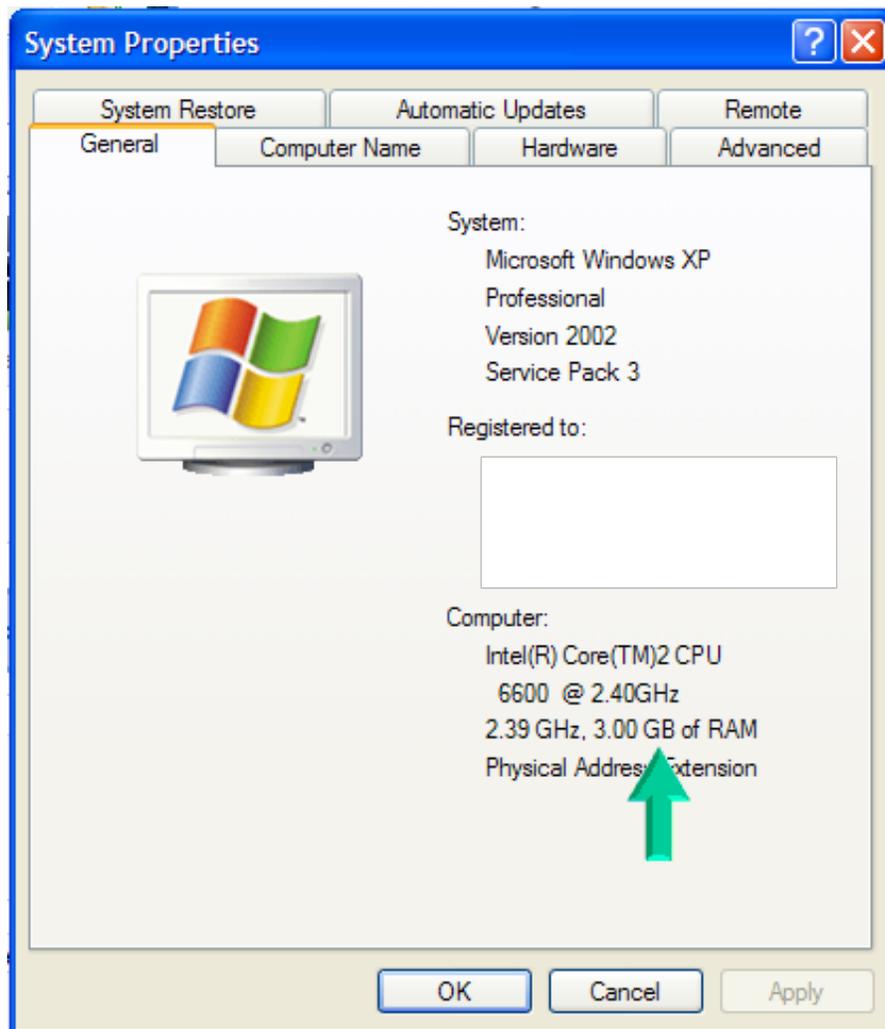


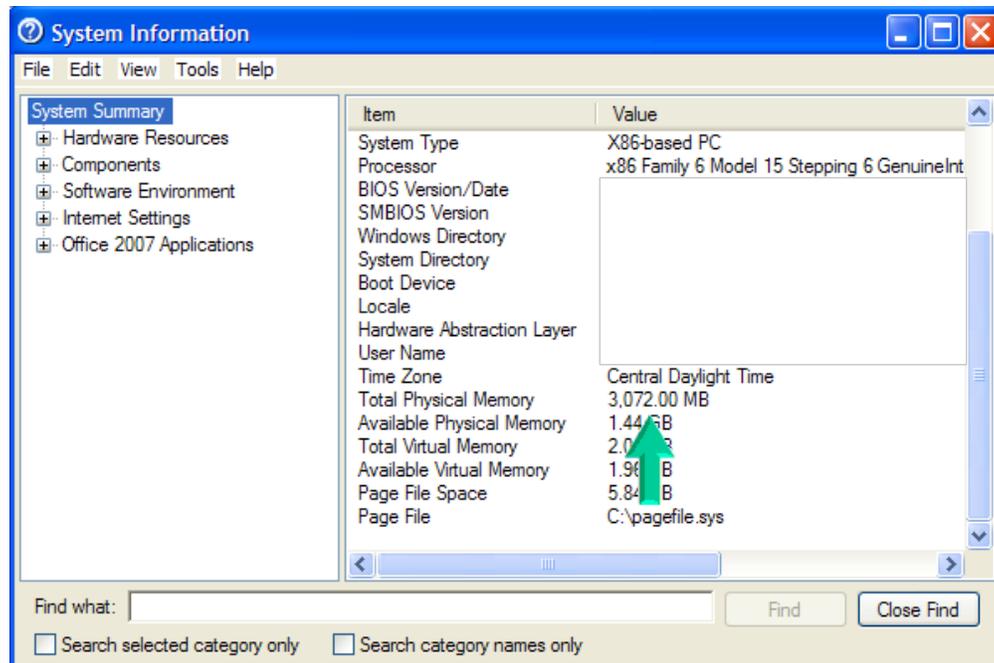
## **UPGRADING (INCREASING) SYSTEM MEMORY (RAM)**

Increasing system memory is usually the cheapest and easiest way to increase system performance. However, not every system can be upgraded and it is possible that you may already have the optimal amount of system memory for your hardware/software configuration. The first thing to do is determine how much memory is currently installed in your system and how much total memory your system is capable of utilizing. Depending on the operating system that you are using the amount of optimal memory varies. As a general rule of thumb Windows XP users will want to have 3 gigs for optimal performance and Windows Vista 3 gigs for the 32 bit version and 4 to 8 gigs for the 64 bit version. Windows 7 should also use 3 gigs for the 32 bit version and 4 or more for 64 bit. (Windows 7 will actually run faster than Vista with the same amount of memory installed.) To find out how much memory your system currently has installed use one of the following methods:

- Right-click on the 'My Computer' icon, and select Properties from the drop-down menu.
- Look under the 'General' tab to find the amount of RAM in megabytes (MB) or gigabytes (GB). Remember 1000 MB's is equal to 1 GB.



- Another way to find system memory is to Click Start-> All Programs-> Accessories-> System Tools-> System Information. Then look for 'Total Physical Memory' in the panel on the right.



One of the easiest ways I have found to determine the maximum amount of memory a system is capable of utilizing is to use the 'memory advisor' tool that is located on the [www.crucial.com](http://www.crucial.com) website. To use the tool simply enter the manufacturer and model number of your PC. After entering your PC manufacturer and model number you will be given detailed information regarding the maximum memory capacity for your particular system, and the type of memory and maximum size of memory boards and configurations that are available for your system.

Another option to determine maximum memory capacity would be to consult the website of the manufacturer of your PC for details regarding your particular system. Note: If you have a custom built machine you will need the specification sheet that accompanied the motherboard that is currently in your system to find out the details concerning maximum memory capacity, memory type, speed, etc. In the event that you do not have this information you will have to open the computer case and find the model number of your motherboard. The model number is normally printed on the face of the motherboard but can be difficult to find. Assuming you are able to find the model number, use it to search the manufacturer's website for details about the memory specifications for that motherboard.

Before purchasing new memory be careful to ensure that the memory type that you are buying is correct for your system. There are quite a few different types of memory available, you will want to be absolutely sure that the memory you purchase will work in your system. If your system requires DDR or DDR2 you will need to buy two matching memory boards to perform an upgrade. With DDR3 you will more than likely need three matching boards. (These details can vary however, depending on the motherboard.)

There are also many different memory speeds available for each type of memory. If you are planning on completely replacing the old memory you should be able to use faster memory for your specific memory type, if it's available. If you are planning to add new memory to existing memory you should try to find memory that is the same speed as the existing memory.

## **Installing Memory Upgrades**

Installing memory can be tricky so take your time and don't try to force a memory stick into your system if it is not easily snapping into place. There are slots on the memory that will only allow it to be inserted in one direction so be sure to line them up when installing. If the memory board does not seem like it is fitting in the socket correctly try turning it around. If the slots in the memory do not match the breaks on the motherboard memory socket then you have the wrong type of memory for your system.

## **Removing the old RAM Memory Boards**

- Be sure your computer is completely shut down.
- Unplug the power cord from the back of the computer.
- Unplug any other cables that are connected to the computer including telephone lines or networking cables.
- Remove the access panel or computer cover. You may have to remove some screws on the rear of the computer or on some systems press a release button (usually on the bottom of the case).
- Locate the old memory on the motherboard. You can identify the memory by examining your new memory and looking for similar memory boards installed on the motherboard, usually near the CPU.

- Before attempting to remove the old memory, be sure to release the latches that are used to hold the memory firmly in place. You will find these at both ends of each memory board.
- Grasping the memory firmly in the middle, carefully pull the memory board in a perpendicular direction, away from the motherboard until it slides out. IF THE MEMORY IS NOT EASILY SLIDING OUT CHECK THE LATCHES TO BE SURE THAT THEY ARE COMPLETELY OPEN.

## Installing New RAM Memory Boards

- Depending on the type of memory you are installing be sure that you are installing the memory in the correct slots.
- DDR and DDR2 will normally be installed in slots 1 and 3 or slots 2 and 4. (Many times these slots will be a different color, either blue or possibly yellow.)
- DDR3 will be installed in slots 1, 3 and 5 or slots 2, 4 and 6.
- If you are installing new memory but plan to add your new memory to the existing memory and do not plan to remove the old memory then be sure that the LARGER memory modules are installed in the first slot that is closest to the CPU. (for DDR, DDR2, DDR3 be sure the first memory stick of the largest set of memory boards is installed closest to the CPU and the matching ones are installed accordingly).
- Be sure to line up the slot in each memory board with the break in the memory slot.
- Press each board down until it snaps into place. (Both latches on the ends of the memory board should lock into place.)

## Close Your Computer Case or Cover

- Replace the cover or panel that you removed earlier.
- Replace any screws that you may have removed or loosened.
- Plug any cables you removed earlier back in to the computer.
- Power up your computer and pay careful attention to the boot screens to be sure that there are no error messages during the boot-up process.
- You may see a message indicating that the amount of system memory has changed. This is normal.

## **Troubleshooting - If you are Experiencing Problems with the System not Powering Back up Properly or Locking Up.**

- Ensure that all of the memory boards are fully seated in the sockets and that they are latched firmly on both ends.
- Be sure that you have the boards in the correct slots. (If there are any boards of different sizes then the largest memory board must be in the slot closest to the CPU.)
- If you are using DDR, DDR2, or DD3, you must use matching memory boards and they must be installed in groups and in the correct slots.
- If you have added new memory to older existing memory your new memory may be a different speed than the old memory. Some motherboards will not allow using memory of different speeds. Try using only the new memory.

## Techheads

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MAY 26, 2010

# *Upgrading RAM*

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