



Steve Jobs used last week's MacWorld conference to launch the first Intel-based Macintosh systems, although none of the new machines bear any external signs ("Intel Inside," "Core™ Duo" or "VIIV") that reveal their silicon underpinnings. Apple gives users their choice of Core Duo processors running at either 1.83GHz or 2.0GHz, mated with 17-inch and 20-inch displays, at prices starting at \$1,299 for the smaller screen model and \$1,799 for those based on the larger screen. The systems look just like, and are priced just like the G5-based iMacs Apple has been selling, but they offer two to three times the performance of the earlier G5-based models. The company also introduced the awkwardly-named MacBook Pro, a new notebook that comes with either a 1.6GHz or a 1.83GHz Core Duo and a 15.4-inch display. Apple prices the new notebook like the \$1,999 15-inch G4-based PowerBook it replaces, and claims the new Intel-based design outperforms the old G4 design by a factor of four to five. Given the barely competitive performance of those aging G4 notebooks, this probably wasn't hard to achieve.

#### **Smoothing the Software Transition**

Apple released a fully-ported, native x86 version of its OS X (Tiger) operating system, along with native x86 versions of its key Macintosh applications: iPhoto, iMovie, iDVD, GarageBand, iLife, iWork, iWeb and Aperture. In this regard, its move from PowerPC (PPC) to x86 differs dramatically from the 68K to PowerPC transition it undertook in 1992. When it launched its initial PowerMac offerings, large portions of the OS and most applications ran only in 68K emulation mode. Apple's Xcode software development environment plays a key role in smoothing this transition and making it a bit less painful than the earlier ones. The company extended Xcode to support x86 processors, thus allowing Apple's developers, as well as those working for key third-party software development partners, to stay within a familiar environment as they adapted their programs to run on x86 processors. Apple intends to deliver so-called "universal versions" of its software that support both PowerPC and x86 architectures, so the installer can always match the proper binaries with the architecture of the machine on which it is running. It's providing a low-cost (\$49) "crossgrade" package that allows users of earlier versions of Apple's proprietary software to get the latest x86 versions. Hopefully, ISV's will follow suit, and provide affordable mechanisms for customers to get x86-native versions of their packages as well.

Of course, some PowerPC Mac software may never get ported to x86. Most PPC applications running on OS X can use an emulation/translation facility Apple calls "Rosetta," based on Transitive Corp.'s QuickTransit technology, to run on the new x86 Macs. Rosetta works well with non-CPU-intensive applications like word processors and web browsers, but bogs down when it encounters compute-intensive tasks like PhotoShop or Premier. Microsoft currently supports its Mac application suite via Rosetta, and plans to deliver native x86 versions this spring. Adobe, Apple's other key ISV, has been less forthcoming regarding its x86 plans; users who make extensive use of PhotoShop or Premier should probably delay MacIntel purchases until this situation clears up. Apple supports Rosetta only under OS X; Mac users who have not yet migrated from MacOS 8 or MacOS 9 have no easy way to move their applications to MacIntel configurations, and will be consigned permanently to increasingly obsolete PowerPC platforms. Consider these users as the collateral damage created by Apple's latest architectural transition.

#### **Reliance on Intel Chipsets Reduces Apple's Hardware Development Expense**

The new iMacs and MacBooks incorporate the processor formerly known as Yonah, Intel's latest dual-core mobile chip. The non-portable iMac benefits from the Core Duo's low heat dissipation, an important issue given the iMac's cramped interior. Both systems rely on the same Intel core logic (i.e., chipsets) used in the latest Windows-based "Napa" platforms Dell, HP, Lenovo (and countless others) released at the start of the month. In addition to reducing Apple's time to market with new technologies, the move from PPC to x86 saves Apple millions in R&D expense by getting the company out of the core logic development business.

## **No 64-Bit Tiger X86 Support Until Later This Year**

Unfortunately, Intel's new Core Duo lacks 64-bit extensions, precluding Mac users from tapping the 64-bit capabilities in the Tiger OS. This should not bother MacBook users, since Apple's G4-based notebooks also lack 64-bit capability, but iMac G5 users, who had just gotten a taste of 64-bittedness, now will find themselves relegated back to the land of 32 bits. As usual, Apple refuses to comment on its future product roadmaps. Insight 64 anticipates that when Intel releases its next generation 64-bit Core Duo processor (Merom) later this year, Apple will likely refresh the current products to add 64-bits, and extend the line with x86-based versions of the PowerMac tower and Xserve configurations, thus completing the PPC to x86 transition quicker than most had anticipated when Apple first announced its Intel strategy last spring.

## **Windows Can't Run On MacIntel Platforms; OS X Can't Run On Non-MacIntel Platforms**

Following Apple's disclosure of its x86 strategy, many hoped the new Apple boxes would have the ability to run Windows as well as OS X. Although true Macolytes question the sanity of anyone who would taint Apple's sacred hardware with the Devil's operating system, those who are trapped in a Windows world (including this author) but admire Apple's craftsmanship and industrial design, certainly viewed Windows on MacIntel as an attractive alternative. Alas, no such option will be forthcoming. Although Apple now uses standard Intel processors and chipsets, standard ATI Radeon graphics controllers, and standard USB, SATA and PCI-Express buses, the new Macs differ from Windows-based PC's in one key regard, firmware. Since the launch of the very first 8088-based IBM PC in 1981, DOS and Windows-based systems have relied on BIOS (Basic Input/Output System) firmware to boot the system and start the OS. BIOS firmware has evolved greatly in function, but lacks flexibility and (some feel) needlessly complicates PC support issues. For several years, Intel has encouraged its PC OEM customers to adopt a more enlightened firmware environment dubbed the "Extensible Firmware Interface (EFI)," but inertia keeps BIOS in the driver's seat. Apple, with no x86 legacy concerns, opted for the newer, more flexible EFI approach. Tiger uses EFI to start up on x86 machines, and since Wintel boxes lack EFI, they cannot run Tiger. Conversely, Windows needs BIOS to get started, and since MacIntel boxes lack BIOS, they cannot run Windows. These different firmware environments will separate MacOS and Windows environments almost as effectively as instruction set architecture did when Macintosh software ran only on PowerPC chips.

## **The Impact on Apple's Market Share**

When Apple signaled its new strategy, Insight 64 feared that a difficult and awkward software transition to x86 might drive some Apple customers away from the platform, into the willing arms of Wintel suppliers. Given the aplomb with which the migration appears to be progressing, those fears have largely abated at this point. Although Apple's move to x86 may not result in wholesale defections from its installed base, it remains to be seen whether these new platforms can pry Windows users away from XP. Insight 64 remains skeptical in this regard. Regardless of how easy or hard a software interface may be to master, once it has been assimilated, moving to a different environment takes more work than staying with the old one. Given the vast improvements in price/performance enabled by its shift to x86, Apple may be able to attract more new users (i.e., those who have yet to fill a disk drive with files and programs that cannot move easily to an incompatible system) than has been the case over the past few years. But, barring a major disaster with the upcoming Windows Vista launch, we would be greatly surprised if Apple's shift to x86 resulted in a meaningful increase in the company's market share.

## **Apple Outside**

Few ingredient branding programs have ever achieved the success of the "Intel Inside" campaign Intel put into practice in 1991. Over the years, Intel has spent more than \$3B to subsidize OEM marketing programs that promote their own brands, along with Intel's. (That little five note "Intel sound" you hear whenever you see a Dell, HP, IBM or Lenovo ad on TV means Intel has paid roughly half of the cost of the ad.) Given the thin margins on which Wintel PC suppliers operate, these Intel Inside subsidies can greatly impact the OEM's profit picture. Whatever doubts we had about whether Steve Jobs would be tempted by the pots of gold available via the Intel Inside program were erased when we laid eyes on the new iMacs and MacBooks. MDF (Market Development Funds) notwithstanding, Apple has no intent to deploy any brand but its own on its products or in its advertising. They may have switched to Intel inside, but they're still Apple on the outside.