**Why doesn't Windows recognize all of my memory?**

**Answer**

The maximum amount of memory that your system can use is actually limited in two ways — not only is there a maximum amount of memory that your computer motherboard can accept, there is also a maximum amount of memory that your operating system (OS) can accept.   
  
For instance, when you install 4GB of memory in a 32-bit Windows operating system (the most common version; 64-bit systems are typically used only by high-end users), your system will see (and utilize) only 3GB or 3.5GB. Is the problem bad memory?   
  
Relax, there isn't a problem with the memory. Windows allows for 4GB of memory to be addressed, but this isn't 100 percent the same as having 4GB of physical memory.  
  
What happens is that some of the addressable memory (regardless of how much you have physically installed) is reserved for use by page files or by some of the devices that you are using, such as a graphics card, PCI card, integrated network connections, etc., so it's unavailable for use as normal main memory.   
  
The amount of memory needed for these devices is calculated by your system at startup; if you haven't maxed out the memory in your system, it's invisible to you, and all your physical memory (the RAM that's installed) is available for use. However if you've maxed out the DRAM in your system, this amount will be deducted from your physical memory, so you can't use 100% of your DRAM.   
  
The maximum memory limitation varies by operating system; for instance, the 4GB memory limitation doesn't exist in 64-bit versions of Windows.  
  
Memory maximums for current Microsoft® Windows OSs include:

Windows 8 (64 bit)

* Enterprise: 512 GB
* Professional: 512 GB
* Home: 128 GB

Windows 8 (32 bit)

* Windows 8 Enterprise: 4 GB
* Windows 8 Professional: 4 GB
* Windows 8 Home: 4 GB

 Windows 7 (64 bit)

* Windows 7 Ultimate: 192 GB
* Windows 7 Enterprise: 192 GB
* Windows 7 Professional: 192 GB
* Windows 7 Home Premium: 16 GB
* Windows 7 Home Basic: 8 GB

Windows 7 (32 bit)

* Ultimate: 4 GB
* Enterprise: 4 GB
* Business: 4 GB
* Home Premium: 4 GB
* Home Basic: 4 GB
* Starter: 2 GB

 Windows Vista (64 bit)

* Ultimate: 128 GB
* Enterprise: 128 GB
* Business: 128 GB
* Home Premium: 16 GB
* Home Basic: 8 GB

Windows Vista (32 bit)

* Ultimate: 4 GB
* Enterprise: 4 GB
* Business: 4 GB
* Home Premium: 4 GB
* Home Basic: 4 GB
* Starter: 1 GB

 Windows XP (64 bit)

* Professional: 128 GB
* Windows Server 2003 (64 bit)
* Datacenter SP2: 2 TB
* Enterprise SP2: 2 TB
* Standard SP1: 32 GB
* Datacenter R2: 1 TB
* Enterprise R2: 1 TB
* Standard R2: 32 GB
* Small Business Edition: 128 GB

 Windows XP (32 bit)

* Professional: 4 GB
* Home: 4 GB
* Starter Edition: 512 MB