

AdobeSM Customer Services

Maximizing Performance

This technical note describes tips for improving performance in Adobe Photoshop, both when setting up your system and when working on images in the program. It also provides explanations and solutions for out-of-memory error messages you may receive while working with Photoshop.

Most users find their productivity increases greatly as they become more familiar with the Adobe Photoshop program. It is strongly recommended that you complete the *Adobe Photoshop Tutorial* and experiment with the program to try out different functions on your own. For more information on improving productivity, also see the *Adobe Photoshop Getting Started* booklet and the *Adobe Photoshop User Guide*.

GENERAL TIPS

Regardless of your system configuration, you can speed up Adobe Photoshop following these general tips.

For the Macintosh version:

- Set the system Disk Cache (in the Memory Control Panel) to its smallest possible setting. If you are using System 7.0 or higher, make sure that System 7.0's virtual memory does not conflict with Adobe Photoshop's virtual memory. To avoid conflict, either turn off System 7.0's virtual memory or assign its virtual memory and Adobe Photoshop's virtual memory to different disks using the Memory Control Panel.
- If you are running Adobe Photoshop under System 6.0.7, turn off the RAM cache in the General Control Panel.

For the Windows version:

- Adobe Photoshop operates best in 386 Enhanced mode. If you wish to use Photoshop in Standard mode, it is recommended that you either run Photoshop while no other applications are open or lower the memory allocation percentage for Adobe Photoshop.

For both versions:

- Deselect the Export Clipboard check box in the General Preferences dialog box if you do not need that function. You will need it only if you plan to copy and paste images into other applications.
- Set the interpolation method in the General Preferences dialog box to Bilinear to speed up computations when interpolation is required.



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- If working in CMYK mode, deselect Display Color Channels in Color in the General Preferences dialog box. Channels displayed in color in CMYK mode can be misleading because they may appear oversaturated.
 - Set your monitor to display in 256 colors instead of Millions of Colors. This will save you considerable time in screen redraws.

MAXIMIZING PERFORMANCE THROUGH SYSTEM CONFIGURATION

One of the most important factors influencing speed and performance in Adobe Photoshop is the system configuration. The following sections introduce some common hardware terminology and include suggestions for optimizing your setup for use with Adobe Photoshop.

The following factors significantly affect Adobe Photoshop performance:

- The type of computer you are using, including the CPU speed
- The amount of random-access memory (RAM)
- The use of Digital Signal Processing (DSP) acceleration
- How you use virtual memory
- The size and complexity of your files
- SCSI speed of hard disks
- Video acceleration

Various factors do not significantly affect Adobe Photoshop performance, including math coprocessors, G-World accelerators, and QuickDraw™ accelerators, which accelerate only functions that are controlled by QuickDraw, such as screen refresh. In addition, using a removable hard disk cartridge or optical drive as the scratch disk significantly degrades performance because these disks have relatively slow access times and are prone to damage. Running Adobe Photoshop from a RAM disk also does not improve performance.

FASTER CPU SPEED

CPU-based accelerators can provide maximum benefit when used with Adobe Photoshop. Computers such as the Macintosh Quadra™ 700, 800, 900, and 840 use a faster chip than earlier Macintosh models. The faster chips allow Adobe Photoshop to perform operations more quickly. The same is true on the IBM® platform, where, for example, the Intel® 80386 chip is not as fast as the Intel 80486 chip.

AMOUNT OF RAM

The more RAM you have available and can allocate to Adobe Photoshop, the faster the program can perform operations. If you have enough RAM, Adobe Photoshop doesn't need to use virtual memory for computations. Because using virtual memory requires accessing the hard disk, it is always slower than using RAM—this is true regardless of the type of the hard disk drive or hard disk drive accelerator used.

For the Macintosh version:

If you have 32-bit addressing turned on, you can access large amounts of RAM in your computer; 32-bit addressing is available on Macintosh IIfx, IIfx, and Quadra models. If you are running System 6.0.7, or you use a Macintosh IIcx or older, you can install the MODE 32 application (available from Apple) to enable you to use 32-bit addressing. You turn 32-bit addressing on and off in the Memory Control Panel.

For the Windows version:

When Photoshop is launched, it measures the amount of available RAM on your system. The program measures available RAM by calculating the amount of installed RAM minus any RAM being used by disk-caching software such as SmartDrive, RAM disks, or other software that permanently reserves RAM (including the Windows operating system). The result is the amount of RAM that Photoshop can use. Adobe Photoshop maximizes its performance by allocating 100% of this amount for its own use by default.

For both versions:

Allocate as much memory to Adobe Photoshop as you possibly can. The optimum amount of memory is at least five times the size of the file you will be working on. If your computer has more than 8 MB of RAM installed, subtract the RAM your system uses plus 10% of the remaining RAM and assign the remainder to Adobe Photoshop.

To change the memory allocation for the Macintosh version:

- 1 Quit Adobe Photoshop.
- 2 Click the application icon, and then choose Get Info from the File menu.
- 3 Enter the desired amount of memory in the Current Size field in the Info dialog box. The amount includes memory for both the application and image data.

To change the memory allocation for the Windows version:

- 1 Launch Adobe Photoshop.
- 2 Choose Preferences/Memory from the File menu.
- 3 In the Physical Memory Dialog box, you can change the memory allocation by clicking the toggle switch next to the % sign. Please note that Photoshop utilizes 100% by default.
- 4 Exit Photoshop, and restart Photoshop.

SCSI SPEED OF HARD DISKS

Hard disk SCSI speed becomes important when Adobe Photoshop uses virtual memory to access unused hard disk space for its computations. When using virtual memory, Adobe Photoshop requires at least three to five times the current file size in free space on the selected disk or storage medium. This storage area is known as the *scratch disk*. You can assign a primary and a secondary scratch disk by choosing Preferences from the File menu and Scratch Disks from the submenu; indicate the location for the scratch disks in the Scratch Disks dialog box.

To enhance performance, the scratch disk needs to have a fast access-seek time. Although you can use SCSI accelerators to speed up the throughput of data from the CPU to the hard disk and back to the CPU, accelerators will not noticeably improve performance. In addition, the scratch disk should not be overly fragmented. Excessive fragmentation degrades Adobe Photoshop's performance. You can use a third-party application such as Norton Utilities to check the fragmentation level and optimize the disk.

You should not use removable cartridges and optical media as scratch disks, because such storage devices are slow, and they tend to become damaged by extensive handling. Using a RAM disk as a scratch disk does not improve Photoshop's performance; it is more efficient to allocate as much RAM as possible directly to the program.

USING VIDEO ACCELERATORS

A video accelerator speeds up any screen drawing functions. Be aware, however, that some earlier accelerator cards did not correctly implement color QuickDraw routines, causing various problems in Adobe Photoshop. Manufacturers of these video cards are addressing the problems through ROM upgrades. For more information about the compatibility of your video accelerator with Adobe Photoshop, contact your video card manufacturer or dealer.

WORKING ON IMAGES EFFICIENTLY IN ADOBE PHOTOSHOP

The following sections include some suggestions for improving performance when working on images in Adobe Photoshop.

WORKING WITH CHANNELS

Working with multiple channels can be slow. A more efficient way to work is to duplicate channels in a separate document using the Duplicate command in the Calculate submenu of the Image menu. You can then delete the channel information from the image and load channels as selections from the other document as you need them (using the Duplicate command again).

USING FILTERS

Some Adobe Photoshop filters—such as the Distort filters including Pinch, Ripple, and Zigzag—are RAM dependent. If you have insufficient RAM for these filters, Photoshop will generate an out-of-memory error message. In this situation, having a large scratch disk will not help. It may be advisable to run the filter separately on each channel of the image. (Running a filter on just the red channel of an RGB image, for example, uses a third of the memory required for running the filter on the entire image.)

When applying the Wave filter to individual channels, be sure to turn off the Random Start Phase option in the Wave dialog box.

OUT-OF-MEMORY MESSAGES

The following are solutions to out-of-memory messages you may encounter when using Adobe Photoshop.

PostScript error offending command Limitcheck -8133 or VM error -8133 messages when printing.

You may receive this error message if you are using a clipping path in your Adobe Photoshop file that contains too many control points on a path and thus exceeds the printer's memory. Simplify the clipping path, or set the Flatness value. For more information, see the *Adobe Photoshop User Guide*, or refer to the technical note "Working with Clipping Paths."

"Disk is full" error message when trying to save a file.

You do not have enough room on your hard disk to save the file. You should either free up more room on the hard disk or save the file on another drive.

"Disk or Scratch Disk is full" error message when opening or working on a file in Adobe Photoshop.

The disk that Adobe Photoshop is using for virtual memory has run out of space. You can reassign virtual memory to another disk or assign additional scratch disks to the virtual memory using the Preferences command in the File menu.

This message may also indicate the following situation:

The file exceeds the free space on the hard disk specified for virtual memory. You need from three to five times the amount of space assigned to virtual memory as the size file you are working on. Check the lower-left corner of your Adobe Photoshop document window to see the size of your file. Multiply the file size by 5, and check whether your hard disk drive has that much free space. If not, select another hard disk drive as a secondary scratch disk, or free up more space on your hard disk.