

30 October 2006

By: Cristi Buca, Editor, Mac OS Reviews



[MacBook Pro Core 2 Duo Limitations](#)

Why units are limited to 3GB RAM..

Macfixit.com has previously reported that the MacBook Pro Core 2 Duo can psychically accommodate two 2 GB RAM modules, making a total of 4GB. Every manufacturer claims that their Core 2 Duo-based portables can address up to 4 GB of RAM; but, in spite of this, Apple's specs say that their model can recognize 3GB of RAM maximum. This created quite a confusion and questions began to be asked as to why Apple's product cannot address 4GB like the other rival products. Macfixit.com have been preoccupied with this issue and now they possess some additional information that they were kind enough to share with us. If one looks at the specs of the Intel 945PM chipset, he/she will see that it can physically handle 4GB of DDR2 RAM. This is the chipset that is used by the MacBook Core 2 Duo and this is where the whole confusion starts. The actual thing is that, in a 4GB configuration, when all the amount of RAM is being addressed, there is some overlapping. This does not happen in a 3GB configuration. The problem occurs only when the system memory attempts to occupy space that is already assigned to functions between 3GB and 4GB. One example is the PCI Express RAM. The PCI Express RAM allocation occurs at somewhere between 3.5GB and 3.7GB as it needs 256 MB of RAM. This means that this virtual space between 3.5GB and 3.7GB is occupied by the PCI Express data and in a 4GB configuration this space is wasted, whereas in a 3GB one, the installed system RAM does not violate that space. In the end, the final conclusion is that the amount of RAM that is fully accessible is actually 3GB. If a notebook should have 4GB, 700MB of the RAM would be overlapping critical system functions, making it non-addressable by the system, Macfixit reports. The source also states that this is not a Mac-specific issue. This happens with all of other products, but Apple is the only one that tells it to the customers. Reports are that HP does provide a technical specification page for the NC8430 where they state that "all memory may not be available" above 3GB; but even in this case, the online HP store allows users to purchase 4GB of RAM as a shipping option with no indication of this limitation. *In essence, Apple's 3 GB limit appears to be accommodation on Apple's part, discouraging users from installing expensive memory that is not addressable by the system and refraining from falsely advertising a 4 GB limit.*

Related Links: [MacBook Pro vs Dell Precision](#) [Apple Prepares for Core 2 Duo MacBook Pro Ramp?](#) [MacBook Owners Still Disappointed?](#) [Apple MacBook Owners Disappointed](#)