

Running Windows on a Mac

Why?

- 1. We still live in a mostly Windows world at work (but that is changing)**
- 2. Because of the abundance of Windows software there are sometimes no valid Mac Equivalents. (Many games, some productivity, some developer apps)**
- 3. Sometimes we need to interact with Windows software to see how our Mac created solutions run on a PC & their programs. (Web developers, Java, Javascript, VBscript, PHP programmers, etc)**
- 4. Sometimes a document created on a Windows program even though it opens on the Mac equivalent, has some formatting changes that are unacceptable.**
- 5. The new Office 2008 for Mac has no more VB support, scripts embedded in some documents created in Office 2007 or earlier will not run.**
- 6. IT Managers often need to work remotely administering Windows PCs from another Windows PC.**

Please understand we're not covering BootCamp today except in passing since it is essentially just running Windows XP or Vista natively on Mac hardware; just as on a PC.

In the Past . . .

Hardware Solutions

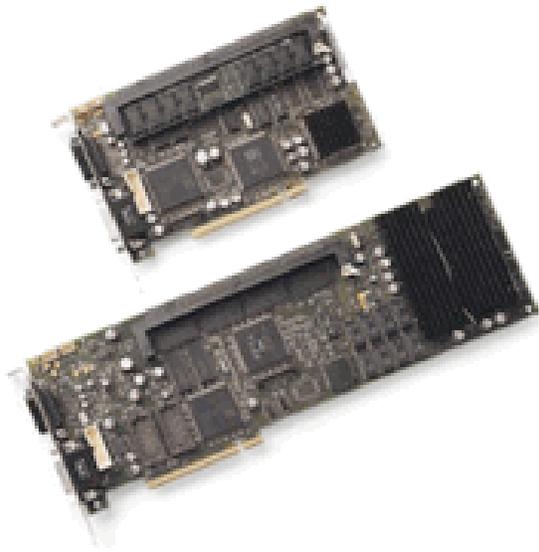
PowerMac 6100 DOS

-- 486 on separate internal card with dedicated or shared memory (really only good for Win 3.1, lack of 32 bit drivers)

Performa 640 DOS, Centris/Quadra DOS

Various Mac Pentium/i586 PCI Cards 7" & 12"

DOS compatibility Cards



12" PCI Pentium Card

7" PCI 586 card - 100Mhz

DOS Compatibility card for PowerMac

DOS Compatibility card for Quadra/Centris

Software Solutions - i386 emulators - translated i386 code into instructions for PPC and back again

SoftWindows 98 PPC MacOS 7 & 8 (not compatible with 9) on PPC CPUs

Virtual PC MacOSX on PPC CPUs

A New Hope . . . Intel Macs

Intel Macs with Core Duo Processors opened a new era with Intel VT technology

VT is an evolved cousin to HT Technology that came from the Late Pentium 4s routing multiple processes to run in parallel within a CPU.

Intel Macs can now boot to the newest versions of Windows natively from their own partition using Apple's BOOTCAMP. Runs just like a PC, but with no MacOS running concurrently.

Intel MacOS can still run older OSX PPC apps through Rosetta, but Intel native code or "universal apps" run faster.

Remember similar "FAT binaries" when we made the switch from 68K to PPC CPUs?

But . . . the future of Windows on Mac is now bright because of Virtual Machines (VM) that can run a Windows environment fast like a PC, but within a Mac running OSX.

Introducing — Virtual Machines (VMs)

Parallels Desktop for Mac in May 2006

<http://www.parallels.com/en/desktop/>

VMware Fusion for Mac in August 2007

<http://www.vmware.com/products/fusion/>

Some features differ, many are the same or similar, but both allow you to run different versions of Windows (and some Linux/Unix) very fast concurrently/within MacOSX along with the sometimes ubiquitous Windows only programs. Basically you need:

1. an Intel Mac with minimum 1GB RAM, the RAM needs to be more depending on how many multiple VMs are running at once
2. ~ 11 GB hard disk space for the software and at least one virtual machine hard drive file, the hard disk requirements can vary depending on how many VMs you want. It is *best* to share some folders on the Mac with your Windows VM to minimize the size requirements of your VM drive container. The containers can be either expanding or fixed size; you can also run a VM directly from a BootCamp partition already installed on your Mac. (there is some trickery that uses a Windows feature called hardware profiles to allow reactivation in both VM nad BootCamp)
3. Both need the program(s) installed with a activation key (demo keys are available) Both cost about \$79. but you can also almost always find a sale or rebate.
4. Legit copy of Windows (\$100-240) to run
5. What ever Windows programs you want (\$?).

But there is an alternative for some Windows programs that does not require Windows at all!

Crossovers for Mac see <http://www.codeweavers.com/>

(a polished implementation of the WINE project, allows I386 code to run on OSX or Linux)

I have researched, studied, blogged and used all three, some in real world production, and will now share what I have learned. All need Intel Macs.

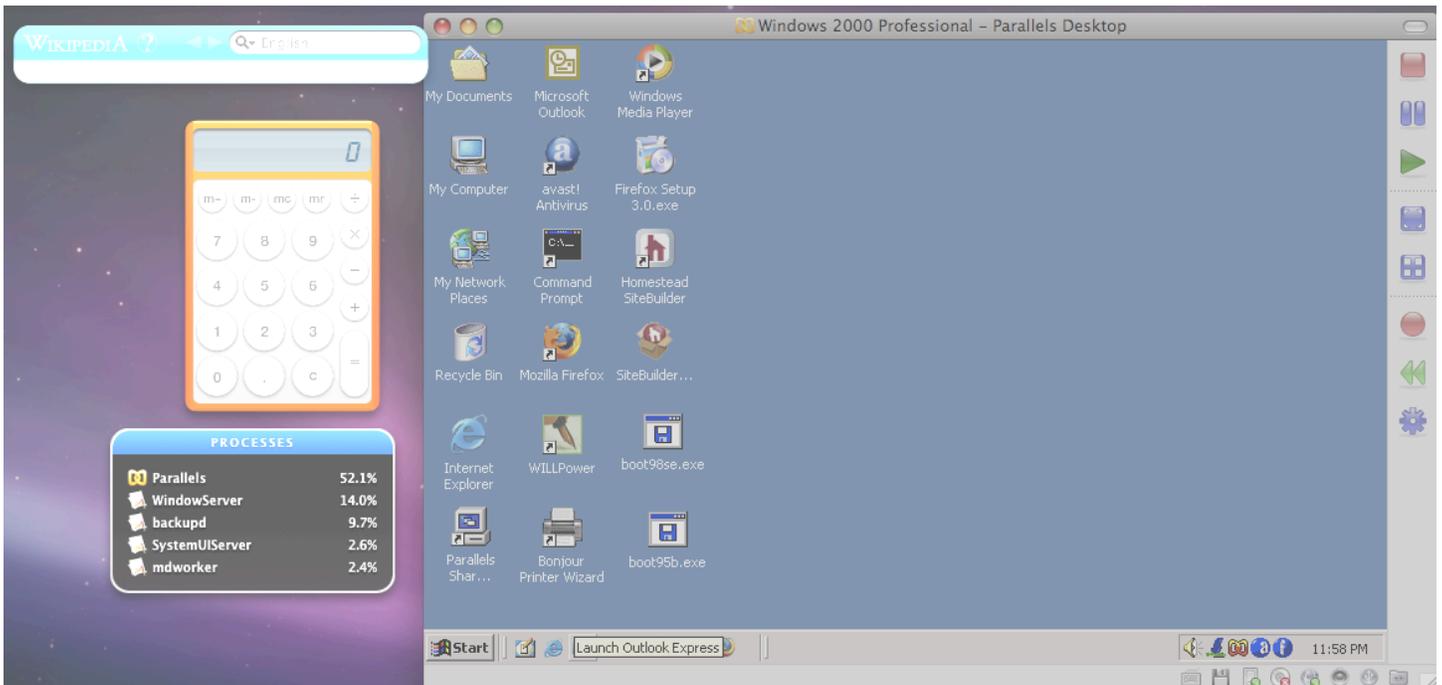
Host System Category	Fusion 1.1.3	Parallels 3.0	Crossover	My Winner
Ease of Install	Very Good	Very Good	Very Good	TIE - All
Documentation	Fair	Excellent	Very Good	Parallels
RAM requirements	512 MB min; 1 GB rec	512 MB min; 1 GB rec	512 MB min; 1 GB rec uses memory dynamically	Crossover
HD space Software	275 MB	200 MB	100 MB	Crossover
HD space per VM	10 GB recommend	15 GB recommend	Varies - just what application and supporting files need	Crossover
Guest Sys Category Overall Impression	Very stable and compatible, small memory footprint	Stability Improved but uses more resources, and some installers don't work in some Windows	Very good in supported applications, some installers & updaters are problematic	Fusion
Processors Supported	2	1	2	Fusion
64 Bit support	yes	no	NA	Fusion
Win Client Systems	20 tot (DOS 6.2 & Win 3.1-Any Vista)	20 tot (DOS 6.2 & Win 3.1-Any Vista)	NA	Fusion
Win Server Systems	6 tot (NT4 - 2003)	5 tot (NT4 - 2003)	NA	Fusion

Host System Category	Fusion 1.1.3	Parallels 3.0	Crossover	My Winner
Unix Systems	36 Linux & 2 Solaris 10	14-Linux & 2 Solaris & OS/2	NA	Fusion
Printing Support	Setup in Windows or use Bonjour for Windows; need Windows drivers	Automatically can use LPT-1 to map printer output to Mac printers; or setup in Windows or use Bonjour for Windows	goes to Mac Printers on your system	TIE - Parallels & Crossover
Network	can use NAT, Bridged, or host only, <i>change on the fly with ease</i>	can use NAT or host only	uses Mac network settings	Fusion (both others close runner ups)
File Sharing to host system	Drag and drop; shared folders on Mac	Drag and drop; shared folders; can access Windows drive container from Mac with Explorer	uses Mac file system and bottles for Windows components, finder accessible	TIE - Parallels & Crossovers -
Windows Application Compatability & Stability	Very stable, all updaters work so far	Stable with some bugs in updaters	Stable in supported applications; non-supported apps can have bugs or require special installs	Fusion
Sound support	OK, but incomplete, lack of drivers for older than Win 2000	Excellent, Parallels tools drivers work on older Win OSs	NA	Parallels
Video Support	Some hardware acceleration, no open GL	Some hardware acceleration, some open GL	NA	Parallels; Crossovers uses native MacOS support for video
Overall Speed of VM	Not too bad, best for Vista	faster for XP, Win 2000, slower for Vista	NA	Parallels

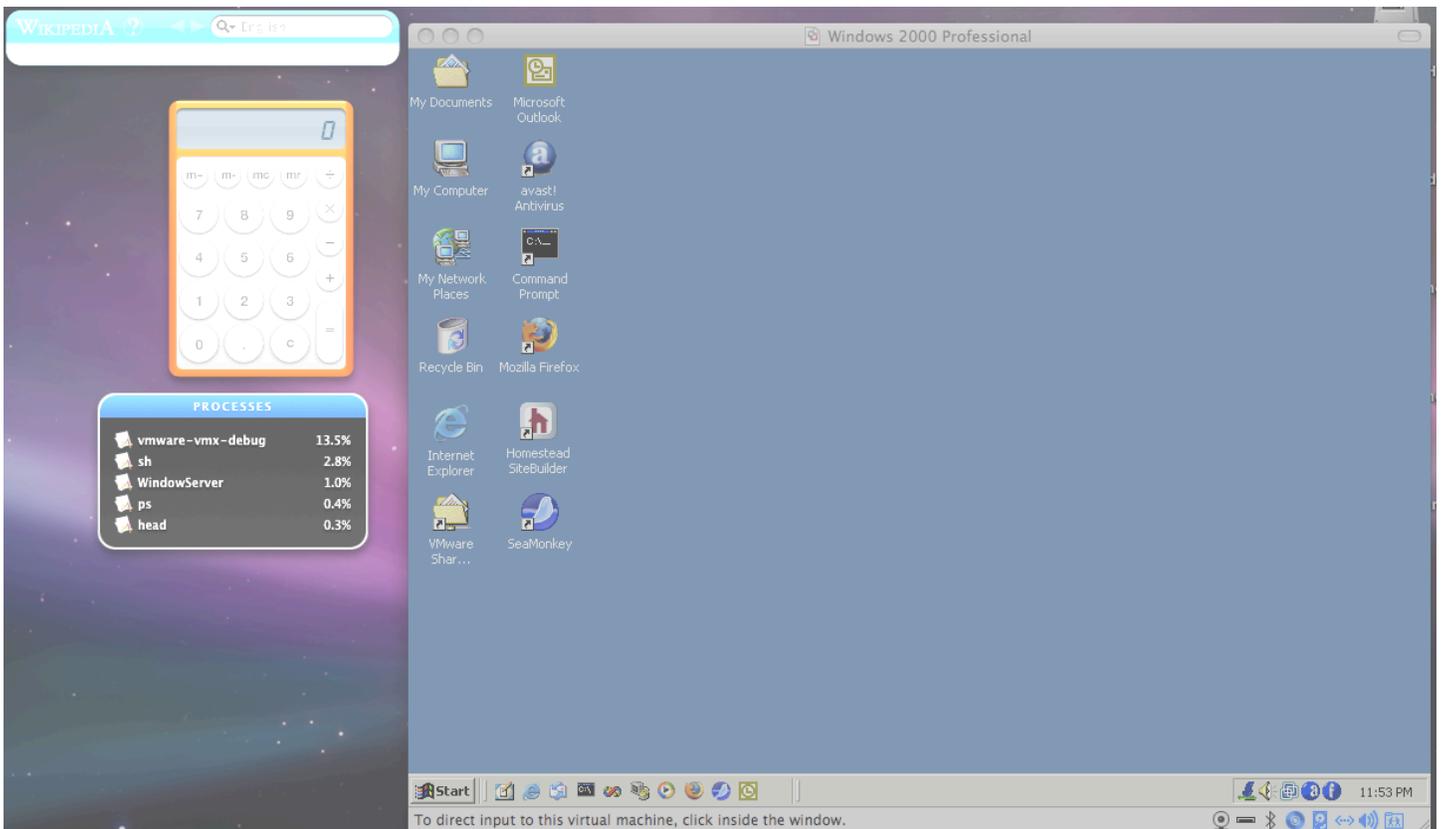
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Extras	Has separate tool that must be installed in for transferring Parallels VM into Fusion	Image tool is excellent a, recreating and resizing disk files from Parallels and Fusion; Transporter can create Parallels images from real PC disks	NA - can open bottles in finder	Parallels
Snapshots	Currently only 1	Multiple	Archive Mutiple bottles	Parallels
Running Modes	Window, Full Screen, Unity on Mac Desktop	Window, Full Screen, Coherence on Mac Desktop	Runs in own Windows-like application window on Mac Desktop	Tie - Fusion & Parallels
USB support	all 2.0 and 1.1 devices; GPS devices workperfect with MS Maps and Streets	2.0 and 1.1 devices, sometimes problems with asynchronous devices	NA uses MacOS	Fusion

I originally used Parallels from the beginning until version 2.5 in July of 2007. I had trouble with memory leaks and releases over time in MacOS and with some updaters within virtual machines. When the update for Parallels 3 came out at \$40 I hesitated; soon thereafter Fusion 1.0 came out at early adopter price of \$39 so I went for it. Fusion says there will be no fee to upgrade to their new Version 2. I still see that Parallels seem to use more resources than Fusion. I have pictures of iStat Nano processes open with both running Windows 2000 at idle.

Here is a screen shot of Parallels - 52.1%



Here is a screen shot of Fusion - 13.5% (with debugging)



VMware now has a beta Fusion 2.0, that has many of the extra features in Parallels that were not in Fusion 1.1.3. As with all betas there are some bugs but you can try either for free.

http://www.vmware.com/landing_pages/fusion2_beta.html

Some questions for PMUG attendees

Have you run Windows on a Mac?	Satisfied	Switched to another solution	Had Problems and gave up	Never
PPC solutions - Virtual PC, etc				
Intel Mac - BootCamp				
Intel Mac - Parallels				
Intel Mac - Fusion				
Other Solutions				
Totals				