

## What You Need to Know About 64-bit Processing with OS X 10.6, *Snow Leopard*

### Don't Get Caught-Up In All the Hype!

There is a lot of misunderstanding and misguided expectations regarding the "64-bit-ness" in *Snow Leopard*. This is a buzz word that gets tossed around quite a bit, with lots of geeks arguing back-and-forth about it. Hopefully, this brief article will alleviate some of this confusion.



#### What does 64-bit mean?

The Intel processor is your Mac's "brain." It deals best with information (data) in chunks. Each chunk of data consist of a distinct length of *bits*, which are units of measurement when talking about quantity of data. Back in the olden days of the Apple ][ computer, we had 8-bit processors. Through the years, our computers doubled this measurement: we went from 16-bit to 32-bit and most recently to 64-bit processors. Simply put, ***the increasing numbers allow computers to process data faster and to be able to access much higher amounts of memory.*** All this will make accessing very large files (images and movies) easier and faster.

#### So what's the problem?

The problem is that being able to fully take advantage of 64-bit processing takes a long time. The changes are gradual. Developments in processor technology take time to be properly integrated into both existing and future systems. Therefore, not all parts of an operating system may use the latest 64-bit technologies.

As with other computer manufacturers, Apple has gradually introduced portions of 64-bit functionality into their most recent operating systems. Some behind-the-scenes 64-bitness was introduced with OS X 10.4 *Tiger* operating on G5 PowerPC platforms. OS X 10.6 *Leopard* introduced some additional under-the-hood functionality when operating in the Intel Core 2 Duo processor of the later Mac models.

*Snow Leopard* is providing even more 64-bit support - but not completely, yet. Almost all native Apple applications — including the *Finder*, *Mail*, *Safari*, *iCal*, and *iChat* — are 64-bit applications. Apple claims that all system applications except *DVD Player*, *Front Row*, *Grapher*, and *iTunes* have been rewritten in 64-bit. *Snow Leopard* also introduces new 64-bit KEXTs (Kernel Extensions - modules that attach to the operating system) 64-Bit Drivers (software that talks to devices like printers) and a 64-Bit Kernel (the "heart" of the operating system).

So, the bottom line is that all this could introduce some upgrade headaches, since software developers need to reprogram their applications for 64-bit support.

## What does all this mean to you?

As a typical Mac user, and for most home users, the move to 64-bit computing in *Snow Leopard* **means absolutely nothing**; running 64-bit vs 32-bit modes will be indistinguishable, especially for current applications. The 64-bit capability of the operating system is going to be primarily beneficial to programmers who can take advantages of the efficiencies the new architecture provides. As application developers augment their programs to take full advantage of 64-bit computing, Apple will throw the switch on native 64-bit computing in *Snow Leopard* and beyond.

Here's a neat analogy I picked up on the interwebs: *Think about 64-bit capability as adding a carpool commuter lane to a highway. If you have cars (applications) that have enough passengers and can use the commuter lane then you may at times see a benefit based on traffic conditions, but if not then the cars will have to use the normal lanes. Regardless of the lanes being used, however, there is still a cap on the overall speed limit so even if there is only one car in the commuter lane it cannot just zip on through.*

## Some salient points pertaining to *Snow Leopard* 10.6.0 with respect to 64-bit:

- ★ *Snow Leopard* boots into 32-bit mode by default for application compatibility
- ★ You *do not* need to be running in 64-bit mode
- ★ You can boot into 64-bit mode manually via a special key combination, but non-64-bit applications will crash
- ★ Some applications are, and will run in, 64-bit if you boot into 64-bit mode by using a special key combination
- ★ There will be a lengthy transition period before everything is in the 64-bit space
- ★ When all applications, kernel extensions and drivers are 64-bit, Apple will make the operating system bootable in the 64-bit kernel by default
- ★ When you run in 32-bit mode, as Apple currently wants, your 64-bit applications will work, and your 32-bit applications will work
- ★ Currently, System Preferences is running as a 64-bit application. All of Apple's preference panes are running 64-bit. However, some third-party preference panes are NOT 64-bit compatible, and will NOT run. In this case, Apple PROMPTS you to restart System Preferences. It will restart in 32-bit mode so that your third-party preference pane can run.

