Windows version 3.11.

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ADDENDUM TO THE MICROSOFT SOFTWARE LICENSE AGREEMENT FOR
MICROSOFT WINDOWS OPERATING SYSTEM VERSIONS 3.10 AND 3.11
=====

The files provided in this Application Note are intended to replace the corresponding files provided with Microsoft Windows version 3.11 and Microsoft PSS Application Note WW0981, "Windows 3.11 Refresh Files." Upon installation, these files become a part of the Windows operating system and are subject to the same license terms and conditions as the Windows 3.10 or 3.11 product you previously acquired from Microsoft Corporation. Any other use of these files is prohibited.

RECONFIGURING MICROSOFT WINDOWS VERSION 3.11
=====

This Application Note includes the Windows 3.10 versions of seven core Windows files. To replace your Windows 3.11 versions of these files, follow the procedure below that is appropriate to your configuration.

To Install Windows 3.10 Files over
a Local Installation of Windows 3.11

1. Quit Microsoft Windows.
2. Create a backup directory. For example, to create a backup directory off the root of drive C, type "md c:\oldwin" (without the quotation marks) at the MS-DOS command prompt and then press ENTER.
3. Copy the files listed below from your Windows SYSTEM subdirectory to the backup directory or a floppy disk.

COMMDLG.DLL
GDI.EXE
KRNL386.EXE
PSCRIPT.DRV
SHELL.DLL
UNIDRV.DLL
USER.EXE

To do this, use the following syntax

```
copy <drive>:\<windir>\system\<filename> <drive>:\<backdir>
```

where <drive> is your hard disk drive, <windir> is your Windows directory, <filename> is the file you are copying, and <backdir> is your backup directory.

For example, if your hard disk drive is C, your Windows directory is named WINDOWS, your backup directory is called OLDWIN, and you are copying COMMDLG.DLL, type the following:

```
copy c:\windows\system\commdlg.dll c:\oldwin
```

Repeat this command for the remaining files.

NOTE: You may receive the "File not found" error message when you try to copy PSCRIPT.DRV or UNIDRV.DLL because these files may not be on your system.

4. Insert the enclosed WW1007 disk in the appropriate floppy disk drive. At the MS-DOS command prompt, type the following and then press ENTER

```
copy <drive>:\*.* <destination>
```

where <drive> is your floppy disk drive and <destination> is your Windows SYSTEM subdirectory.

For example:

```
copy a:\*.* c:\windows\system
```

NOTE: After you copy the new USER.EXE file to your Windows SYSTEM subdirectory, your registered user and company name will be blank.

5. If you use Novell® NetWare® connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file, which is located in your Windows directory.
 - b. In the [386Enh] section, change device=vtda.386 to device=*vtd.
 - c. Save the file and quit the text editor.

To Install Windows 3.10 Files over
a Network Installation of Windows 3.11

-
1. Determine the location of your SYSTEM.INI file and the network share that contains your shared Windows files. For example, if the network drive containing your Windows program files is Q, the location of your shared Windows files may be Q:\WINSHARE and your user directory may be Q:\USER\ - 2. Quit Microsoft Windows.
 - 3. Create a backup directory. For example, to create a backup directory off the root of drive C, type "md c:\oldwin" (without the quotation marks) at the MS-DOS command prompt and then press ENTER.
 - 4. Copy the files below from the network share to the backup directory on your hard disk drive using the following syntax at the MS-DOS command prompt and then press ENTER

```
copy <netdrive>:\<netshare>\<filename> <harddrive>:\<backdir>
```

where <netdrive> is the network drive, <netshare> is the network share containing your SYSTEM.INI file, <filename> is the file you are copying, <harddrive> is your hard disk drive, and <backdir> is your backup directory.

For example, if your network drive is Q, the network share is WINSHARE, the file you want to copy is COMMDLG.DLL, your hard disk drive is C, and your backup directory is called OLDWIN, type the following:

```
copy q:\winshare\commdlg.dll c:\oldwin
```

Repeat this command for the remaining files:

```
COMMDLG.DLL  
GDI.EXE  
KRNL386.EXE  
PSCRIPT.DRV  
SHELL.DLL  
UNIDRV.DLL  
USER.EXE
```

NOTE: After you copy the new USER.EXE file to your Windows SYSTEM subdirectory, your registered user and company name will be blank.

5. Remove the Read-Only file attributes on the shared Windows files using the MS-DOS ATTRIB command.

6. Insert the enclosed WW1007 disk in the appropriate floppy disk drive. At the MS-DOS command prompt, type the following and then press ENTER

```
copy <drive>:\*.* <destination>
```

where <drive> is your floppy disk drive and <destination> is the network drive and share.

For example:

```
copy a:\*.* q:\winshare
```

7. Reset the Read-Only file attributes on the shared Windows files using the MS-DOS ATTRIB command.
8. If you use Novell NetWare connectivity, do the following:
 - a. Use a text editor (such as Windows Notepad) to open your SYSTEM.INI file.
 - b. In the [386Enh] section, change device=vttda.386 to device=*vtd.
 - c. Save the file and quit the text editor.

TO OBTAIN THIS APPLICATION NOTE

=====

You can have this Application Note mailed to you by calling Microsoft Product Support Services Monday through Friday, 6:00 A.M. to 6:00 P.M. Pacific time at (206) 637-7098. If you are outside the United States, contact the Microsoft subsidiary for your area. To locate your subsidiary, call Microsoft International Sales Information Center at (206) 936-8661.

KBCategory: kbnetwork kb3rdparty kbfile kbappnote

KBSubcategory:

Additional reference words: appnote 3.10 appnote

=====

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Common Questions and Answers for Windows 3.11

PSS ID Number: Q114301

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system version 3.11

SUMMARY

=====

This article contains common questions and answers regarding the differences between Windows 3.1 and Windows 3.11. The answers cover why Microsoft released Windows 3.11, who can benefit from it, what files changed, and issues with OS/2 for Windows.

This article is a reprint of the Windows 3.11 Q&A document written by Product Management and made available on the online services. This article is reproduced in the Knowledge Base for reference only.

MORE INFORMATION

=====

1. What is Windows 3.11? How is it different from Windows 3.1?

Microsoft Windows 3.11 is a "refresh" release that implements packaging changes designed to reduce counterfeiting. The release also includes some updated device drivers and a few bug fixes to address issues such as diskless workstation support.

2. Why were these changes made?

It's been nearly two years since Windows 3.1 was introduced to the market. These new drivers and bug fixes will improve the experience of a customer buying Windows for the first time. Also, these changes had already been incorporated in our Windows for Workgroups 3.11 release.

3. Who should update to Windows 3.11?

There is no new functionality in the 3.11 release of Windows and all of the drivers being added or refreshed have been available on the Windows Driver Library and Microsoft's Download Service. So unless a customer is having a problem related to one of the areas covered by the fixes detailed below, there should be no need for them to update to this release. If a customer does need to update they should call Microsoft at 800) 871-3270 for more information.

4. What is the difference between Windows 3.11 and Windows for Workgroups 3.11.

Windows 3.11: Windows 3.11 is simply Windows 3.1 plus the additional video and printer drivers and the five bug fixes described below. As mentioned above, there is no new functionality or performance improvements, features, etc.

Windows for Workgroups 3.11: WFW 3.11 offers a number of enhancements to our Windows 3.1 product. WFW 3.11 includes enhanced performance, from 50-150% faster disk I/O and up to 100% faster network access. It also includes integrated networking, Microsoft Mail, Microsoft Schedule+, Microsoft At Work PC Fax, and Microsoft's Remote Access Services, and a number of other enhancements for both standalone and networked Windows PCs.

5. Does Win 3.11 work with OS/2 for Windows?

No it does not. From what we have been able to learn without the benefit of source code, which IBM refused to provide Microsoft, OS/2 for Windows patches Windows in memory at fixed address locations. Such a design makes OS/2 for Windows extremely fragile because it depends on Windows code being frozen over time.

Microsoft encourages developers to write well-behaved Windows applications using documented application program interface (API) functions and good programming practices. By establishing these ground rules we can move the platform forward and maintain support for these applications. Windows 3.11 did not break any well-behaved applications that we are aware of.

Though we regret the inconvenience to customers, IBM has to be responsible for writing well-behaved applications -- they have taken shortcuts with OS/2 for Windows that have put their customers in a bad position. We presume that one or more of the bug fixes incorporated in Windows 3.11 (which were included in Windows for Workgroups 3.11 released November 6, 1993) changed the fixed address locations that are patched by OS/2 for Windows. As a result, OS/2 for Windows no longer runs correctly.

6. Did Microsoft do this to thwart IBM?

No we did not. We have been talking publicly about this release since August of last year -- well before IBM even announced their OS/2 for

Windows product. Negotiations with Novell and a desire not to interrupt the Christmas selling season caused us to delay, but Windows has been on the market for nearly two years now and we felt that customers would benefit from a refresh of the product.

7. What should customers do that have purchased OS/2 for Windows and want to update to Windows 3.11?

IBM has the means at its disposal to permit purchasers of OS/2 for Windows to use it with Windows 3.11. First IBM can release a new version of OS/2 for Windows that patches Windows 3.11 at the appropriate address locations in memory. Second, IBM can provide customers with the KERNEL, USER, and GDI modules from Windows 3.1 that do not contain the bug fixes which apparently are the source of the problem. Alternatively customers can purchase the full OS/2 2.1 product from IBM.

8. What about customers who buy Windows 3.11 and then want to run OS/2 for Windows?

We think IBM bears the responsibility for designing OS/2 for Windows in such a way that virtually guaranteed it would break if Microsoft made any changes in Windows. Nonetheless, in an effort to assist our mutual customers, Microsoft will provide purchasers of Windows 3.11 who experience difficulty running the product with OS/2 for Windows with the unimproved Windows 3.1 files which we modified in Windows 3.11 to fix various bugs. Our Product Support Services will distribute these as soon as a diskette can be made available.

9. What exactly are the code changes made to Win 3.11 and what do they do?

First the following drivers have been added or refreshed in the Windows 3.11 release:

- HPLJIV driver
- 256 Color generic SVGA video driver - which will support TSENG ET4000 chip sets and V7, but not ATI Ultra or S3 chip sets.
- As well as the following drivers:

PSCRIPT.DRV	UNIDRV.DLL
PSCRIPT.HLP	UNIDRV.HLP
HPPCL5MS.DRV	HPDSKJET.DRV
HPPCL5E.DRV	HPPCL.DRV
HPPCL5E.HLP	PAINTJET.DRV
HPPCL5E1.DLL	L100_425.WPD
HPPCL5E2.DLL	L300_471.WPD
HPPCL5E3.DLL	L300_493.WPD
HPPCL5E4.DLL	L500_493.WPD
HPPCL5EO.DLL	L200230&.WPD
FINSTALL.DLL	L330_52&.WPD
FINSTALL.HLP	L630_52&.WPD
EPSON24.DRV	EPSON9.DRV
V7VDD.386	V7VGA.DRV

In addition, the following 5 files were changed:

- KRNL386.EXE: Minimal kernel changes to more gracefully shut down the Windows system after installing products which call the ExitWindows API to shut Windows down before returning focus to program manager.
- GDI.EXE: Changes which assist ISVs currently writing graphics applications, especially those that call the 'draw rectangle function'. This will minimize the number of API calls the programmer needs to write and maximize the system resources available on the system when using graphics intensive applications.
- COMMDLG.DLL: Changes which allow Windows applications on diskless workstations to use common dialog boxes. (Formerly available as a PSS application note).
- PSCRIPT.DRV and UNIDRV.DLL: These files were updated to eliminate a font

enumeration conflict that occurred with many word processors when 60 or more fonts are used in a single document.

- VTDA.386: The updated VTDA.386 solves a very small percentage of timer-related problems that occur when starting an MS-DOS-based application under Windows on a Novell NetWare network.

KBCategory: kbdisplay kb3rdparty kbnetwork kbfile kbappnote

KBSubcategory: wfwg

Additional reference words: appnote 3.11 awfax RAS

=====
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WG1027: Updated NWLINK.386 Allows Routing Across Cisco Routers

PSS ID Number: Q116233

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

When you are using the Windows for Workgroups version 3.11 NWLINK.386 file to connect to a network that uses a Cisco router, you may receive an error message or have difficulty communicating across a Novell or DECnet network using the "IPX/SPX Compatible Transport with NetBIOS" option. To correct these problems, Microsoft has made an updated NWLINK.386 file available in Application Note WG1027: Updated NWLINK.386 Allows Routing Across Cisco Routers.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WG1027

=====

=====
Microsoft® Product Support Services Application Note (Text File)
WG1027: UPDATED NWLINK.386 ALLOWS ROUTING ACROSS CISCO ROUTER

=====
Revision Date: 6/94

1 Disk Included

The following information applies to Microsoft Windows™ for Workgroups, version 3.11.

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Introduction

When you are using the Windows for Workgroups version 3.11 NWLINK.386 file to connect to a network that uses a Cisco router, the following problems may occur:

- Windows for Workgroups workstations configured with the "IPX/SPX Compatible Transport with NetBIOS" option cannot communicate across a Cisco router when both Novell® routing and DECnet™ routing are enabled.
- or-
- A Windows for Workgroups workstation displays the "Error 51: Failure to Connect" message in response to the NET USE \\<SERVER>\<SHARENAME> COMMAND.

These problems occur when NWLINK.386 does not correctly handle certain Cisco router addresses that begin with the letter A. Any address with the high-order bit set on an end or intermediate system results in NWNblink truncating the routing address, which causes the network connection to fail.

The WG1027 disk included with this Application Note contains a revised NWLINK.386 file that corrects this problem.

To install the new NWLINK.386 file

1. Quit Windows for Workgroups.
2. Make a backup copy of the currently installed NWLINK.386 file by typing the following at the MS-DOS command prompt and then pressing ENTER

```
ren <drive:path>\nwlink.386 nwlink.old
```

where <drive:path> is the location of your Windows SYSTEM subdirectory.

For example, if your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
ren c:\windows\system\nwlink.386 nwlink.old
```

3. Insert the enclosed WG1027 disk in the appropriate floppy disk

drive.

4. To copy the file to the Windows SYSTEM subdirectory, type the following at the MS-DOS command prompt and then press ENTER

```
copy <drive>:\nwlink.386 <destination>
```

where <drive> is the floppy disk drive containing the WG1027 disk and <destination> is the drive and directory of your Windows SYSTEM subdirectory.

For example, if the WG1027 disk is in drive A and your Windows directory is called WINDOWS and is on drive C, type the following at the MS-DOS command prompt and then press ENTER:

```
copy a:\nwlink.386 c:\windows\system
```

TO OBTAIN THIS APPLICATION NOTE
=====

You can find WG1027.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG1027.EXE, and click GO! Open the article, and click the button to download the file.
 - Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
Get WG1027.EXE
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Dial (206) 936-6735 to connect to MSDL
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For additional information about downloading, please see the following article in the Microsoft Knowledge Base:

ARTICLE-ID: Q119591
TITLE : How to Obtain Microsoft Support Files from Online Services

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KBCategory: kbnetwork kbappnote kbhw kb3rdparty kbfile

KBSubcategory: wfw wfwg

Additional reference words: 3.11 appnote softlib

=====
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Delrina WinFax Pro 3.0 for Networks and WFWG 3.11

PSS ID Number: Q116376

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

The following problems can occur when you use Delrina WinFax Pro 3.0 for Networks with Windows for Workgroups 3.11 configured for network use:

- Conflicts occur between the Microsoft At Work PC Fax drivers and the WinFax for Windows terminate-and-stay-resident (TSR) programs.
- You receive device conflict error messages.
- You receive the "Netbios not present" error message when loading the WinFax Pro 3.0 drivers.
- You receive the "Image contains invalid data" error message.

Delrina Technology offers an application note (document number 2018) that suggests ways to correct these problems. This application note also recommends document number 9003 for additional information.

For more information, contact Delrina Technical Support.

WinFax Pro is manufactured by Delrina Technology, a vendor independent of Microsoft; we make no warranty, implied or otherwise, regarding this product's performance or reliability.

KBCategory: kbnetwork kbfile kbappnote kb3rdparty kbatwork

KBSubcategory: wfw wfwg awfax

Additional reference words: appnote 3.11

=====
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AWFAX Err Msg with Excel: A Document with the Name...

PSS ID Number: Q119207

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11
- Microsoft Excel for Windows, versions 4.0, 5.0

SYMPTOMS

=====

When you send a fax from Microsoft Excel with Microsoft At Work PC Fax by choosing Send Mail from the File menu, you may receive one of the following error messages:

- A document with the name <filename> is already open

-or-

- General Protection fault in the file VBA.DLL

-or-

- Undeliverable Mail - Error while rendering fax

NOTE: This problem does not occur with other Microsoft Office applications.

CAUSE

=====

When you send mail from an application and address the message to a FAX recipient, Microsoft Mail calls the application associated with the attached document to render (print) the document to generate the final .DCX output file. Because Microsoft Excel does not support having two copies of the same document open simultaneously, you receive one of the errors noted above.

WORKAROUND

=====

To work around this problem in Microsoft Excel 5.0:

1. From the Microsoft Excel File menu, choose Print.
2. Choose Printer Setup.
3. Choose "Microsoft At Work Fax on FAX:" and then choose OK twice.

To work around this problem in Microsoft Excel 4.0:

1. From the Microsoft Excel File menu, choose Page Setup.
2. Choose Printer Select.
3. Choose "Microsoft At Work Fax" as the default printer.

When you fax a document this way, the application renders the document, and then a Mail message is created with an attached .DCX file.

MORE INFORMATION

=====

When you choose the File Send command, Microsoft Excel embeds the active sheet in a mail message. The embedded object uses the name of the active sheet and is given the extension .XLS. When the message is ready to be faxed, Microsoft Mail activates the object. Upon activation, the embedded sheet is copied to the TEMP directory and Microsoft Excel is told to open it. After the file is opened, a Print command is sent to Microsoft Excel, and the file is printed to the fax port.

The aforementioned errors occur when the embedded file uses the same name as the workbook that is already open in Microsoft Excel. The embedded sheet fails to open, Microsoft Excel displays a message indicating there is already a file with that name open, and the fax is never sent.

Application Note WG0992, "Updated Files for Microsoft At Work PC Fax Version 1.0," addresses a similar issue. If the steps taken above do not correct this problem, you may want to order WG0992. For information about obtaining WG0992, query on the following words in the Microsoft Knowledge Base:

wg0992 and appnote

KBCategory: kbprint kbfile kbappnote kbinterop

KBSubcategory: wfw wfwg awfax

Additional reference words: gpf

=====

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WG1126: Updated AWFAXIO.DLL Prevents System Hangs

PSS ID Number: Q122674

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups versions 3.1, 3.11
-

Microsoft has produced an Application Note titled "Updated AWFAXIO.DLL Prevents System Hang in Microsoft At Work PC Fax with Certain Modems" (WG1126), which corrects a problem that occurs on some modems that use a Rockwell chip.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.

TEXT OF WG1126

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=====
Microsoft® Product Support Services Application Note (Text File)
WG1126: UPDATED AWFAXIO.DLL PREVENTS SYSTEM HANG IN
MICROSOFT AT WORK™ PC FAX WITH CERTAIN MODEMS
=====

Revision Date: 11/94
1 Disk Included

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Introduction

The WG1126 disk included with this Application Note contains an updated version of the AWFAXIO.DLL file that corrects a problem associated with some fax modems that use a Rockwell chip. If you have a fax modem with a Rockwell chip (for example, the Megahertz XJACK) and are using Microsoft At Work PC Fax, your system may stop responding (hang) during the initialization process. To determine whether the updated AWFAXIO.DLL file is needed, perform the following steps:

1. Open Windows Terminal (usually located in the Accessories group).
2. Type the following command:

```
AT*F2
```

If this command displays the message "Download Initiated" and your system then hangs, install the updated AWFAXIO.DLL file.

The previous version of the AWFAXIO.DLL file from Microsoft At Work PC Fax sends an *F2 command to the modem to force XON/XOFF flow control. This command causes the Rockwell chip to start a Flash ROM download routine. The updated version of AWFAXIO.DLL does not contain the *F2 command.

To Install the Updated File

-
1. Insert the enclosed WG1126 disk in the appropriate floppy disk drive.
 2. At the MS-DOS command prompt, type the following and press ENTER

```
copy <drive>:\awfaxio.dll <destination>
```

where <drive> is the floppy disk drive containing the WG1126 disk and <destination> is the drive and directory where your AWFAXIO.DLL file currently resides. For example, if the WG1126 disk is in drive A and Windows for Workgroups is installed on drive C in a directory called Windows, type the following command:

```
copy a:\awfaxio.dll c:\windows\system
```

TO OBTAIN THIS APPLICATION NOTE

=====

You can find WG1126.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WG1126.EXE, and click GO!
Open the article, and click the button to download the file.
- Internet (anonymous FTP)
`ftp ftp.microsoft.com`
Change to the Softlib/Mslfiles folder.
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KBCategory: kbappnote kbfile kbother kbatwork

KBSubcategory: wfw wfwg awfax

Additional reference words: 3.10 3.11

=====
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WW1116: OLE Version 2.03

PSS ID Number: Q123087

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
- Microsoft Windows for Workgroups versions 3.1, 3.11

Microsoft has an Application Note available titled "WW1116: OLE Version 2.03" that contains an updated version of OLE for use with Microsoft Windows for Workgroups and Microsoft Windows versions 3.1 and 3.11. OLE 2.03 includes several improvements that affect other Microsoft applications, such as Microsoft Word for Windows and Microsoft Access.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

For complete information, see the "To Obtain This Application Note" section at the end of this article.



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THE TEXT OF WW1116

=====
Microsoft® Product Support Services Application Note (Text File)
WW1116: OLE VERSION 2.03
=====

Revision Date: 9/95
1 Disk Included

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Introduction

The WW1116 disk included with this Application Note contains an updated version of OLE for use with Windows and Windows for Workgroups versions 3.1 and 3.11. OLE version 2.03 includes the following improvements:

- You can unload Microsoft Excel add-in tools.
- Japanese NEC computers do not hang when a running OLE program is called by another program.

OLE version 2.03 also includes the following previous improvements:

- There is no longer a 20-user limit on read-only network files.

Programs Affected

Microsoft Word for Windows, versions 2.x and 6.x

- Some incompatibilities between OLE programs and network operating systems (such as DEC® PATHWORKS® and UNIX®) have been removed.

Programs Affected

Microsoft Works for Windows, version 3.0

- A general protection (GP) fault using multiple palettes no longer occurs.

Programs Affected

Microsoft Access, versions 1.x and 2.0

NOTE: Microsoft Access users should also order Application Note WX1124.

- A GP fault no longer occurs on computers with Win32s® present but not loaded.

Installing OLE Version 2.03

To install OLE version 2.03, follow these steps:

1. If you received a disk with this Application Note, insert the disk in the appropriate floppy disk drive.

If you downloaded this Application Note from an online service, skip to step 2. This procedure assumes that you have already downloaded and extracted the compressed file.

2. On the Program Manager File menu, click Run. In the Command Line box, type the following line and then press ENTER

```
notepad <source>:\license.txt
```

where <source> is either the letter of the floppy disk drive containing the WW1116 disk or the folder containing the file you downloaded from an online service. For example, if you inserted the floppy disk in drive A, type the following line:

```
notepad a:\license.txt
```

Or, if you downloaded the Ww1116.exe file from an online service to the C:\Download folder, type the following line:

```
notepad c:\download\license.txt
```

3. On the Notepad Edit menu, click Word Wrap. Review the licensing agreement, and then quit Notepad.
4. On the Program Manager File menu, click Run. In the Command Line box, type the following line and then press ENTER

```
<source>:\setup
```

where <source> is either the letter of the floppy disk drive containing the WW1116 disk or the folder containing the file you downloaded from an online service. For example, if you inserted the floppy disk in drive A, type the following line:

```
a:\setup
```

Or, if you downloaded the Ww1116.exe file from an online service to the C:\Download folder, type the following line:

```
c:\download\setup
```

5. Follow the instructions in the Setup program to finish installing OLE 2.03.

Setup installs the OLE 2.03 library files on your hard disk. Refer to the "Filename in Windows\System folder" column to determine the filename and size of files that are expanded on the hard disk.

Original Filename	Size (bytes)	Filename in Windows\System folder	Size (bytes)

_mssetup.bat	255	Not applicable	--
_mssetup.exe	9,813	Not applicable	--
_mstest.exe	89,504	Not applicable	--
Compobj.dl_	61,684	Compobj.dll	109,056
License.txt	9,912	Not applicable	--
Mscomstf.dll	77,072	Not applicable	--
Mscuistf.dll	71,424	Not applicable	--
Msdetstf.dll	25,232	Not applicable	--
Msinstf.dll	67,104	Not applicable	--
Mssh1stf.dll	14,400	Not applicable	--
Msuilstf.dll	6,352	Not applicable	--
Ole2.dl_	170,995	Ole2.dll	304,640
Ole2.re_	5,606	Ole2.reg	27,397
Ole203.inf	1,174	Not applicable	--
Ole2conv.dl_	35,579	Ole2conv.dll	57,328
Ole2disp.dl_	88,247	Ole2disp.dll	163,408

Ole2nls.dl_	73,439	Ole2nls.dll	124,512
Ole2prox.dl_	24,421	Ole2prox.dll	51,712
Setup.exe	39,920	Not applicable	--
Stdole.tl_	2,850	Stdole.tlb	5,472
Storage.dl_	89,197	Storage.dll	157,696
Typelib.dl_	108,842	Typelib.dll	177,744
Ver.dll	9,008	Not applicable	--

TO OBTAIN THIS APPLICATION NOTE
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You can find WW1116.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW1116.EXE, and click GO! Open the article, and click the button to download the file.
- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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ARTICLE-ID: Q119591
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KBCategory: kbfile kbappnote kbole
KBSubcategory: wfw wfwg win31 appnote
Additional reference words: 3.10 3.11

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WW1138: Updated Calculator Accessory for Windows

PSS ID Number: Q124345

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
 - Microsoft Windows for Workgroups, versions 3.1, 3.11
-

This Application Note provides an updated version of the Calculator accessory that is shipped with Microsoft Windows 3.1x and Windows for Workgroups 3.1x. Previous versions of Calculator display simple subtraction errors when you subtract two numbers that include values to the right of the decimal point.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

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THE TEXT OF WW1138
=====

=====
Microsoft® Product Support Services Application Note (Text File)
WW1138: UPDATED CALCULATOR ACCESSORY FOR WINDOWS®
=====

Revision Date: 1/95
1 Disk Included

The following information applies to Microsoft Windows and Windows for Workgroups, versions 3.10 and 3.11.

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Introduction

The WW1138 disk included with this Application Note contains an updated version of the Calculator accessory that is shipped with Microsoft Windows

3.1x and Windows for Workgroups 3.1x. Previous versions of Calculator display simple subtraction errors when you subtract two numbers that include values to the right of the decimal point. While Calculator is determining how to display the solution, it encounters a loss of precision and shows an incorrect answer.

NOTE: This rounding error is unrelated to the floating-point unit (FPU) in the Intel® Pentium® chip. This problem occurs only in Calculator and does not affect Windows, other components in Windows, or other Windows-based applications.

In addition to correcting the problem described above, the new rounding algorithm in Calculator causes it to perform more like most hand-held calculators. For example, if you enter the following equation in the updated Calculator accessory or in a hand-held calculator

```
[(1/3 + 10 - 10) x 3]
```

the result is 0.9999. The result in previous versions of Calculator is 1.0. The value 0.9999 is generated because significant digits are lost by adding and subtracting 10. This is a secondary effect of the changes made in Calculator to correct the precision errors.

To install the updated files

-
1. Quit Windows, or open an MS-DOS command prompt within Windows.
 2. Rename the existing CALC.EXE file in your Windows directory. For example, if Windows is installed in a directory on drive C called WINDOWS, type the following commands, pressing ENTER after each line:

```
cd\windows  
ren calc.exe calc.old
```

3. If you received a disk with this Application Note, insert the disk in the appropriate floppy disk drive.

If you downloaded this Application Note from an online service, skip to step 4. This procedure assumes that you have already downloaded and extracted the compressed file.

4. At an MS-DOS command prompt, type the following and press ENTER

```
copy <source>:\calc.exe <location>
```

where <source> is either the letter of your floppy disk drive or the directory containing the file you downloaded from online services, and <location> is the path to your Windows directory. For example, if you are installing from a floppy disk that you inserted in drive A, and C:\WINDOWS is the path to your Windows directory, type:

```
copy a:\calc.exe c:\windows
```

Or, for example, if you downloaded the WW1138.EXE file from online services to C:\DOWNLOAD and C:\WINDOWS is the path to your Windows directory, type:

```
copy c:\download\calc.exe c:\windows
```

You are now ready to restart Windows (if necessary) and run the updated Calculator accessory.

Steps to Reproduce Problem Using Previous Versions of Calculator

-
1. To perform this test, choose two numbers that include values to the right of the decimal point (for example, 12.52 and 12.51).
 2. Double-click the Calculator icon in the Accessories group.
 3. Enter the larger number first (for example, 12.52).

4. Press the MINUS SIGN (-).
5. Enter the smaller number (for example, 12.51).
6. Press the EQUAL SIGN (=).

Note that in this example you do not receive .01, the expected result. Instead, you receive one of the following:

```
0.00
0.00999999999
0.010000001
```

The updated Calculator accessory displays the correct result, which is .01.

TO OBTAIN THIS APPLICATION NOTE
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 - Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbappnote kbfile kbtlc kbbuglist

KBSubcategory: win31 wfw wfwg

Additional reference words: 3.10 3.11 ww31tlc wg31tlc wg311tlc

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WG1129: Updated Files from the Windows NT Server 3.5 CD-ROM

PSS ID Number: Q124904

Article last modified on 07-29-1996

PSS database name: WIN3X

3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows for Workgroups version 3.11

The disk included with Application Note WG1129, "Updated Files from the Windows NT Server Version 3.5 CD-ROM," contains six updated Windows for Workgroups 3.11 files that are shipped on the CD-ROM version of Microsoft Windows NT Server 3.5. These updated files provide several improvements.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft Product Support Services

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=====
Microsoft® Product Support Services Application Note (Text File)
WG1129: UPDATED FILES FROM
THE WINDOWS NT™ SERVER VERSION 3.5 CD-ROM
=====

Revision Date: 1/95
1 disk included

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Introduction

The WG1129 disk included with this Application Note contains six updated Windows for Workgroups 3.11 files that are shipped on the CD-ROM version of Microsoft Windows NT Server 3.5. These updated files provide the following improvements:

- Support for named pipes over direct host IPX
- Performance enhancements to direct host IPX
- A patch to prevent browse masters from synchronizing and announcing simultaneously
- Changes to allow Windows NT remote administrators to work on Windows for Workgroups
- Changes to allow browsing of Windows NT workgroups outside a subnet
- Changes to allow Windows NT 3.5 servers to screen out older Windows for Workgroups clients trying to connect through direct host IPX

To install the updated files

1. If you received a disk with this Application Note, insert the disk in the appropriate floppy disk drive.

If you downloaded this Application Note from an online service, skip to step 2. This procedure assumes that you have already downloaded and extracted the compressed file.

2. At the MS-DOS command prompt, type the following and press ENTER

```
copy <source>:\net.exe <location>
```

where <source> is either the letter of your floppy disk drive or the directory containing the file you downloaded from online services, and <location> is the path to your Windows directory. For example, if you are installing from a floppy disk that you inserted in drive A, and C:\WINDOWS is the path to your Windows directory:

```
copy a:\net.exe c:\windows
```

Or, for example, if you downloaded the WG1129.EXE file from online services to C:\DOWNLOAD and C:\WINDOWS is the path to your Windows directory:

```
copy c:\download\net.exe c:\windows
```

3. Copy the remaining five files to the Windows SYSTEM subdirectory one at a time. For example, type the following commands and press ENTER after each one:

```
copy a:\ndis.386 c:\windows\system
copy a:\netapi.dll c:\windows\system
copy a:\nwnblink.386 c:\windows\system
copy a:\vnetsup.386 c:\windows\system
copy a:\vredir.386 c:\windows\system
```

The table below lists the new file sizes and dates:

File	Size (bytes)	Date
NDIS.386	27,846	9/4/94
NET.EXE	450,262	9/4/94
NETAPI.DLL	109,120	9/4/94
NWNBLINK.386	37,964	9/4/94
VNETSETUP.386	14,647	9/4/94
VREDIR.386	85,746	9/4/94

4. Reboot your computer and restart Windows.

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You can find WG1129.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon.
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Enter kbfile WG1129.EXE, and click GO!
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KBCategory: kbappnote kbfile
KBSubcategory: wfw wfwg winnt
Additional reference words: 3.11

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WW1140:Windows Solution for Faulty Pentium Floating-Point Unit

PSS ID Number: Q124905

Article last modified on 07-29-1996

PSS database name: WIN3X

3.10 3.11

WINDOWS

The information in this article applies to:

- Microsoft Windows operating system versions 3.1, 3.11
 - Microsoft Windows for Workgroups versions 3.1, 3.11
-

The "Windows Solution for Faulty Pentium Floating-Point Unit" (WW1140) Application Note contains a utility called PENTFIX.EXE. The PENTFIX.EXE utility automatically disables the Intel Pentium floating-point hardware that contains the floating-point division accuracy error. When you use the PENTFIX.EXE utility, the Pentium behaves similarly to an Intel 486SX or 386 that does not contain floating-point processing hardware.

You can obtain this Application Note from the following sources:

- Microsoft's World Wide Web Site on the Internet
- The Internet (Microsoft anonymous ftp server)
- Microsoft Download Service (MSDL)
- Microsoft FastTips Technical Library
- Microsoft Product Support Services

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Microsoft® Product Support Services Application Note (Text File)
WW1140: WINDOWS® SOLUTION FOR FAULTY PENTIUM™ FLOATING-POINT UNIT
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Revision Date: 2/95
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Introduction

The WW1140 disk included with this Application Note contains a utility called PENTFIX.EXE. The PENTFIX.EXE utility automatically disables the Intel® Pentium floating-point hardware that contains the floating-point division accuracy error. When you use the PENTFIX.EXE utility, the Pentium behaves similarly to an Intel 486SX or 386 that does not contain floating-point processing hardware.

Installing the PENTFIX.EXE Utility

To install the PENTFIX.EXE utility, follow these steps:

1. Quit Windows, or open an MS-DOS command prompt within Windows.
2. If you received a disk with this Application Note, insert the disk in the appropriate floppy disk drive.

If you downloaded this Application Note from an online service, skip to step 3. This procedure assumes that you have already downloaded and extracted the compressed file.

3. At an MS-DOS command prompt, type the following command and press ENTER

```
copy <source>:\pentfix.exe <location>
```

where <source> is either the letter of your floppy disk drive or the directory containing the file you downloaded from online services, and <location> is the path to your Windows directory. For example, if you are installing from a floppy disk that you inserted in drive A, and C:\WINDOWS is the path to your Windows directory, type:

```
copy a:\pentfix.exe c:\windows
```

Or, for example, if you downloaded the WW1140.EXE file from online services to C:\DOWNLOAD and C:\WINDOWS is the path to your Windows directory, type:

```
copy c:\download\pentfix.exe c:\windows
```

Running the PENTFIX.EXE Utility

To run the PENTFIX.EXE utility, double-click the PENTFIX.EXE file. For additional information about the PENTFIX.EXE utility, run the PENTFIX.EXE utility and choose the Help button.

TO OBTAIN THIS APPLICATION NOTE

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You can find WW1140.EXE, a self-extracting file, on the following services:

- Microsoft's World Wide Web Site on the Internet
On the www.microsoft.com home page, click the Support icon. Click Knowledge Base, and select the product. Enter kbfile WW1140.EXE, and click GO! Open the article, and click the button to download the file.

- Internet (anonymous FTP)
[ftp ftp.microsoft.com](ftp://ftp.microsoft.com)
Change to the Softlib/Mslfiles folder.
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KBCategory: kbappnote kbfile

KBSubcategory: win31 wfw wfwg

Additional reference words: 3.10 3.11 pentfix

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