Chapter
13   *Troubleshooting Windows 3.1*

This chapter provides information about troubleshooting Microsoft
Windows for both general users and experts. If you have trouble
installing Windows, or if Windows doesn't run as well as you
expected, this chapter will help you find out why and show you
how to isolate and solve common problems.

See also Chapter 4, "Troubleshooting," in the *Getting Started*
booklet

·   *Windows Resource Kit:* "The Troubleshooting Flowcharts for
      Windows 3.1" in "Welcome"

Contents of this chapter

About Troubleshooting

As a general orientation to troubleshooting, begin with these basic problem-solving actions:

· Try to reproduce the problem using the minimum system configuration described in "Creating a 'Clean Boot' for Troubleshooting." later in this chapter.

· Try to reproduce the problem in both standard mode and 386 enhanced mode, to see if the problem is mode-specific.

· Try to reproduce the problem while running another application and, if possible, while running the applications provided with Windows.

· Check the README.WRI, PRINTERS.WRI, and NETWORKS.WRI files in the WINDOWS directory, looking especially for notes related to your specific hardware or for TSRS, device drivers, and other third-party software that you are running with Windows.

Windows is a stable environment that was tested on thousands of computers before it was shipped. However, your system might have a display adapter or other hardware that was not in existence during the latest Windows development cycle. This means you might be installing or running Windows on an untested configuration. This chapter, and the README files in your WINDOWS directory, can help you find solutions.

Getting Started with Troubleshooting

You can use this decision tree to begin troubleshooting for Windows.

Decision Tree for Troubleshooting Windows 3.1

· During Setup, you get an error message or your system crashes.
   ® See **"Troubleshooting Setup"**
      and **Flowchart 1.2**

· Your display is garbled or wrong or you have other display

problems.

® See **"Troubleshooting Display Problems"**
and **Flowchart 2.3**

· You have memory-related configuration problems.
   ® See **"Troubleshooting MS-DOS Configuration Problems"**
      and **Flowchart 1.2**

· You have problems using the upper memory area.
   ® See "**Troubleshooting EMS Memory Problems"**
      and **Flowchart Series 2**

· You cannot run Windows in standard mode
   or you get not-enough-memory messages.
   ® See **"Troubleshooting Windows in Standard Mode"**
      and **Flowcharts 1.1 and 5.9**

· You cannot run Windows in 386 enhanced mode, or the
   system crashes, or you have hard disk problems.
   ® See **"Troubleshooting Windows in 386 Enhanced
   Mode"**
      and **Flowchart Series 2** and **Series 5**

· You get out-of-memory messages or the application won't
   start
   when you try to run a non-Windows application under
   Windows.
   ® See **"Troubleshooting Non-Windows Applications"**
      and **Flowcharts 5.4, 5.5., and 5.8**

· You experience problems when using TrueType fonts.
   ® See **"Troubleshooting Fonts"**
      and **Flowchart Series 3**

· You cannot print from Windows or have problems with
   printing.
   ® See **"Troubleshooting Printing"**
      and **Flowchart Series 4**

· You have problems installing or running Windows on a
   network,
   or you have problems printing over a network.
   ® See **"Troubleshooting Networks"**
      and **Flowcharts 1.3, 4.2, and 4.4**

· You receive GP-fault messages while running Windows
   applications.

® See **"Troubleshooting GP Faults"**
and **Flowcharts 5.3, 5.4,** and **5.5**

· You have problems with multimedia accessories.
® See **"Troubleshooting Multimedia"**
and **Flowchart Series 6**

> **Flowchart 1.5**
> **Clean Boot Disk**

Use a "clean boot" floppy disk to boot your system for troubleshooting problems with incompatible TSRs and drivers and problems with conflicting uses of the upper memory area. Remember that you must reboot your system after any change in AUTOEXEC.BAT or CONFIG.SYS for the change to take effect.

Creating a "Clean Boot" for Troubleshooting

To create a "clean boot" disk for troubleshooting:

1. Back up your hard disk before beginning.

2. Minimize the configuration in your CONFIG.SYS and AUTOEXEC.BAT, including only the drivers and programs necessary for the computer to boot and run Windows, and removing all other TSRs or drivers.

   For testing purposes, reduce the CONFIG.SYS file to:

   ```
   files=40
   buffers=20
   device=c:\windows\himem.sys
   device=c:\windows\ega.sys            ; if you have an EGA monitor
   stacks=9,256                                ; if MS-DOS 3.3 or later
   shell=c:\dos\command.com c:\dos /p /e:256   ; make sure command.com
   [plus any network command lines]            ; is in the C:\DOS directory
   ```

   Reduce the AUTOEXEC.BAT file to:

   ```
   path=c:\;c:\dos;c:\windows
   set temp=c:\windows\temp                ; TEMP must point to a valid directory
   prompt $p$g
   [plus any network command lines]
   ```

3. Make a boot disk. To do this, place a disk in drive A and type the following command at the command prompt:

   ```
   format a:
   ```

4. Copy the configuration files to this disk by typing the following commands at the command prompt:

   ```
   copy \config.sys a:
   copy \autoexec.bat a:
   ```

5. Save your current initialization files on the floppy disk by typing the following commands at the command prompt:

   ```
   copy \windows\win.ini a:
   copy \windows\system.ini a:
   copy \windows\progman.ini a:
   ```

Flowchart Series 1
Troubleshooting Setup

Windows Setup is two programs bound into one executable file. The first program is MS-DOS Mode Setup, which installs the critical system files used to start Windows. The second program is Windows Mode Setup, which installs the Windows applications and the supporting files, sets up the Program Manager groups, and installs printer drivers.

If you want to establish a system configuration that ensures optimal perfor-mance, or if you want to customize other features in Windows 3.1, you can also begin with a standard configuration by using the "clean boot" disk. Make one change at a time to make troubleshooting easier.

Note   Use the standard drivers included in the Windows 3.1 or MS-DOS 5.0 packages. Avoid third-party drivers unless you can confirm that such drivers have been tested and are known to be compatible with Windows 3.1.

Troubleshooting Setup

Many installation problems are caused by your system configuration—for example, by TSRs or third-party memory managers that conflict with the Windows memory managers. Failure can occur at three key points in Setup:

· During initial detection of TSRs in your system.
· During hardware auto-detection in MS-DOS Mode Setup.
· During the initial loading of Windows.

If Setup fails at any of these stages, you might see an error message describing the problem, or Setup might crash and return to the command prompt, or your system might require rebooting. The following sections discuss possible solutions to problems you might experience during Setup.

Tip   To see a list of switches that you can use to start Setup, type **setup /?** at the command prompt.

Troubleshooting TSRs During Setup

W   Windows Setup can check your system for memory-resident programs, looking in AUTOEXEC.BAT and CONFIG.SYS and also checking the programs currently running in memory. If Setup finds a program with which Microsoft testing has uncovered problems running with Windows 3.1, a message appears on your screen, giving you the opportunity to continue with Setup or exit.

To check for conflicting memory-resident software with Windows Setup:

· Type **setup /t** at the command prompt and press ENTER.

If you receive a message that incompatible TSRs or drivers are present when you try to run Setup, we recommend that you take the following steps.

To solve Setup problems related to incompatible TSRs:

1. Read SETUP.TXT on Windows Setup disk #1 for information about TSRs you are running. This information will tell you if you should install Windows 3.1 while this program is loaded.

   If you choose to install Windows 3.1 without changing your system configuration, follow the instructions on the screen to continue with Setup.

2. If you decide that you should not install Windows 3.1 with the programs loaded, follow the instructions on the screen to exit Setup.

3. Uninstall the TSR by following instructions in the program's documentation or by removing the filename from your AUTOEXEC.BAT or CONFIG.SYS file.

4. Reboot your computer and start Windows Setup again.

5. After Windows is successfully installed, you might want to restore the memory-resident programs.

<table>
<tr><td>

Flowchart 1.2
Windows Hangs
During Setup

</td><td>

In the first stage of MS-DOS Mode Setup, Setup uses an auto-detection scheme to determine your system's hardware configuration, specifically identifying the type of processor, machine, display adapter, mouse, and network.
Some TSRs run with Windows if you start them after starting Windows. Read the SETUP.TXT file on Windows installation disk #1 for information about the best way to run a specific TSR with Windows.

</td></tr>
</table>

Check the entries in the **[incompTSR1]** and **[incompTSR2]** sections in the SETUP.INF file in your Windows SYSTEM subdirectory for up-to-date lists of software that conflicts with Windows Setup. The TSRs listed in **[incompTSR2]** can cause problems with Setup. We recommend that you uninstall any of this software before running Windows Setup. The TSRs and device drivers listed in **[incompTSR2]** can cause problems if they are running when you run either Setup or Windows 3.1.

Troubleshooting MS-DOS Mode Setup

If Setup hangs your system or pops out to the command prompt at this point and your system doesn't have any TSRs running, then the Setup auto-detection scheme is probably causing the problem. You can start Setup with the **/i** switch to tell Setup to ignore auto-detection. To do this, type **setup /i** at the command prompt and press ENTER to start Setup.

If you turn off auto-detection, Setup will select a standard configuration. When the hardware configuration screen appears, the list will be similar to this:

Computer:	MS-DOS System
Display:	VGA
Mouse:	Microsoft, or IBM PS/2
Keyboard:	Enhanced 101 or 102 key US and Non US keyboards
Keyboard Layout:	US
Language:	English (American)
Network:	Network not installed

If your system does not match the default settings, you might need to select the appropriate settings manually, following the instructions on screen.

These machines can be specifically selected during Setup:

· MS-DOS System
· AST: All 80386- and 80486-based machines
· AT&T PC
· AT&T NSX 20: Safari Notebook
· Everex Step 386/25
· Hewlett-Packard (all machines)
· IBM PS/2 model L40SX
· IBM PS/2 model P70
· Intel 386 SL based system with APM
· MS-DOS System with APM
· NCR: All 80386- and 80486-based machines
· NEC PowerMate SX Plus
· NEC ProSpeed 386
· Toshiba 1200XE
· Toshiba 1600
· Toshiba 5200
· Zenith: All 80386-based machines

These networks (and specific versions of most networks) can be
specifically selected during Setup:

· No Network Installed
· 3Com 3+Open
· 3Com 3+Share
· Artisoft LANtastic
· Banyan Vines
· DEC Pathworks
· IBM OS/2 LAN Server
· IBM PC LAN Program
· Invisible Software Invisible Network (version 2.21)
· Microsoft LAN Manager
· Microsoft Network (or 100% compatible)
· Novell Netware
· TCS 10Net

Flowchart 1.2
Windows Hangs
During Setup

If you are not running any TSRs and your machine hangs when Windows Mode Setup is starting to run for the first time, a file was probably unable to load. Most problems with Setup failing at this point are due to an incorrect display driver selection. Either the auto-detection scheme incorrectly detected the system configuration or your custom choices were incorrect.

Troubleshooting Windows Mode Setup

The second point where Setup might fail occurs when MS-DOS Mode Setup is finished and Windows Mode Setup is starting. During MS-DOS Mode Setup, modifications are made to WIN.INI, identifying Setup as the shell. The last thing that MS-DOS Mode Setup does is to start Windows. Then Windows begins loading the Windows files, in this order:

1: WIN.COM	4: MOUSE.DRV	8: GDI.EXE
2: KRNL286.EXE	5: DISPLAY.DRV	9: USER.EXE
or KRNL386.EXE	6: SOUND.DRV	10: NETWORK.DRV
3: SYSTEM.DRV	7: COMM.DRV	11: SETUP.EXE

Certain display adapter chip sets lead Setup to detect the display adapter incorrectly. Typically, this error is due to an incomplete implementation of BIOS on older display adapters. For example, if the card is detected as a Video 7 VGA with 512K and it is an older machine, the display adapter might not be identifying itself correctly.

An easy test is to rerun Setup and select a basic display adapter (usually EGA or VGA) to see if that works.

For more troubleshooting tips about display adapters, see "Troubleshooting Display Problems" later in this chapter.

Note   If you are installing Windows from a network using **setup /n**, and Setup fails just as Windows is loading for the first time, check to see that all the files in the list above are present on the network and that they are not damaged.

Troubleshooting Windows Configuration

Five main topics are described in this section:

·   Desktop configuration problems
·   TSR compatibility problems
·   Display problems
·   MS-DOS configuration problems
·   Expanded memory management problems

Troubleshooting the Desktop Configuration

You might get an error message when you start Windows that indicates a .GRP file is invalid or damaged, and that instructs you to reconstruct the group. This error can occur if:

·   A group (.GRP) file has been deleted or damaged.

·   The files were moved into another directory, but the PROGMAN.INI file was not updated to reflect this change.

You might also need to rebuild groups if no group windows or icons appear when you enter Program Manager after starting Windows. To rebuild groups, follow the procedure outlined in Chapter 15, "Maintaining Windows with Setup," in the *Windows User's Guide.*

Troubleshooting TSR Compatibility Problems

Setup does not detect all memory-resident programs that might cause problems running with Windows. Also, if you run a TSR after installing Windows, Windows itself cannot detect a program to warn you if there is a problem. Two kinds of problems might occur:

·   The interaction of the program with Windows might result in an unexpected system response such as a system crash or an incorrect display.

·   Either the program or Windows might require that you take special steps to get these programs to run together.

If you have problems running Windows or a TSR program, check the list in SETUP.TXT in the Windows SYSTEM subdirectory to see if there is a known conflict and a solution. Otherwise, begin troubleshooting by removing the program from memory to see how well Windows runs when the program is not present.

TSRs That Cause Problems with Setup

These programs might cause problems with Setup and should be removed before installing Windows, but should work with Windows after installation:

·   ASP Integrity Toolkit version 3.7 causes various problems with Setup.

·   Data Physician Plus version 2.0 (VirAlert) causes problems during Setup. Version 3.0 appears to correct this problem.

·   Norton Anti-Virus version 1.0 can cause Setup to crash. Version 1.5 appears to correct this problem.

·   PC-Kwik version 1.59 might cause Setup to crash. Version 2.0 appears to address this problem.

·   SoftIce Debugger causes Windows Mode Setup to crash.

·   Vaccine causes Setup to hang.

·   VDefend, a PC-Tools Deluxe TSR, should not be in use during installation, but you can run it with Windows after Setup is complete.

·   Virex-PC version 1.11 causes Setup to crash.

·   ViruSafe version 4.0 causes Setup to crash. Version 4.5 appears to correct the problem, but its authors recommend that you run ViruSafe with the **/C-** switch with Windows.

TSRs That Cause Problems Running with Windows 3.1

These programs cause problems running with Windows 3.1:

·   ANARKEY version 4.00 might prevent Windows 3.1 from
    loading under certain circumstances. Version 4.01 appears to
    correct these problems.

·   APPEND, an MS-DOS utility, interferes with the ability of
    Windows and Windows applications to build valid paths for
    files they want to access. Do not use APPEND with Windows
    3.1.

·   DOSCUE, a command-line editor, produces unreliable results
    with Windows 3.1. We recommend that you do not use this
    program with Windows 3.1.

·   GRAPHICS, an MS-DOS utility, is loaded into all VMs for non-
    Windows applications running under Windows 3.1. Printing
    from those VMs can be unpredictable, because the VM that has
    the focus sends its output to the printer, and printing becomes
    intermixed if you switch between non-Windows applications.

·   JOIN, an MS-DOS utility, works fine with Windows 3.1 if you do
    not change the state of the joined drives during a Windows 3.1
    session. This includes adding or removing joined drives from
    within Windows. We recommend that you do not use JOIN
    when running Windows Setup or Windows 3.1.

·   LanSight version 2.0 is a utility for controlling and monitoring
    workstations attached to a Novell network, and it requires TSRs
    to be loaded on the workstations before Windows is started. If
    a message asking permission to view the screen is sent from
    the supervisor workstation to a workstation running Windows
    3.1, the workstation running Windows might require
    rebooting.

·   Lockit version 3.3 (PC Vault, Secure It) strip spaces out of the
    load= entry in WIN.INI. Version 3.3+ appears to correct this
    problem.

·   MIRROR, an MS-DOS utility, cannot be removed from memory
    with the **mirror /u** command if it is loaded from Windows
    standard mode using the File Run command.

- Newspace version 1.07, a disk compression utility, is not compatible with Windows 3.1.

- Norton Utilities version 5.0 programs Diskreet and Ncache are not compatible with Windows 3.1 and can cause your system to hang. Version 6.01 solves this problem, with some limitations.

- Norton Utilities version 6.01 DiskMon, the disk monitoring program, may cause inconsistent results under Windows 3.1 if you are trying to access files in a directory that DiskMon is monitoring. We do not recommend that you use this TSR with Windows 3.1.

- Printer Assistant is a TSR that allows workstations on Netware 286 and 386 to share a printer. Some Windows applications print garbage mixed with correct output when this TSR is in use.

- XGAAIDOS.SYS causes Windows 3.1 to freeze at the opening logo in standard mode.

TSRs That Need Special Consideration

These programs will run with Windows if you take special action to make the two programs work together:

- BOOT.SYS, a power user's tool for booting under multiple configura-tions from a menu, creates several sections in CONFIG.SYS and AUTOEXEC.BAT. Windows Setup only modifies the first section in CONFIG.SYS and AUTOEXEC.BAT. You need to manually modify the other sections to use Windows 3.1 with the alternate configurations.

- Doubledisk version 2.5 creates "phantom" disk drives that Windows 3.1 might try to access. Vertisoft (makers of Doubledisk) has a DRVOFF utility to make these phantom drives invisible to Windows 3.1. Contact Vertisoft to get this utility if you want to run Doubledisk with Windows.

- FASTOPEN, a RAM resident MS-DOS utility, might need to be removed in low-memory situations for Windows 3.1 to load and function properly. Also, FASTOPEN causes File Allocation Table (FAT) problems when used with disk defragmenting

utilities.

· LaserTools Control Panel version 2.2 might cause your system to hang in both standard and 386 enhanced modes if the TSR is loaded from within Windows 3.1. If you use this product, we recommend that you load it before starting Windows 3.1.

· The LANtastic KBFLOW TSR should not be loaded before you start Windows 3.1. To use KBFLOW, start Windows 3.1 first and run the TSR from within Windows.

· Le Menu version 1.0 can cause environment information such as PATH, PROMPT, and WINDIR to be lost when you run a non-Windows application under Windows. If you are going to start Windows 3.1 from a Le Menu menu option, we recommend that you set up Windows 3.1 as a batch file menu option so that COMMAND.COM can be loaded before Windows 3.1. (See the Le Menu documentation.)

· Logitech Mouse Software versions 5.0 and 6.0 must be loaded from within a non-Windows application after it is launched in Windows if you want to use Click and Logimenu, even if the TSRs were loaded before starting Windows 3.1. After exiting Windows 3.1, reload these TSRs for them to function from the command prompt.

· Norton Utilities version 6.01 Ncache program prevents you from creating a permanent swap file if this caching program is on a disk drive. Windows 3.1 will work with this program, however.

·   PC-Tools Deluxe version 6.0 (Desktop) might cause your machine to hang if you launch it from a non-Windows application running under standard mode Windows. In 386 enhanced mode, it might cause your machine to reboot. Version 7.0 of PC-Tools appears to correct these problems. Even with version 7.0, however, you should not run Desktop from within a non-Windows application if the TSR was loaded prior to Windows 3.1. We recommend that you run Desktop from a PIF.

·   Pyro! version 1.0, a screen saver, will blank the screen after the delay period has expired if it is loaded before Windows is started. At that point, it is impossible to restore the Windows screen.

·   SideKick versions 1.0 and 2.0 and SideKick Plus cause several problems with Windows 3.1. We recommend that you run SideKick from within Windows with a PIF instead of loading it as a memory-resident program.

·   SPEEDFXR is not compatible with Windows 3.1 as a TSR. Running SPEEDFXR -X appears to work better with Windows 3.1, because it does not remain in memory.

·   SUBST, an MS-DOS utility, works fine with Windows 3.1 if you do not change the state of the substituted drives while running Windows. This includes adding or removing substituted drives from within Windows.

·   Trantor T100 Host Adapter Driver (TSCSI.SYS) identifies the SCSI hard disk drive as a removable drive, so your system might crash if you try to access this drive through File Manager. Other unexpected results can occur while deleting files through File Manager.

For information about running network drivers with Windows, see "Troubleshooting Networks" later in this chapter.

Flowchart 2.3	Many problems with garbled displays, inadequate screen

<table>
<tr><td>

Flowchart 2.3
Display Adapter
Problems

</td><td>

Many problems with garbled displays, inadequate screen refreshing, and other odd behavior are related to the display adapter or display driver. If you cannot find another explanation in this chapter for faulty behavior in your system, check the details in this section closely for a description of symptoms you may be experiencing.

</td></tr>
</table>

Troubleshooting Display Problems

Display drivers actually have three parts:

· **The Windows display driver** (*.DRV; for example, VGA.DRV), which contains the code that knows how to talk both to the display adapter board (hardware) and Windows (software).

· **The grabber**, which contains the code that supports data exchange between Windows and non-Windows applications. The standard mode grabber only supports copying and pasting text; the 386 enhanced mode grabber supports copying text and graphics up to the standard VGA resolutions (video mode 13). The grabber is built into the display driver file, but requires supporting font files. These files use the filename extension .2GR for standard mode and .3GR for 386 enhanced mode (replacing the .GR2 and .GR3 extensions used in Windows 3.0).

· **The Virtual Display Driver** (VDD*x*.386), which provides virtual display support for running non-Windows applications in virtual machines in 386 enhanced mode.

The naming conventions listed parenthetically are not required. However, most drivers use these naming conventions.

Display-related problems typically fall into two categories:

· Problems with third-party display drivers (those provided by the display adapter manufacturer).

· Problems with display adapters that use nonmaskable interrupts (NMI).

This section will help you determine the source of and solutions for display problems.

1. Windows or Windows applications are not displayed correctly.

In this case, the display driver may be incorrect or corrupted, and a correct driver must be installed. Or the problem may be related to NMIs, described in item #4 of this section.

2. You can't copy and paste data between non-Windows applications and Windows.

Usually this is because the grabber files are incompatible. You might encounter grabber problems in an incomplete installation of a third-party display driver. Windows might run fine, but non-Windows applications are not displayed correctly. To correctly install third-party display drivers, you must copy the driver and the appropriate grabber files, and you must also update the entries for **286grabber=** or **386grabber=** in the **[boot]** section of SYSTEM.INI.

3. You can't start non-Windows applications, or an error message identifies an incompatible display adapter.

The problem is probably that your system does not have a complete set of drivers for that display adapter. Or else that display adapter is not supported by Windows.

If the display adapter can be configured as standard VGA, set the card for that mode, and make sure Setup detects the appropriate display adapter, so that Windows recognizes the display adapter as a standard VGA board.

Also, check with the manufacturer to see if updated Windows 3.1 display driver files (.DRV, .2GR, .3GR, and VDD*x*.386 files) are available.

4. The Windows logo appears in 386 enhanced mode, then disappears and leaves the screen blank.

A few display adapters use nonmaskable interrupts (NMI) to switch video modes to support higher resolutions and to switch modes on the fly. Display drivers shipped with Windows do not support this type of dynamic mode switching, and Windows will not update the display.

A typical scenario with NMI display adapters is that Windows runs correctly in standard mode, but when you try to run Windows in 386 enhanced mode, the logo screen appears briefly, then scrolls off the bottom of the screen, leaving the screen blank. Windows is actually running, but the screen is not being updated. (At this point, you can usually press ALT+F4 and ENTER to exit Windows and return to the command prompt.)

To solve the problem, check the manual for the display adapter to find out how to turn off the NMI or extended modes for the display adapter. For example, some ATI Technologies display adapters use NMI support, but ATI Technologies also provides Windows display drivers that handle NMI correctly.

5. An incorrect-system-version error message appears when you try to run a non-Windows application in 386 enhanced mode.

The VDD*x*.386 and .3GR file versions are probably mismatched. If the Virtual Display Device and 386 grabber have mismatched versions, edit SYSTEM.INI to make sure that one of the following configurations is installed:

·   These are the SYSTEM.INI entries for Windows 3.1 VGA and Super VGA:

```
[boot]                          [386enh]
386grabber=vga.3gr              display=*vddvga
```

The "*****" in the **display=** entry indicates that the information is built into the WIN386.EXE file, rather than existing in a separate file.

·   These are the SYSTEM.INI entries for some third-party and OEM display adapters that require Windows 3.0 versions of VDD and 386 grabber files:

```
[boot]                        [386enh]
386grabber=vga30.3gr          display=vddvga30.386
```

Some OEM display drivers for Windows 3.1 that are shipped with display adapters also include VDD files, 386 grabber files, or both. Be sure that the correct files are installed for the display adapter and that SYSTEM.INI is updated. If the OEM driver disks include a 386 grabber file, but SYSTEM.INI contains the entry **display=*vddvga** in the **[386enh]** section, you must change this entry to **display=vddvga30.386**. Also, the VDDVGA30.386 file must be copied and, if necessary, expanded into the Windows SYSTEM subdirectory from the Windows Setup disks.

6.   Your system has a VGA display adapter, and you experience problems running Windows in 386 enhanced mode.

Some VGA-compatible cards such as Video 7 and Paradise use additional memory to enhance the performance of their cards. Display adapter boards with the main chips manufactured by Tseng Labs, Chips and Technologies, Paradise, and Headland Technologies also work this way.

Windows detects most of these cards and automatically excludes the additional memory. However, you must add an **emmexclude=C400-C7FF** entry in the **[386enh]** section of SYSTEM.INI if:

· Your system has both an 8514 and a VGA display adapter but you configured Windows for the 8514.

· Your system has an enhanced VGA adapter that Windows does not recognize.

· Your system has both a VGA display adapter (primary) and an 8514 (secondary), and you have problems switching between full-screen non-Windows applications when running in 386 enhanced mode.

For more information about other problems that can be solved with entries for **emmexclude=**, see "Troubleshooting Windows Running in 386 Enhanced Mode" later in this chapter.

7. Your system has a VGA adapter, and an application does not display properly.

The digital-to-analog converter (DAC) on the VGA card might need to be updated. Contact the display adapter manufacturer for an upgrade. In the meantime, if your application has a command to refresh the screen, you might be able to temporarily correct the display so that you can use the application. For example, if the display is a color display, you can type **mode co80** at the command prompt and press ENTER.

See the application's documentation for information about commands that refresh the screen.

8. Your system has a SuperVGA adapter, and you experience display problems.

If you do not update your display driver to a Windows 3.1 driver, Windows might not work properly when running in 386 enhanced mode. Update your Windows system configuration to use the Windows 3.1 SuperVGA driver if you have a video card and multifrequency monitor with 800x600 16-color resolution but are currently using a third-party Super driver or one of these Windows 3.0 Supplemental Drivers:

·   ATI Mode 54h (800x600 16-color) version 2.00
·   CHIPS Super VGA 82C451 (800x600 16-color)
·   CHIPS Super VGA 82C452 (800x600 16-color)
·   Paradise VGA (800x600 16-color)

The Windows 3.1 SuperVGA driver also contains new features and performance enhancements, including the ability to obtain over 50 percent more screen space when running Windows.

9. Your system has a TIGA or DGIS display adapter, and you want improved performance.

If you are using a Texas Instruments Graphics Architecture (TIGA) or Direct Graphics Interface Standard (DGIS) display adapter, use the Windows 3.1 drivers for this display. Windows provides two versions of the TIGA display driver: "TIGA (Small Fonts)" and "TIGA (Large Fonts)."

We recommend that you use the Large Fonts version if you use the display at resolutions of 1024x768 and above. If you are using a 16-inch or larger monitor and want to fit more information on screen, use the Small Fonts version. To change the resolution, you must quit Windows and use the TIGAMODE utility or another resolution utility supplied with your display adapter. Unless you want to use a different version of the TIGA driver (Small Font or Large Font) to change font sizes, you don't have to run Windows Setup after changing your TIGA screen resolution.

If you use a TIGA-based display adapter and run Windows in 386 enhanced mode, you can increase the amount of conventional memory available to non-Windows applications by loading the TIGACD driver from WINSTART.BAT instead of from the AUTOEXEC.BAT file. This ensures that the TIGACD driver will load only when Windows is running and will not occupy conventional memory space in 386 enhanced mode.

We do not recommend loading the TIGACD driver from WINSTART.BAT if you run TIGA applications outside of the Windows environment. Also, to run Windows in standard mode on a TIGA display adapter, you must load the TIGACD driver into memory before starting Windows.

10. You experience specific display problems with the PS/2, Toshiba plasma display, Video Seven 256-color adapter, or other hardware.

See the README.WRI file in the WINDOWS directory. The README file contains up-to-date information about problems with display adapters for specific hardware.

Troubleshooting MS-DOS Configuration Problems

This section describes some problems related to the upper memory area and other MS-DOS issues. For information about problems with expanded memory, see "Troubleshooting EMS Memory" later in this section.

1. Your device drivers or programs won't load in the high memory area.

You should be able to run programs in the upper memory area if all the following conditions are met:

·   The computer has an 80386 or higher processor.

·   The computer has at least 350K of extended memory available.

·   CONFIG.SYS contains a **device** command for HIMEM.SYS before any other **device** or **devicehigh** commands.

·   CONFIG.SYS contains either a **dos=umb** or **dos=high,umb** command.

·   CONFIG.SYS contains a **device** command for EMM386.EXE, which must include either the **noems** switch or the **ram** switch. This command must appear after the **device** command for HIMEM.SYS but before any **devicehigh** commands.

·   CONFIG.SYS contains a **devicehigh** command for each device driver you want to load into the UMBs.

·   AUTOEXEC.BAT contains a **loadhigh** command for each memory-resident program (TSR) you want to run in the UMBs.

If you have set up the system to run drivers and programs in the UMBs, but when you use the **mem /c** command, nothing appears in the upper memory section of the **mem** command output, you might be loading EMM386 with the **ram** switch in CONFIG.SYS, but your system might not have enough space in the UMBs to load programs or drivers.

To adjust EMM386 to provide additional space in the UMBs, follow the instructions in "Optimizing Use of the UMBs" in Chapter 6, "Tips for Configuring Windows 3.1." See also the *Microsoft MS-DOS Getting Started* booklet, p. 37.

2. **Your computer stops only when you load a specific driver or memory-resident program (TSR) with the devicehigh or loadhigh command.**

You might not be able to load that driver or TSR into a UMB. MS-DOS 5.0 device drivers and memory-resident programs should load into the UMBs without any problems (except HIMEM, EMM386, and SMARTDrive must be loaded in conventional memory).

Make sure the device drivers work by replacing the **devicehigh** command with the **device** command, so the device is loaded into conventional memory. You might also have to remove a size switch. If loading the device driver with the **devicehigh** command was the problem, your computer will now work properly.

3. **You get a cannot-find-file error message, and you are running the
    MS-DOS APPEND utility.**

When Windows opens a file such as WINWORD.EXE, it records the complete drive and path of this file, so that the file can be reopened later without regard to the current drive and directory. For example, Windows might record a path as C:\WINWORD\WINWORD.EXE.

The MS-DOS APPEND utility prevents Windows from reliably determining the proper path of files. For example, if C:\EXCEL is the current drive and directory when a file is opened, and D:\WINWORD is on the APPEND search path, APPEND might cause Windows to mistakenly build the filename as C:\EXCEL\WINWORD.EXE.

Figure 13.2

Example of UMBs in
the upper memory area

For a VGA or V7VGA
display adapter,
a network card at
D000-D7FF, and an
EMS 3.2 page frame
at E000-EFFF

Later, when Windows tries to open this file again, an error occurs because the file is not in the drive and directory indicated. This error results in the message:

Change Disk
Cannot find WINWORD.EXE, Please insert in drive A:

Windows Setup will warn you if APPEND is found in your configuration and ask you to remove it before Setup proceeds. But Windows will not warn you about its presence if you install APPEND after Setup. APPEND is usually found in AUTOEXEC.BAT, and it should be removed or commented out.

Troubleshooting EMS Memory Problems

This section discusses solutions for several problems that can occur if you use EMM386.EXE with Windows 3.1.

For more information about EMM386 and its startup parameters, see pages 605–609 of the *Microsoft MS-DOS User's Guide and Reference.* For more information about how to use program information files (PIFs) to provide expanded memory to non-Windows applications, see Chapter 7, "Non-Windows Applications," in the *Windows User's Guide.*

Tip   To see a list of the switches for controlling EMM386.EXE after it has been loaded, type **emm386 /?** at the command prompt.

1. **You get an invalid-path-for-EMM386 error message when you start Windows in 386 enhanced mode.**

   If this happens, add the **/y=path** switch to the command line that loads EMM386 in CONFIG.SYS. This switch specifies the location of EMM386 when you start Windows. For example, if EMM386.EXE is in the C:\DOS directory, the command in CONFIG.SYS would be:

   device=emm386.exe /y=c:\dos\emm386.exe

Make sure you specified the correct directory in CONFIG.SYS for the HIMEM.SYS and EMM386.EXE files. Also, make sure HIMEM and EMM386 are functioning properly. To do this, make a test boot disk with a CONFIG.SYS file that contains only the **device** commands for loading HIMEM and EMM386. The command that loads EMM386 should be:

```
device=c:\dos\emm386.exe noems x=a000-efff
```

And include a test AUTOEXEC.BAT file that contains the following:

```
path=c:\dos
prompt $p$g
set TEMP=C:\
```

If the computer stopped when you used the test disk to boot the system, you might have a problem with HIMEM or the hardware.

If the computer functions properly when you boot with this test disk, HIMEM works with EMM386.

2. Some other programs conflict with EMM386.

If you use a third-party disk-caching program other than SMARTDrive, it might not be working properly with EMM386. Remove that program temporarily and put a command in your AUTOEXEC.BAT file to load SMARTDRV.EXE. Contact the manufacturer of the third-party disk-caching program for more information about using it with EMM386.

3. Another program uses the same UMB space as EMM386.

If the computer stops, and none of the preceding solutions have worked, EMM386 may be using the same memory addresses as another program or card. For example, this could happen when you install a network card or a card for a device.

If you suspect a memory-resident program (TSR) is causing the problem, edit the AUTOEXEC.BAT file to remove the **loadhigh** command so the program loads into conventional memory. If loading the program with the **loadhigh** command was the problem, the computer should now work properly.

If your system has a card or drive that might conflict with EMM386, check its documentation to see what address space the card or driver uses. If the conflict occurs over a network, check with the network administrator to find which memory addresses are being used. Then use the **x=** switch to prevent EMM386 from using those addresses. For example, if your system's network card uses the D800h-DFFFh memory addresses, the command line that loads EMM386 in CONFIG.SYS should look like this:

```
device=c:\dos\emm386.exe noems x=d800-dfff
```

You can experiment with the command that loads EMM386 to determine which memory addresses are being used by the other program or device, as described in "Optimizing Use of the UMBS" in Chapter 5, "Windows 3.1 and Memory Management." For details about the command-line switches that can be used with EMM386, see Chapter 14, "Optimizing Windows," in the *Windows User's Guide.*

4. Microsoft Windows 3.1 does not provide expanded memory after EMM386 is installed.

The symptoms of this problem vary. Common symptoms include:

· When you start a non-Windows application, the application displays an out-of-memory message and stops running, or it behaves erratically and displays out-of-memory messages when you try to perform certain tasks.

· Windows 3.1 stops when you start some non-Windows applications, but you have no problem starting other non-Windows applications.

To solve the problem, change the **device** command line for EMM386 so that it includes the **ram** switch instead of the **noems** switch. If the application runs normally after you restart the computer, the **noems** switch caused the problem.

After you add the **ram** switch, other programs or drivers might not load into UMBS. (Use the **mem /c** command to find out.) If so, follow the instructions in "Adjusting EMM386 to Provide More UMBS" in Chapter 6, "Tips for Configuring Windows 3.1."

If your programs and device drivers still do not load into UMBs, the system might not have enough UMBs available to run those programs. See the computer's hardware documentation to find out which addresses are used.

<table>
<tr><td>

Flowchart 5.9
Cannot Run Windows
in Standard Mode

</td><td>

· The machine has an 80286 or higher processor.
· There is at least 256K conventional memory free.
· HIMEM.SYS or another XMS driver is installed.
· There is at least 192K extended memory free.

</td></tr>
</table>

Troubleshooting Windows Running in Standard Mode

If you have successfully installed Windows, then using the **win /s** switch should force Windows to start in standard mode, provided that:

If you cannot start Windows in standard mode, the problem is usually related to the XMS driver or to not having enough extended memory.

1. **RAMDrive or other resident software may be using extended memory and preventing Windows from accessing that memory.**

Decrease the size of the RAM drive or do not load the memory-resident software.

2. **The XMS driver is out of date or incompatible with Windows 3.1.**

Replace the driver with the version of HIMEM.SYS in the Windows package.

3. **HIMEM.SYS may be incorrectly identifying the machine type.**

HIMEM uses an algorithm to detect the machine type, then uses the appropriate routine to access extended memory. When HIMEM loads at boot time, it reports which A20 handler is installed. A20 is a technical reference to the line on the processor that allows access to extended memory. During boot time, the display should read:

Installed A20 handler number x.

The value for *x* identifies the routine used to access the A20 line.

Certain machine types cause HIMEM to mistakenly identify which A20 handler to use. To force HIMEM to use the correct driver, you must use the **/m** switch in the **device=himem.sys** line in CONFIG.SYS, where **m** identifies the type of computer as either the number or name from the following table.

Number	Name	Computer type
1 compatible	at	IBM AT or 100%
2	ps2	IBM PS/2
3 BIOS	ptlcascade	Phoenix Cascade
4 A+)	hpvectra	HP Vectra (A and
5	att6300plus	AT&T 6300 Plus
6	acer1100	Acer 1100
7 1200XE	toshiba	Toshiba 1600 and
8	wyse	Wyse 12.5 Mhz 286

For example, either of the following lines can be used to tell HIMEM to use the IBM AT method of accessing extended memory:

device=c:\dos\himem.sys /m:at   **or**   device=c:\dos\himem.sys /m:1

The table above lists values for some of the most popular hardware. Contact your hardware manufacturer for specific values if your system does not match values in the table.

For more details about using HIMEM.SYS with Windows 3.1, see Chapter 14, "Optimizing Windows," in the *Windows User's Guide.*

If Windows runs only in standard mode, this indicates that there may be a conflict in the upper Memory Block (UMB). This have conflict in physical Windows memory, your might network card, an extended video board, or some other device.

Make sure your computer hardware and reduce physical extended memory slider up to the upper Memory Block (UMB) has conflict physical when Windows memory, you detect a network card, an your hardware board, you can determine how so an other device the system.

4. Your system doesn't have enough extended memory.

To make more extended memory available:

· If CONFIG.SYS includes a **device** command for RAMdrive or EMM386, these programs could be using too much extended memory. If so, reduce the amount of memory specified by editing the **device** command for each driver. For information about editing **device** commands in CONFIG.SYS, see pages 283‑287 of the *Microsoft MS-DOS User's Guide and Reference.*

· Make sure there are no commands in CONFIG.SYS and AUTOEXEC.BAT to start unnecessary programs that use extended memory.

Troubleshooting Windows Running in 386 Enhanced Mode

If you have successfully installed Windows, Windows will start automatically in 386 enhanced mode provided that:

· The machine has an 80386 or higher processor.
· There is 256K of free conventional memory.
· An XMS driver such as HIMEM.SYS is already loaded.
· There is 1024K of free extended memory.

This section describes solutions to problems you might encounter when trying to run Windows in 386 enhanced mode.

1. You can run Windows in standard mode, but not in 386 enhanced mode.

W

To determine if there is a UMB conflict, try running Windows with the **/d:x** switch, which excludes all of the upper memory area (similar to setting **emmexclude=A000-FFFF** in the **[386enh]** section of SYSTEM.INI).

If Windows runs when you use this switch, there was a conflict with some device in the UMBs. To solve the problem, you need to identify the boards or devices in the machine. Also, use MSD.EXE to see if either shadow ROM or shadow RAM is enabled in the E000 segment. After you determine which memory addresses the devices use, add an entry for the **emmexclude=** in SYSTEM.INI to avoid accessing that address range. For example, many high-resolution video boards use the address range above C000 to C7FF. In that case, the correct entry in SYSTEM.INI would be **emmexclude=C000-C7FF**.

Limiting the excluded range to the specific address range is important because Windows uses that memory address range to place the API translation buffers and page frame. If Windows cannot locate enough free memory in the UMBs, it will allocate conventional memory for the translation buffers, taking memory away from non-Windows applications that you want to run. For more information, see "Placing Translation Buffers in the Upper Memory Area" in Chapter 5, "Windows 3.1 and Memory Management."

Note   You can run MSD.EXE or use the MS-DOS **mem /p** command to see what drivers might be using the UMBs and their respective addresses. Also, you can type **win /?** at the command prompt to see a list of switches that you can use to run Windows 3.1.

2. **The system crashes when you run Windows in 386 enhanced mode.**

When Windows starts in 386 enhanced mode, it installs the API translation buffers in any free UMB area it finds. Windows might also compete for memory with adapter cards that don't sign in at the memory area they occupy. The standard is for adapters to leave a ROM signature 0xAA55 followed by the size of the area that is being used, but not all cards do this. If Windows tries to use an area that appears to be free but that is also being used by an adapter card, the system might crash.

With 386 loadhigh drivers such as QEMM and 386MAX, there can be additional contention problems within the UMBs, because the loadhigh drivers might already be using that area. With conventional memory at a premium on most machines, you must consider how much memory to allocate to the loadhigh drivers and which areas to leave open for the translation buffers.

To keep the translation buffers from competing for memory, add the entry **emmexclude=A000-EFFF** to the **[386enh]** section of SYSTEM.INI. This entry tells Windows not to position the translation buffers in the UMBs. Windows will allocate the buffers in conventional memory.

If Windows 386 enhanced mode crashed before implementing this switch, and now it doesn't crash, the next step is to isolate the specific area causing Windows to crash:

·   If your system has a nonstandard video board, you can begin by excluding the range C600-C800, which some display adapters use without warning. If your system uses shadow RAM or has copied either system BIOS or video BIOS into the UMBs, then you should turn the feature off, or exclude the area that is being used (usually **emmexclude=E000-EFFF**).

·   If the display adapter supports extended modes (like SuperVGA), also try turning off the extended mode support, which is typically a nonmaskable interrupt (NMI). For details, see item #4 in "Troubleshooting Display Problems" earlier in this chapter.

Windows 386 enhanced mode, without SMARTDrive loaded, supports only standard ST506 and ESDI controllers. To use 386 enhanced mode with SCSI or other nonstandard devices, you must load SMARTDrive. When Windows detects SMARTDrive, it directs all disk access requests through SMARTDrive, so that SMARTDrive can function effectively as a double-buffering hard disk device driver, which eliminates most compatibility problems.

3. You experience hard disk problems when running Windows in 386 enhanced mode.

But even if SMARTDrive is loaded, in some configurations you might experience hard disk access errors, such as the following:

```
Cannot Read from Drive C:
Cannot Write to Drive C:
Drive C: Not Ready Error
```

If this happens, add the entry **VirtualHDirq=off** in the **[386enh]** section of SYSTEM.INI. Also, you must have SMARTDrive installed without the **/B-** switch. For example, add the **VirtualHDirq=off** entry to SYSTEM.INI if you use a Plus Hardcard or a SCSI hard disk drive using DMA.

This is the highest level of hard disk compatibility that can be achieved under Windows 3.1. If you still experience hard disk problems, contact the disk manufacturer for further assistance.

4. You get an internal-stack-overflow message while running Windows in 386 enhanced mode.

Stacks are temporary data structures that MS-DOS and applications use for processing hardware events. If you get a stack-overflow error:

·   And if your system uses MS-DOS 3.2, include this line in CONFIG.SYS:

```
stacks=9,192
```

·   And if your system uses MS-DOS 3.3 or above, include this line in CONFIG.SYS:

```
stacks=9,256
```

5. **Typing slows down when you run more than one application, but your system seems to have plenty of memory.**

The timeslice for multitasking is taking processing time away from the foreground application. You can increase the foreground priority in the 386 Enhanced dialog box in Control Panel or in the application's PIF. Better still, you can increase the priority of the foreground application only when it receives a keystroke by adding the entry **KeyBoostTime=.005** (or some larger increment) in the **[386enh]** section of SYSTEM.INI.

Troubleshooting for Non-Windows Applications

This section describes some solutions to problems that can occur while running non-Windows applications. See also the section "Troubleshooting Windows Configuration" in this chapter, because it discusses many problems that also relate to non-Windows applications.

1. **You receive an "Unexpected MS-DOS Error #11" message.**

If you receive this error message when you try to run a non-Windows application from Windows 3.1, it is a Kernel internal error that indicates Windows has tried to execute a file that has an invalid format.

If this happens in standard mode, then either the WINOLDAP.MOD file or the 286 grabber is corrupted; if in 386 enhanced mode, then either the 386 grabber or WINOA386.MOD file is corrupted.

<table>
<tr><td>

Flowchart 1.7
Expanding Files from
the Windows Disks

</td><td>

To solve this problem, copy the grabber file plus WINOLDAP.MOD or WINOA386.MOD file from the source disks, and expand these files, using EXPAND.EXE (which can be found on your Windows 3.1 installation disks or in your MS-DOS directory).

</td></tr>
</table>

2. **You experience problems running non-Windows applications in standard mode.**

· If the application doesn't run in the startup directory specified in the application's PIF, check the Working Directory setting for the program item in Program Manager. This setting overrides PIF settings.

· If data is garbled or lost, check the Directly Modifies options in PIF Editor to ensure that the application is controlling the keyboard and any COM ports it uses. Also, make sure No Save Screen is not checked.

· If you can't paste screen captures, make sure No Screen Exchange is not checked in PIF Editor.

· If you can't switch back to Windows, make sure Prevent Program Switch isn't checked, and that Keyboard is not checked in the Directly Modifies options in PIF Editor.

3. You experience problems running non-Windows applications in 386 enhanced mode.

·   If your system runs out of memory when you are running a high-resolution graphics application, check High Graphics in the PIF's Video Memory option and check Retain Video Memory.

    Conversely, to free as much memory as possible if your system has a Hercules or CGA adapter, check Low Graphics and make sure Retain Video Memory is not checked.

·   If the mouse doesn't work when you run the application in full-screen mode, make sure that an MS-DOS mouse driver is installed. See also Flowchart 2.8 for specific troubleshooting procedures.

    Also, try choosing Full Screen option if your system is running out of memory.

·   If the application doesn't display properly, make sure the Monitor Ports options are checked. If text is garbled or the cursor is in the wrong place, make sure Emulate Text Mode is not checked.

·   If you can't paste into a non-Windows application, make sure Allow Fast Paste is not checked in the PIF Advanced Options dialog box.

4. You experience performance problems when running some applications at the same time, but each application runs okay alone.

You might have a device driver or memory-resident application that requires expanded memory or extended memory, but EMS or XMS memory is locked in the PIF for another non-Windows application. Examine the PIFs of all applications that run simultaneously, and clear the EMS Memory Locked and XMS Memory Locked options if you are trying to run applications simultaneously.

5. Lotus 1-2-3 version 3.1 won't start.

If Lotus 1-2-3 no longer runs properly, or it prevents you from opening large files, there could be several causes:

·   Your system might not have enough XMS memory available. You need at least 384K. For information about how to make more extended memory available, see "Troubleshooting Windows Running in Standard Mode" earlier in this chapter.

·   The PIF for Lotus 1-2-3 has been modified so that it no longer specifies enough extended memory. Specify that 384K of XMS memory is needed in the PIF. For more information, see Chapter 8, "PIFs and PIF Editor."

·   EMM386 isn't set up to work with Lotus 1-2-3. For example, you might have loaded EMM386 with the **noems** switch.

Because Lotus 1-2-3 version 3.1 and EMM386 both run in protected mode, they need to communicate to avoid conflicts. Lotus and EMM386 can use the DPMI protocol to communicate. DPMI assumes that a page of expanded memory exists. A page is not available if EMM386 uses the **noems** switch. You must change the CONFIG.SYS setting. For example:

```
device=c:\dos\emm386.exe ram p0=d000
```

The **ram** switch gives programs access to both expanded memory and the UMBs. The **p0=d000** setting specifies a page for EMS.

When you restart the computer after making this change, you'll be warned that a LIM 3.2-compatible page frame does not exist. The standard size for a page frame is 64K, but since Lotus 1-2-3 is using XMS memory (not EMS), it only needs a 16K page. This provides more space for programs in UMBs.

6. You experience problems running a specific application or using non-Windows 3270 applications.

Check the README.WRI file for up-to-date notes on specific applications.

7. You receive error messages such as general protection faults, application execution errors, or system integrity violations.

See Flowcharts 5.3, 5.4, and 5.5 for specific troubleshooting procedures.

<table>
<tr><td>*Flowchart Series 3*
Font Problems</td></tr>
</table>

Some display drivers that cache fonts in unused video memory have problems displaying TrueType fonts. If you experience problems, contact your display adapter manufacturer for updated display drivers.

Troubleshooting Fonts

1. **You experience problems with your system when you choose TrueType fonts.**

2. **You use a third-party printer driver, and you cannot print TrueType fonts.**

Most printer drivers created for Windows 3.0 do not support TrueType fonts. Use one of the printer drivers in your Windows 3.1 package, or contact your vendor for an updated driver.

3. **You are using a font converter, and you experience system problems when you use TrueType fonts.**

Some font converters are not completely compatible with TrueType, causing problems in code segments while running. If you experience system crashes or other problems, do not use that font converter. Contact the manufacturer for an updated version.

4. **You have a minimum configuration for running Windows, and you experience problems when you use TrueType fonts.**

You might have problems if you attempt to use TrueType on a system with less than 2MB of memory. If you have such a system, to avoid low-memory situations, choose vector fonts or bitmap fonts, and avoid TrueType.

5. **You use Bitstream FaceLift and have a high-resolution display, and you experience problems when you use TrueType fonts.**

FaceLift is incompatible with some Windows 3.1 display drivers. Contact Bitstream for software updates, or disable FaceLift when you want to use TrueType. Or use your old Windows 3.0 display drivers with FaceLift.

<table>
<tr><td>*Flowchart Series 4
Printing Problems*</td><td>Many of the printing problems reported to Microsoft Product Support Services are actually hardware or configuration problems not related to Windows. This section provides tips for general troubleshooting for printing, then provides solutions to some specific problems related to printing in Windows.</td></tr>
</table>

6. You have a type manager installed in your system, but you want to remove it.

See Flowcharts 3.2, 3.3, and 3.4 for instructions on disabling Adobe Type Manager, Bitstream FaceLift, and HP Intellifont.

Troubleshooting Printing

A Strategy for Troubleshooting Printing

If you have problems printing, begin with these steps to isolate a minimal number of variables. By eliminating the variables, you can solve the problem.

· **Read the PRINTERS.WRI file in the WINDOWS directory.**

The PRINTERS file contains up-to-date information about printing from Windows with specific hardware.

· **Make sure you can print from MS-DOS.**

Copy a file to the printer port to make sure the communication path is working correctly. To do this, at the command prompt, type **dir > lpt***x* or **dir > com***x* (where *x* is the number for the port that the printer is connected to).

This method will not work for PostScript printers. To check a PostScript printer, copy TESTPS.TXT to the printer from your Windows SYSTEM subdirectory.

If you cannot print from MS-DOS outside of Windows, it's not a Windows printing problem. Contact your printer manufacturer or distributor.

·   **Check the printer's cable connections.**

Make sure the printer is turned on and that it is online. Check that it has paper and toner.

·   **Use a SET TEMP statement in AUTOEXEC.BAT.**

Make sure you include a **SET TEMP** statement in AUTOEXEC.BAT and that it points to an existing directory. For testing purposes, we recommend that you use the statement **SET TEMP=C:**. Verify that enough space is free on the hard disk for spooling temporary files while printing. If the TEMP environment variable points to a network drive, you must have create and write access to the target directory.

·   **Make sure you are using the correct printer driver for the printer.**

The current printer driver can be seen by choosing the Printers icon in Control Panel. If the highlighted printer name doesn't match the printer that you are using, then you need to install a printer driver that does match the printer, as described in Chapter 5, "Control Panel," in the *Windows User's Guide.*

·   **If you print to a COM port, you might need to configure the COM port with the MS-DOS Mode command or with Control Panel settings.**

See the MS-DOS *User's Guide* for information about the **mode** command. In Windows, choose the Ports icon in Control Panel to configure the COM port. Make sure that the printer is selected, and then try to print. If there is a program that redirects or reconfigures the printer at the MS-DOS level, you should print to LPT*x*.DOS (where *x* is the port number), which tells Windows to let the operating system handle the printing. For details, see "WIN.INI [Ports] Settings and the LPT*x*.DOS Method" in Chapter 10, "Printing."

·   **Check the communication settings for serial printers.**

<div style="border: 1px solid black; padding: 5px;">

Flowchart 2.2
Serial Port Problems

</div>

If you have a serial printer, make sure the communications settings are correct. The settings on the printer and the Windows 3.1 settings should be the same. In Windows, the communications settings are set in Control Panel. Almost all serial printers, including Hewlett-Packard plotters and most PostScript printers, use a setting of **9600 baud**, **no parity**, **8 bits**, **1 stop bit**, and **hardware handshaking**.
To make sure that the printer has the same settings as Windows, use the printer's interactive front panel or DIP switches.

Handshaking for PostScript printers can be set in the Options section of the Windows Printer Setup dialog box. The PostScript driver will send a short program to the printer telling it to switch to the desired handshaking mode.

· **Override direct printing for testing purposes.**

Check the decision tree shown in "Determining Print Method" in Chapter 10, "Printing." If the decision tree indicates that Windows is trying to print directly to a parallel port on the system, try overriding this with the LPT*x*.DOS method discussed in that chapter.

· **If you are printing on a network without a network driver, use the LPT*X*.DOS method.**

You must use LPT*x*.DOS if you are printing to a network-redirected port that is also present in hardware. For example, your system might have a physical LPT1 port in the machine and also have a virtual LPT1 on the network. Again, this is only necessary if your system is on a network and you are not using a Windows network driver.

Also, make sure you are using an up-to-date Windows network driver. For more information, see "Troubleshooting Networks" later in this chapter.

Tips for Specific Printing Problems

The following items suggest solutions to specific printing problems.

1. You get a cannot-print error message.

This error message can occur on a network or on a physical parallel port. If your system is on a network, make sure you are using the right Windows network driver. If you are not using a Windows network driver, and the network is not supported, make sure you use the LPT*x*.DOS method.

Windows 3.1 requires that the Centronics Paper Out signal be Off and that the Select In signal be On. If one of these conditions is not met, Windows gives a cannot-print error message when you try to print. The possible causes of such a problem include:

·   The printer is off line, out of paper, or jammed.
·   The printer has faulty cabling.
·   The printer uses an incompatible print-sharing device, switchbox, or buffer.

For testing purposes, remove all such devices and connect the printer directly to the computer's parallel port with a single cable. If the problem persists, try a different cable. If you use a switchbox to switch printers electronically, test printing with the switchbox removed. If you are printing over a network, print locally (directly connected to the machine) to see if the network is part of the problem.

Check the TEMP variable in your AUTOEXEC.BAT file. Make sure you haven't run out of disk space.

2. You get a printer error message in the middle of printing a document.

You can set the Windows printer time-outs for each individual printer in the Printers section of the Control Panel. The time-out options are Device Not Selected and Transmission Retry. The Device Not Selected option indicates how long Windows will wait for the printer to be online before it gives an error. The Transmission Retry option sets the time that the printer will stay busy before Windows gives an error.

Try increasing the Transmission Retry setting. The Transmission Retry time-out starts counting as each character is sent to the printer. If the time-out lapses before the printer is ready to accept another character, you'll get a printer error message.

3.   Your PostScript print jobs are incomplete or missing.

·   Check the communication settings and the cable.

·   Check that the printer has enough memory to handle the print job.

If the problem is intermittent, or if it only happens with a particular application, download the PostScript Error Handler to help debug the problem.

To get a PostScript error report:

1.   Choose the Printer icon in Control Panel, then choose the Options button in the Printer Setup dialog box.

2.   Choose the Advanced button and, in the Advanced Options dialog box, check the Print PostScript Error Information option. Specify any other options you want in the dialog box, then choose the OK button.

3.   Repeat the procedure that resulted in the problem.

If you see a PostScript error message, the problem is being caused by your application or by the degree of compatibility of your PostScript printer.

If you don't see a PostScript error message, recheck the other solutions discussed in the previous section.

If you suspect that the memory port addresses are conflicting, determine the I/O port addresses for the add-on boards in the system. Then select an address that does not conflict.

Troubleshooting Networks

Most network-related problems that occur in 386 enhanced mode are related to the system configuration. Conflicts with hardware occur in three areas:

· Interrupt conflicts with devices or drivers
· Memory port addresses (I/O addresses)
· Shared-memory addresses

You might also experience problems with specific network drivers.

Make sure you read the NETWORKS.WRI file in the WINDOWS directory for up-to-date information about running Windows on a network. Also, check the Network selection in the Windows Setup dialog box to be sure that the correct network option was selected during Windows installation.

1. You suspect interrupt conflicts with either device drivers or other hardware.

If you suspect interrupt conflicts, refer to the list of IRQs in Troubleshooting Flowchart 2.7. You can run MSD.EXE from the command prompt to see what devices or boards are using specific IRQS.

2. You suspect I/O port address conflicts.

Typical I/O port addresses allowed on network adapters do not conflict with the machine. However, the add-on boards often conflict. On some machines, the CMOS Setup program identifies the I/O ports that the communications devices and other standard devices are using.

3. You suspect shared-memory address conflicts.

The shared-memory addresses are located in the UMBs and can cause subtle problems when video cards are in high-graphics mode or when the network card is being accessed.

> *Flowcharts 5.3-5.5*
> *GP Faults*
> *and Other Errors*

A General Protection fault (GP fault) occurs when a Windows application writes to a memory space where it doesn't have access. This corrupts any other code that already occupies that memory space. In Windows 3.0, after a GP fault happened, sometimes the memory was so corrupted that even applications that didn't cause the problem could trigger a GP fault message; the system remained unstable so that you had to exit Windows and reboot the system. Also, shadow RAM and shadow ROM can cause memory address conflicts, so you might want to investigate the CMOS Setup to check for shadowing options.

4. You suspect network driver problems.

First, review the NETWORKS.WRI file for any information about your specific network driver.

Some network shells and drivers cause problems. For example, Novell shells earlier than version 3.01e can cause problems, especially if you use the EMSNET3.COM, EMSNET4.COM, XMSNET3.COM, or XMSNET4.COM shell. These shells have exhibited random problems, but the most significant and reproducible problems concern printing.

· Replace your current NetWare shell with the NETX.COM provided with Windows 3.1. NETX.COM will run on any version of MS-DOS 3.0 or higher.

· If you send a job to the printer and get garbage, determine which shell is loaded. Closer inspection of the garbage printout might reveal that the print job started at address 0:0 and printed out the interrupt vector table, the MS-DOS environment, or other factors. These clues can help you find the source of the problem.

Troubleshooting GP Faults

W Windows 3.1 and Windows applications designed especially for Windows 3.1 are significantly more reliable. A new internal feature called Parameter Validation checks for invalid parameters.

If you do see a GP fault message while running Windows 3.1, the message will provide

specific information about which application caused the error and where the error occurred. You can probably continue running the application after a GP fault, so that you can save your work before exiting the application.

You can use Dr. Watson, a utility provided with Windows 3.1, to learn more about what is causing a GP fault. For details, see "Dr. Watson and GP Faults" later in this section.

W   You can also use the Windows 3.1 local reboot by pressing
                      CTRL+ALT+DEL if a Windows application or a non-Windows
                      application is hung or is not responding to the Windows command
                      to close. When you use local reboot, you will see an error message
                      with instructions for closing the application.

Tips for Troubleshooting GP Faults

This section describes a few reasons why a GP fault might occur.

**1. You are running an application that was designed for an
     earlier Windows version (2.x) under Windows 3.1.**

If an application was designed for Windows versions earlier than
3.0, it displays a dialog box when you try to start it, describing this
error. If the application has not been specifically designed to run
under Windows 3.0 or later versions, it will trigger a GP fault.

**2. You manually selected an incorrect machine or network
     during Windows installation, or Setup's auto-detection
     misidentified elements of your system.**

When you install Windows 3.1 on some machines and networks,
you can't use Setup's auto-detection as described in
"Troubleshooting Setup" earlier in this chapter. Instead, you have
to override the default and specifically make the correct selection,
or Windows will not operate properly. If you don't specifically
select these machines and networks, you might get a GP fault.

For details about system selections in Setup, see "Troubleshooting
MS-DOS Mode Setup" earlier in this chapter.

**3. Your CONFIG.SYS or AUTOEXEC.BAT files contain either
     incompatible terminate-and-stay-resident programs (TSRs)
     or unsupported network drivers.**

You can test your system for incompatible TSRs or unsupported
network drivers by temporarily removing them so that the system
is at a minimum operable configuration. If doing this solves the GP
fault problem, then you've begun to isolate the cause.

To find the specific cause, replace the lines for the TSRs and network drivers in CONFIG.SYS or AUTOEXEC.BAT one by one until the problem reappears. Then you'll know which one is causing the GP fault.

4. Your system has a page-mapping conflict when you run Windows in 386 enhanced mode.

Page-mapping conflicts only occur in Windows 386 enhanced mode. And this usually occurs because Windows doesn't see the page frame and so maps over it when you are using a third-party EMS manager instead of EMM386.EXE.

Test for a page-mapping conflict by running Windows with the **win /s** switch (standard mode) or the **win /3 /d:x** switch (excluding the upper memory area). If the problem doesn't happen, you might be experiencing a page-mapping conflict in the UMBs.

To isolate the problem, start by excluding the entire UMB from mapping with an **emmexclude=A000-EFFF** entry in the **[386enh]** section of SYSTEM.INI, then begin narrowing the range as described in "Troubleshooting Windows Running in 386 Enhanced Mode" earlier in this chapter.

If you have a Micro Channel (MCA) bus machine, such as an IBM PS/2, you might be able to determine the location of hardware adapters by booting with the machine's Reference Disk. If you have a standard ISA machine, consult the documentation for the adapters, or contact the manufacturer's technical support services to find out which memory locations they use.

5. Your system has an incorrect version of MS-DOS.

If your machine is not running the right version of MS-DOS, you might get GP faults. You should only use OEM versions of MS-DOS (such as Compaq MS-DOS or IBM PC-DOS) on OEM hardware platforms. For example, only use Compaq MS-DOS on Compaq machines.

To determine which version of MS-DOS to use, follow this rule:

·   If your machine's manufacturer has an OEM version of MS-DOS,
     use it.

·   If your machine's manufacturer doesn't have an OEM version
     of MS-DOS, use Microsoft MS-DOS and upgrade to version 5.0.

Dr. Watson is a Microsoft diagnostic tool that provides detailed information to Windows by opening the Control Panel and Windows Program Manager. The multimedia applications and others follow Dr. Watson. Drivers, a joystick file in Mapper, and Screen Saver. If these icons aren't there, you must install. Dr. Watson prompts you to install this about the circumstances under which the application error occurred. Sometimes Dr. Watson detects a fault that might not be fatal, and you are given the opportunity to ignore the fault or close the application.

Dr. Watson and GP Faults

When you choose the Ignore option after an application error is detected, Windows continues without performing the faulting instruction. You might be able to save your work in a new file at this point, but do not continue using the application for other actions. We recommend you exit Windows after saving your file, then restart Windows.

If you ignore a fault, the same dialog box might appear again. If choosing Ignore a few times doesn't allow you to continue operation, choose Close to terminate that application, because that is the only option available.

When you choose Close, the General Protection Fault dialog box appears, with an explanation and some data that may be useful in tracking the source of the error. Save this information. Contact your application vendor to discuss the source of the application error.

Troubleshooting Multimedia

This section provides some tips for troubleshooting the multimedia accessories.

1. Your multimedia features don't work.

<table>
<tr><td>

Flowchart 6.5
Sound

</td></tr>
</table>

·   Make sure you have the speakers plugged into the correct port. With some configurations, it's easy to confuse the microphone port with the speaker port.

2. **Your application won't play audio.**

·   Make sure that speakers are getting the power they need to operate. Some speakers require an external power source or batteries.

·   Check the volume setting for your PC audio hardware. You might have it turned all the way down.

·   Choose the Drivers setting in the Control Panel to make sure you have the correct audio driver installed and that the settings are configured according to the hardware manufacturer's documentation.

3. **Audio is too loud or too soft.**

If you can hear audio, but it's too loud or too soft, check the volume control on your PC hardware and make any necessary adjustments. Also check the batteries in your speakers to see if they need to be replaced.

4. **You can't hear audio when running a non-Windows application that supports audio.**

Several non-Windows applications support audio. If you try to run one of these applications in 386 enhanced mode, the following message might appear: "This application will not be able to use audio." This is because Windows 386 enhanced mode takes over the audio hardware and won't relinquish control to a non-Windows application. You can run the application with audio in two ways:

·   Exit Windows and run the application from MS-DOS.

·   Exit Windows, and restart Windows in standard mode by typing **win /s** at the command prompt. This will let you run the non-Windows application from Windows with audio intact.

<table>
<tr><td>

Flowchart 2.4
Cannot Access
CD-ROM

</td><td>

· If you have an external drive, make sure the cable is securely attached and connected to the correct port. Also, some drives require an external terminator. Make sure this is installed if needed. See your CD-ROM drive documentation for details.

</td></tr>
</table>

5. Your PC doesn't recognize the CD-ROM drive.

· Make sure the MSCDEX CD-ROM driver is installed. You should have installed this at the same time as you set up your CD-ROM drive. Contact your CD-ROM drive manufacturer to obtain this software.

· If you have installed MSCDEX correctly, check the PATH statement in your AUTOEXEC.BAT file to make sure the directory that holds the MSCDEX software is in the path.

6. Your CD drive can't read the CD disc correctly.

· Make sure you place the disc in its drive caddy before inserting it into the drive.

· Make sure you insert the disc with its label side up.

· If you upgraded your PC with an MPC upgrade kit, make sure you installed and configured the hardware according to the manufacturer's directions.

· Make sure to use the correct kind of disc. CD-ROM discs contain information and multimedia applications; CD audio discs contain music. You can't use File Manager or any other MS-DOS or Windows file commands on an audio disc.

· Even though discs are quite durable, they are plastic and can become damaged. Excessive heat can warp or even melt a disc. Scratches and fingerprints on the surface can cause problems. Clean a disc by wiping with a soft cloth from the center of the disc outward in a straight line. Do not use alcohol-based cleaning solutions.

7. Music Box doesn't play correctly.

If Music Box won't play a disc or plays very slowly, check the following:

<table>
<tr><td>

Flowchart 6.6
Sound Recorder

</td><td>

·   Make sure you have a disc in the drive before starting Music Box. Make sure you place the disc in its correct drive caddy before inserting it into the drive.

·   Make sure you're using the right kind of disc. Music Box can't play a disc that doesn't have audio.

·   Make sure you're using the most current version of the CD-ROM driver software (MSCDEX). If you're using an older version, this can cause Music Box to play too slowly. Contact your CD-ROM drive manufacturer to obtain the latest version of MSCDEX.

</td></tr>
</table>

8. Sound Recorder doesn't record.

·   Make sure you speak clearly and distinctly into the microphone.

·   Make sure your PC has enough disk space to hold the recorded file.

·   Make sure the output volume level of your audio hardware is set correctly. If you set it too low, you can see the audio recording, but you won't be able to hear it when you play it back.

<table>
<tr><td>

Flowchart 6.2
Media Player

</td><td>

· Make sure the correct MIDI driver is installed. Choose the Drivers setting in the Control Panel to see whether you have a MIDI driver set up and ready for use.

</td></tr>
</table>

9. The Media Player won't play MIDI files.

· Make sure you set Media Player to play MIDI files through the Device menu.

· Make sure you have the right MIDI mapping setup. If you added MIDI hardware, check the MIDI Mapper settings in Control Panel.

10. The Media Player won't play animation.

· Make sure you set Media Player to play animation files through the Device menu.

· Make sure the animation driver is installed. Choose the Drivers setting in Control Panel to see whether you have the Microsoft MCI Driver for MMP set up and ready for use.

11. The Media Player won't play audio files.

· Make sure the correct audio driver is installed. Choose the Drivers setting in Control Panel to see whether you have the correct audio driver set up and ready for use.

· Make sure you set Media Player to play audio files through the Device menu.

· Make sure the file you want to play is a .WAV file.