

## Troubleshoot Windows 98 startup problems

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Anyone who has ever supported Windows 98 in a large-scale enterprise can probably tell you that there are a million different things that can prevent Windows from booting correctly. Fortunately, there are some relatively easy techniques you can use to diagnose and repair stubborn boot problems. In this article, I'll share some of these techniques with you.

### Windows won't load at all

If Windows doesn't load, the problem is usually related to hard disk corruption. For example, the master boot record could have been corrupted, destroyed, or overwritten by a virus. It's also possible that a critical Windows system file is missing or corrupt.

This particular type of error can either be really easy to fix, or almost impossible, depending on the extent of the damage. The first thing I recommend you do is create a boot disk that you can use to repair the error. To do so, go to another machine that's running an identical version of Windows 98. The identical version part is important. If the troubled machine is running Windows 98 SE, then you must use a machine that's also running Windows 98 SE to create the disk.

On the good machine, insert a blank, formatted diskette into the machine. Next, open a Command Prompt window and enter the following commands:

```
SYS A:
```

```
C:
```

```
CD\WINDOWS\SYSTEM\COMMAND
```

```
COPY FDISK.* A:
```

```
COPY FORMAT.* A:
```

```
COPY SYS.* A:
```

```
EXIT
```

There are other files, such as XCOPY32, that may also be helpful should you get into a difficult repair, but these particular files should get the job done. At this point, write protect the disk to prevent any viruses that might exist on the failing machine from infecting the disk. Now, boot the failing machine from the disk that you've created. When the machine boots to the command prompt, enter the following commands:

```
FDISK /MBR
```

```
SYS C:
```

These two commands are designed to make the machine bootable, without overwriting anything important. The FDISK /MBR command fixes the machine's master boot record. The SYS C: command reinstalls the COMMAND.COM file and the hidden IO.SYS and MSDOS.SYS files. You should now be able to boot the

failing PC without the repair disk.

If the PC still doesn't boot, you'll may end up reinstalling Windows. However, keep in mind that there are a couple of things you should do before attempting a reinstallation. First, boot the machine from the repair disk again, and use the DIR command to examine the machine's directory structure. Check for any obvious signs of corruption, such as scrambled file names or an over abundance of .CHK files.

If you determine that the hard disk is severely corrupted, then you probably don't want to reload Windows just yet. Instead, you need to either reformat the hard disk or work on fixing the corruption. I recently wrote an article for TechProGuild on creating a [Windows 98 emergency repair disk](#) that contains more utilities you can use to fix the problems at hand. The disk described in that article also provides you with access to your CD-ROM drive from the command prompt. This allows you to reinstall Windows from the CD and to access any CD-ROM based utilities that you may require.

### Safe Mode

If your system is suffering from a Windows Protection Error or a General Protection Fault, the next step of the repair process is to attempt to boot the machine into Safe Mode. You can do so by repeatedly pressing the F8 key during the earliest phases of the Windows 98 boot process. Eventually, you should see a boot menu, and Safe Mode will be one of the choices.

When Windows boots into Safe Mode, it's running at minimal capacity. Most of the system's device drivers aren't loaded, and neither are any of your startup applications. Should Windows actually boot into Safe Mode, then you're well on your way to fixing the problem. If Windows won't boot into Safe Mode, you'll usually have to reinstall Windows to fix the problem.

### Windows Protection Errors

A Windows Protection Error is an error that occurs during boot up. Windows will begin loading normally and then stop abruptly, displaying the Windows Protection Error message. Normally, this error is caused by either a PCI device conflict a bad device driver. A virus corrupting a critical Windows system file can also cause the error. When Windows generates Windows Protection Errors, the system will almost always boot in Safe Mode.

The first thing that I recommend doing to fix the problem is to scan for viruses. I recommend using [ViRobot Expert](#) from [Hauri](#). This antivirus program will not only run in Safe Mode, but it can also repair many of the most destructive viruses. Most of the other antivirus programs on the market simply quarantine infected files rather than trying to repair the damage. According to my sources, the program will be available in the United States as early as February 2003.

### Checking for drivers

Assuming that a virus doesn't infect the system, then a corrupt or invalid device driver is probably causing your Windows Protection Error. This means that you have to figure out which driver (or drivers) is causing the problem. This tends to be a long and tedious process.

To do so, first check your CONFIG.SYS and AUTOEXEC.BAT files for any real mode drivers that the system might be loading. Use your text editor to REM out any real mode drivers that you find. Then open the Control Panel and double click the System icon. When the System Properties sheet opens, locate the Device Manager. Go through the Device Manager and make note of any hardware devices that are present on the system. You should then use another PC to download the latest drivers for each device from the Internet. You'll want to get drivers for things like network cards, video cards, and sound cards. Don't worry about components that always use a standard Windows 98 driver, such your system board, hard drive, or CD-ROM drive.

When you have all of the necessary drivers, go back to the Control Panel and double click the System icon to display the System Properties sheet. At this point, select the Device Manager tab. Click the plus sign next to

each device category to reveal the specific hardware that's installed in your system. For each device on your list, expand the device category, select the individual hardware component, and click the Remove button. This will uninstall the driver that's associated with each device. Be sure to uninstall the video card (listed under Display Adapters) last. After each device has been uninstalled, click the OK button to close the Device Manager. You may now reboot the computer. When the system reboots, Windows will detect each device in the computer one at a time. As each device is detected, supply the driver that you've downloaded for the device. Although Windows 98 doesn't always require it, I recommend rebooting after you install each driver. Doing so tends to prevent device conflicts. Once all of the new device drivers have been loaded, you may have to manually reconfigure some settings such as your network connection. This somewhat tedious process, however, should fix your Windows Protection Error.

#### General Protection Faults and illegal action errors

Finally, General Protection Faults (GPFs) and illegal action errors are usually caused when a program tries to use an illegal memory address. Keep in mind that the word "program" doesn't necessarily refer to an application, such as Microsoft Word. Instead, these errors can be caused by any segment of code, even at the system or device driver level.

The address that the program tries to access may be illegal for any number of reasons. For example, another program may be using it already. Other causes are that the memory address is flagged as read only or the address may not exist at all. Whatever the cause, the important part is fixing it. There are countless things that can cause system errors.

If you're experiencing GPF or illegal action errors, I recommend beginning the troubleshooting process by following the instructions found in the section above on dealing with Windows Protection Errors. Many of the same types of events that trigger Windows Protection Errors can also trigger GPFs. The main difference is that a GPF is a less severe error. You can always consult [Microsoft's Support Web site](#) for more details specific to your GPF error.

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