Machine lockups, warnings about not enough memory to open applications, or problems opening large or complex documents can be symptomatic of a low memory situation. If the amount of installed memory (RAM) on your Macintosh is sufficient to handle your computing needs, you can use this memory more efficiently by rightsizing the memory allocations to the applications you use.

Before experimenting with different memory allocations, consult each application’s user manual and other information available from the software developer for memory usage tips. Arriving at the proper memory amounts for your applications and work style requires some trial and error but can be well worth the effort.

About This Macintosh

To optimize Macintosh application memory allocations, start by consulting the About This Macintosh window over the course of several typical computing sessions—when the applications that you often have open at the same time are in fact open. Click on your desktop to make the Finder active and then select About This Macintosh from the apple menu to view information about the machine’s current memory allocation.

The window displays the following information:

- **Built-in Memory.** The amount of RAM physically installed in the machine.
- **Largest Unused Block.** The largest block of memory available to launch another application.
- **Total Memory.** The RAM (physical + virtual memory) available to the Macintosh. (*Note:* This item displays only when virtual memory is on or when a memory utility, such as RAM Doubler, is installed.)

The list of applications in the lower part of the window tells you how much memory has been reserved for each open application (and cannot therefore be used by other applications). The shaded section shows how much of this allocated memory is currently in use by the application. Turn on balloon help and move the cursor onto the shaded bar to see the numeric equivalent.

**Get Info**

Use the Get Info box to view and modify the current memory settings for your individual applications. Before you can modify settings in the Get Info box for an application, you will need to quit the application if it is currently running. Locate the application you want to modify, highlight its icon, and then select Get Info from the File menu. (*Note:* Find the application’s icon, not an alias.)

The Memory Requirements section of the Get Info
box provides the following information:

- Suggested size. The memory allocation recommended by the application’s developer.
- Minimum size. The smallest unused block of memory that must be available for the application to launch.
- Preferred size. The maximum RAM allocated to the application if a block larger than the minimum size is available. (*Note: MacOS versions prior to 7.1 used the single setting “current size” in place of the minimum and preferred size settings.)*

**Rightsizing**

Use the information gathered from the About This Macintosh window to modify the settings available in the application’s Get Info window. You can change both the minimum and preferred memory sizes but you cannot set the minimum size larger than the preferred size.

What you change in the Get Info window depends on the situation you want to correct.

- If the application freezes often or if you need to load large or complex documents that require additional memory, try increasing the application’s preferred size. If extra memory is available, it will be allocated to this program. (*Note: When increasing application memory, a good starting point is to increase by 50 percent. For example, set an application currently using 2,000 KB to 3,000 KB.*)
- If you do not want to run the application with anything less than a specified amount of memory, increase the minimum memory setting as well. For example, if you discovered that for your purposes an application requires a certain amount of memory, change the minimum setting to that amount. (*Note: Use the rule of thumb above as a general guideline for increasing the minimum memory setting.*)
- If you find that an application allocates much more RAM than you typically use or if you don’t have much memory left in the largest unused block to launch the application, try reducing its preferred and/or minimum memory allocations. Be careful! Lowering the memory requirements may cause more frequent low memory situations and application crashes.

When changing memory allocations, remember that you are still working within the confines of the largest unused block of memory on your computer and that less memory may be available for other programs. Monitor your memory situation for a few days before and after changing the allocations. If you find you encounter more problems after changing memory settings, return them to the previous values and investigate other possible causes such as extension conflicts, software in need of updating, or hardware problems.

**Other memory tips**

Rightsizing your applications is a good strategy for optimizing the memory you have, but when it comes to memory, the more RAM you can install, the better. Here are a few additional tips about memory management.

- If you’ve opened and closed applications throughout the day, your available memory may be fragmented into a number of smaller chunks. The largest unused block is the largest of these memory chunks and may be insufficient to open another application. Exiting all open applications, or better yet, restarting your machine, will clear out the memory and should provide a larger unused block of memory for your application.
- If your Macintosh has a 68030 CPU or better or a 68020 CPU with a PMMU chip, use virtual memory to provide a memory boost by increasing your total memory and thus the largest unused block. To set virtual memory, which uses space on your hard drive as additional RAM, open the Memory control panel. Turn Virtual Memory on and then click the up or down arrow (shown below) to set an amount for total RAM (i.e., physical RAM + virtual RAM). This amount will be taken away from available hard drive space so make sure you can afford to lose this storage space. Be aware, however, that virtual memory creates overhead by accessing the hard drive and can slow machine performance in certain situations.
- On a Power Macintosh, turn on virtual memory to reduce the memory requirements of native applications (those designed to run on a Power Macintosh). Increasing the memory by 1 MB provides the benefits of Power Macintosh memory management without the additional overhead of higher settings.
- If you use virtual memory on any Macintosh, do not exceed twice your physical RAM and keep the amount reasonable. Increasing your RAM by 50 percent is generally a reasonable working amount.
- Some software applications work better with real (physical) memory as opposed to virtual memory. A number of applications (including Adobe Photoshop) use their own memory management scheme. In these cases, using virtual memory decreases the performance of the application.

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