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An Apple for the Enterprise?

Say what? Macs in the mainstream — even on a server rack? *InfoWorld*'s Tom Yager revisits time-honored, anti-Mac objections now that Leopard and 64-bit x86 chips are in the mix

LIKE IT OR NOT, BUYERS OF X86 SERVERS, CLIENTS, AND WORKstations face a major platform shift as the 32-bit CPUs, operating systems, and applications slowly fade into history. That historic migration will have dramatic impact. After all, 64-bit computing revolutionized RISC-based UNIX systems, allowing them to step into roles dominated by mainframes and minicomputers. Something similar is sure to occur with PC servers as they muscle up with the huge horsepower and memory elbow room inherent in 64-bit computing.

Yet one factor keeps getting pushed aside as we obsess over hardware progress: humans. Among the demands we make of new technology, raising human productivity should top the list. And although 128-bit registers have productive effect, usability has a magnitude more impact.

That's why Apple's latest Macs and OS deserve a good, hard look as mainstream enterprise fare.

Apple accepts that raising user and administrator productivity is the responsibility of the core platform. As Macs achieve 64-bit ubiquity — a journey furthered by the September delivery of new 64-bit 17-, 20-, and 24-inch iMac one-piece desktops — and the Leopard (OS X 10.5) operating system/application platform stalks its way to a spring 2007 release, Apple is promising the benefits of next-generation nimbleness and power to the desks, laps, and consoles of users and server administrators alike.

Even non-Mac users acknowledge the advanced usability. So why do most purchasers of commercial and enterprise systems ignore Macs when they get serious about buying?

In truth, the objections are well-known. Most have persisted for a while. Many are rooted in legitimate concerns, but others deserve push back, especially in light of Apple's latest offerings. Read on, and decide for yourself whether you think Macs have earned — or will soon warrant — a spot on your enterprise short list.

BY TOM YAGER

"Macs are so expensive."

Apple behaves as though the natural forces that shape all other PC makers' pricing don't affect it. Although Apple almost never cuts prices, however, it does respond to the market. Mac models are upgraded to faster CPUs and buses, larger hard drives, and faster GPUs (graphics processing units) without Apple raising their prices. Instead of cutting prices on Xserve RAID arrays to make them more competitive, Apple raises capacity. At one point, Apple slipped a major controller board upgrade into new Xserve RAID shipments with no fanfare. Apple customers who time it right will always be able to get substantially more machine for the same money each time they repurchase a given model.

With the introduction of the Mac Pro workstation, Apple made its first public claim in recent memory that a Mac model is, without any disclaimers or qualifications, less expensive than a competitor's comparably configured PC. Mac newcomers may have newfound respect for Apple now that it's duking it out with Dell on price.

"A PC is a PC; who cares who makes it?"

The PC has come to be defined as a computer that isn't engineered, but merely assembled. Anyone over the age of 8 is a Phillips-head screwdriver and credit card away from building himself a computer identical to the majority of systems — those being one- and two-socket desktops and servers — that first-tier PC makers offer. In essence, those vendors have become brokers for systems designed and made in Asia.

As do most other first-tier PC makers (Dell being a notable exception), Apple contracts out the assembly of its systems. But Apple does all of its hardware engineering in-house. Neither you nor any of Apple's competitors could turn off-the-shelf components into a machine of comparable quality and functionality in the same price range as a Mac. Apple's engineering ingenuity shows itself most plainly as consumer gimmickry with hidden practicality, such as the MacBook's iSight Webcam or the Front Row infrared remote.

From the perspective of a steely eyed IT buyer, how is a Mac not like a garden-variety PC? For one thing, Macs have virtually unlimited life spans, as reflected in their resale value. Macs are fast, their chasses are indestructible, and OS X is solid as a rock. And of course, if you buy the usability argument, Macs are the only computers that run OS X.

"It's a proprietary platform."

If that objection is a showstopper for you, where do you propose to go? HP, IBM, Microsoft, Novell, Red Hat, Sun Microsystems, and Apple are all in the business of selling proprietary solutions.

Contrary to popular belief, the Mac platform is more open than many. Macs will run software written for UNIX- and POSIX-compliant operating systems — although code written in native languages must be recompiled for the Mac from source code. The Mac runs Java client and server applications directly using a Java virtual machine that Apple developed, validated, and maintained. Two Java application servers, JBoss and WebObjects, are bundled with OS X Server. OS X includes stable editions of dynamic languages, including Perl, Ruby, PHP, Python, and JavaScript. PDF, HTML, XML, and OpenGL are among standards implemented as OS X platform intrinsics, again, using designs developed in-house.

Moreover, Apple publishes most of the source code for OS X — primarily

Leopard Leaps In

APPLE IS PROMISING A FAST TURNAROUND FOR THE NEXT major release of OS X. Version 10.5, dubbed Leopard, should hit the streets in spring 2007. Beyond such front-end improvements as improved search, chat, and application linking, a number of under-the-hood enhancements are of special note.

First and foremost, Leopard will be a 64-bit operating system and application platform through and through, from kernel to GUI. Depending on how thoroughly Apple exploits it, 64-bit operation may have a tremendous impact on graphics performance on the company's Core Microarchitecture systems, such as Mac Pro and Apple's new 64-bit iMac systems.

Apple's application frameworks, such as the Core Data database and Spotlight search, along with lower-level system services such as NFS, could also yield big rewards if Apple optimizes specifically for 64-bit features of the CPU. No transient storage lies closer to the CPU than its registers, and 64-bit x86 applications have much more register space to play with. At present, OS X Tiger (10.4) has some 64-bitness about it at the system level, but it can't leverage much because Apple can't risk making software incompatible with 32-bit Macs.

Another low-level feature of Leopard is particularly good news to cross-platform developers: Apple is submitting Leopard to The Open Group for certification as a UNIX operating system. OS X Tiger is UNIX-based, just as is software from other certified commercial UNIXes such as Solaris, AIX, and HP-UX. If Apple can pass The Open Group's certification tests, Apple not only gets to take "-based" out of OS X's classification but also has the potential to reduce to zero the number of changes needed to port UNIX applications to OS X. Moreover, Apple has recommitted to its Darwin open source project, so OS X's UNIX foundation will continue to be open source.

The standout user-facing feature of Leopard is unquestionably Time Machine. This creates file system deltas, a record of changes to files and folders leading up to the present. Time Machine is similar to a file systemwide undo buffer, except that the user can select which specific changes to reverse. Rather than making checkpoints at fixed intervals, Time Machine works constantly in the background, recording deltas either to local storage or to a system running OS X Leopard Server. Leopard Server, which we'll cover in greater detail when Xserve ships, incorporates a Time Machine server that effectively maintains up-to-the-minute backups of clients' disk contents. — *T.Y.*

the system software, commands, and utilities that reside below the presentation layer — as the Darwin open source project. After a long delay, Apple recently made the source code for Darwin x86 available online. Apple took over stewardship of Darwin and a sister project called DarwinPorts, which is a repository of ready-to-compile open source applications validated for the Mac.

Intel-based Mac hardware is proprietary only insofar as its design makes it possible for OS X to tell the difference between a Mac and a non-Mac PC. Salient details of the Mac's design are public and thoroughly documented so that developers working in OS X or another x86 operating system can fully exploit the Mac's features. The Mac boots with the standards-based Extensible Firmware Interface instead of a closed, proprietary BIOS, but Apple includes EFI extensions that transparently support operating systems that don't yet work with EFI.

"Why invest in OS X when Vista is going to wipe it off the map?"

If imitation is the sincerest form of flattery, Steve Jobs is blushing. Apple Vice President Bertrand Serlet held the keynote audience at Apple's 2006 Worldwide Developer Conference in a state of disbelief with a presentation showing that Vista's design is rooted in OS X Tiger to a degree that even a die-hard Mac zealot would find incredible.

When Vista ships, Apple will be delivering all of its new Macs with OS X Leopard (see "Leopard Leaps IN," page 2). And if you're hung up on Vista, the third-party Parallels Desktop will run it at blistering speed as a guest OS under OS X. There will be no vice versa in Vista's favor.

"I can't manage a network of mixed platforms."

Nobody wants to learn yet another set of proprietary management tools. But administrators don't have to resort to the proprietary to keep a mix of systems running.

The Mac shares common ground with all UNIX and POSIX systems. Management tools with open source will recompile and run on OS X — which incorporates X Window System, VNC, and secure shell servers and clients. Microsoft offers a free download of a fast RDP (Remote Desktop Protocol) client for the Mac. Parallels Desktop will run the native management tools you need for any x86 OS. You will find specific guidance from Apple and in the Mac community for wiring the standard SNMP support in OS X and Xserve RAID into commercial management solutions from HP, IBM, and others.

But make no mistake, when you have to go to the command prompt, the Mac's quirks most certainly will get in the way. If you're used to a System V UNIX or Linux OS, the locations of files, the boot sequence, and the contents of the process tree will mystify you at first. If you're accustomed to system management by custom Perl or shell scripts, your scripts will need some conditional code added to accommodate the Mac.

One quality all Mac systems share makes them a delight to manage: From the administrator's point of view, all Macs are identical. The policies you set using OS X Server are applied uniformly to PowerPC and Intel Macs, to mobile and stationary users. When you have an administrative task, such as installing an application or an update on all of the Macs on your network, Remote Desktop 3 will handle it for you. The combination of Remote Desktop, Server Manager, Server Monitor, and RAID manager is all the Mac-specific management you'll

Mac Pro: Woodcrest Goes to Work

APPLE'S $2,499 MAC PRO HAS LITTLE IN COMMON WITH OTHER two-socket Woodcrest systems, apart from the fact that it has the same pair of CPUs and the same chip set.

Mac Pro's exterior was cooked up for a 64-bit PowerPC, renowned for being fast as hell and twice as hot. Apple stripped the enclosure to bare walls, added three giant fans, and then turned its engineers loose on the ample real estate.

Mac Pro is port city front and back, with five USB, four FireWire (including two 800Mbps), two digital audio, three analog audio, and two Gigabit Ethernet connections. Inside, the system has four full-length PCI Express slots.

As for storage, the deal maker is a four-bay strip of zero-cabling, serial ATA hard drive trays. With 750GB drives, Mac Pro holds a stunning 3TB of storage.

Mac Pro uses 667MHz fully buffered DIMM memory, as is standard with Woodcrest systems. But instead of fixing DIMM sockets to the motherboard, Apple placed the sockets and supporting circuitry on removable riser cards, which are extremely easy to install and remove.

Tricked out with the highest-end graphics card, four hard drives, and 4GB of RAM, Mac Pro idles at about 220 watts. In sleep, that falls to about 7 watts. It takes Mac Pro only four seconds to wake, not much longer than it takes Windows to recover from suspend.

On everyday CPU benchmarks, any Woodcrest box can run as fast as a Mac Pro. But CPU power isn't all there is to performance. With a three-drive RAID 0 stripe set on Mac Pro, the performance boost is phenomenal. Plus, OS X has several mechanisms for safe backups without parity or mirroring overhead.

As with all Macs, when Mac Pro is running flat out with a maximum compute load, it will maintain top CPU clock speed and voltage beyond what other vendors consider to be the thermal danger zone. But the system is designed for it.

Another unique performance edge stems from OS X's use of the GPU (graphics processing unit). Mac software can take advantage of the GPU with no extra effort; the precision math libraries that come with Apple's free development tools natively support whatever GPU is in the system.

With Mac Pro, Apple has done what it always does: design as though there is no competition, treat chipmakers as suppliers rather than keepers of the gospels, and let customers boss the company around. Mac Pro is engineered to satisfy workstation and power users who never expected to be spoiled by a $2,499 computer. And yes, Virginia, it will run Windows. (For a complete review of Mac Pro, see infoworld.com/4523.) — *T.Y.*

need, and it won't take you an hour to learn the whole stack.

"OS X Server is unproven in critical, high-availability, and large-scale deployments. It's an enterprise wannabe."

OS X Server may actually be an enterprise "don't-wannabe." Apple has lowered its sights with a server campaign that runs under the tag line, "No IT department required." Small and midsize businesses are Apple's server target.

No wonder. Apple's track record in the enterprise is not exactly stunning. OS X couldn't get sufficient uptake from ISVs on whose applications enterprises rely. Windows, established RISC UNIX, and Linux already fill the top three spaces in the market.

Yet Apple's pursuit of UNIX certification for OS X Leopard bodes well for the future. Today, native commercial software must be adapted to and separately validated on the Mac, but if OS X passes the full UNIX-compliance suite, ISVs will be a recompile away from delivering OS X server software.

Meanwhile, a clutch of high-profile customers running Xserve and Xserve RAID bolster Apple's enterprise credentials. Several broadcasters, including CNN, use Mac enterprise gear to create, store, and air content. The U.S. military hauls Mac servers into the field and out to sea. Mac systems are widely deployed in academia, medicine, high-performance computing, science, film, and other fields where one server failure is cause for hauling a machine to the curb.

"Apple controls the availability of systems, parts, upgrades, and service."

This incontrovertible truth is one of the greatest points of contention between Apple and its customers. Apple maintains a viselike grip on distribution, pricing, and service, and with the spreading of Apple retail stores, its grip is tightening such that if it chose to, the company could shut down its reseller program entirely and continue to function without a hiccup. The merest whiff of that possibility sent resellers leaping to their fax machines and lawyers.

When challenged persistently on an issue, however, Apple tends to loosen its grip. For years, for example, Apple software would only burn DVDs on Apple-branded internal drives. The software shipped with Macs was limited to burning one hour of video to a DVD. After a lot of yelling that Apple pretended not to hear, and after users hacked a couple of widely used work-arounds, Apple eventually gave in on both issues. It's Apple's nature to try to squeeze its users now and then, and it's Mac users' nature to tell Apple to go screw itself when that's what's called for. It's nice to have people with attitude watching your back.

"Apple's got a smoke-and-mirrors hack that makes Macs run Windows."

Boot Camp is a hack that alters a running copy of OS X so that the user can choose to run Windows instead at boot time. It is a very limited solution, one that Apple branded a beta by. Boot Camp seems intended to prove that, true to its word, Apple did nothing to keep Windows from running on an Intel Mac.

Dual-booting between operating systems is no more practical a solution for professional Mac users than it is for anyone else. In most cases, users will want to run OS X and another OS side by side. That's a job for virtualization, and because OS X will allow itself to operate as a guest OS, it has to host other x86 OSes.

This it does, exceedingly well, with help from Parallels Desktop. This solution is imperfect — display updates could be faster and there's no support for 64-bit guests — but it's fast, effortless, and compatible with every imaginable 32-bit guest OS. Imposing small overhead, Parallels Desktop is an entirely practical means of running alternate operating systems on a Mac.

"Apple's product line is tiny. All other Intel OEMs focus on choice."

Apple's catalog has just eight systems: iMac, 15-inch MacBook Pro, 17-inch MacBook Pro, white MacBook, black MacBook, Mac Pro, Xserve, and Mac mini. Apple departs from its Intel OEM brethren that feel it's necessary to save a place in their product lines for every subvariety of Intel CPU. With Apple, you pretty much choose the shape you like best, and that determines what Apple puts inside.

Almost. When it cut the number of base configurations, Apple also raised the number of configure-to-order options. You can't order a Mac Pro with a Celeron D, Pentium 4 Extreme Edition, or a single Core 2 Duo processor, but you can dial in up to four hard drives, two optical drives, and one of several graphics cards. Nonetheless, if you long for options in low-level items such as CPUs and chip sets, look elsewhere.

"Apple picked Intel when it should have gone with AMD."

So far. AMD's road map will take the company places that Intel can't go. Sooner rather than later, Apple may find its margins and its ability to compete restricted by its CPU supplier, just as occurred before with IBM and Motorola. If necessity dictates it, Steve Jobs will take the stage at Macworld to welcome AMD as a supplier and intimate that Apple had planned that move all along. Today, Macs may or may not appeal to you as enterprise machines. But don't underestimate the company's drive to compete.