iEmulator 1.7.9 Documentation

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iEmulator 1.7.9 Documentation

Thank you for choosing iEmulator 1.7.9!

iEmulator is an inexpensive, high-performance PC hardware emulator for Mac OS X based on the powerful open-source QEMU emulator core. Please take the time to read through this documentation; it will only be a few minutes before your new PC emulator is up and running!

The first step is to install iEmulator, and it couldn't be simpler! Simply drag the "iEmulator 1.7.9" application from the .dmg file you downloaded to your "Applications" folder on your Mac.

iEmulator 1.7.9

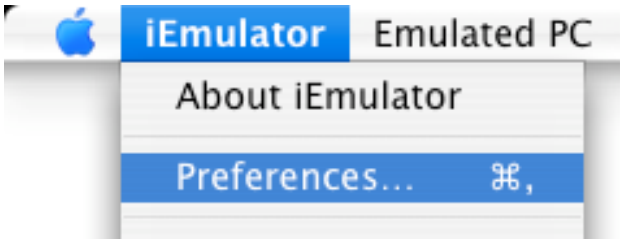
Congratulations! You've successfully installed iEmulator 1.7.9 … it's that easy.

Using iEmulator

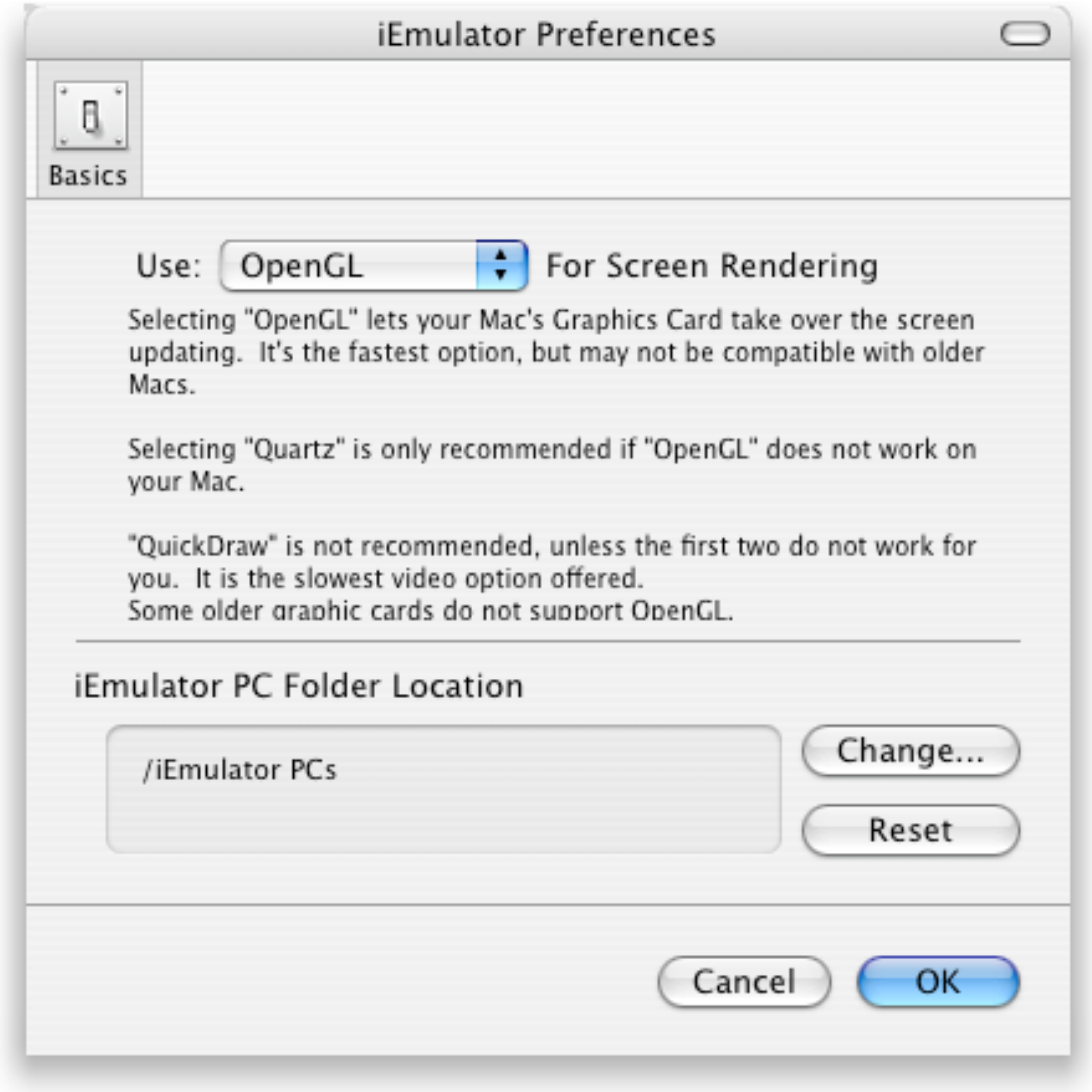
iEmulator is very easy to use! You simply need to follow a few short steps to "create" your emulated PC(s), and you'll be up and running.

First, double-click the "iEmulator 1.7.9" icon located in your "Applications" folder. You'll see a window similar to:

Before we create any new PCs, let's set a couple of application preferences. Please select "Preferences" from the "iEmulator" menu:



You can set the graphics rendering method used as well as where iEmulator should store emulated PCs and definitions:



Most modern Macs can use “OpenGL” for rendering, and if your Mac supports this method, please use it: it’s the fastest screen rendering method in iEmulator. If your emulated PCs have random lines on the screen when “OpenGL” is selected, please try “Quartz” or “QuickDraw”.

In the above screenshot, we’ve selected “/iEmulator PCs” as the location for our emulated PC definitions, but the default is your user’s “Documents” folder. Clicking “Reset” will change the PC Folder Location back to the default.

Now that we've set the iEmulator preferences, let's create a new emulated PC. The icons at the top of the main iEmulator windows are:


Create a new Emulated PC

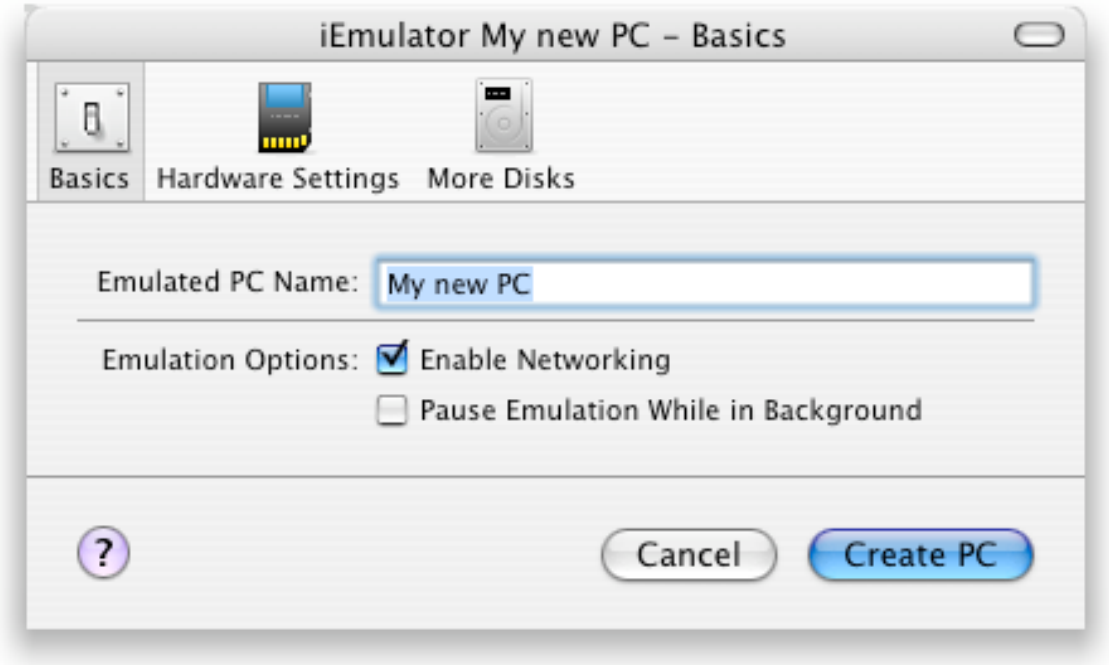

Edit an existing Emulated PC


Launch an existing Emulated PC


Delete an existing Emulated PC

Let's create one now, using the "FreeDOS" operating system included with iEmulator. First, copy the "freedoshd.img" file from the .dmg file you downloaded to your hard disk. You can put it anywhere, but remember where you copy it.

Next, click on the "Create a new Emulated PC" button (). You'll be presented with the first of three options panels where you can configure your emulated PC:



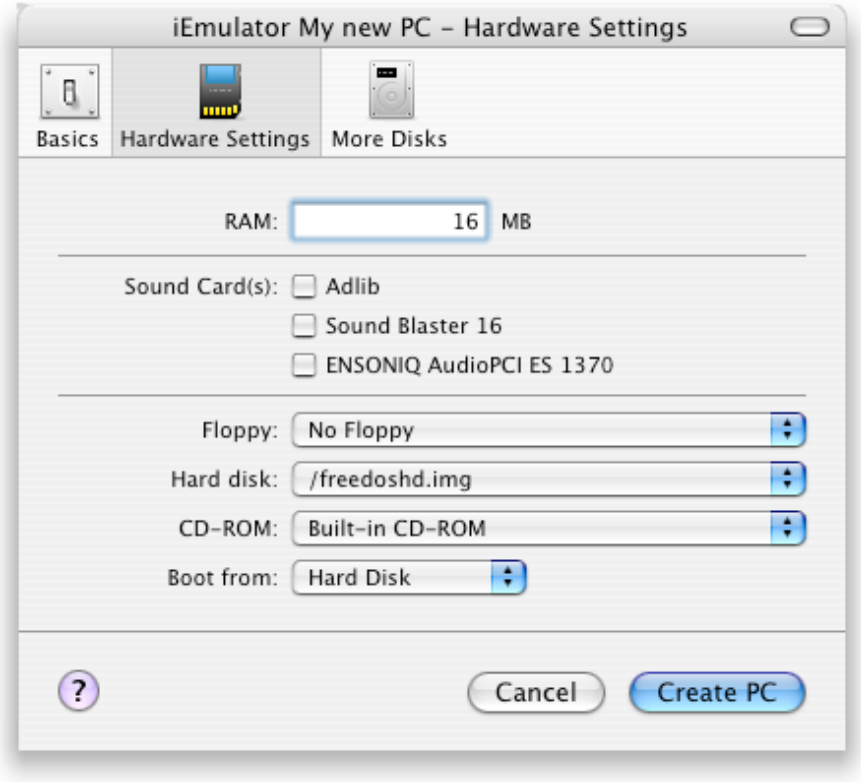
The "Basics" panel lets you name your emulated PC (please note that your PC name cannot contain the "/", ":" or "." characters, nor can it be identical to an existing PC's name.

Networking can only be enabled if your Mac has an existing, active Internet connection; you must be connected to the Internet in order to enable networking.

Also please note that networking must be enabled here in order to access the Internet from your emulated PC, to print to any printer connected to your Mac or to share files and folders with your Mac.

"Pause Emulation While in Background" does exactly that: whenever the emulation window is not the foremost window, the emulated PC will automatically be paused.

First, give the PC a name. Let's call this one "DOS PC". In this case (a simple DOS PC), networking or pausing in the background are not critical options, so please leave the defaults. Next, please click the "Hardware Settings" icon:



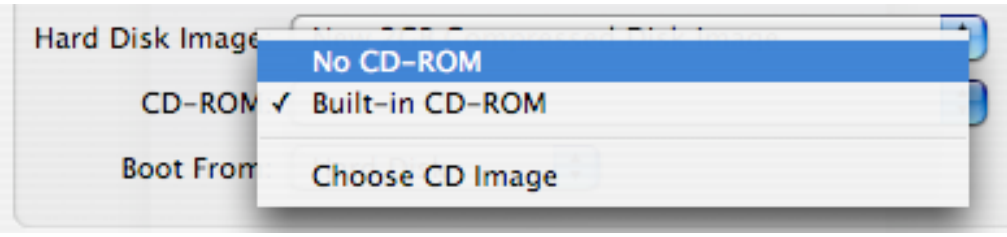
16MB of RAM is enough for this PC, but if you want to emulate a PC running Windows, you'll want to emulate significantly more RAM memory! We recommend at least 128MB to emulate the latest Windows operating systems. Please note that you can assign up to 1GB (1024MB) of RAM to each emulated PC!

We don't need to emulate a floppy disk nor a CD-ROM, only a hard disk. Please select " Choose Existing Disk Image…" from the "Hard Disk Image:" drop-down menu:

You can then navigate to where you copied the "freedoshd.img" file, and select it.

NOTE: Please ensure that the folder names where your images are stored do not contain any special characters. Please limit naming these folders to alphanumeric and space characters only. iEmulator may not be able to reference folders with these special characters in their name.

Next, please select "No CD-ROM" from the "CD-ROM:" drop-down menu, since we're only going to use the "freeDOSHD.img" file for this PC:



Next, ensure that the “Boot Disk” drop-down menu is set to “Hard Disk”.

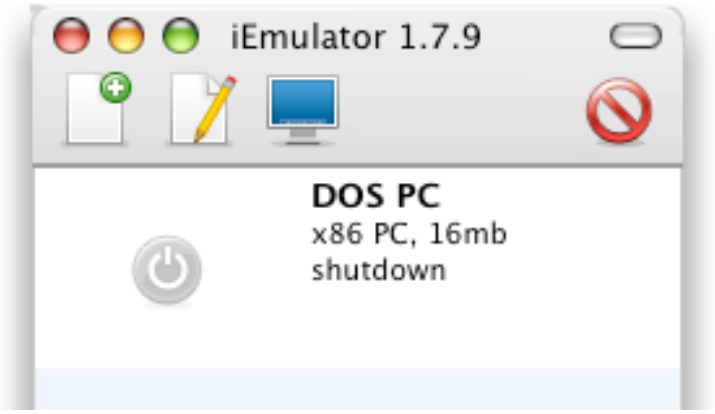
We don’t need to worry about Audio support yet; our DOS PC will not include any audio drivers, so we can leave this checkbox unchecked.

The third tab, “More Disks” is only used if (a) you are installing Windows 2000 or Windows Vista, or if you wish to add more than a single hard disk image to an emulated PC. We’re doing neither right now, so please ignore it.

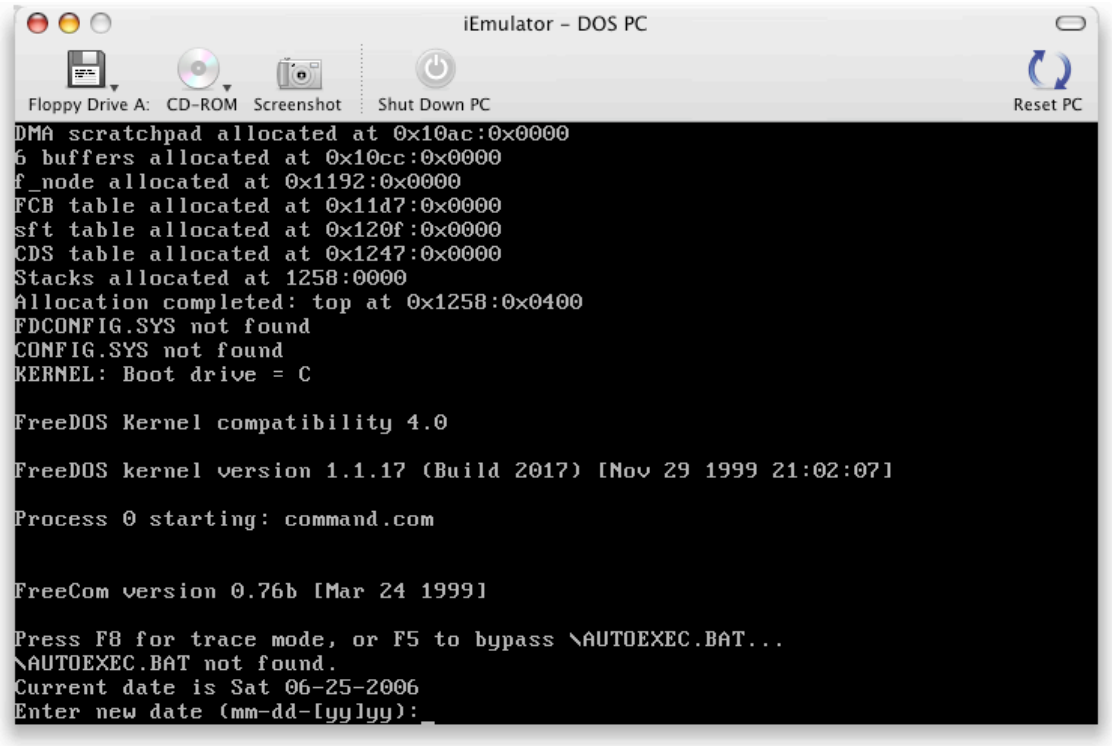
Finally, click “Create PC”.

That’s it!

Let's run our new, emulated PC. You'll notice that your "DOS PC" appeared in the PC list after you created it:



You can either click once on "DOS PC" and then click the "Launch" icon ( ), or double-click on "DOS PC", and your PC will start up!



You'll notice a new group of icons at the top of the emulated PC's window:

Eject and/or swap the current floppy disk image

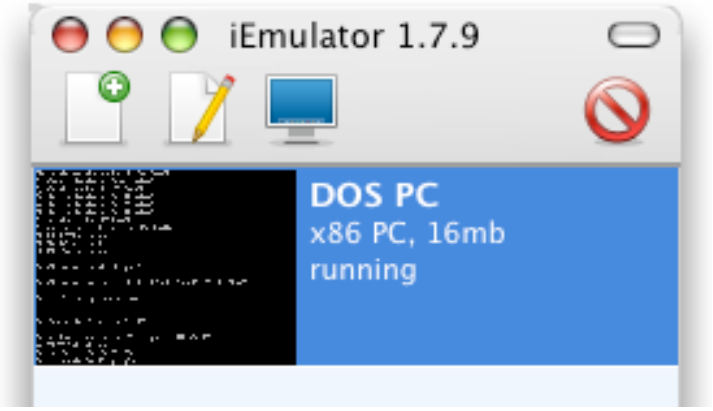
Eject and/or swap the current CD image, or use a physical CD-ROM

Take a screenshot of the current emulation screen, and save it on your desktop.

Shut down the PC, with the option to save it's state for later

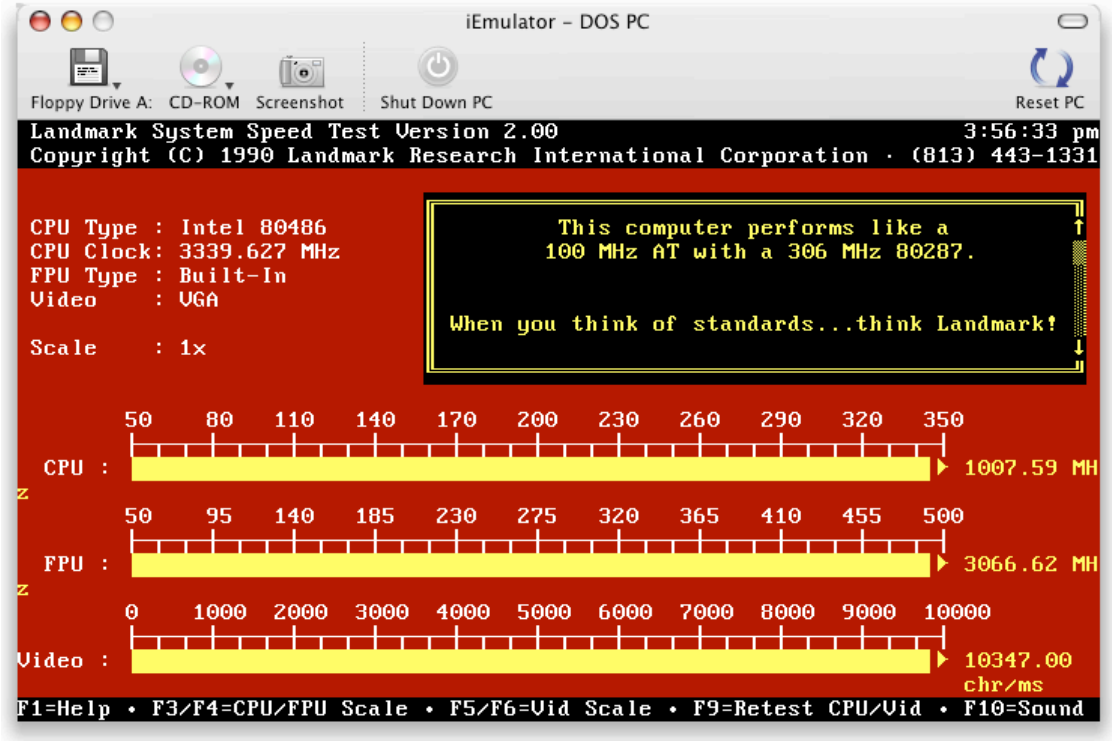
Immediately reset and re-launch the PC

You will also notice that in the main iEmulator window, the emulated PC's screen is reflected in a thumbnail:

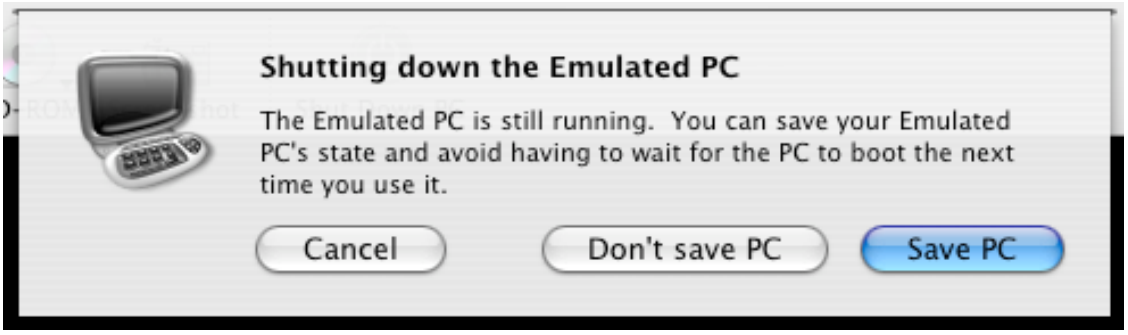


This becomes very useful later, when we'll save the PC's state; you can always see at a glance what the emulated PC was doing immediately before you shut it down and saved it.

We've included a couple of simple DOS benchmarks on the freeDOS hard disk image so you can test the performance of your emulated PC. Simply press "return" a few times to get to the "C:\>" prompt, and then type "SPEED200" and press return to run a basic benchmark test. You'll be presented with a screen like the following:

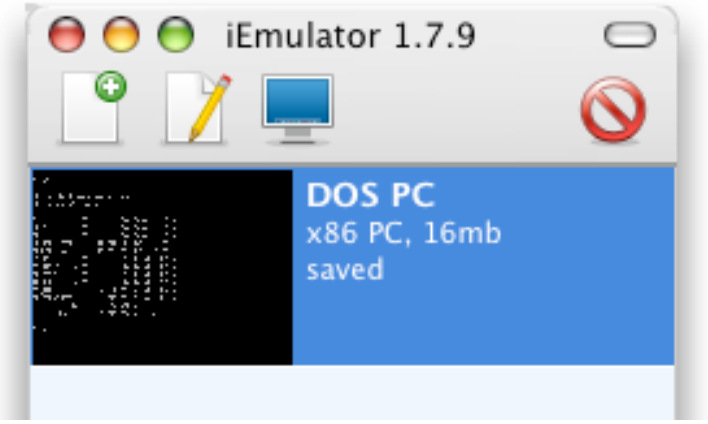


In this case, our emulated PC is running as fast as a 1 GHz Pentium, according to Speed Test! Press the "esc" key to exit from the Speed Test, and feel free to experiment with your DOS PC! When you're ready to quit, simply click the shut down button (). You will be asked if you wish to save the PC's state or not, or if you wish to cancel the shutdown and continue using your PC:

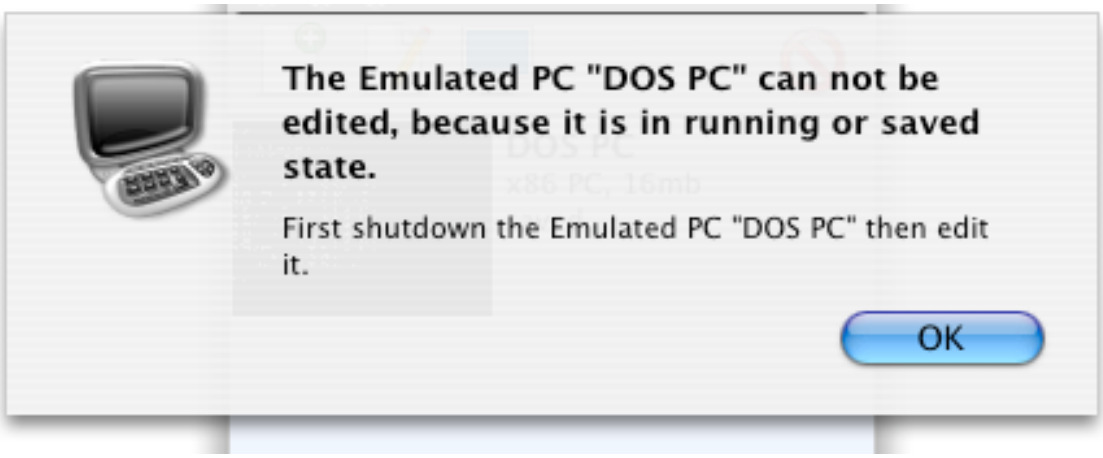


If you choose not to save the PC, the next time you launch it, you'll be booting from scratch, just as if you powered the PC off and on. If you do save the PC's state, the next time you launch it, you'll be almost immediately returned to the exact state that the PC was in when you shut it down – it's a real time saver!

In this case, we've chosen to save the DOS PC's state. Please note that in the main iEmulator window, the saved state is reflected in the thumbnail image of the PC; we can see at a glance exactly what we were doing with the PC when we shut it down, and where we'll be when we re-launch it!



Please note that you cannot change any attributes of a PC that has a saved state: if the thumbnail view of the PC in the main iEmulator window says "saved", as it does above, any attempt to edit the PC by clicking the edit () button will result in an error message being displayed:



To re-enable editing of the PC, please re-launch it, then shut it down without saving it (if the emulated PC is running a non-DOS operating system like Windows or Linux, please shut down the operating system first). You will then be able to edit the PC.

You can now quit the iEmulator 1.7.9 application, or continue on and create a Windows PC!

Creating and using a custom PC

Now that you know the basics of how to use iEmulator, let's create a custom PC, and get it ready to install Windows 2000.

First, run iEmulator and click the "Create PC" button ( ). You'll be greeted with the now familiar "Configuration" window, but this time we're going to create a virtual hard disk that our custom PC will use. You can create a disk of virtually any size, but please note our recommendations by operating system:

DOS	1MB to 500MB
Windows 95	100MB to 1GB
Windows 98, 98SE or ME	250MB to 4GB
Windows 2000	1GB to 4GB
Windows XP	2GB to 8GB
Windows Vista beta 2	13GB or more
Linux (smallest installation)	100MB to 1GB
Linux (full installation)	4G to 8GB

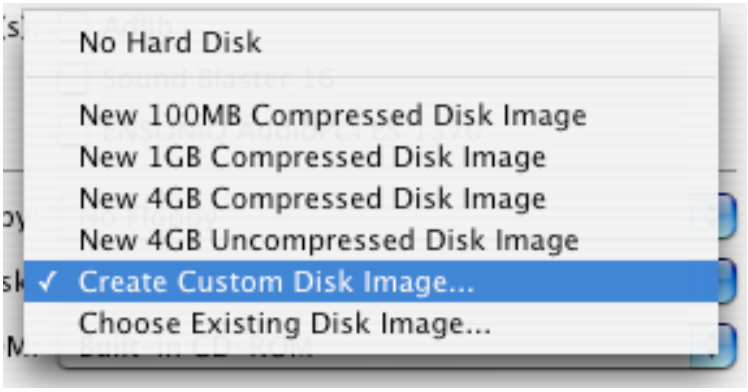
To create a new emulated hard disk, you can choose one of a list of pre-defined disk images in the "Hard Disk Image" drop down menu in the "Hardware Settings" tab:

Or, you can select "Create Custom Disk Image…" to create a disk image of any size. When you select this option, you'll be presented with a window that enables you to select the size you wish, as well as the format. You can choose between two formats: qcow (compressed) and img (uncompressed). Each has their benefits:

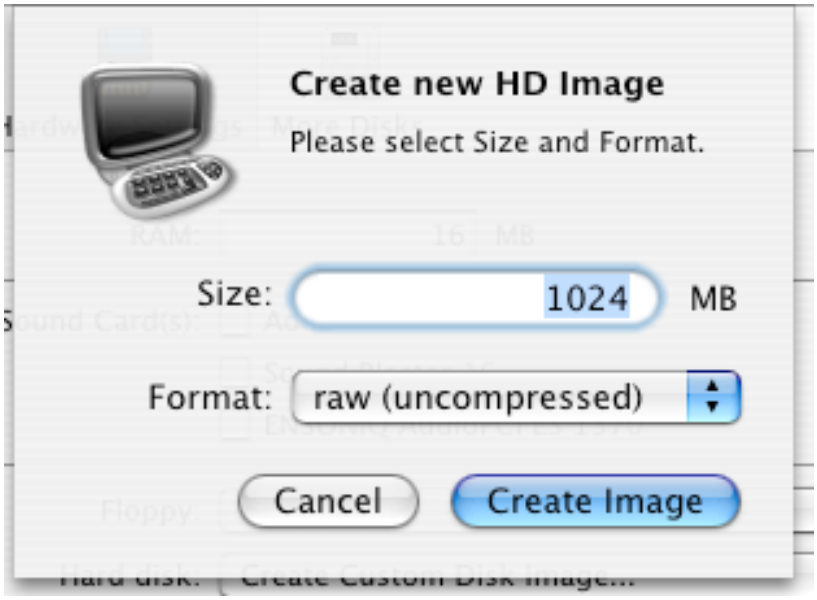
- qcow (compressed) disk images are created very quickly, and do not take up the full amount of disk space that is allocated to them. Even if you create an 8GB disk image, if you choose the qcow (compressed) format, it will only take a few KB of disk space to start, and will automatically grow as data is added to it. The downside is that qcow (compressed) disk images cannot be mounted in the Mac's Finder.

- img (uncompressed) disk images can take a few minutes to create (especially once you get above 2GB in size). They also take the full amount of disk space allocated to them. If you create a 2GB img (uncompressed) disk image, it will immediately take up 2GB of your Mac's disk space. However, these disk images can be mounted in the Mac's Finder as if they were regular hard disks, which is very beneficial if you need to copy files and folders into an emulated PC's hard disk, or if you need to perform maintenance on a damaged hard disk image.

Please select "Create Custom Disk Image…":



In this case, let's create a 1-gigabyte img (uncompressed) hard disk by entering "1024" in the "Size:" field, selecting "img (uncompressed)" in the "Format:" drop-down menu, and clicking the "Create Image" button:



The image will be automatically assigned to the "Hard Disk", but it will not be created until you click "Create PC". Again, please note that it can take a while to create large

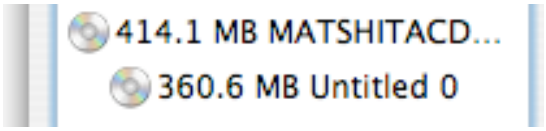
img (uncompressed) disk images … please be patient after clicking "Create PC" … but don't click "Create PC" just yet; we still need to assign the CD to the emulated PC!

You have two options in regards to using your Windows installation CD with iEmulator. You can either create an image of the CD, or you can use the actual CD. If you create an image, reading the CD will be faster in the emulated PC environment, but of course, it's much easier just to use the real CD!

To create a CD image, we'll use Apple's Disk Utility, included with every copy of OS X.

First, place your Windows CD in your CD or DVD ROM drive. You'll see it appear on your desktop within a few seconds.

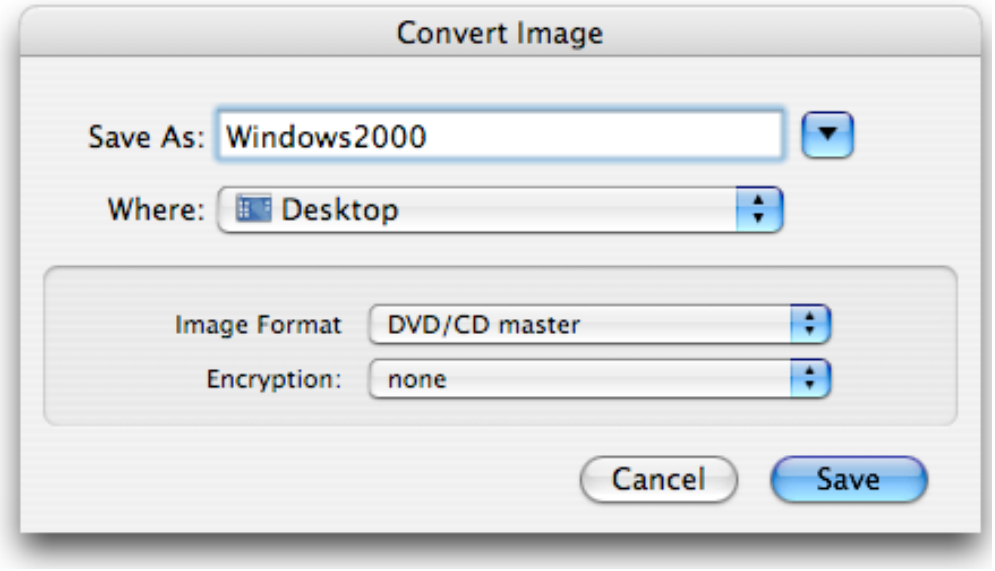
Next, locate the "Disk Utility" application in your "Utilities" folder (which is generally located within your "Applications" folder. Run "Disk Utility"; you'll either see your Windows installation CD in the list of volumes, or it may be named "Untitled 0":



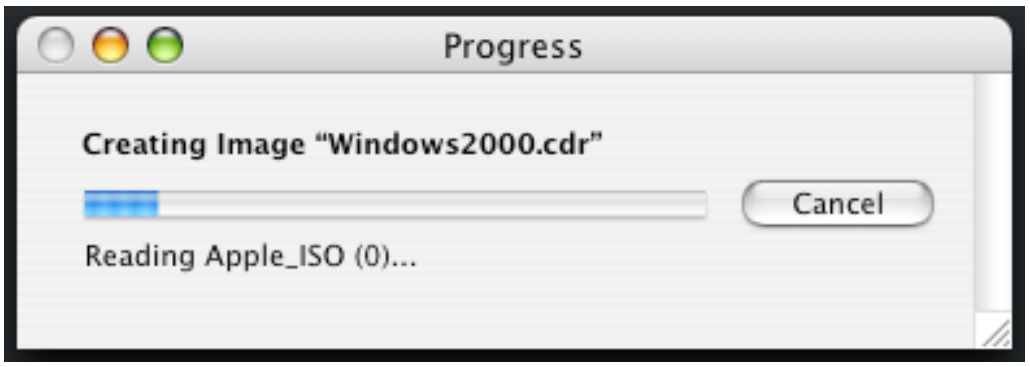
Click once on the Windows Installation Volume (or "Untitled 0") in the list, and from the "File" menu, select the "New" -> " Disk Image From (your Windows Installation CD Name)".

Please note that this assumes that you're using OS X 10.4 ("Tiger"). If you're using OS X 10.3, this menu selection may be under the "Images" menu.

Give your CD Image a name, and select the folder you wish to save it in. **As well, you must select "DVD/CD master" as the image format, and "none" for Encryption**:



After a few minutes of disk activity, Disk Utility will have finished creating your new CD image:



You can now quit Disk Utility and eject your Windows installation CD for safekeeping.

Go back to your iEmulator configuration screen, and click the "CD-ROM:" drop-down menu. Select " Choose CD Image". Locate and select the CD image you just created.

Finally, ensure that the "Boot From:" drop-down menu is set to "CD-ROM" – you'll be booting from this new CD-ROM image.

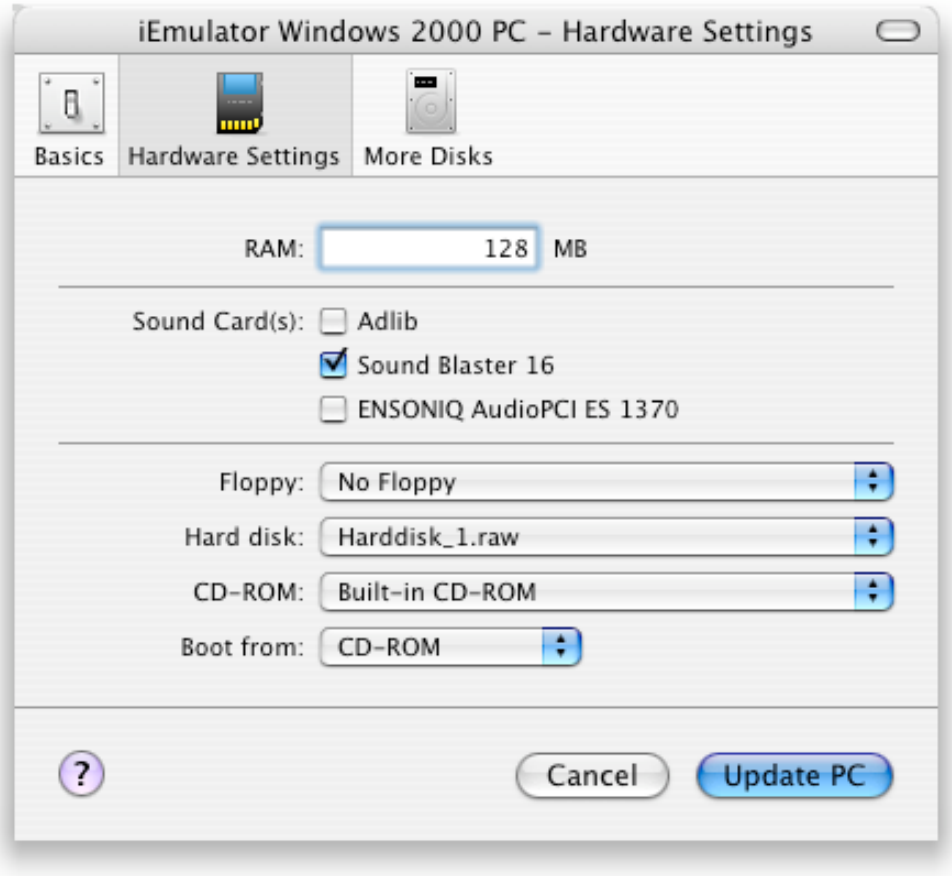
Don't forget to give this new Windows PC enough RAM memory – we recommend at least 128MB for the newest Windows operating systems. We'll also turn on audio support by checking the Audio checkbox. Name this PC, and click "Create PC".

You're done! It's as simple as that. You can now "Launch" your new custom PC by pressing the "Start PC" button () and you can now install Windows.

If you want to avoid the CD image creation process, please simply use the physical CD-ROM. To demonstrate how to do this, we'll re-configure this Windows 2000 PC to use not the CD image we created, but the physical Windows 2000 CD-ROM.

To do this, let's create a new emulated PC. We'll call it "Windows 2000 from CD". We can choose the same hard disk image as we used above, but this time choose "Built-in CD-ROM" in the "CD-ROM" drop-down menu.

Again, ensure that "Boot From" is set to "CD-ROM", and click "Create PC":



Next, insert your Windows CD in your Mac, and wait for it to appear in the Mac's Finder. When you see the CD-ROM icon appear in the Finder, you can then Start this new PC by clicking the Start PC button ().

In both cases, the outcome is the same:

Please note that in some rare cases, an image of the CD will not boot, even though the real CD is bootable. If this happens, then please try booting from the real, physical CD-ROM.

In the future, if you wish to use different CDs while an emulated PC is running, either as images or as real, physical CD-ROMs, you can click the "Swap CD" button in the emulated PC window () and choose to Eject the current CD-ROM or CD-Image, and use a new Image or Physical CD-ROM. Please note that "Ejecting" a CD-ROM or CD-Image from within iEmulator only "ejects" it as far as the emulated PC is concerned; it does not physically eject the CD from your Mac! You still need to manually eject any CDs from your Mac, using the Finder.

Finally, when you get a version of Windows running on your new emulated PC, simply click in the emulator window to start using an emulated Windows mouse. To use your mouse with your Mac again, press "control" and "shift" at the same time. You'll see a reminder in the emulator window if you forget this key sequence.

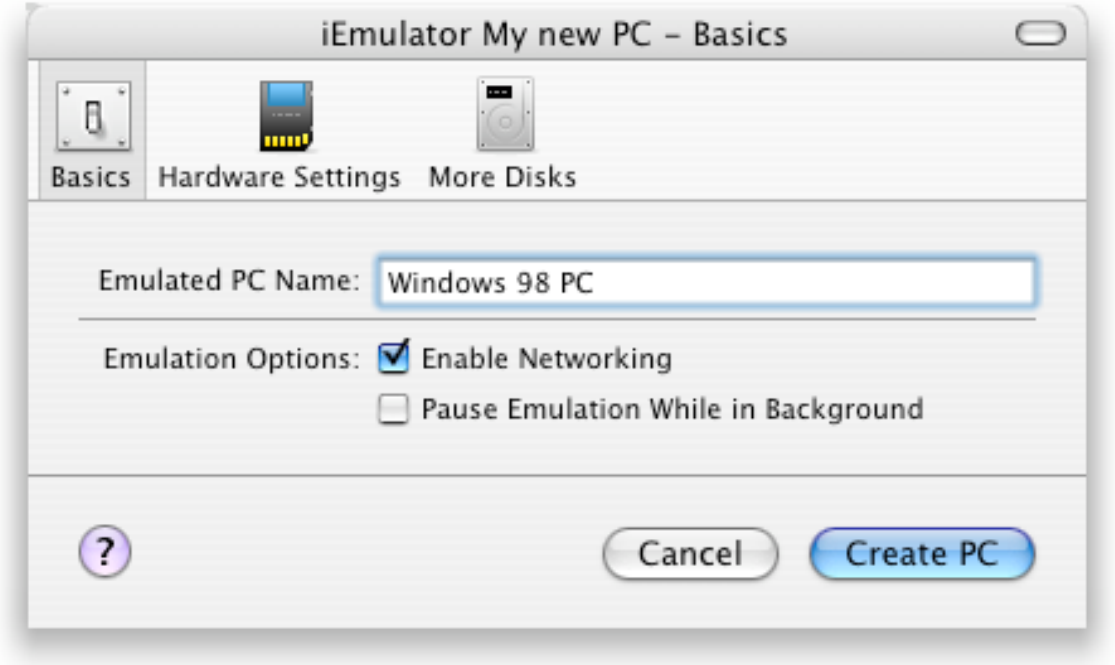
Preparing for Windows 98

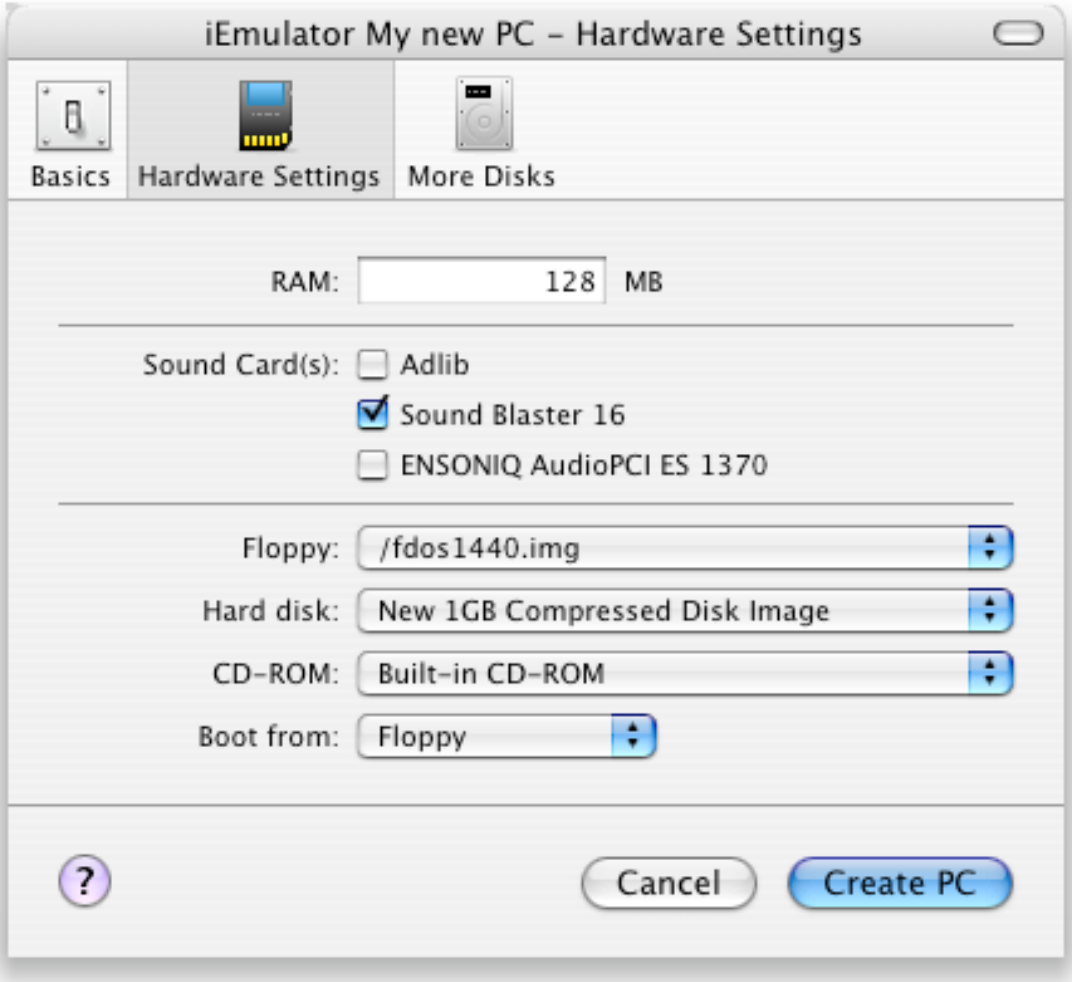
(Please note that some of the emulated PC screens shown in this tutorial were taken with an older version of iEmulator. This does not affect the process at all.)

Because Windows 98 is based on DOS, we have to prepare an emulated hard disk before we can install the operating system.

First, ensure you have an emulated disk image available to install Windows 98 on. As well, make certain that you have the "fdos1440.img" bootable floppy disk image available.

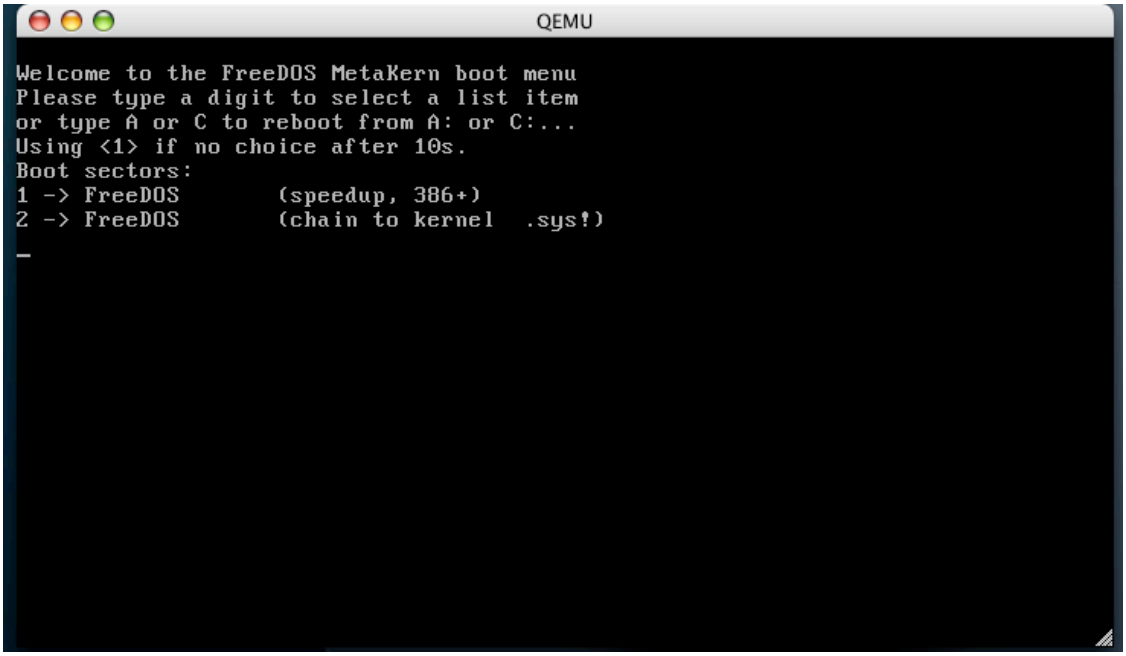
Next, configure your emulated PC within iEmulator:



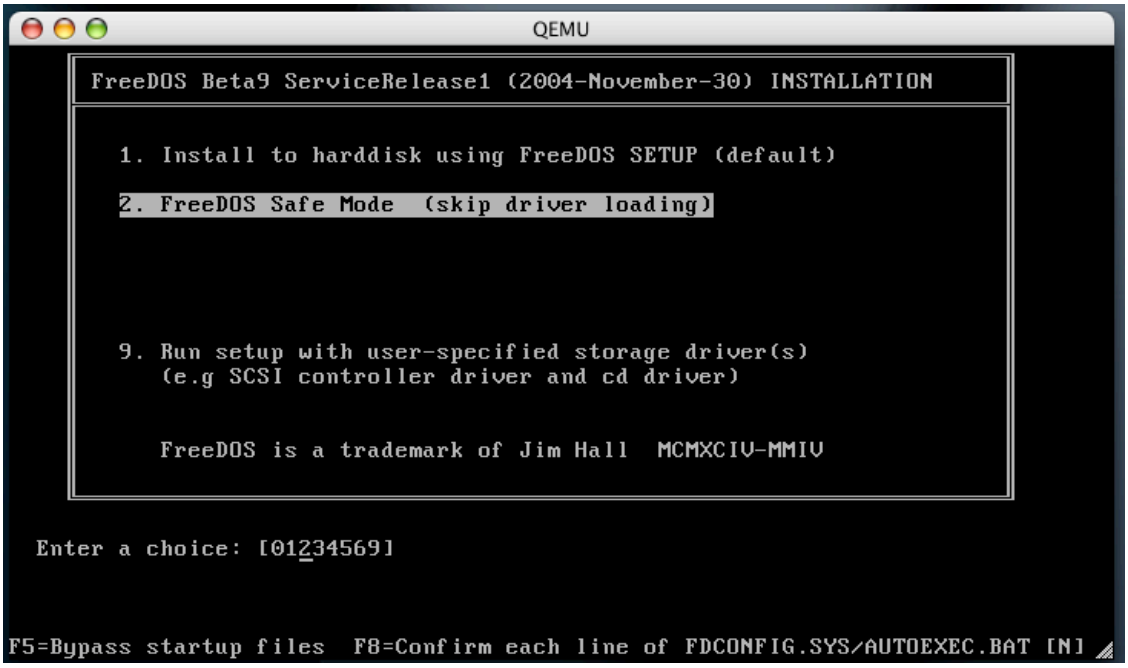


You'll note that we've assigned the "fdos1440.img" bootable floppy disk image to drive A by selecting "Choose Floppy Image…" from the "Floppy Image:" drop down menu, and a new 1GB hard disk image to "Hard Disk". We've also set the boot disk to Drive A (the Floppy).

Click "Create PC", and Launch it! You'll be presented with the following screen:



Choose option (1). After a few seconds, you'll see:

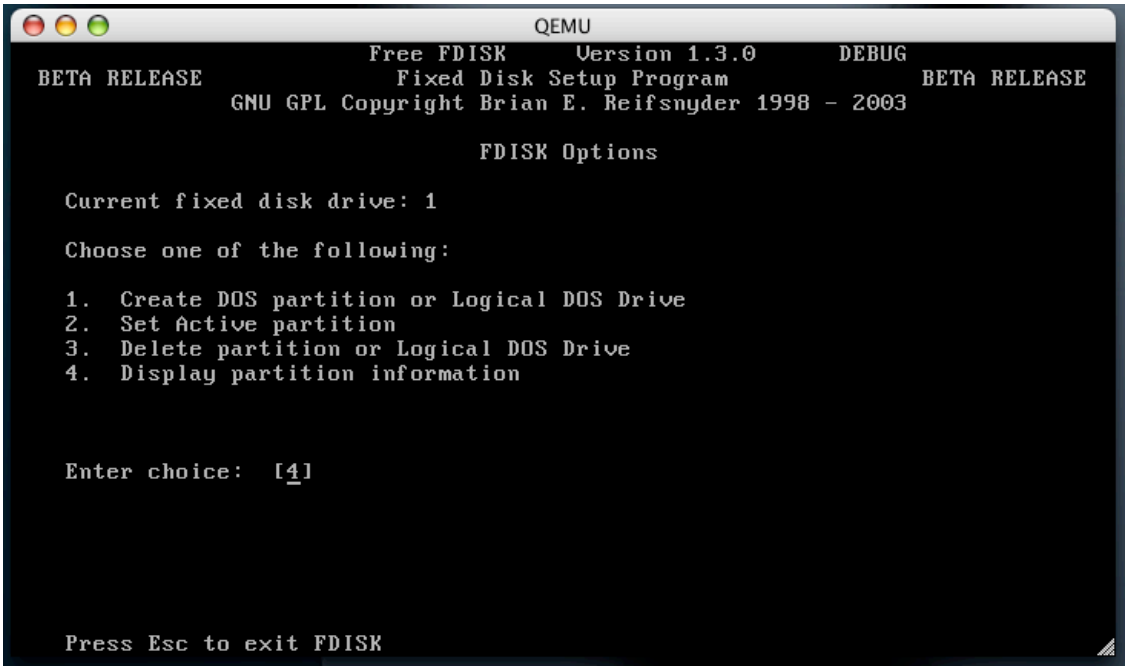


Choose option 2. You'll then be given a DOS prompt.

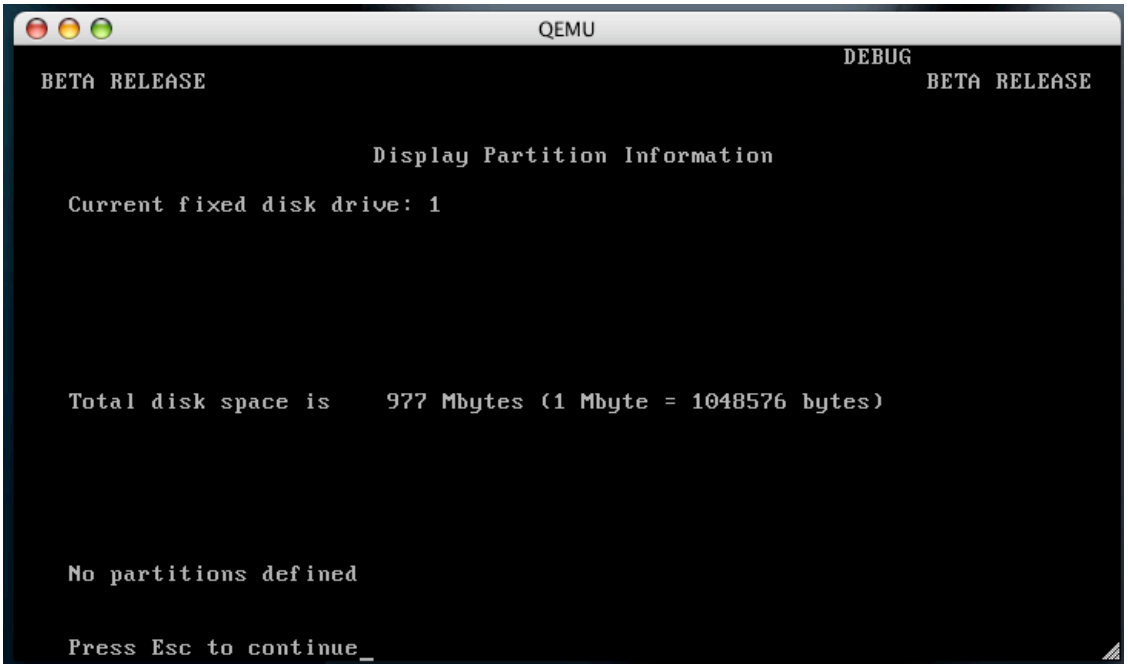
Type "FDISK" and press return. You'll see:

Answer “Y”, as our minimum hard disk size is 1GB, so we’ll need to use FAT32 support.

When you see:

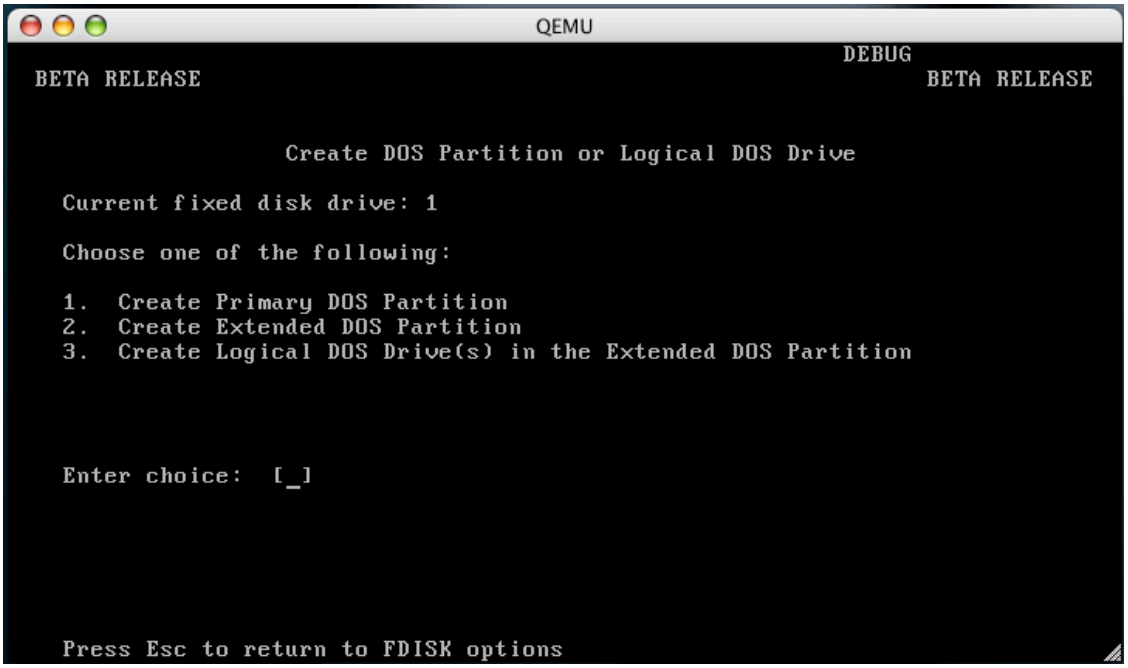


Choose option (4), to ensure that we're working with our hard disk image. As you can see, total disk space is 977MB – the 1GB disk image we want:

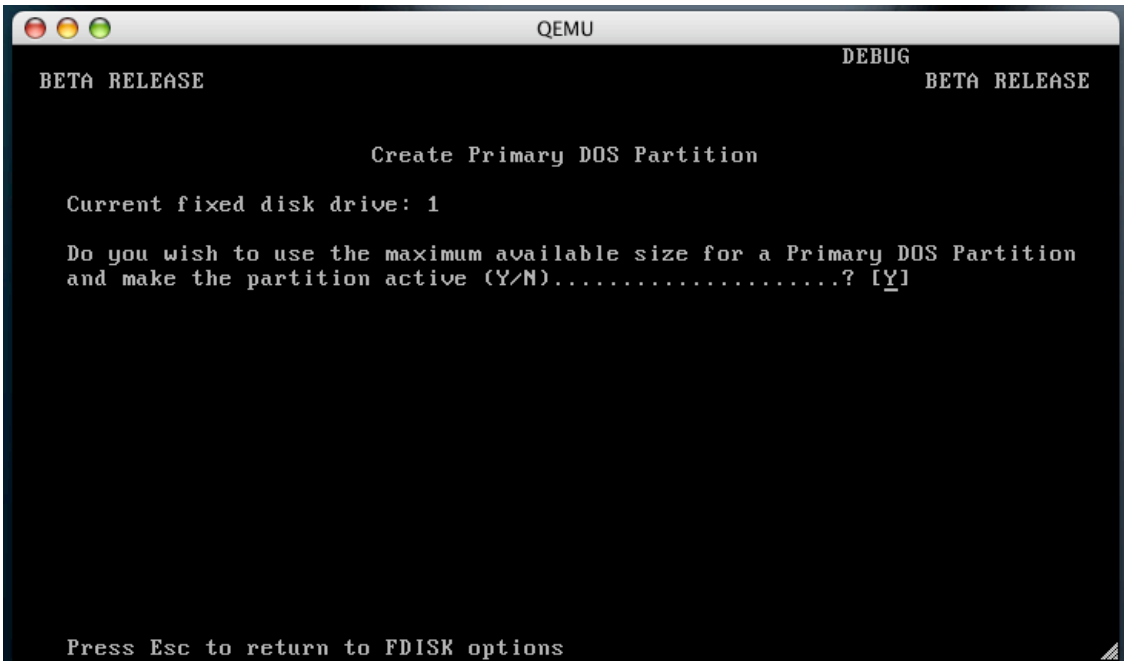


Press "Esc", then select option (1): "Create DOS partition or Logical DOS Drive".

At the next screen, choose (1): "Create Primary DOS Partition":



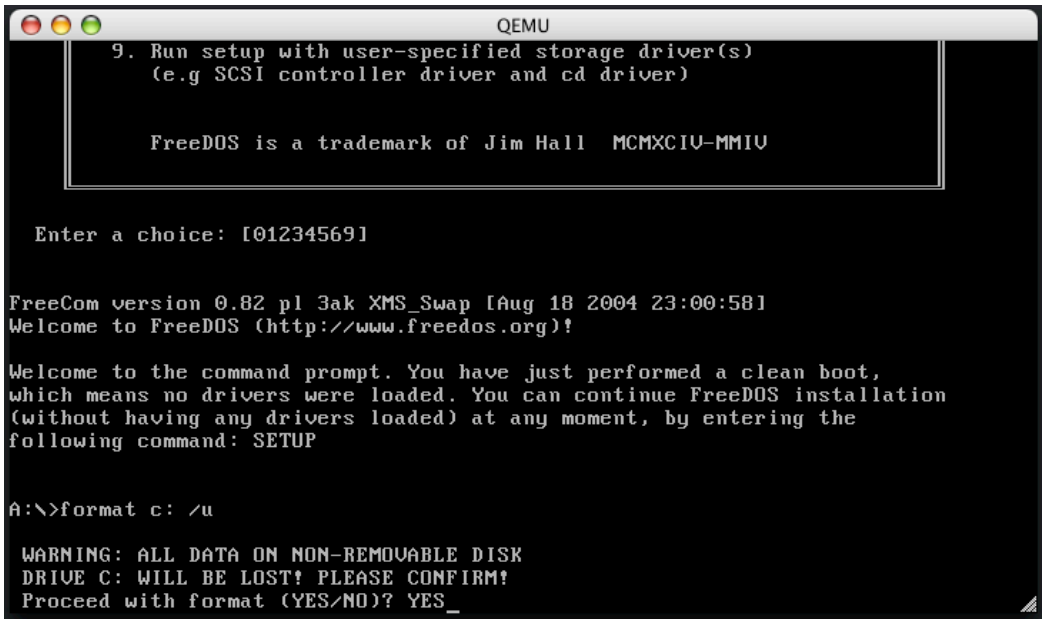
You'll be asked if you wish to use the maximum available size for a Primary DOS Partition, and make the partition active. Select (Y):



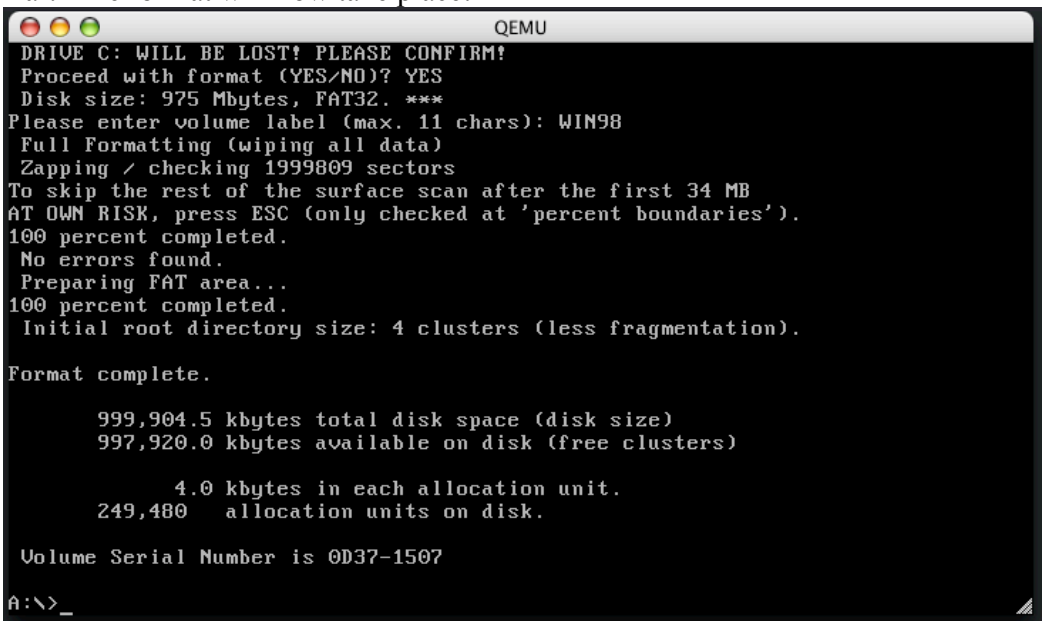
Almost instantly, you'll see a screen reporting that your Primary DOS Partition was created. Press "Esc" to continue, and return to the main menu. From the main menu you can hit "Esc" again to exit, and restart your DOS system.

Again, go through the boot procedure as described above.

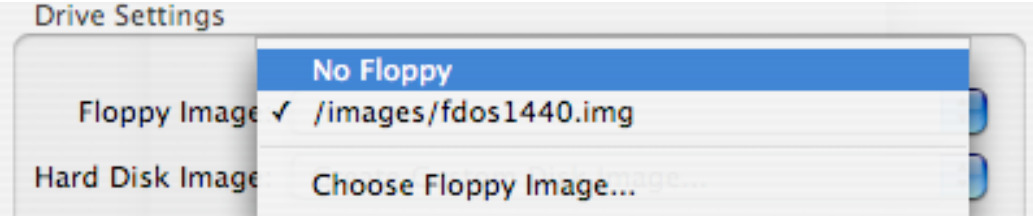
Now it's time to format your emulated hard disk. Once you've booted back to the DOS prompt, simply type "FORMAT C: /u" This will format the hard disk:



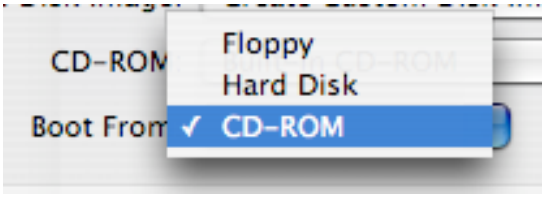
You'll be asked to provide a label for the drive. You can call it "WIN98" or something similar. The format will now take place!



Once it's complete, you can shut down the emulated PC window **without saving it**, and reconfigure your emulated Windows 98 PC by clicking once on the Windows 98 PC in your emulated PC list, and clicking the Edit PC button (). You can remove the bootable Floppy image selecting "No Floppy" from the "Floppy Image" menu:



And then selecting “CD-ROM” from the “Boot From” Menu:



After that, simply click “Update PC”, and you can then re-launch the Windows 98 PC to start the Windows Setup procedure!

Installing Windows 98

Please note that the installation instructions and screen shots are from a Windows 98 Second Edition CD-ROM. What you see may vary slightly from this documentation package.

Once you launch your Windows 98 PC, you'll see what appears to be DOS booting up, with a number of CD-ROM drivers loading:

Press a key to continue, and you'll be presented with a DOS prompt. You'll note that it's assigned our CD-ROM to drive "Y:" in this case, so type "Y:" and press return. At that point, simply type "SETUP" and press return to start the Windows 98 setup.

Note: many Windows 98 distributions will automatically start the SETUP routine without this DOS-style boot.

The Windows 98 Setup routine wants to perform a check on our system, so let's press "Return" (which is the same as "Enter" on a PC). A quick drive scan will be run, and within a few seconds you'll have the graphical Windows 98 installer running:

It's time to activate the mouse cursor! Simply click in the emulator window to use the Windows mouse. You'll notice that you can no longer mouse out of the emulator window. To return to controlling your Mac with your mouse, simply press the "**control**" and the "**shift**" keys simultaneously. Your mouse will now be controlling your Mac, and not your emulated PC.

Go through the installation procedure for Windows 98 as you normally would:

At some point during the installation, you will be asked to create a Startup Disk. Because there's no floppy drive to do so, we'll have to bypass this step of the installation. You'll see the following window:

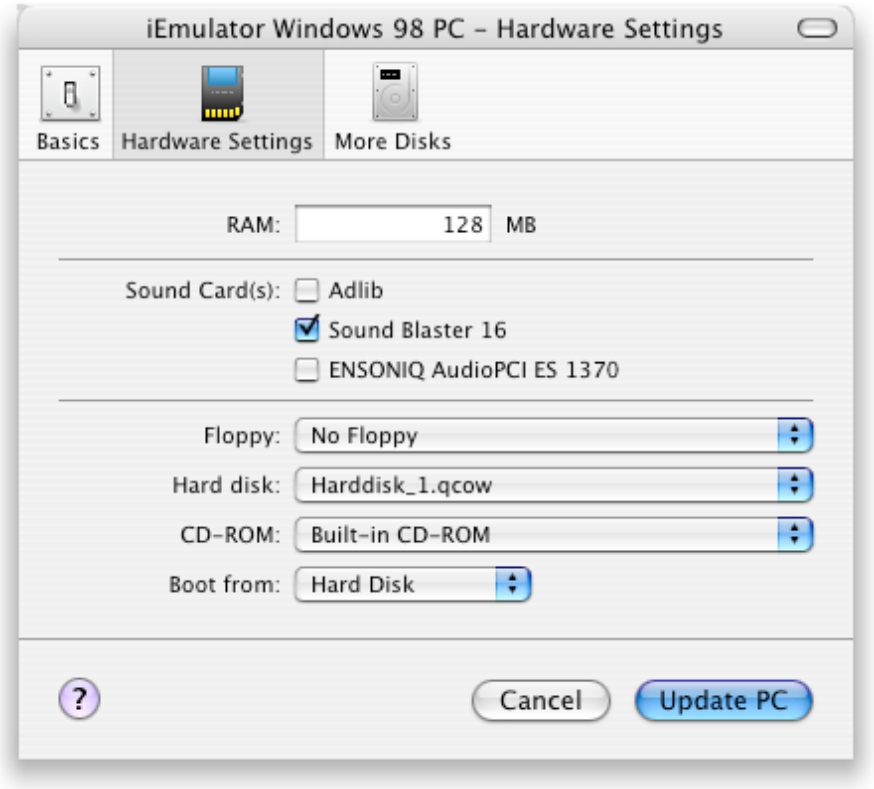
Click “Next”, and wait for the installer to enumerate the files it needs for a startup disk. You’ll then be asked to insert a floppy disk into your non-existent floppy drive:

At this point, you can click the “Cancel” button, then click the “OK” button in the next window.

After that, you can continue installing Windows 98 by clicking the “Next” button. This part of the installation will take a little while:

After the files are copied, you’ll have to restart your emulated PC. At this point we do **not** want to boot with the Windows 98 CD! When the setup routine asks you to restart your pc, simply close the emulator window by clicking on the “Shut Down” button at the top of the emulated PC window, and do not save the PC.

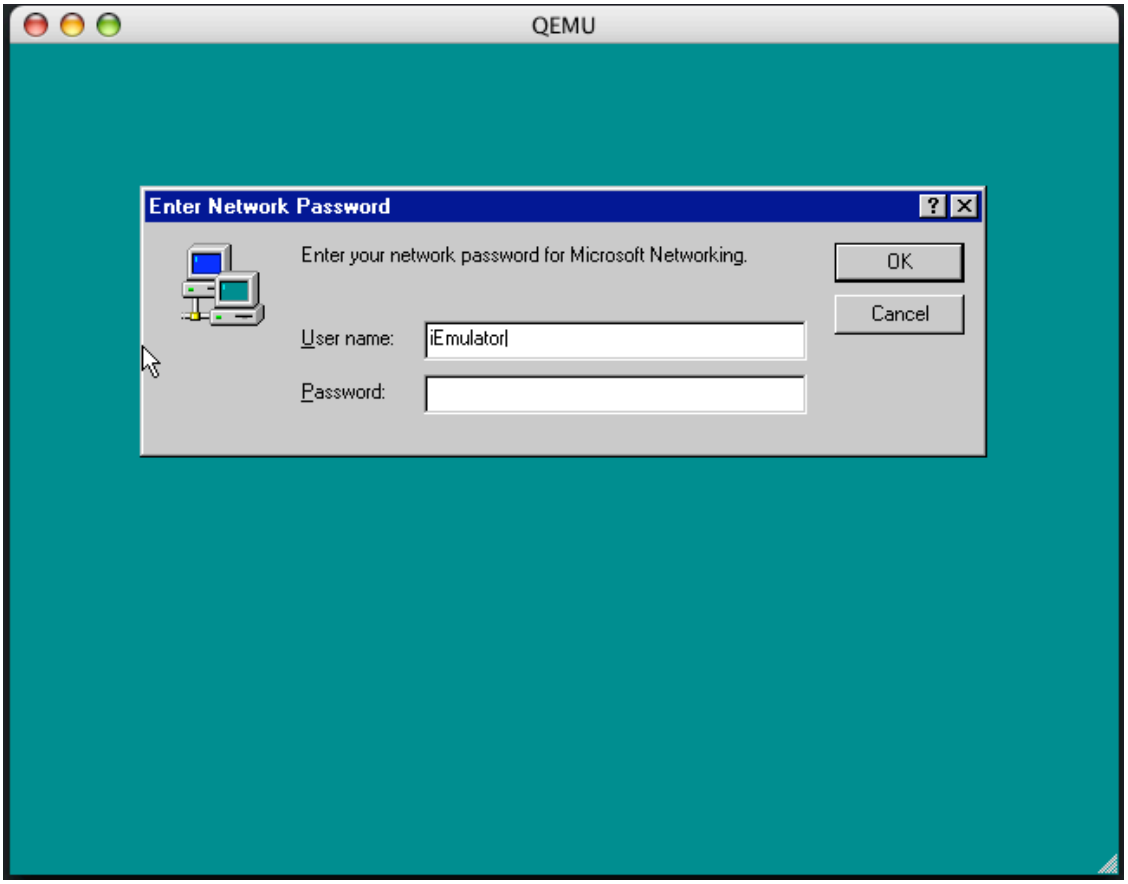
Click once on the Windows 98 PC in your PC list in the iEmulator main window, and click on the “Edit PC” button. Simply change the “Boot From:” drop-down menu to “Hard Disk”. Do **not** remove the Windows 98 CD-ROM from the CD-ROM. Save the configuration, and re-launch the Windows 98 PC:



Windows 98 will launch “for the first time”!

After a short time, the setup procedure will continue, with the installer detecting your emulated hardware and finalizing the Windows 98 settings. Again, this part of the installation will take a little while:

You will be asked to set the time, date and time zone. Once the Windows 98 installer completes this device detection and finishes the installation, you'll be asked to restart your emulated PC once again. After you've restarted, you'll be presented with the Windows 98 Login screen:



That's it! Congratulations, you're now running Windows 98 on your Mac! Please note that the first time that you log into Windows 98, Windows will find a couple more devices and make some changes to your final settings.

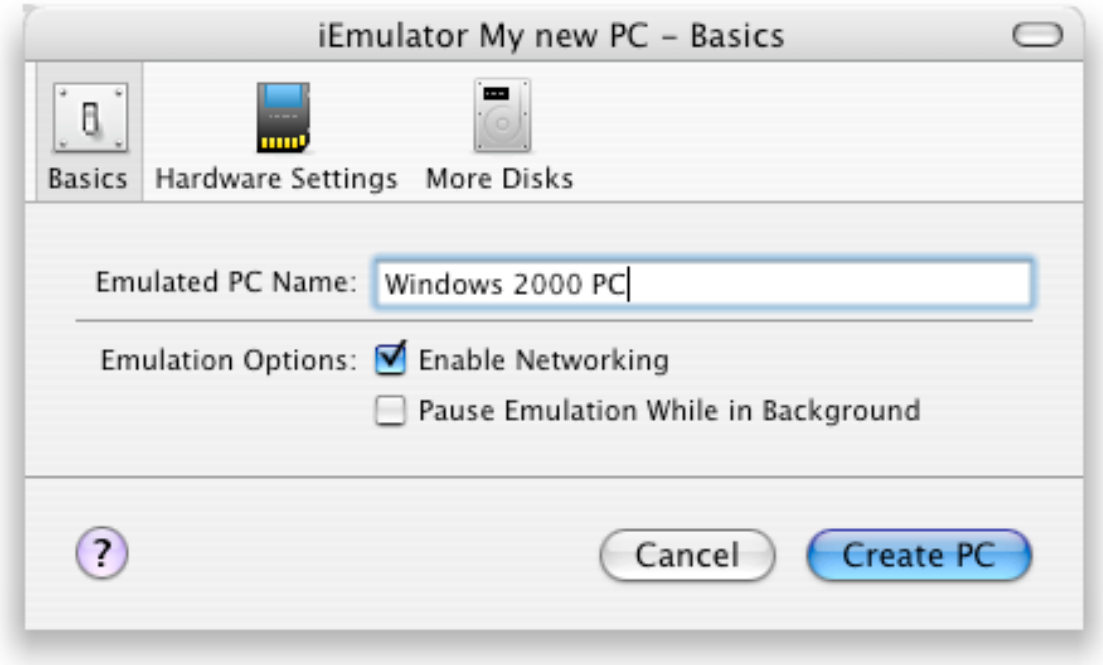
When you're all done with your Windows session, simply click on "Shut Down" in the "Start" menu. Windows 98 should "power off" automatically, and the emulated PC window should close. If the emulator doesn't "power off" automatically, simply click the shut-down PC button at the top of the emulated PC window when Windows informs you that "it's safe to power off your computer".

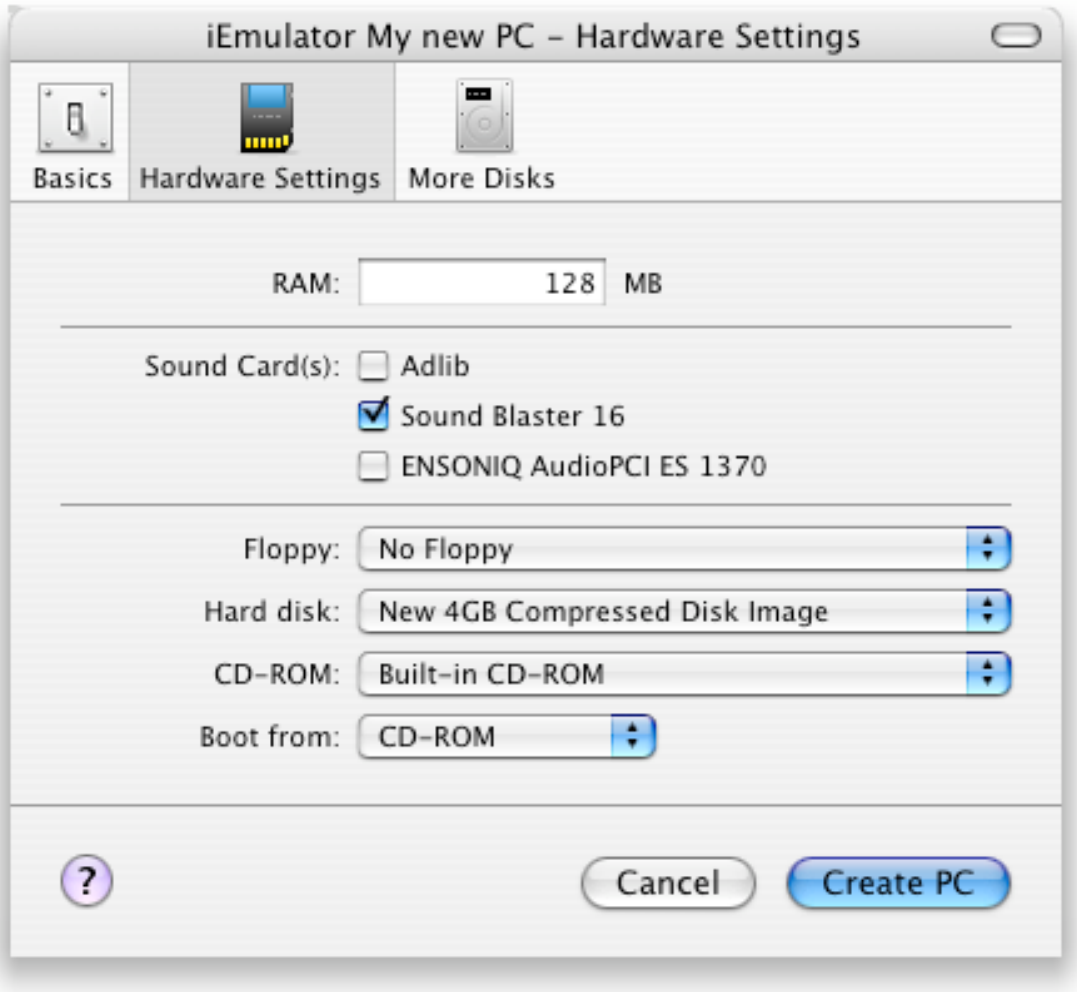
Preparing for Windows 2000

Despite the fact that Windows 2000 is a more complex, modern operating system than Windows 98, it's surprisingly easy to install! No special preparation is required beyond the standard imaging of the Windows 2000 bootable installation CD as described in the "Creating and using a custom PC" section, above, and creating an emulated hard disk image to install Windows on.

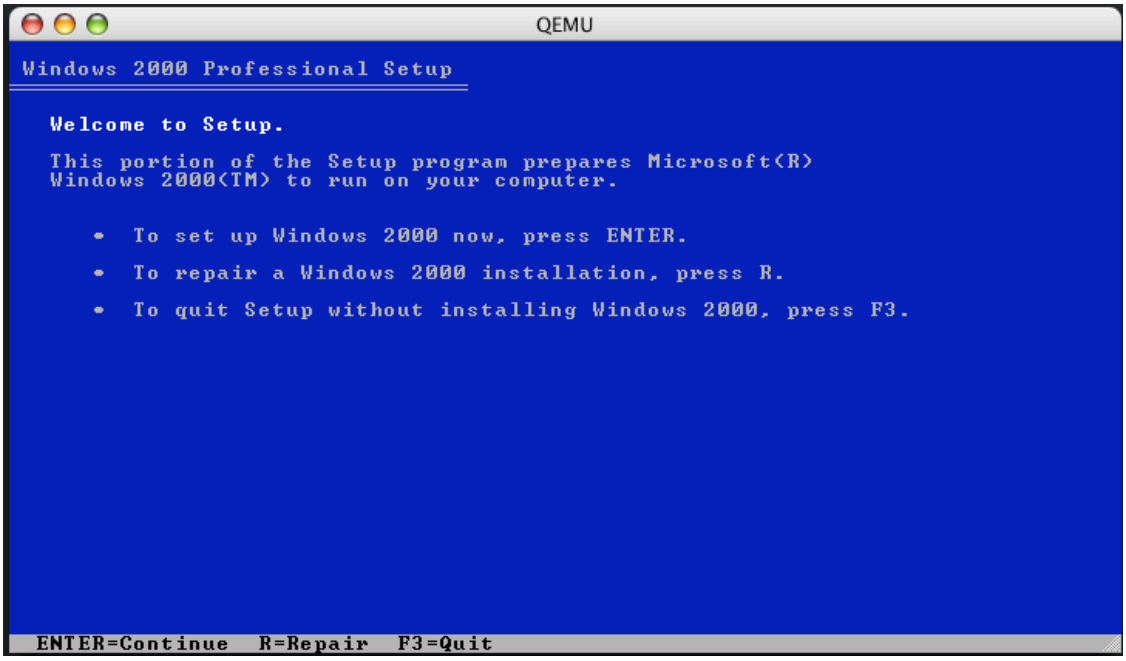
Installing Windows 2000

Because we don't need to prepare our emulated hard disk as we did with Windows 98, configuration is very simple indeed. In the iEmulator configuration window, simply set the Hard Disk Image to your emulated hard disk, the CD-ROM to either the Built-in CD-ROM (to use a physical Windows 2000 installation CD) or a Windows 2000 Installer CD image, and set the boot disk to CD-ROM. We recommend giving at least 64MB of RAM to the emulated PC, with 128MB being significantly better!



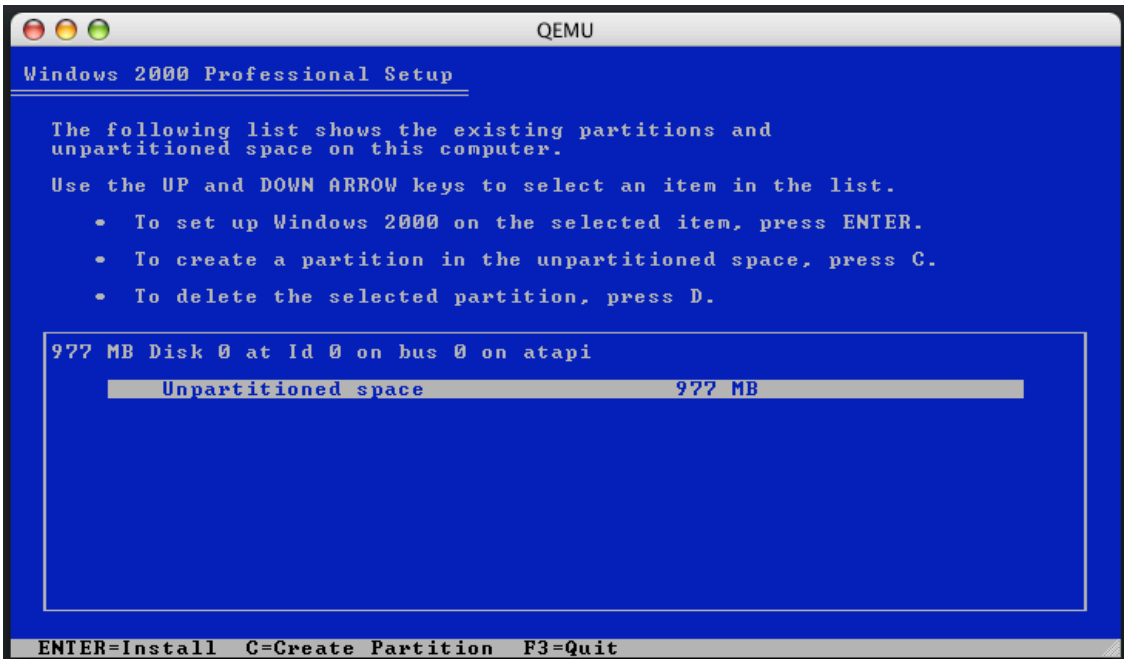


Save your iEmulator profile, and click on the "Start PC" button after you click once on the Windows 2000 emulated PC in the emulated PC list in the iEmulator main window. You'll be asked to "Press any key to boot from CD". Do so, and you'll see the installer load a number of support files. This should only take a short time, after which you'll see the Installer Welcome screen:

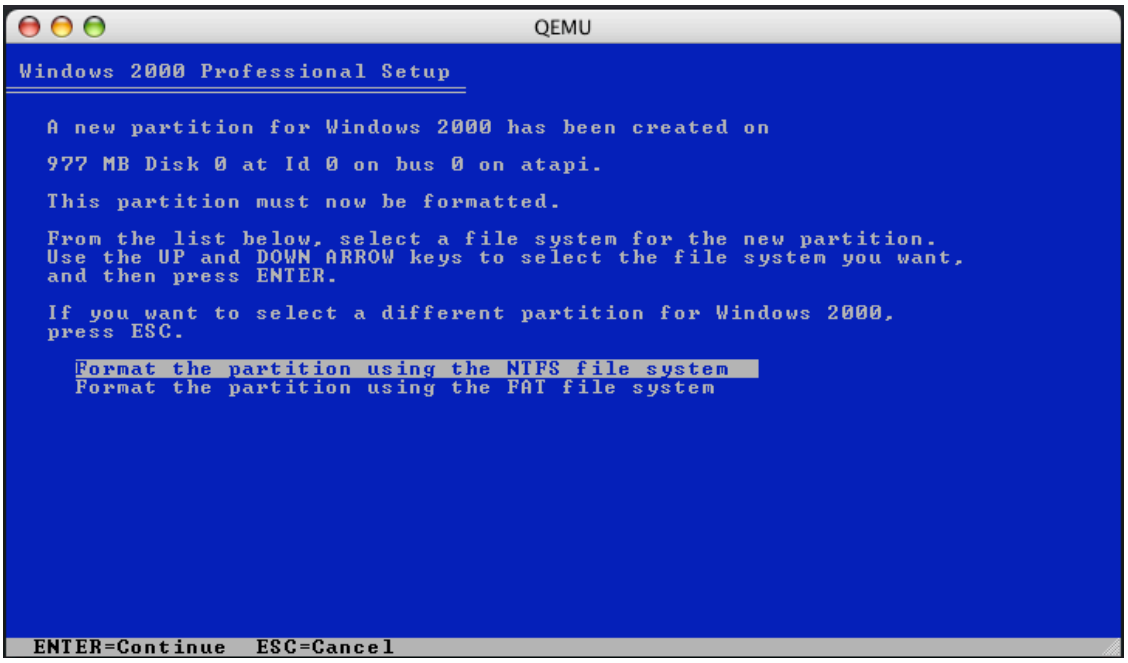


Press “Return” (Mac-speak for the PC’s “Enter” key) to start the installation of Windows 2000. You’ll be asked to agree to the Microsoft license agreement by pressing “F8”. Please note that if you’re running “Konfabulator”, you may have to quit it before you can install Windows 2000, as Konfabulator uses the F8 key.

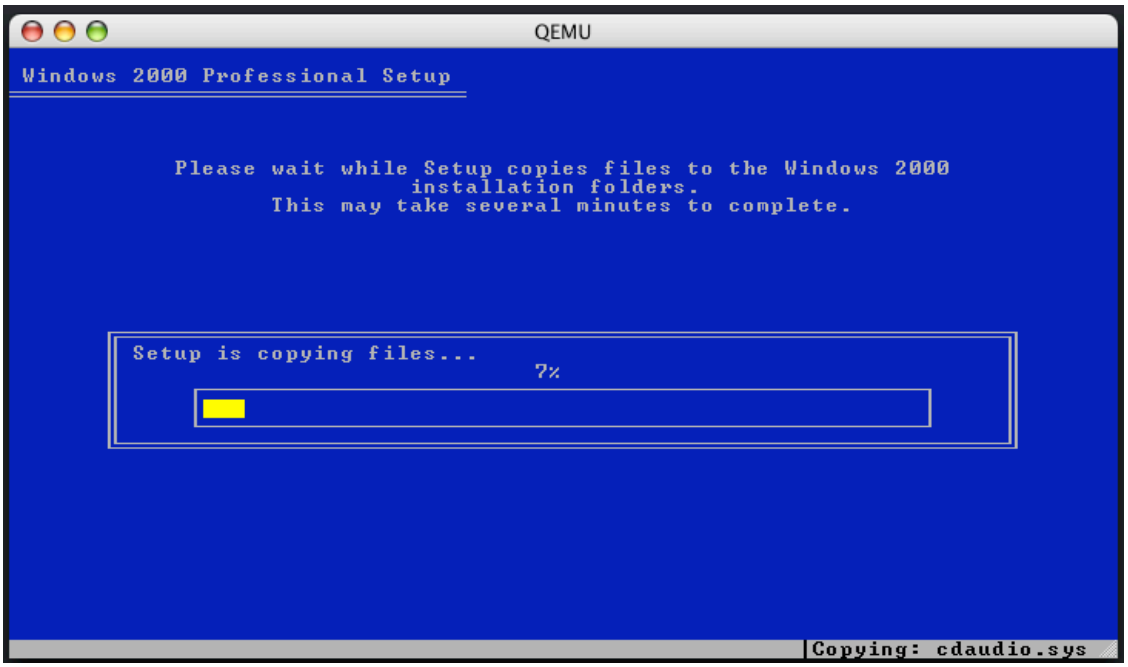
You'll be presented with a hard disk list, with only one drive showing (the emulated Hard disk you associated with your emulated Windows 2000 PC):



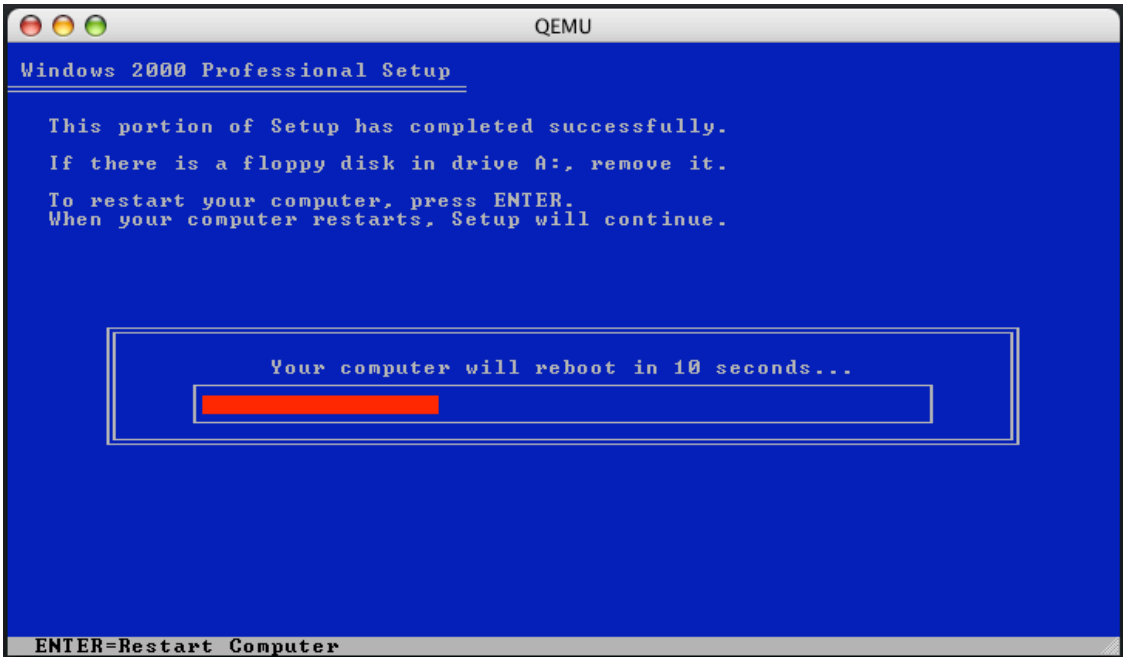
Press "return" to select your unpartitioned emulated hard disk, and format it using NTFS on the following screen:



The emulated hard disk will quickly be formatted, after which file copying will start:

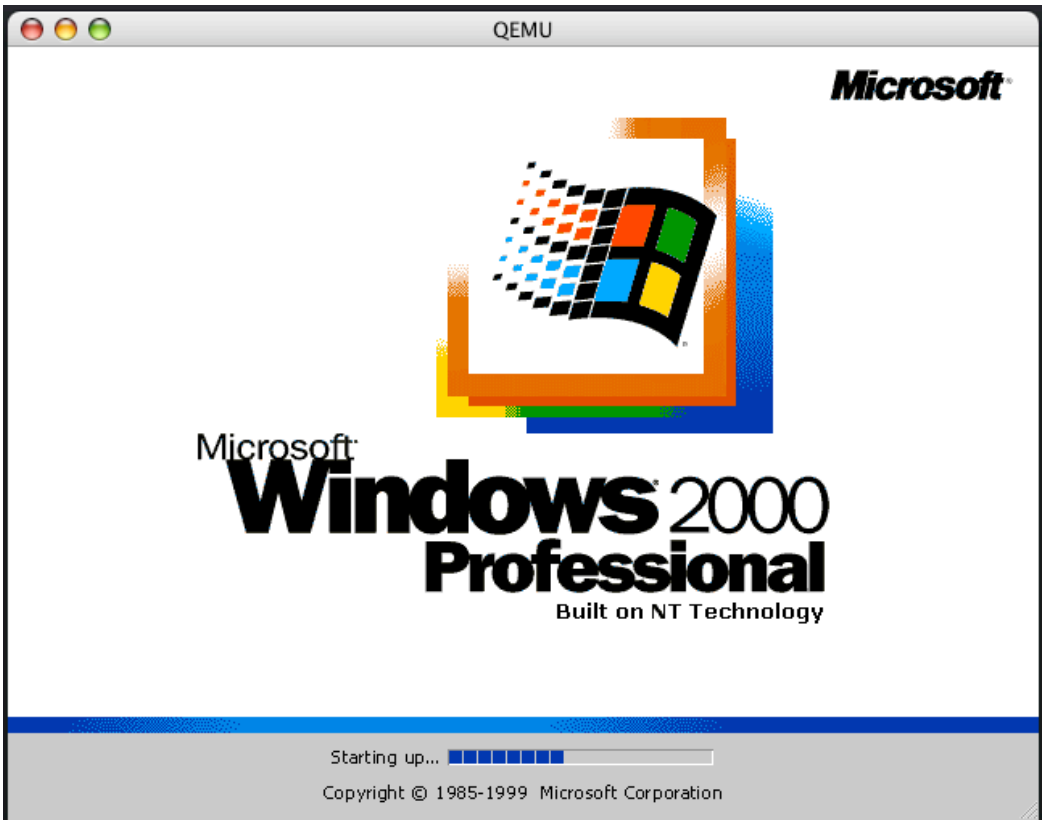


After all files have been copied, you'll be asked to restart your emulated PC. Either press "Return" to restart (or simply wait 15 seconds and it will restart automatically):



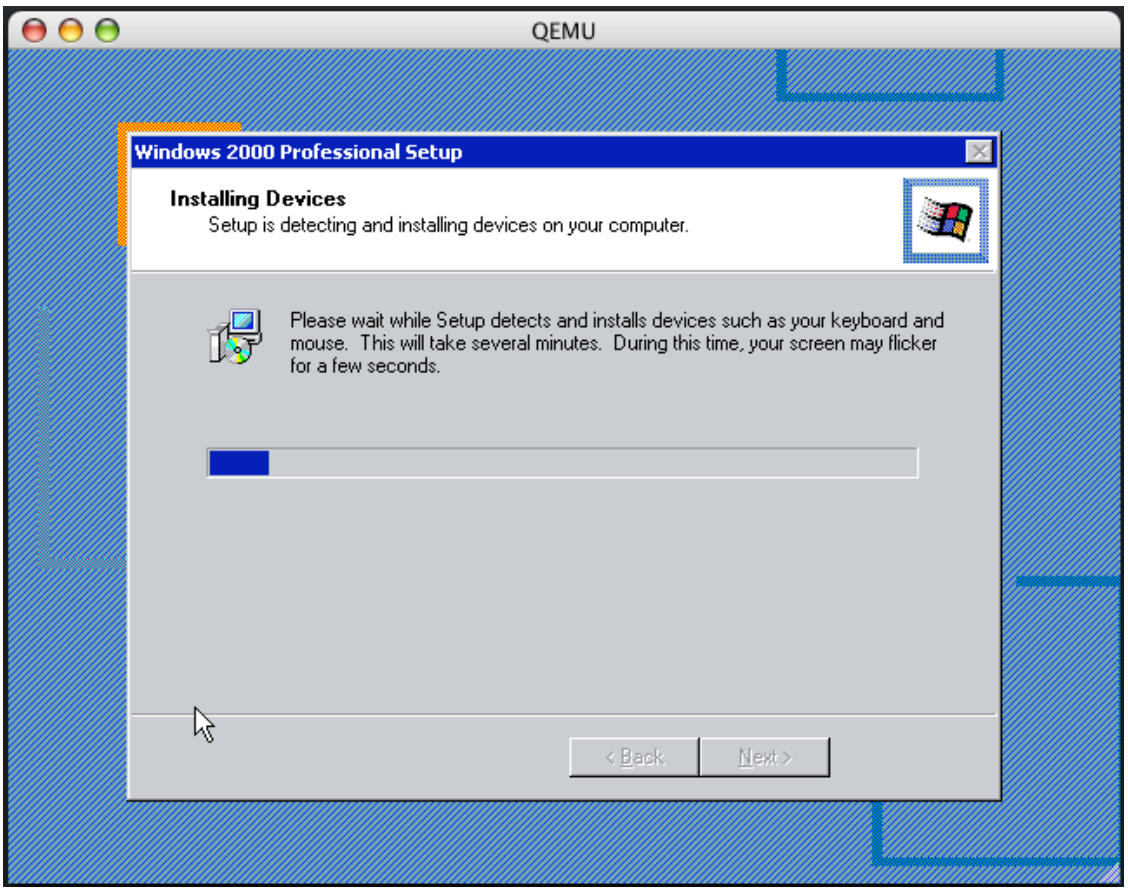
This time, **do not hit a key to boot from CD** – you want the emulated PC to boot from the hard disk!

In a few seconds, your emulated PC should begin booting from the hard disk:



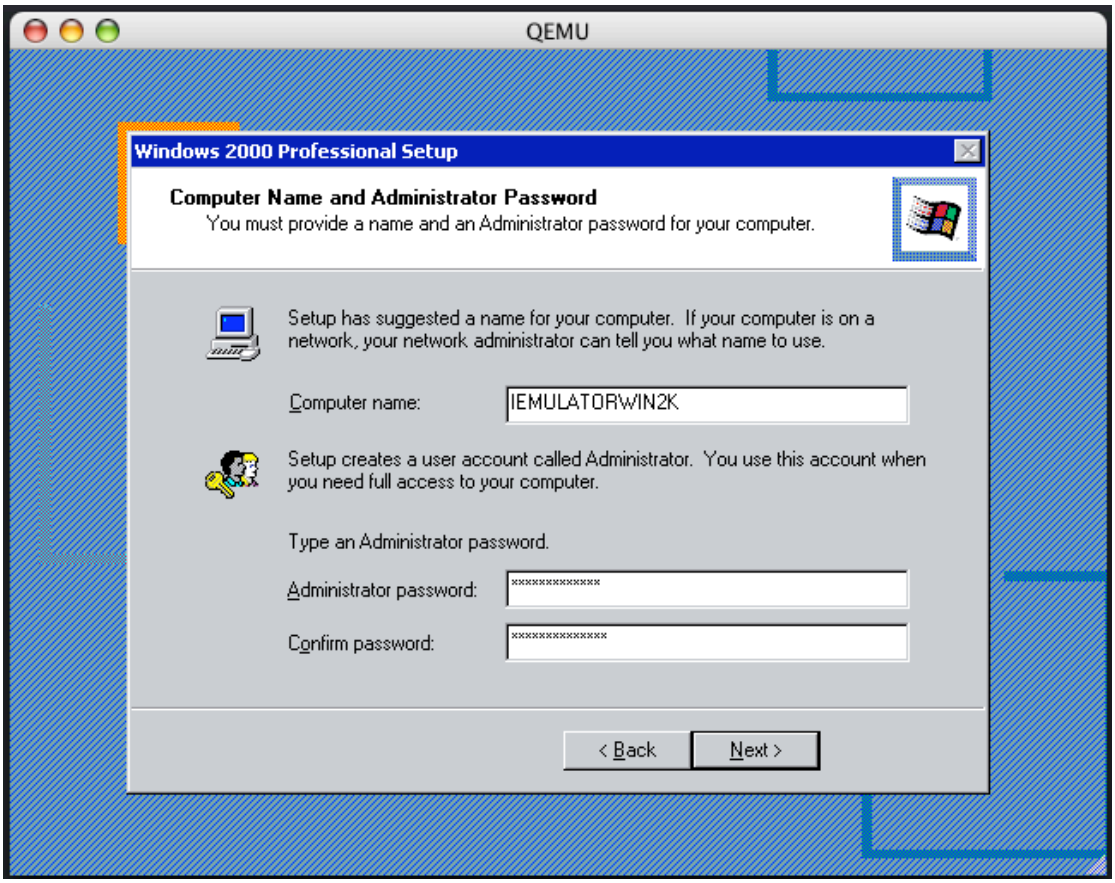
After a short boot process, the installation procedure will continue. Please note that it can take a few minutes to get past the “please wait” prompt (depending on the speed of your Mac). This is normal:

You'll soon be asked to click "Next" to continue the installation process, at which point device installation will take place. Again, this can take some time, depending on the speed of your Mac. It may seem like iEmulator has "frozen" at times, but please be patient:

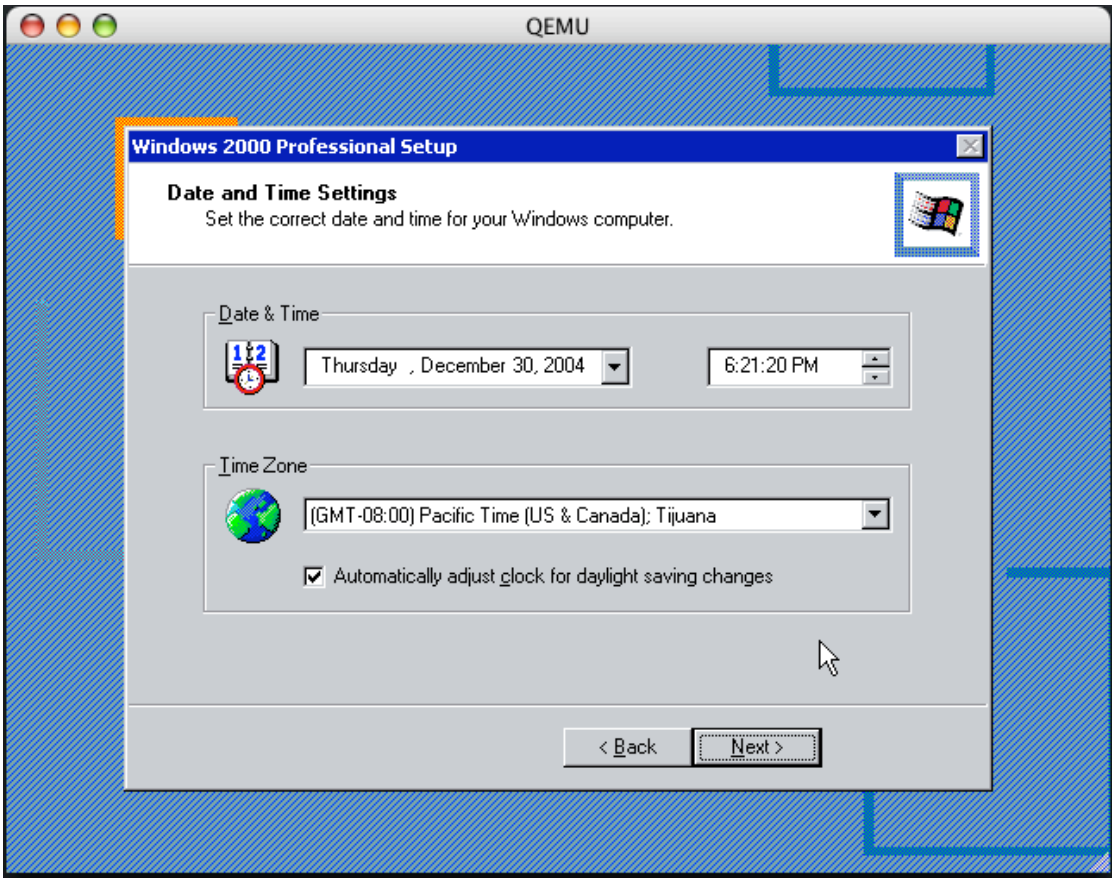


After all of your emulated devices have been detected, you'll be asked to set the regional settings, type in your name and organization name, and enter your Windows 2000 product key.

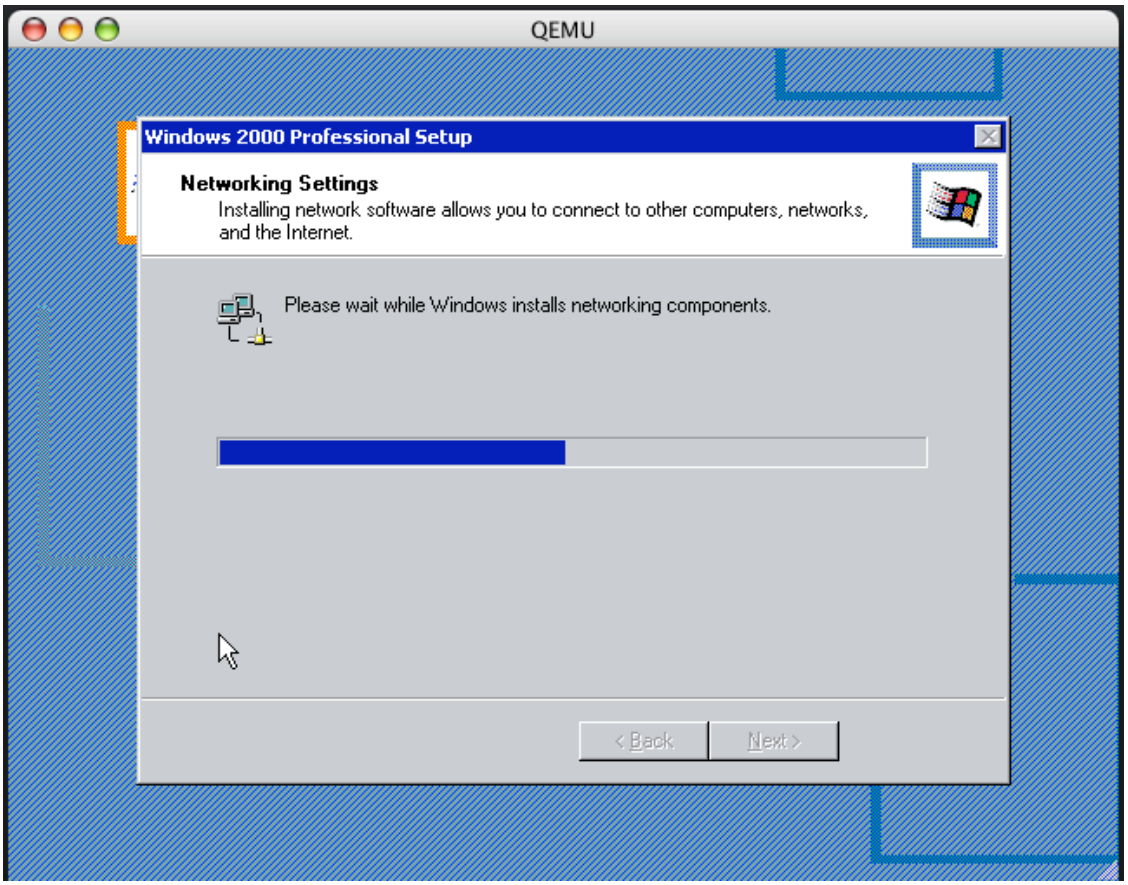
After entering a product key, you'll have to provide a computer name and an administrator password:



Next, set your date and time settings:



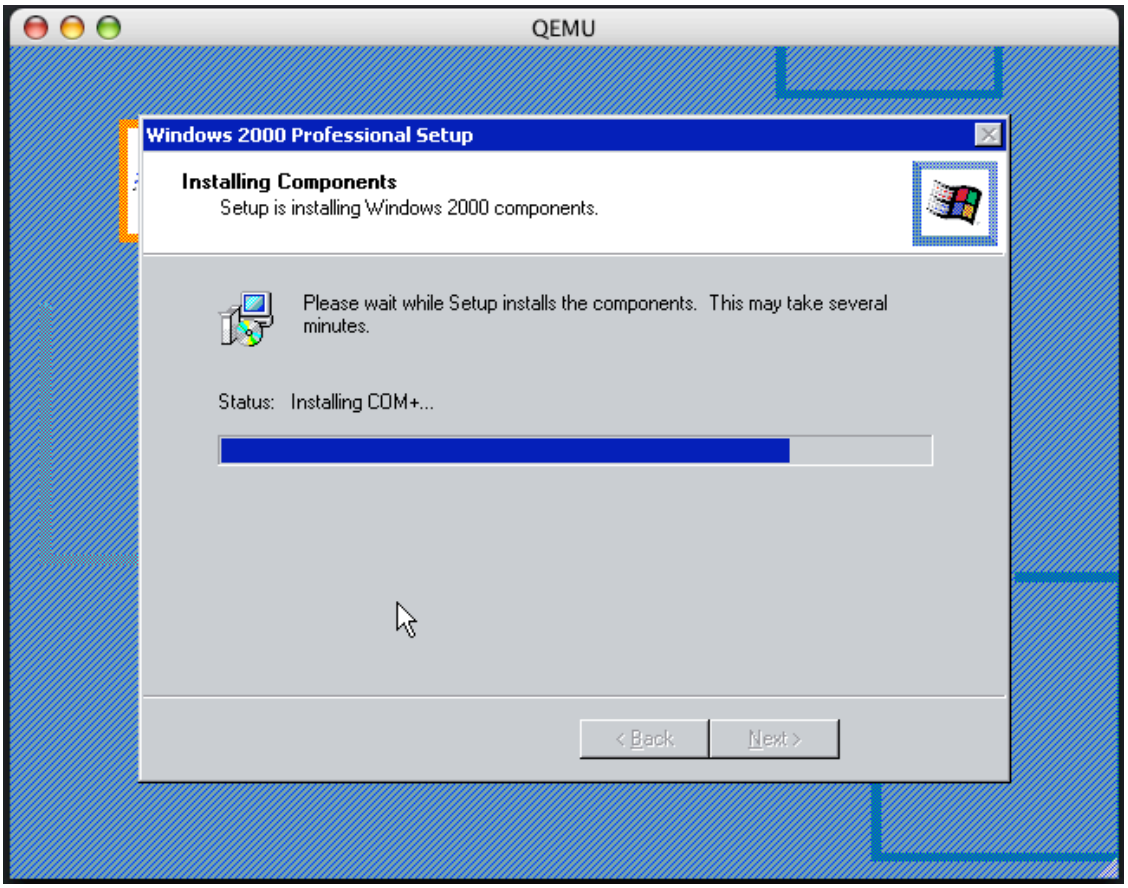
After you've provided ate and time settings, Windows 2000 networking will be installed:



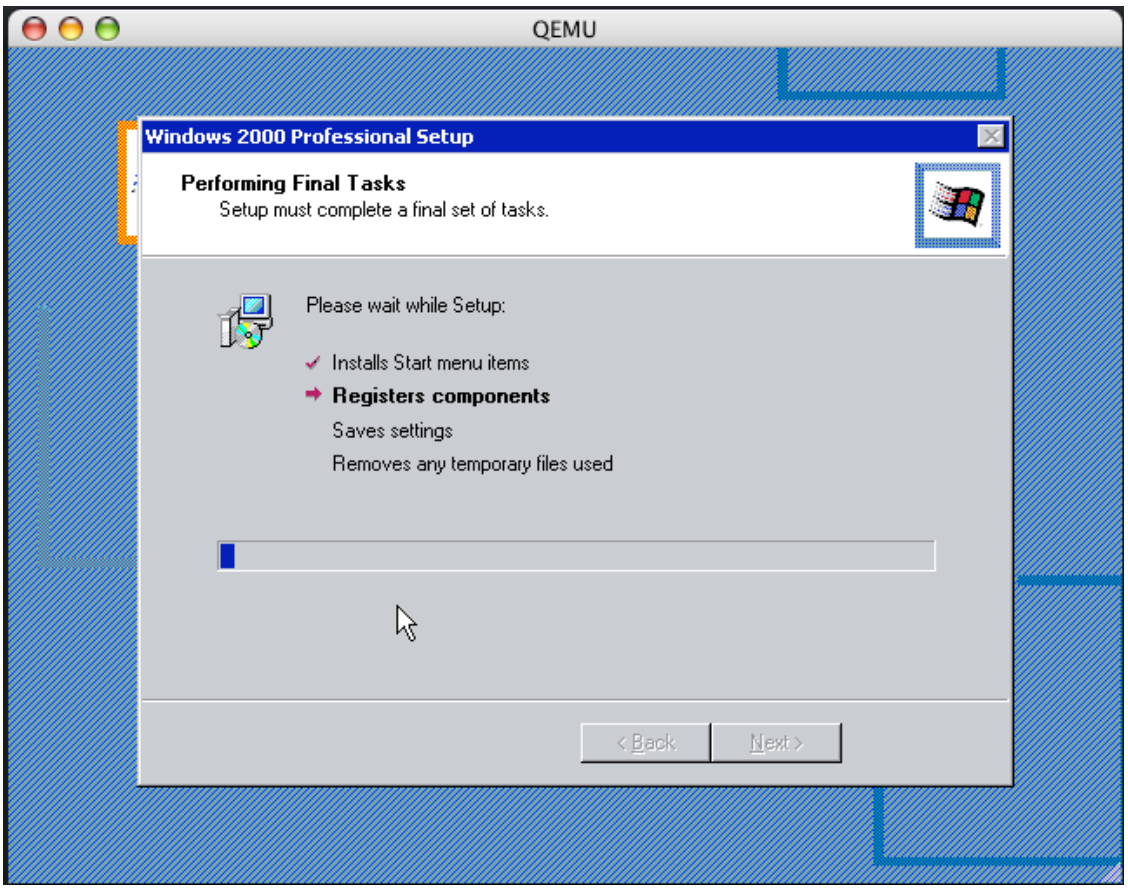
Although you'll be asked to choose between Typical and Custom network settings, we've had no problem using the Typical (default) settings. Of course, you can choose custom settings if you like.

You will also be asked to choose a Workgroup or Domain to join. It's recommended that you do not choose to join a Windows network domain with this version of iEmulator.

The next screen will see the Windows 2000 Installer copy and setup the required Windows 2000 files. As the window says, this may take several minutes, depending on the speed of your Mac. Please be patient:



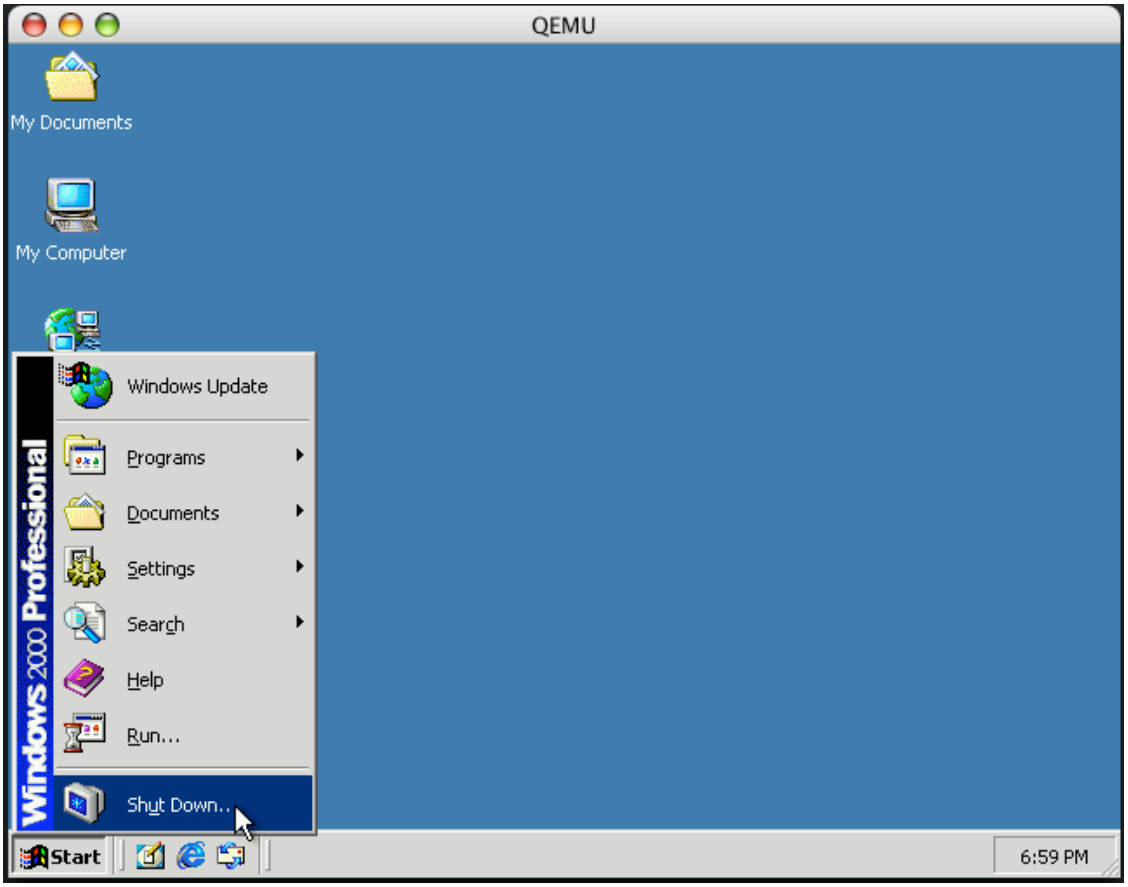
After the component installation has completed, some final tasks will take place, including Installation of Start Menu items, Component Registration and others. Again, this step can take some time, depending on the speed of your Mac. In fact, this step is, in most cases, the one that takes the longest to complete:



After this step completes, installation is finished! You can ignore the request in the next window to remove the CD, as iEmulator will boot from the hard disk if you don't "hit a key to boot from the CD":

The next time you boot, you'll be asked to configure the Windows 2000 network. If you choose the "Windows always assumes the following user is logged in …" option, the startup of Windows 2000 will continue.

When you are done with your Windows 2000 session, simply select “Shut Down” from the “Start” menu:



With some Windows 2000 builds, the emulator will “power off” automatically. With others you’ll see the message “It is now safe to turn off your computer”, at which point you can click the shutdown PC button at the top of the emulated PC window.

Preparing for Windows XP Home & Professional

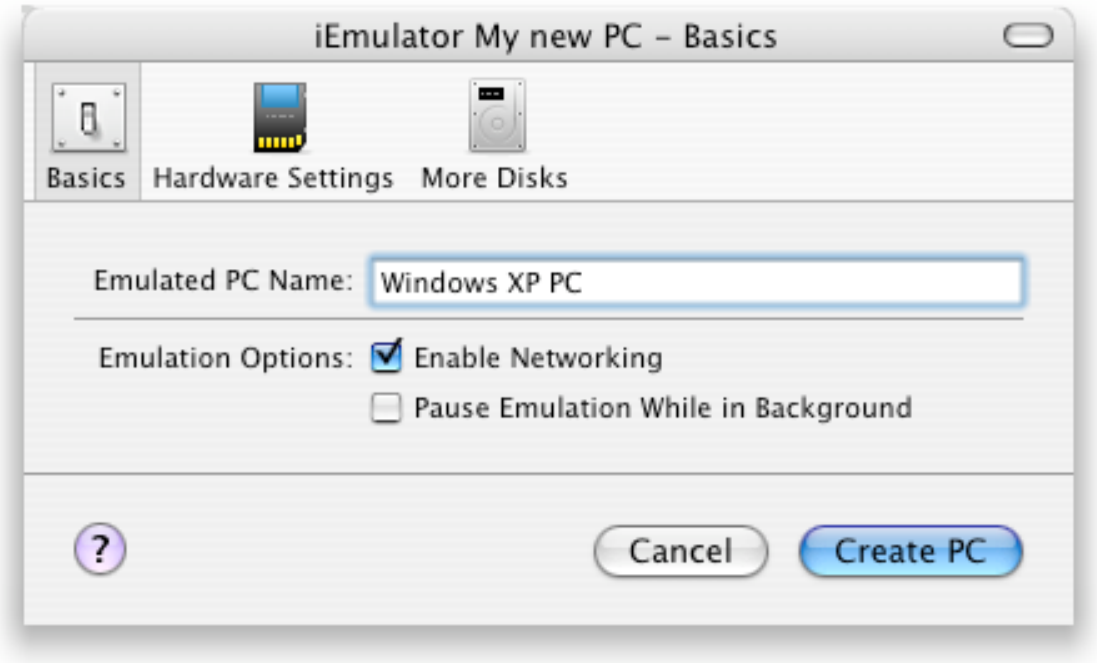
As with Windows 2000, nothing beyond setting your emulated hard disk image to the Hard Disk, setting either the physical XP installer CD-ROM or the imaged bootable Windows XP CD to the emulated CD-ROM and setting the Boot Disk to CD-ROM needs to be done to prepare for installation of Windows XP.

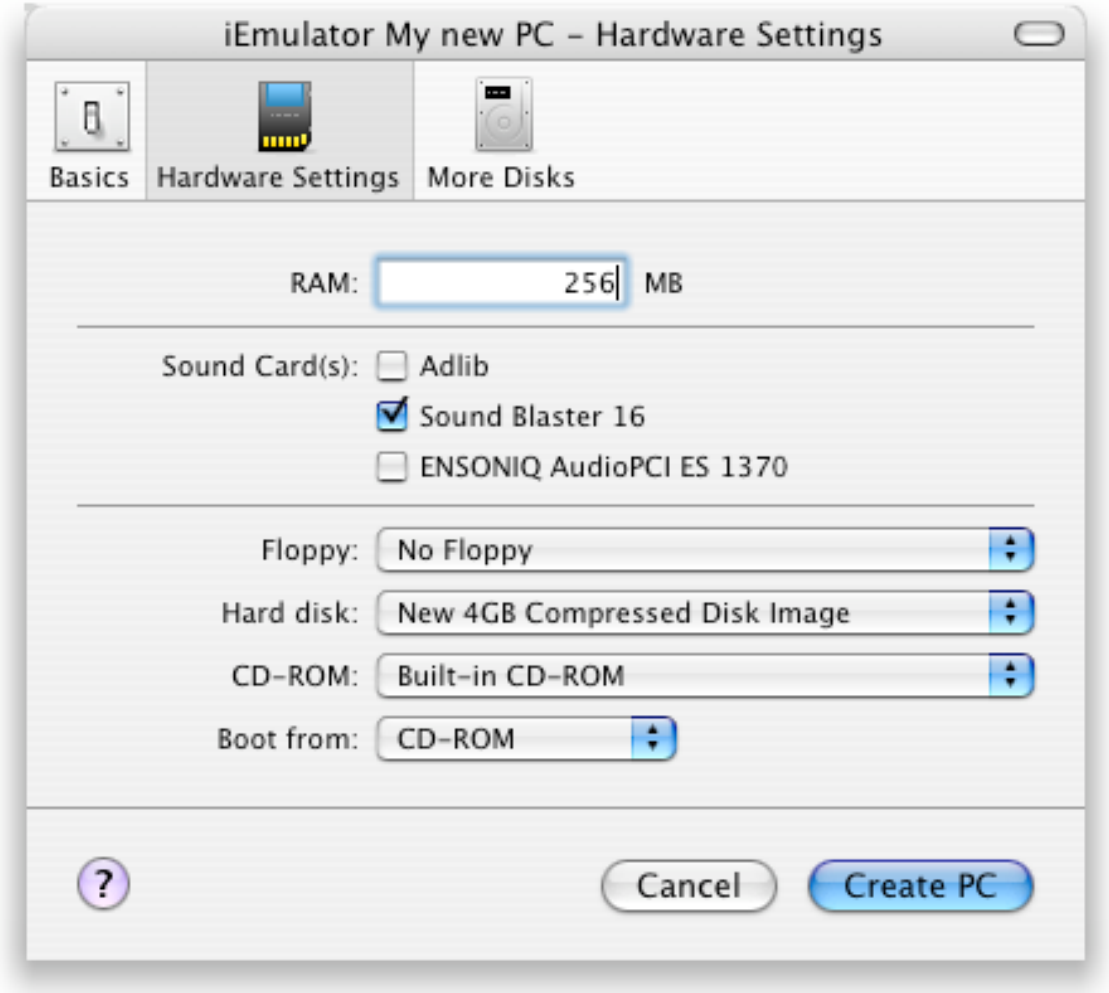
Please note that Windows XP requires considerably more system resources than Windows 98 or Windows 2000. As such, if you wish to run Windows XP, be prepared for slower load & execution times than other, older version of Windows. This is the case not only under iEmulator, but with any emulator or physical PC: XP will generally run slower than Windows 2000 or Windows 98 on **any** platform.

If you wish to run XP, please give the emulated PC as much RAM memory as possible; 128MB would be a bare minimum, with 256MB recommended.

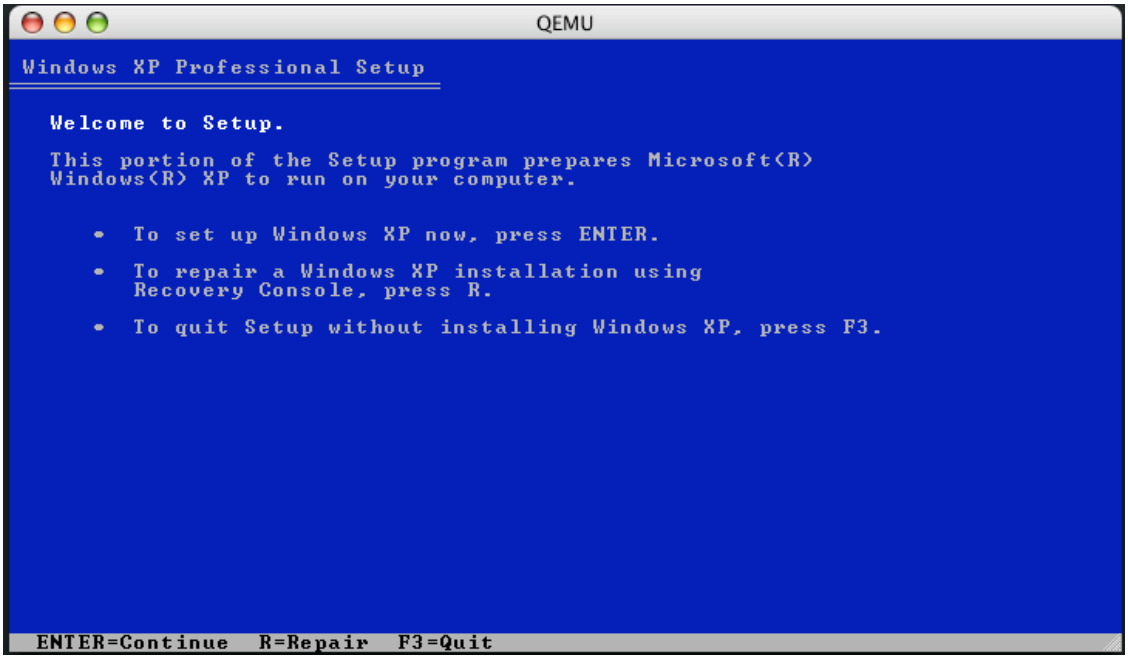
Installing Windows XP

Configuring your emulated PC for an XP installation is almost identical to the configuration for Windows 2000: set the Hard Disk to your emulated Hard Disk image, set the CD-ROM to either the physical CD-ROM drive with your Windows XP CD, or the imaged copy of your bootable Windows XP CD and set the boot disk to CD-ROM:



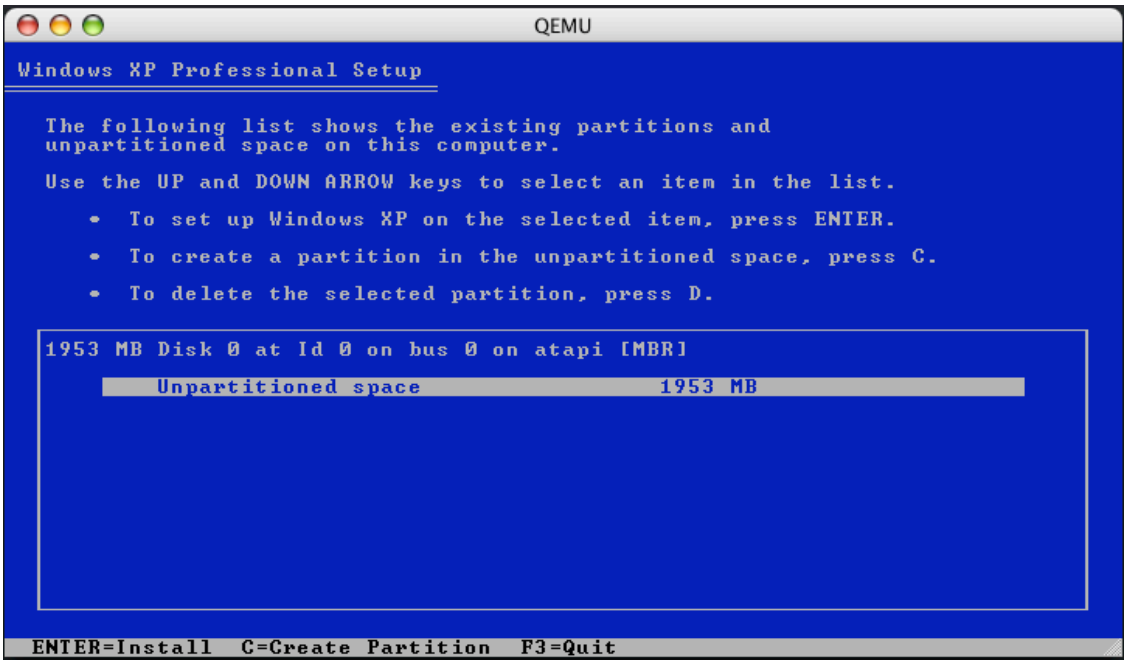


Save the iEmulator PC, then click the "Start PC" button. You'll see some files being loaded, after which you'll be greeted with the Windows Setup Welcome Screen:

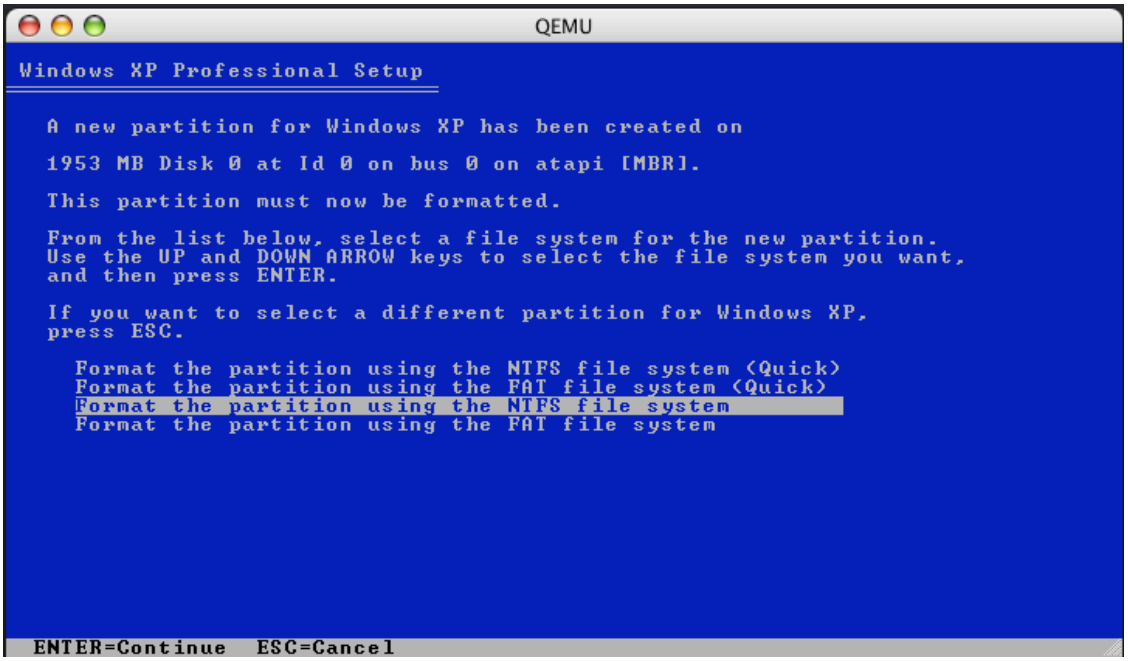


Press “Return” (the Mac equivalent of the PC “Enter” key) to start the installation. You’ll be asked to agree to the Microsoft license agreement by pressing “F8”. Please note that if you’re running “Konfabulator”, you may have to quit it before you can install Windows XP, as Konfabulator uses the F8 key.

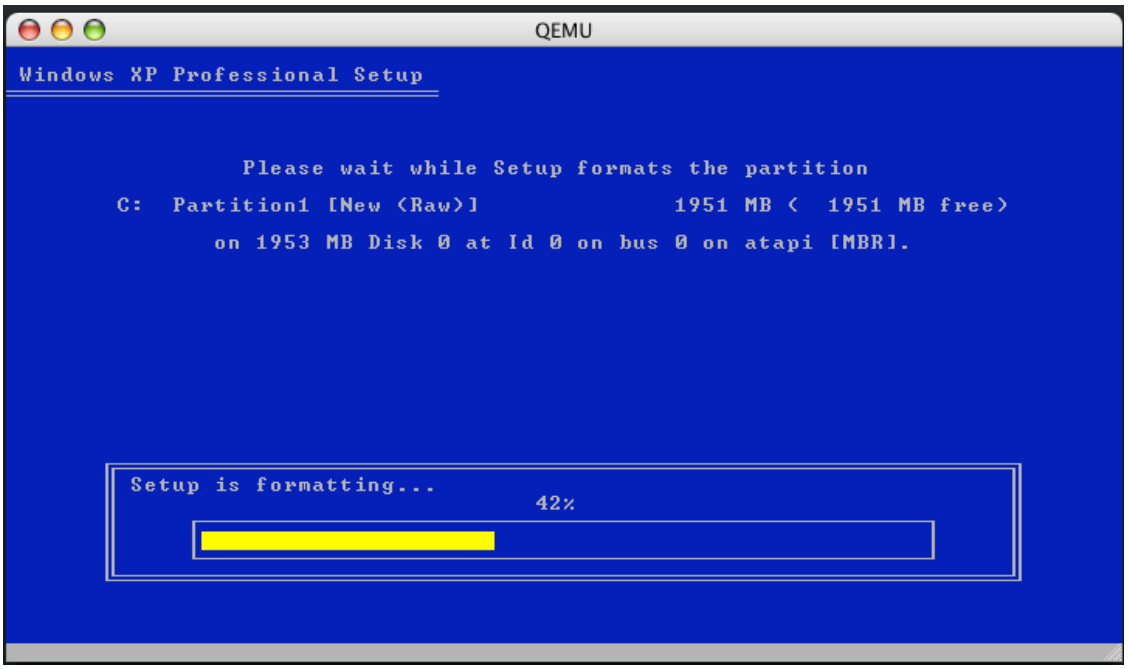
You'll be asked to choose a hard disk on which to install XP. In this case there will only be one selection, the emulated hard disk image that you previously assigned to Drive C:



Press Return to select the hard disk, and accept the selection on the next screen to Format the partition using the NTFS file system:



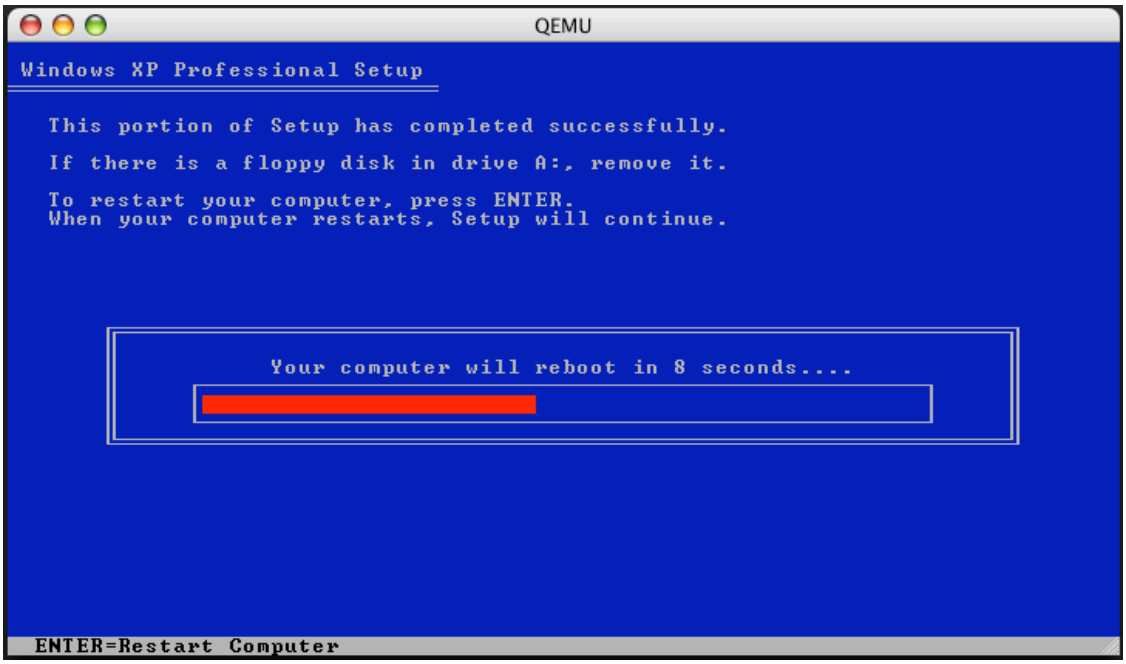
The format will take place, and generally is completed quite quickly:



After the formatting takes place, file copying will automatically begin:

Please note that there's a lot more copying going on with Windows XP than there was for Windows 2000! XP is considerably larger, so it will take longer to complete this copying phase of the installation.

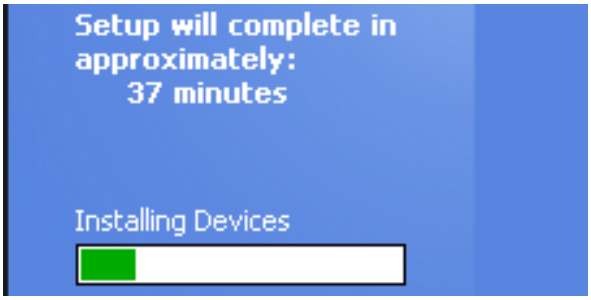
Once the copying is complete, you'll be asked to restart your emulated PC. You can either press "Return" to restart the PC or you can wait 15 seconds, at which point your PC will restart automatically:



When your emulated PC boots, **do not press a key to Boot from CD**! You want to boot from the hard disk, and this will happen automatically if you do not press a key.

You'll soon be presented with the Windows XP installation screen:

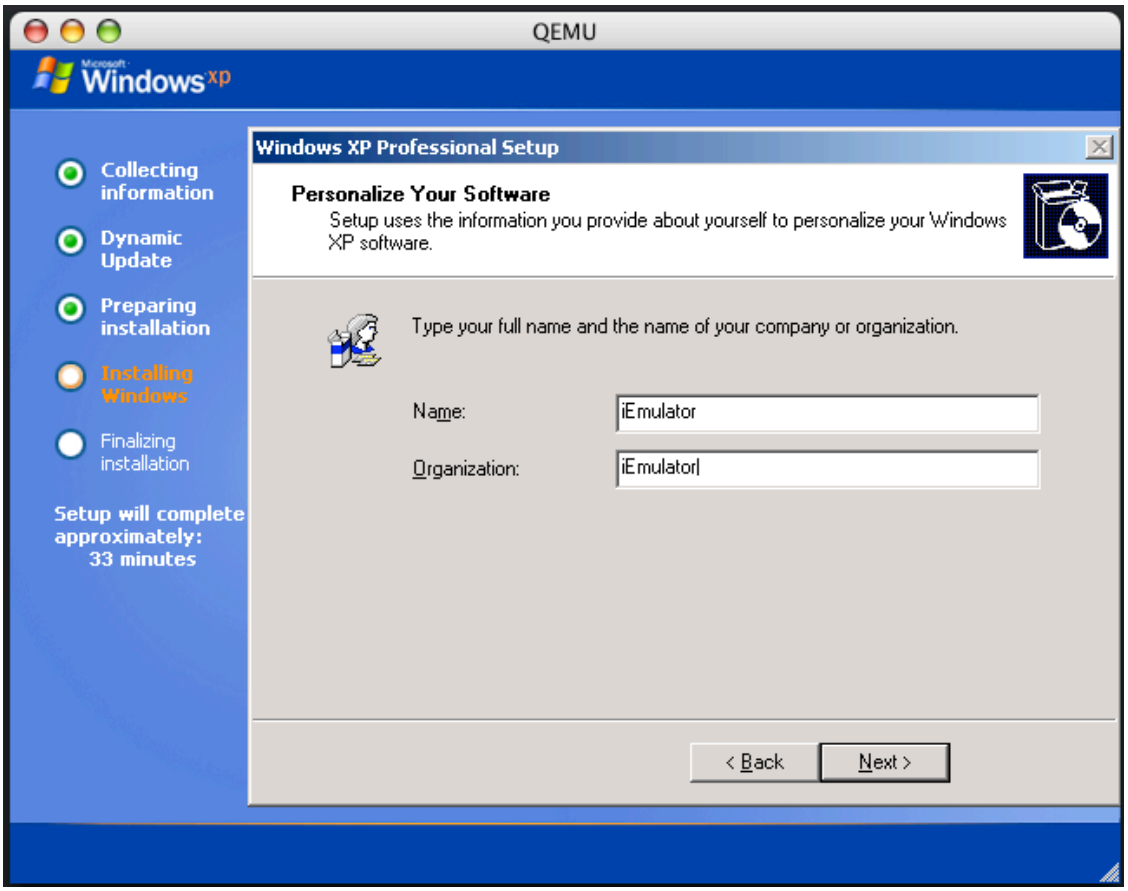
Again, it may seem at times that your emulated PC has "crashed" or "frozen", but this is not the case. It can simply take a considerable time to install XP. You can tell that progress is being made, as the text on the right-hand side of the window will periodically change. Before long, you'll see a new progress bar appear in the lower-left-hand side of the window:



And device installation will commence! Again, please be patient, as device installation will seem to freeze at times. In addition, this phase of the XP installation can take quite

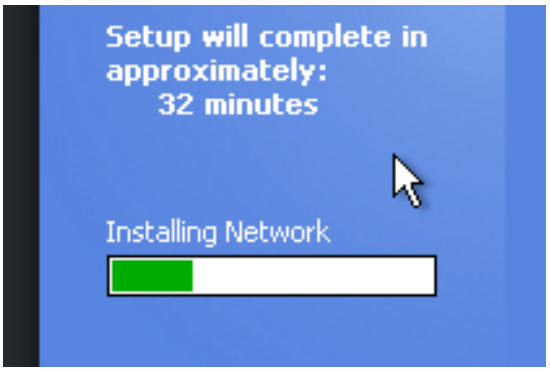
some time to complete, even on faster Macs. Just remember: you only have to install XP once!

After device installation has completed, you'll be able to change the region and language options, and enter your name and organization name:

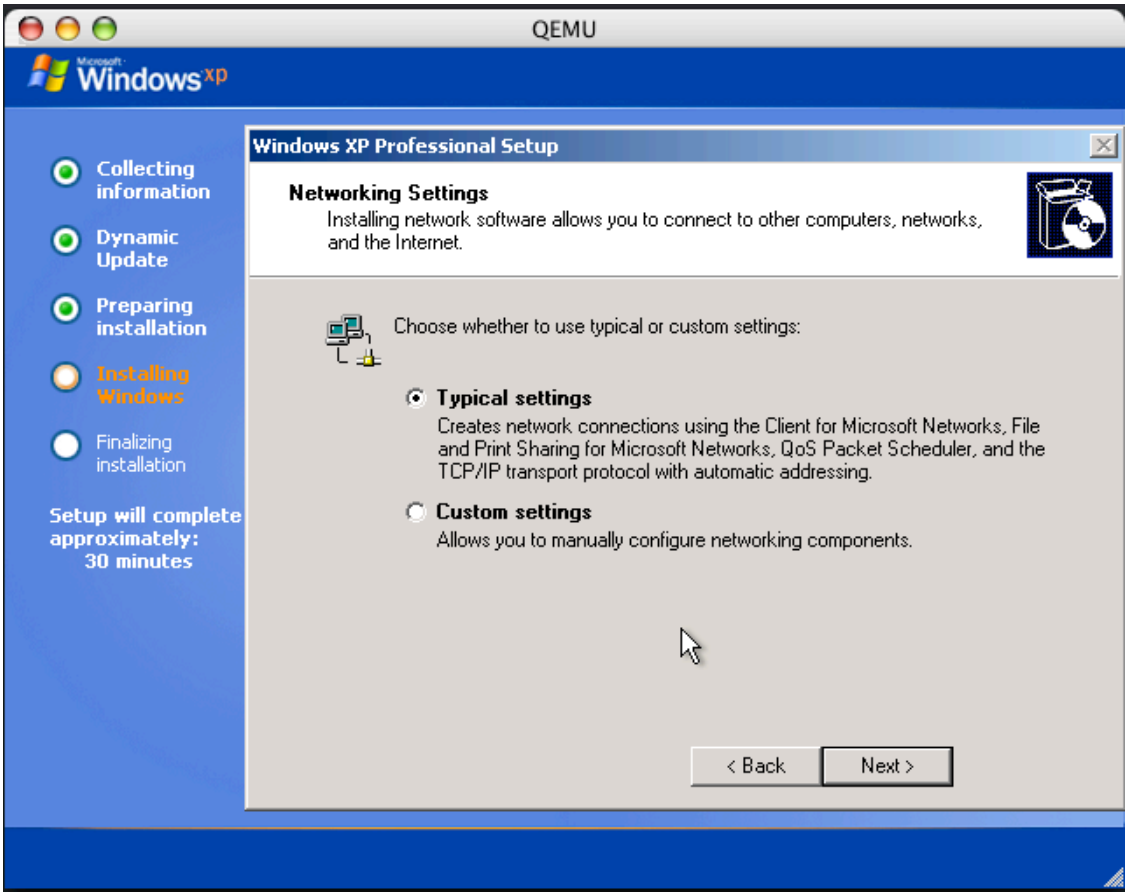


You'll next be asked to enter your Windows XP product key. After entering your key, you'll need to enter a computer name and an administrator password, and the following screen will ask you to provide time & date settings.

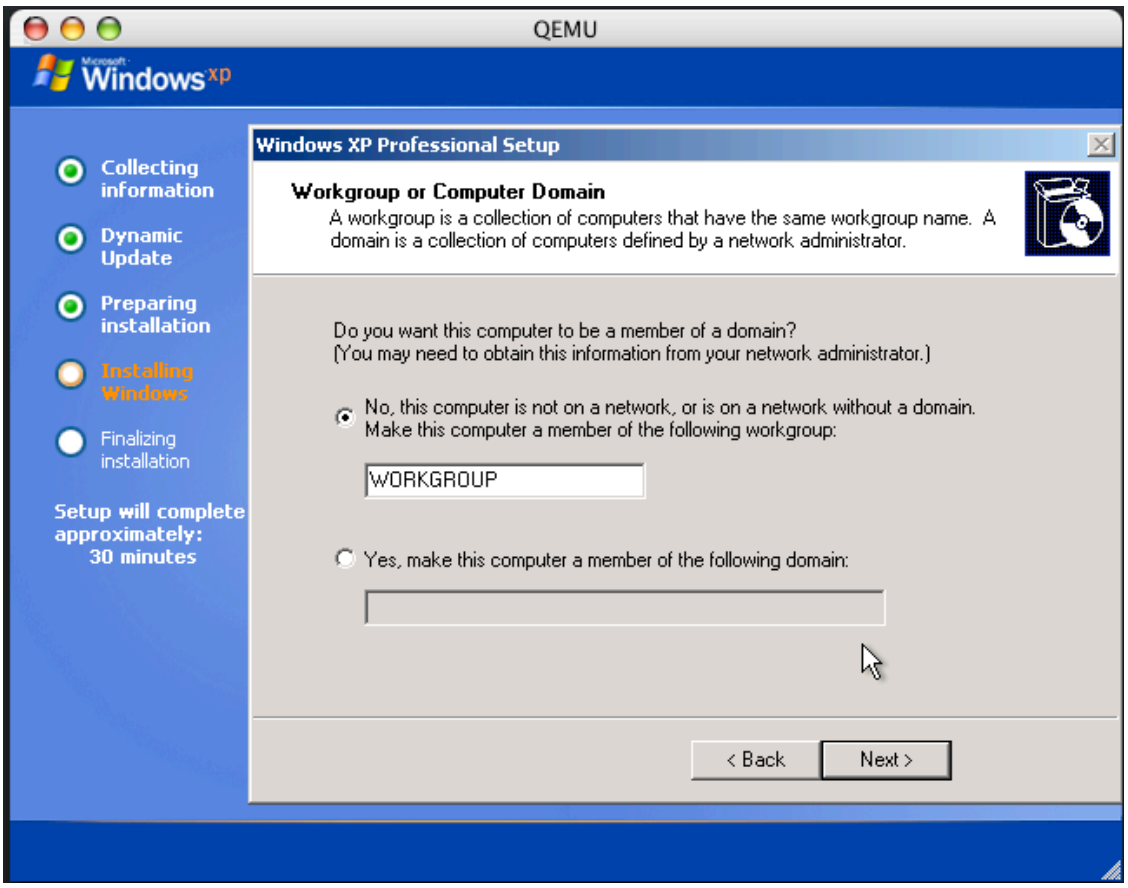
After you've provided all of the required information, the automated XP installation will continue:



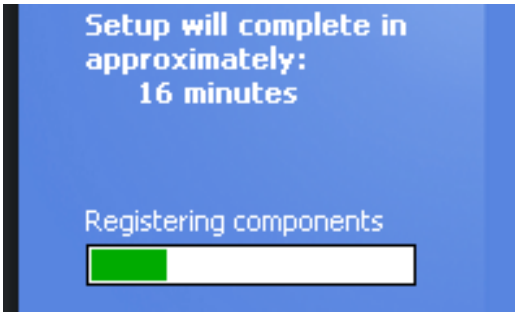
After the network components have been installed, you'll be asked to choose between "typical" settings and "custom" settings. For the purposes of this tutorial, we'll use the "typical" settings:



Next, you will also be asked to choose a Workgroup or Domain to join. It's recommended that you do not choose to join a Windows network domain with this version of iEmulator:



Once again, the automated installation procedure will continue. Please note that this phase of the installation will take a while … especially when the installer "registers components":



Finally, the Windows XP installer will save settings, remove temporary files and the installer will restart your emulated PC:

The first time you boot Windows XP it will seem to load very slowly. Subsequent startups will go significantly faster.

Please note: if you see an error message that Windows XP cannot validate the license of your copy of Windows XP, you may need to update your Windows installation to Service Pack 2 before it can be used. Please follow the directions below in order to do this:

The first thing you'll need is a utility that can create .iso disk images. We've found that the "FireStarter" application, available at http://www.projectomega.org does a terrific job – and it's currently (as of June 2006) available at no charge.

Next, please download the full SP2 installer to your Mac, from:

http://www.microsoft.com/downloads/details.aspx?FamilyID=049c9dbe-3b8e-4f30-8245-9e368d3cdb5a&DisplayLang=en

Create a new folder, then drag the downloaded Service Pack 2 installer into it.

You can then run FireStarter, click the "Burn Data" tab, and drag the folder containing the SP2 installer to the "drop zone". Please then click on "Save as iso...", and save it as "sp2.iso".

You can then configure iEmulator to use "sp2.iso" as the CD-ROM image for your XP PC.

Finally, please boot into safe mode (or safe mode with CD support, if that option is given) from your emulated PC's hard disk, and running the SP2 installer from the "CD".

After SP2 is installed you should be able to boot normally.

Note: to start up in "Safe Mode", please repeatedly press the "F8" key on your keyboard when you first launch the emulated PC. A text-based boot menu will appear, and you can then select Safe Mode. If you're using a portable Mac (iBook, MacBook, MacBoot Pro or PowerBook), you may need to hold down the "FN" key on your keyboard while pressing F8.

When you're finished with your Windows XP session, simply select "Shut Down" from the "Start" menu. With some Windows XP builds, the emulator will "power off" automatically. With others you'll see the message "It is now safe to turn off your computer", at which point you can click the shutdown button at the top of the emulated PC window.

Preparing for Windows Vista (beta 2)

Just like Windows 2000 and XP, it's as simple as setting your emulated hard disk image to the Hard Disk, setting either the physical Vista installer DVD-ROM or the imaged bootable Windows Vista DVD to the emulated CD-ROM and setting the Boot Disk to CD-ROM needs to be done to prepare for installation of Windows Vista.

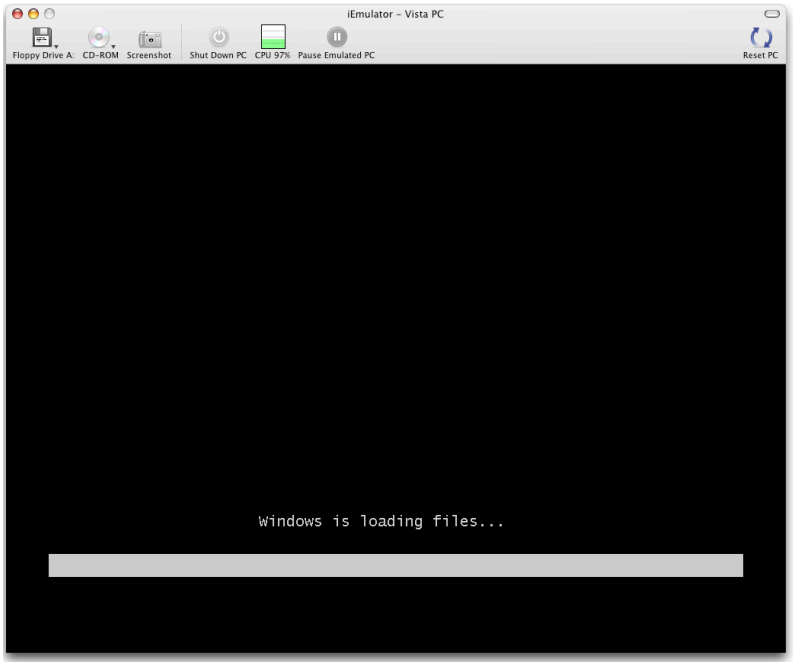
Please note that Windows Vista (at beta 2, the current version when this document was written) is extremely resource intensive – much more so than even Windows XP! It's not recommended that Vista is installed on a PowerPC-based Mac, and it even runs slow on Intel-based computers. The reason isn't so much CPU performance as video: no emulation solution provides the hardware-accelerated video that Vista requires, so all user interface elements in Vista will be extremely slow to the point of not being day-to-day usable. It is "good enough" for basic testing, however, or just for seeing how the new Microsoft operating system looks and runs.

If you wish to run Vista, please give the emulated PC as much RAM memory as possible; 512MB would be a bare minimum, with 1GB recommended. As well, Vista requires at least 13,000 MB of hard disk space just for the basic installation. In addition, the hard disk image you create must be "raw" (uncompressed). Finally, the "Installing Windows 2000 or Vista" checkbox must be checked in the iEmulator PC configuration window, "Basics" tab.

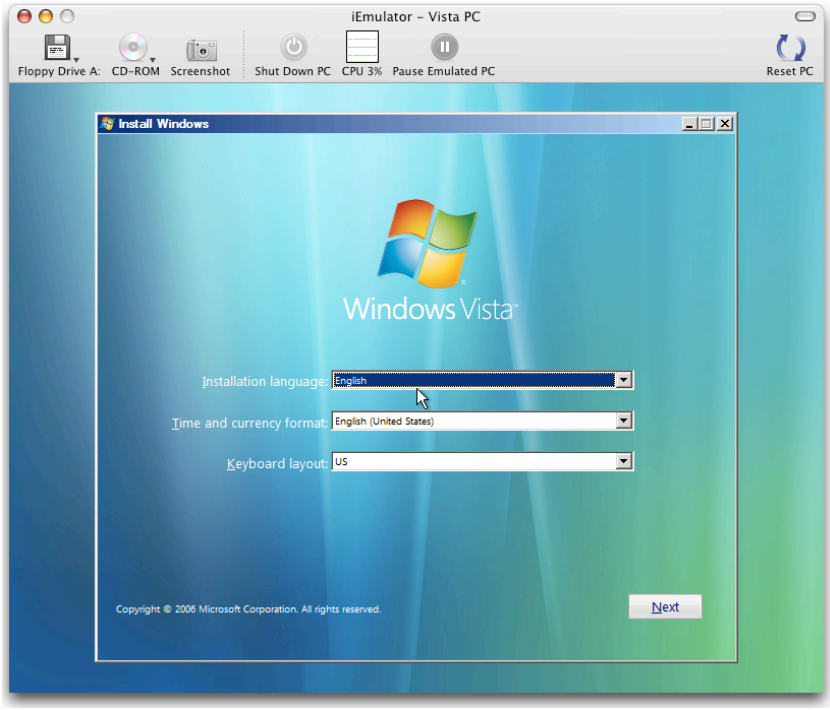
Installing Windows Vista (beta 2)

Configuring your emulated PC for a Vista installation is almost identical to the configuration for Windows 2000 and XP: set the Hard Disk to your emulated Hard Disk image, set the CD-ROM to either the physical CD-ROM drive with your Windows Vista DVD, or the imaged copy of your bootable Windows Vista DVD and set the boot disk to CD-ROM.

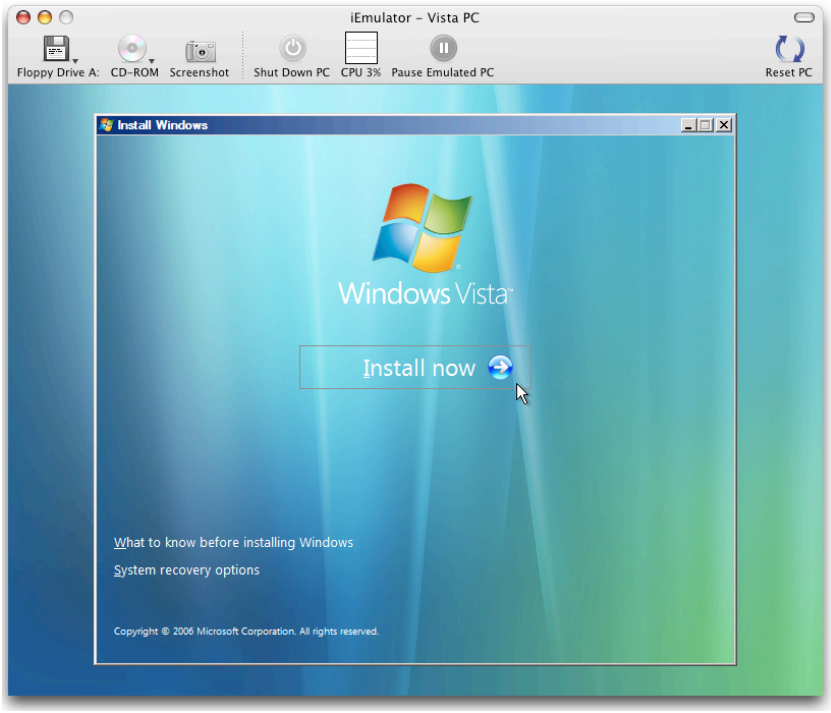
Save the iEmulator PC, then click the “Start PC” button. You’ll see some files being loaded, after which you’ll be greeted with a text-based “loading” screens:



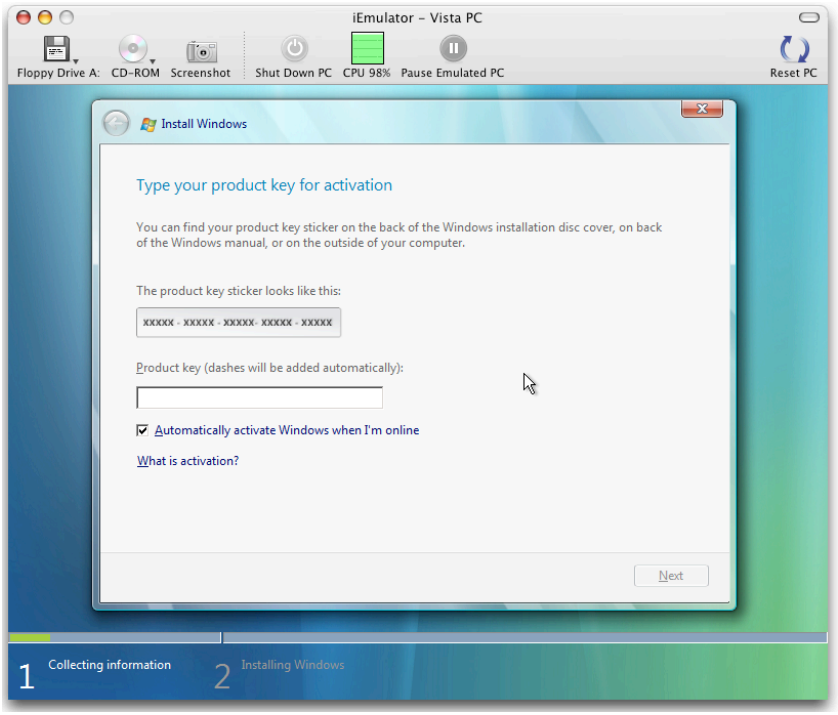
After a few minutes, you’ll see the first installer GUI screen (you’ll notice that installing Vista, even beta 2, is much more graphical than any previous version of Windows).



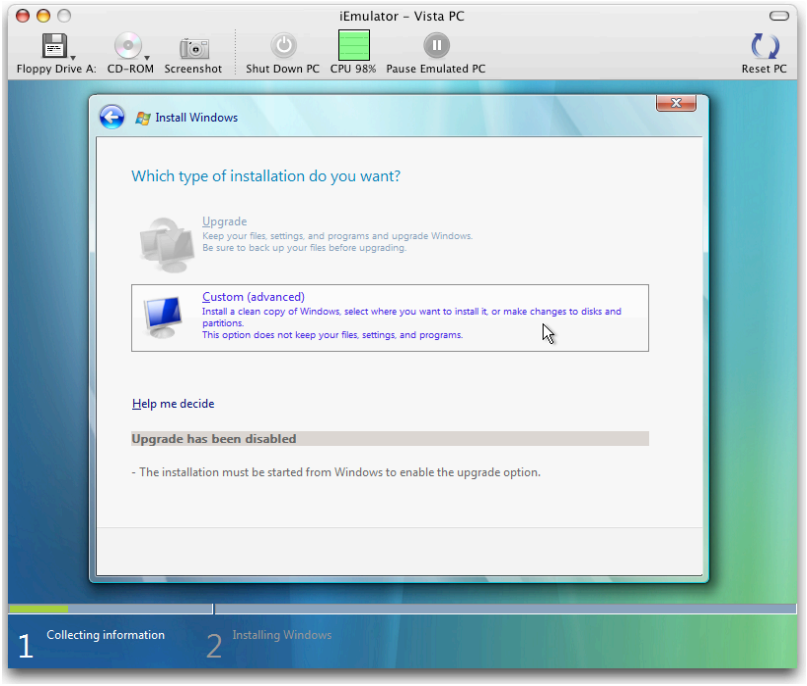
Please provide your location, language and keyboard preferences and then click the "Next" button. You'll see the following "Install Now" screen:



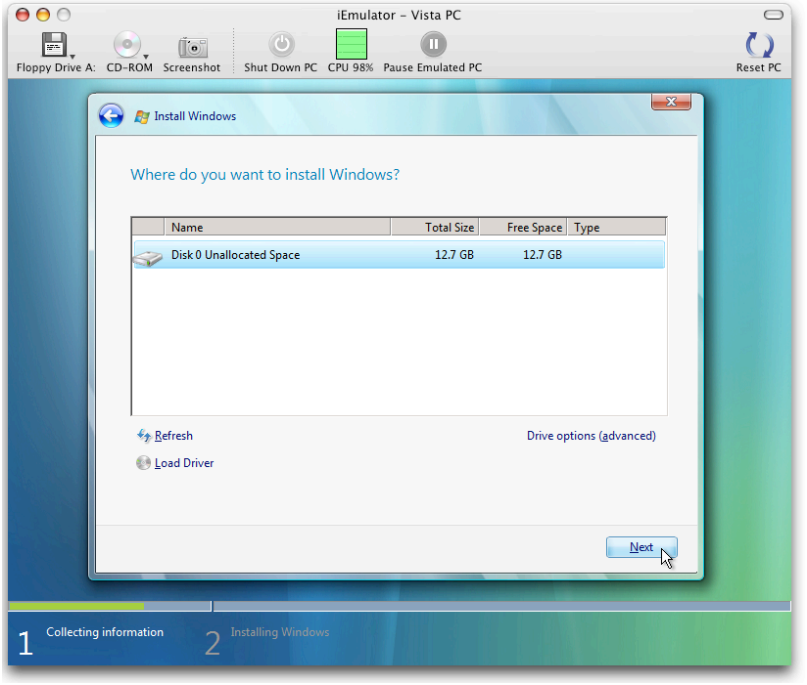
After pressing the "Install Now" button, please wait. The delay can last a significant number of minutes, but you'll soon be asked to provide your Vista product key:



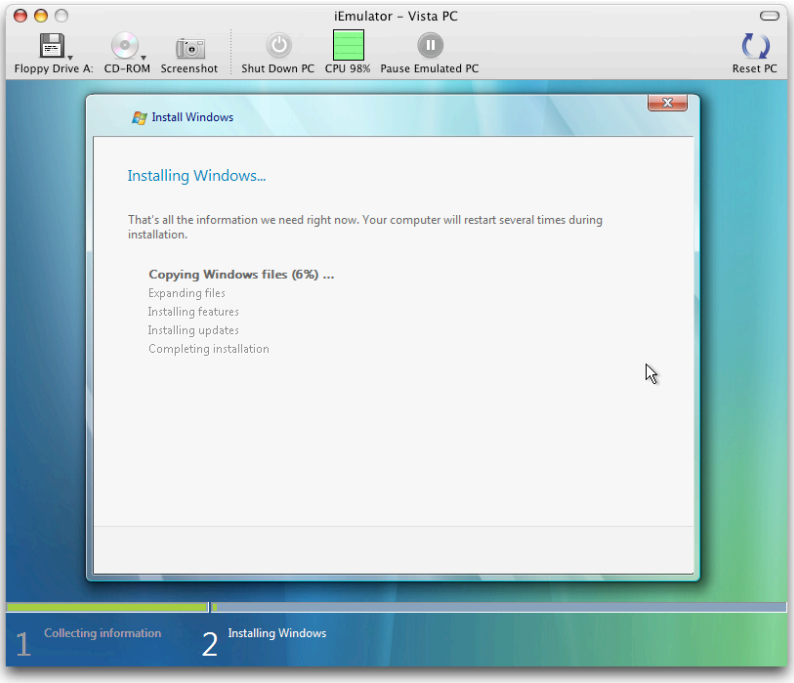
Please enter your product key, and then accept the license agreement. After doing so, you'll be asked what type of installation you'd like. In beta 2, only the "Custom", full installation is available:



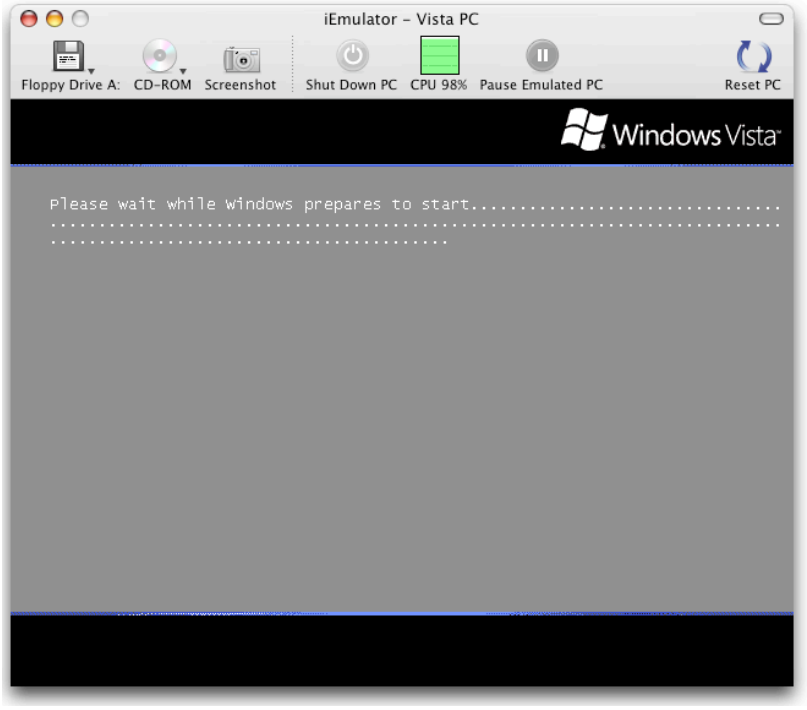
Simply click on "Custom (advanced)". You can then select the emulated hard disk you wish to install Vista on:



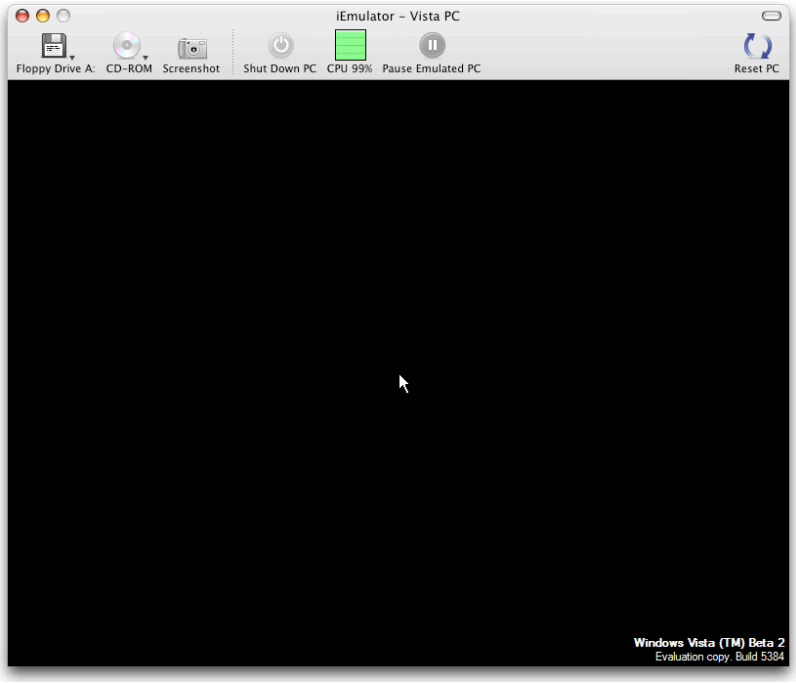
If you've configured your emulated PC to only have one emulated hard disk, it will already be selected, so please simply press the "Next" button. Installation will start!



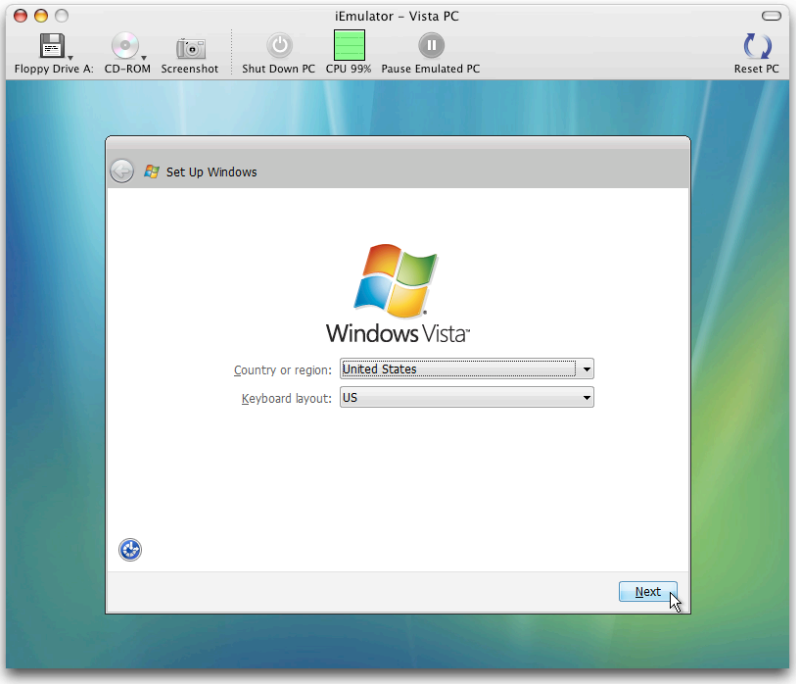
It will take 2 or more hours to copy, expand, install and configure Windows Vista from this point, even on an Intel-based Mac. As well, you will notice your emulated PC restarting from time-to-time; this is perfectly normal.



After more rebooting, your emulated PC will start up with a black screen, with only the version of your Vista (beta) build in the lower-right-hand corner:

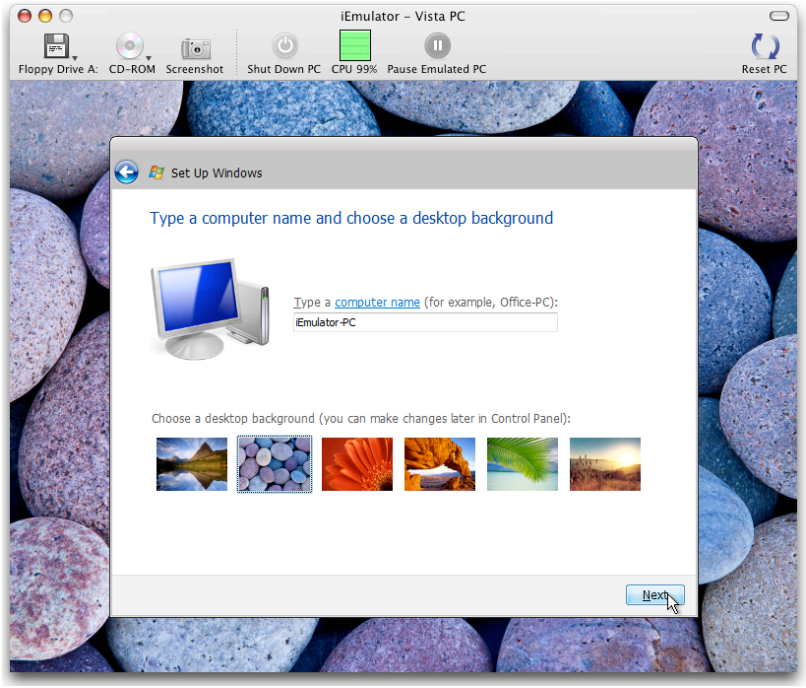


Again, please prepare to wait; the emulated PC will stay on this screen for some time, but eventually it will display a new, graphical configuration screen:

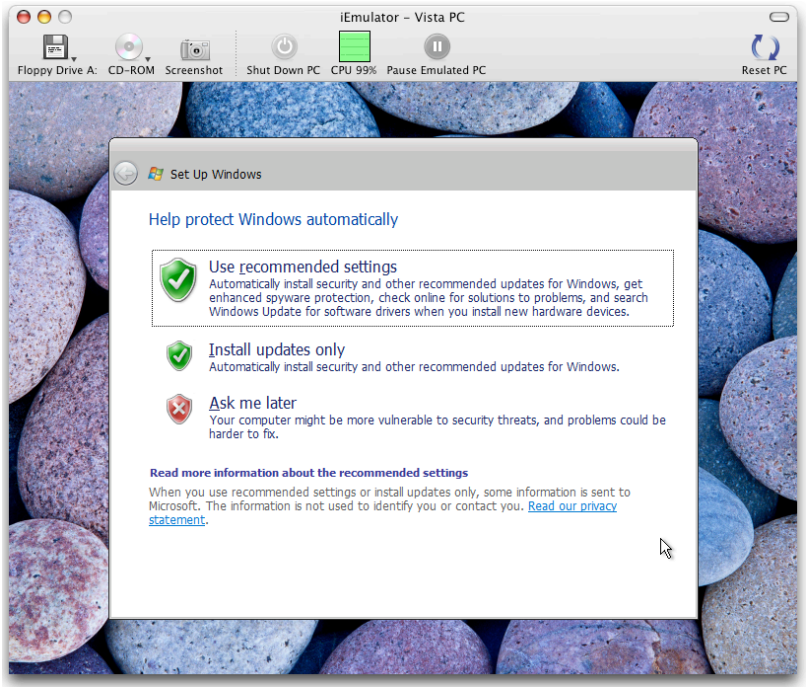


the values in the Country and Keyboard fields should match what you provided when you first started this installation. You can simply click “Next” to continue, at which point you’ll be asked to create a user account, provide a password and supply a password hint:

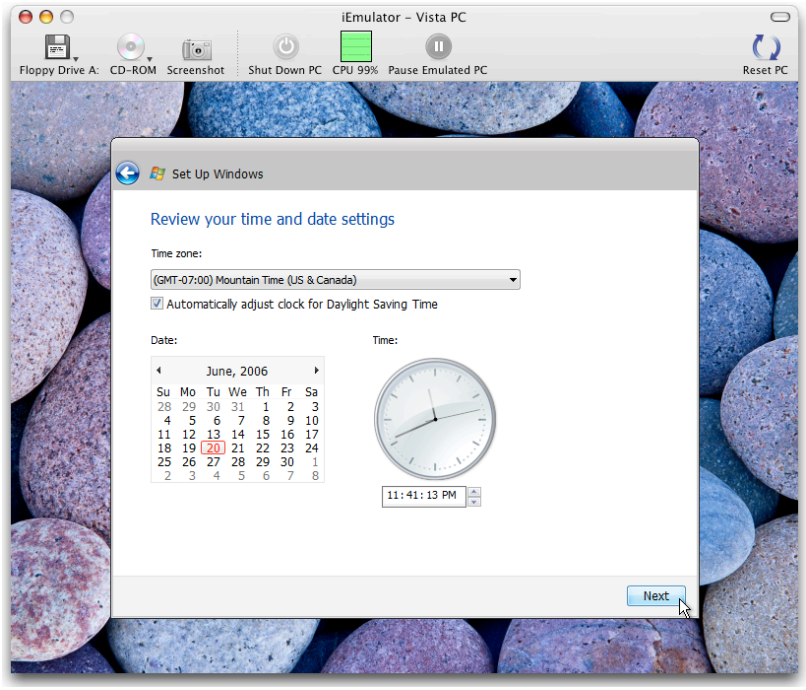
After that, please choose a computer name and select a desktop background.



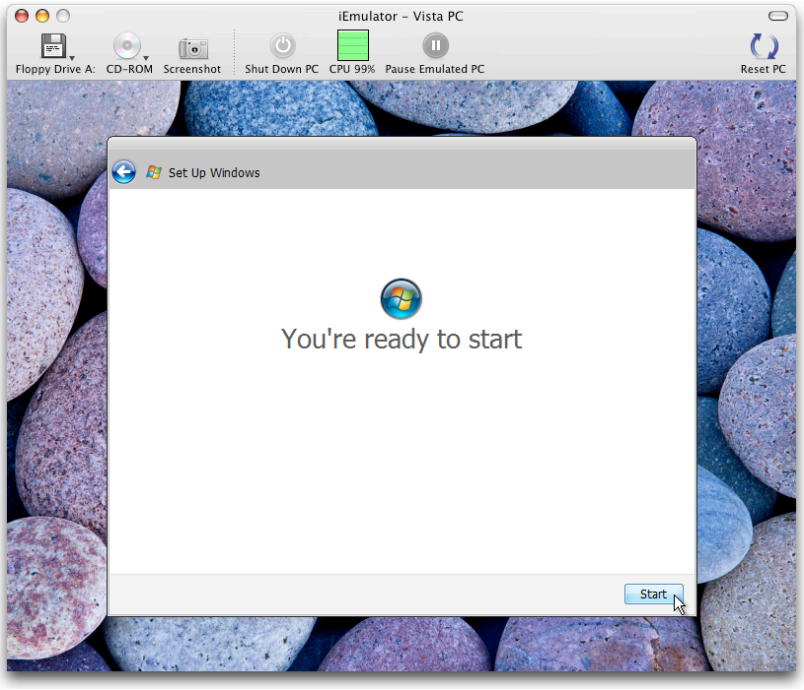
You can now choose if you wish to use Microsoft's Automatic Update service or not. To do so, simply click on the selection. It may take a few seconds to advance to the next screen, so please be patient.



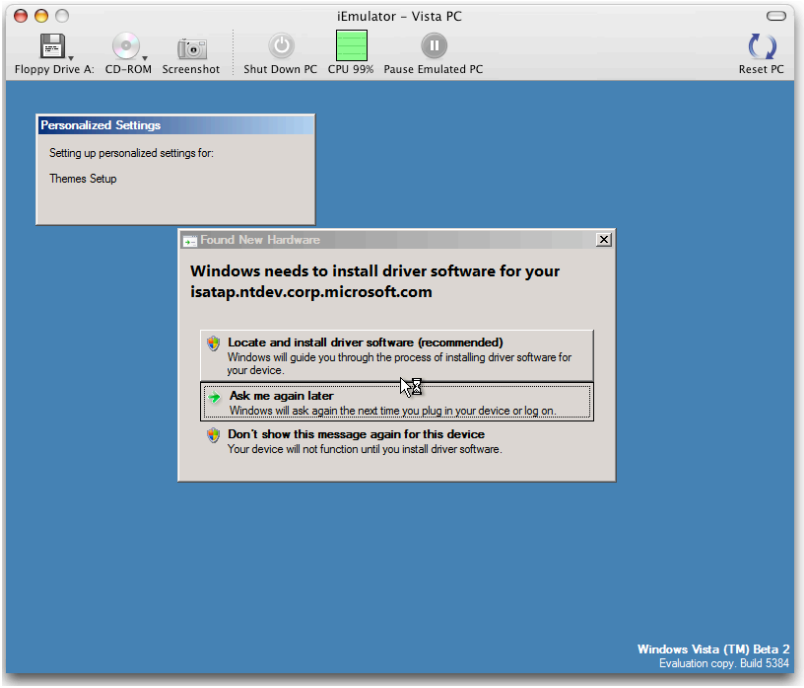
Please set the date, time and time zone …

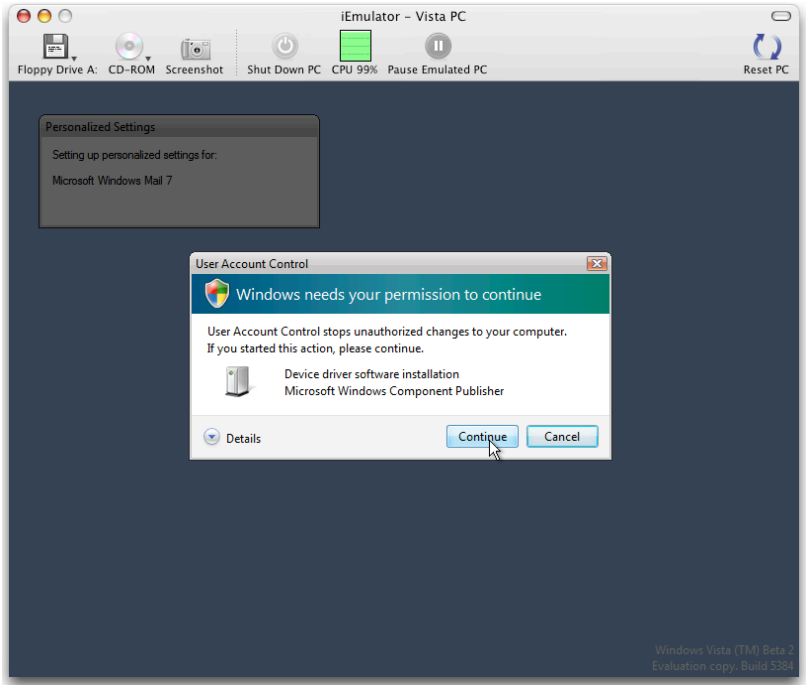


… and you're done! You can now click the "Start" button to start using your new Windows Vista-based emulated PC.



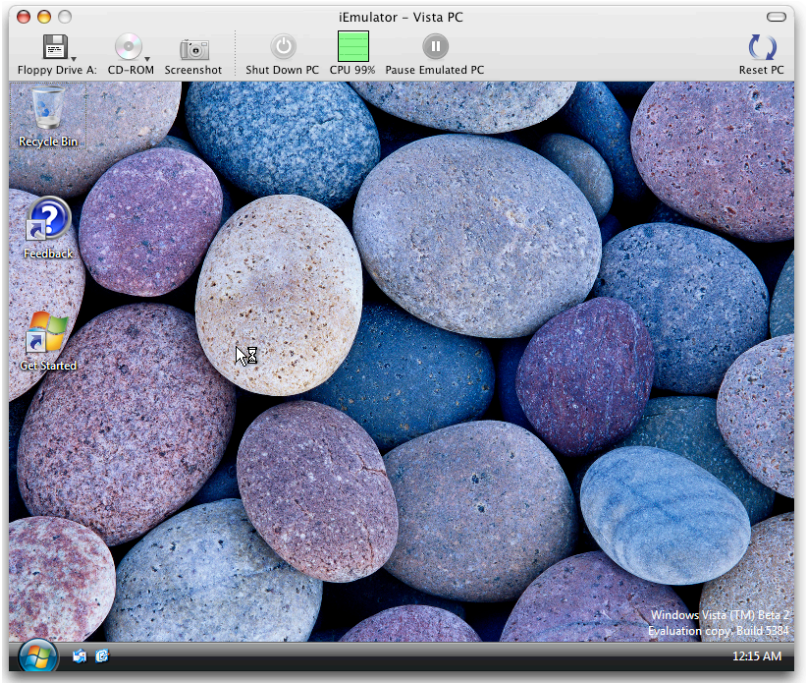
Once you log in using the user ID and password you selected earlier, Vista will still need to configure a few things, which can take a while. Please be patient. Your emulated PC will restart when this configuration is complete.





Once your emulated PC has finished it's automated configuration process and restarted, you can log in once again. If Vista reports any driver errors, please simply "ok" them: they should not impede your use of Vista (beta 2) on iEmulator.

At this point, Windows Vista may go through some final driver installations and/or configurations, but you'll finally get to use Vista!



Please note that this guide was written within a few days of Windows Vista beta 2 being made available by Microsoft. The installation process may change as new versions surface. As well, Vista is beta code: please do not use it for mission-critical activities, as it may not be as stable as production Windows versions.

Finally, we strongly recommend disabling the Windows Vista screen saver, as it seems to contribute to general emulated system instability; everything works much better without the screensaver being active!

Advanced iEmulator

- Windows takes full advantage of two-button mice and scrollwheels. If you have a two-button mouse, the right-mouse button will work great in iEmulator. If you have the standard Macintosh single-button mouse, simply hold down the **Command** (Apple) key and click to emulate a right-click.

- Occasionally, Internet access may not work, even though the Network checkbox is checked in the emulated PC configuration screen. If this happens, simply shut down your emulated PC and re-launch it, at which point Internet access should be available.

- If you wish to run your emulated PC in full-screen mode, simply press the "Apple" and "F" keys simultaneously and then release them. Your screen will fade in and out, after which you'll be running Windows in full-screen mode; it will appear just as it would on a regular Windows PC. To return to "windowed" mode (the default), simply press "Command" and "F" again.

- To change the screen size of your emulated Windows PC, simply hold down the "Apple" key (the key immediately to the left of your spacebar) and click the Windows desktop (alternately, you can simply right-click the Windows desktop if you have a two button mouse). Select "Properties", then "Settings". You can then change the Windows screen resolution and color depth. When you OK the change, the emulator window will automatically resize to reflect your new settings.

- You can run more than one iEmulator at the same time! Every time you want to run more than one emulated PC at once, simply select the PC in the PC list, and click the "Start PC" button.

- Using the Internet in iEmulator is very simple: emulated PCs must be configured as if they are on a LAN, even if your Mac uses a dial-up Internet connection. As far as the PCs are concerned, they are connected to a LAN to your Mac, and are sharing the Internet connection on the Mac.

- Audio is not activated by default, because despite it being highly optimized, audio still slows down overall emulation performance. It may not be significant, but it will make a difference. Please only activate audio if the PC application(s) you wish to run require it.

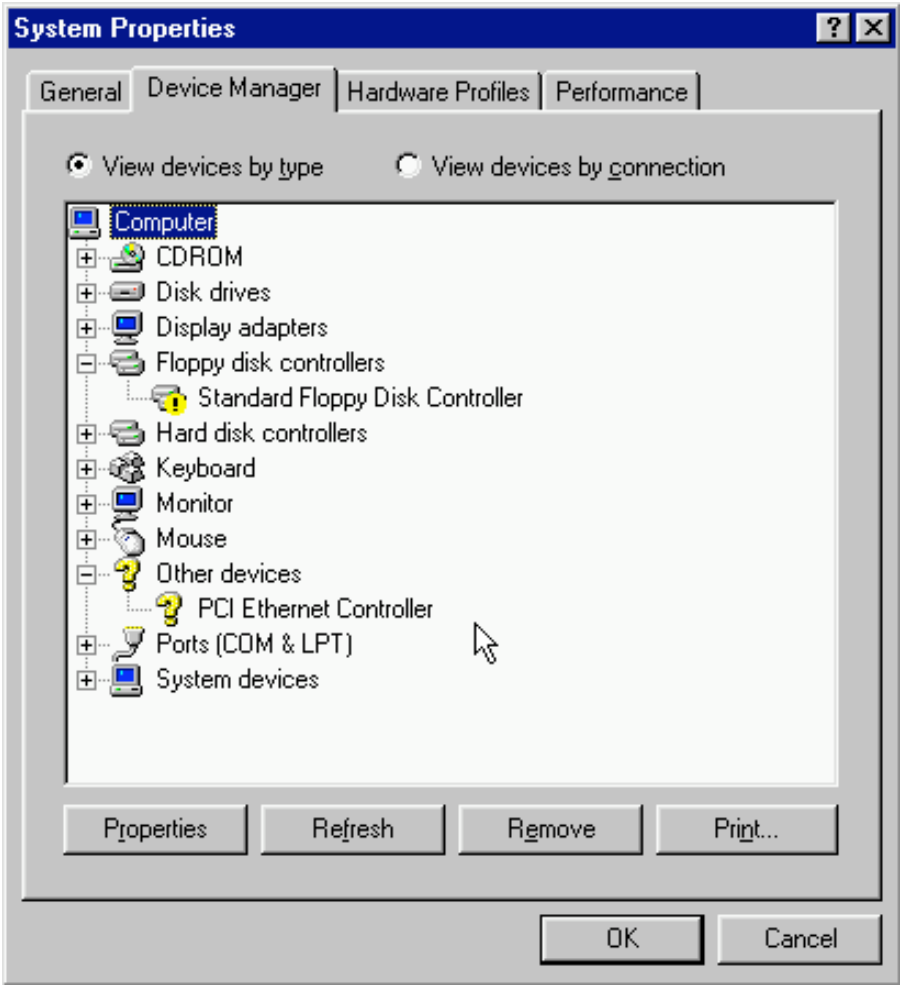
- You can easily customize the icon bar in both the main iEmulator window as well as the emulation window by right-clicking next to the icons (or holding down the "Control" key and clicking). You can then choose what functionality you'd like in the icon bar, and how it should appear.

Networking with Windows 95

Windows 95 is one of the fastest operating systems under iEmulator, however some builds of Windows 95 will not recognize the emulated network card. Once you have Windows 95 installed on iEmulator, you can "force" it to use the network card by following these simple instructions:

First, hold down the "Apple" key on your keyboard, and click once on "My Computer" in the Windows desktop (you can also right-click on "My Computer" if you have a two-button mouse):

Select "Properties", then click the "Device Manager" tab. When the list of devices is presented, please click the plus sign next to "Other Devices":

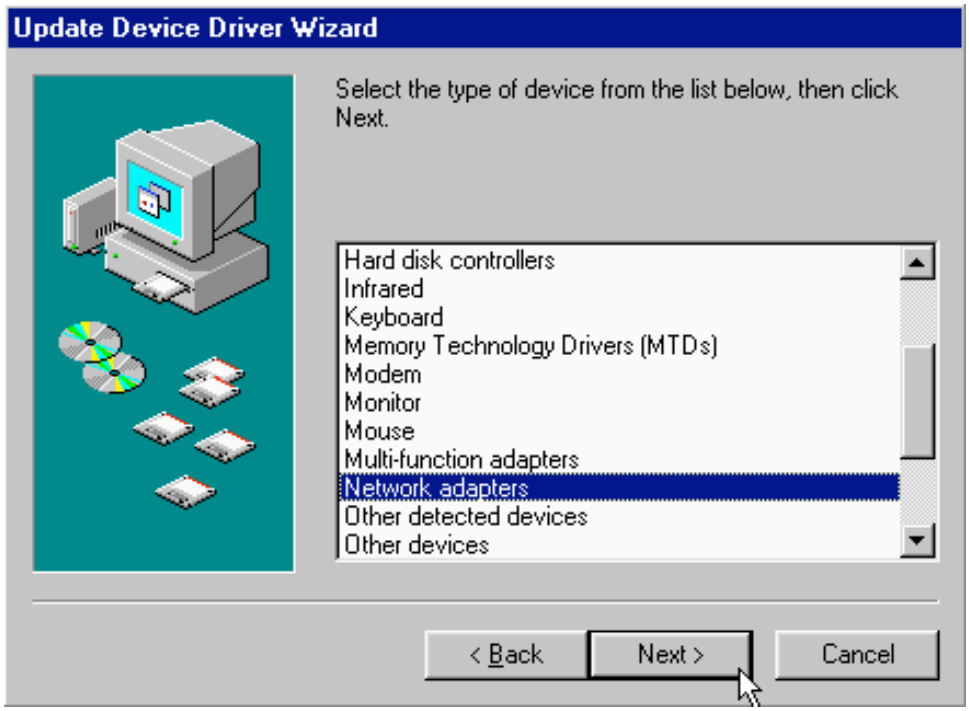


Select the “PCI Ethernet Controller”, and click the “Properties” button. Then, in the window that appears, click the “Driver” tab, and click “Update Driver”:

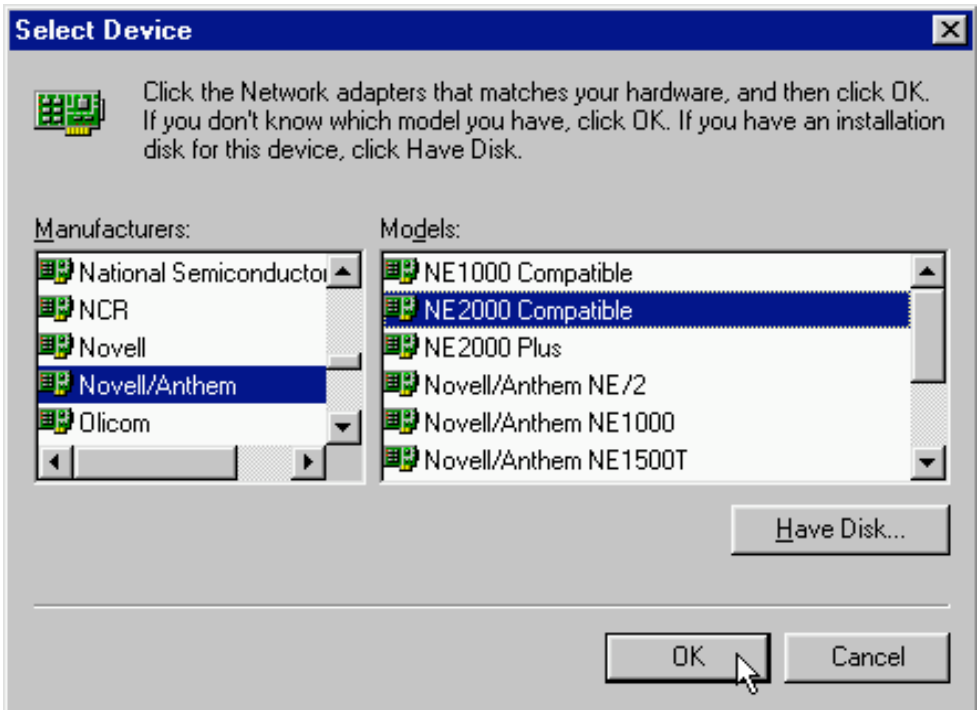
You will then be asked if you want Windows to search for a driver. Select the "Yes (Recommended)" radio button, and click the "Next" button:

Unfortuantely, Windows 95 **still** won't find a driver for our emulated network card, so you'll need to click the "Back" button to get a list of device types. **Please note that with some versions of Windows 95, you'll need to select the "No, select driver from list" radio button and click "Next", and then click "Back" before you'll see the list.**

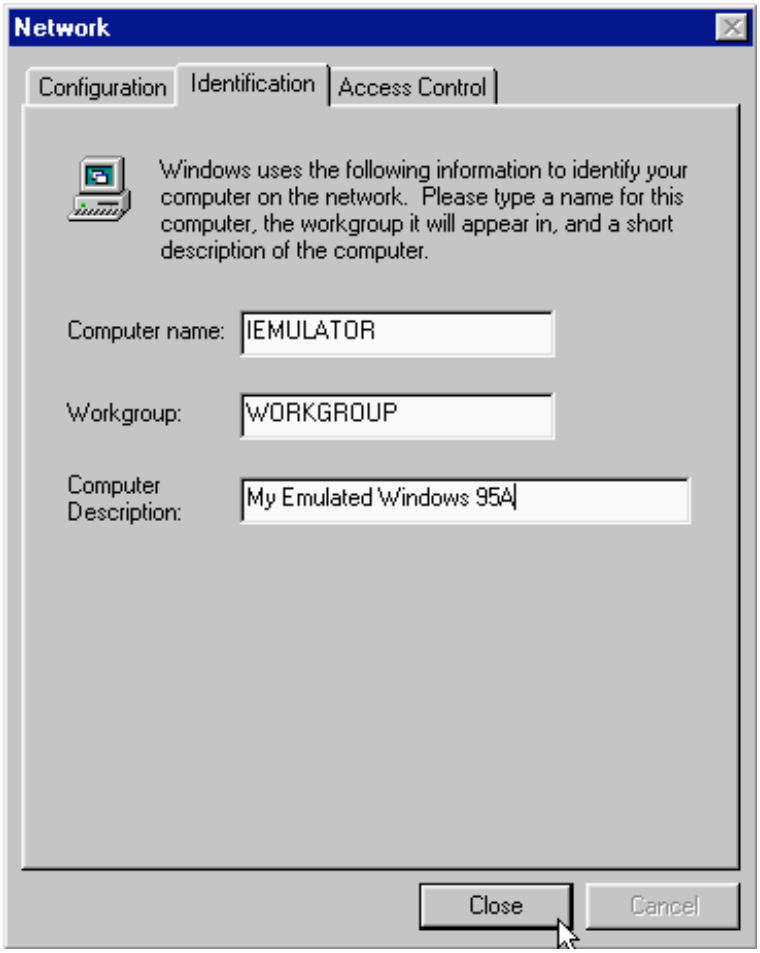
When you see the list, please select “Network Adapters” and click “Next”:



In the next window, please choose “Novell / Anthem” and “NE2000 Compatible” and click “OK”:



You'll have to provide a computer name and workgroup name, and then click the close button:



Finally, the driver will be installed and you'll be asked to restart your emulated PC. Please do so.

You can then add the TCP/IP protocol to Windows 95 and configure your emulated Windows 95 PC to use DHCP. You may need to manually provide your ISP's DNS addresses, however. After that, you should be online with Windows 95!

Using Audio in Windows 95

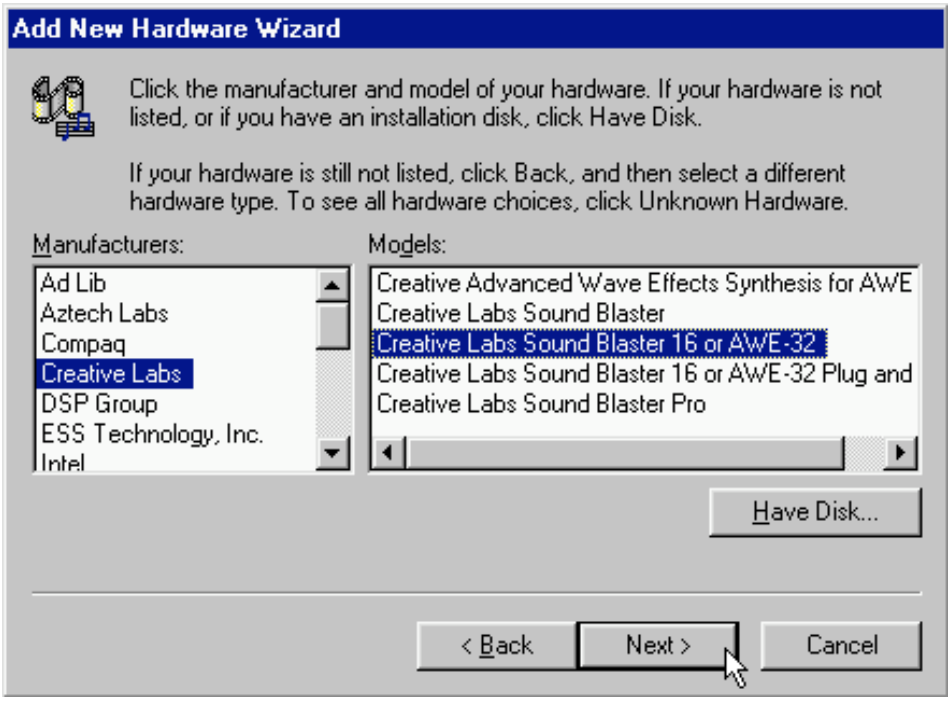
As with the network card, Windows 95 may not recognize the emulated SoundBlaster 16 card if the “audio support” checkbox is checked. However, it’s quite simple to install the SoundBlaster driver:

Cancel any “new hardware found” windows, and open the Control Panel, and run the “Add New Hardware” icon:

Click the “Next” button, and in the following window select “No” and click “Next” again:

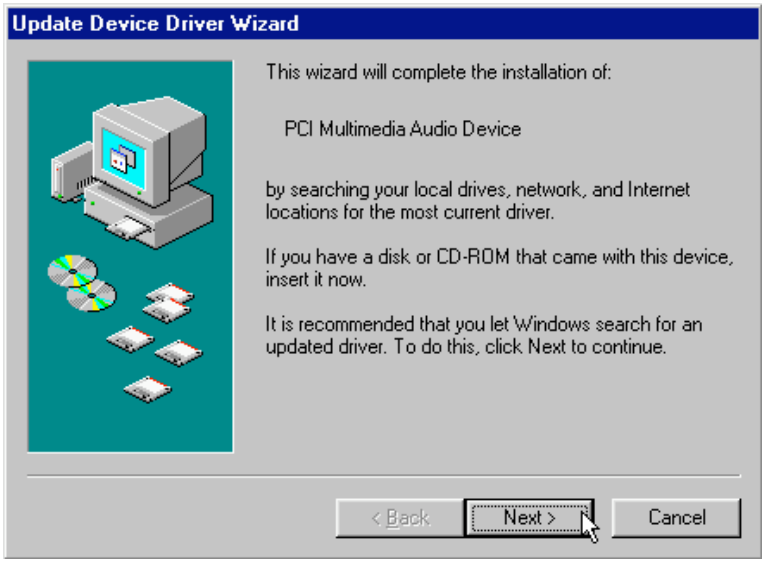
Select “Sound, Video & Game Controllers” in the next window, and click the “Next” button once again:

Next, please select “Creative Labs” for the Manufacturer and “Creative Labs SoundBlaster 16 or AWE32” for the model. **Do not select the Plug and Play entry**.



Accept the factory default settings, and let the driver installation complete. If Windows asks you to restart your emulated PC, please do so.

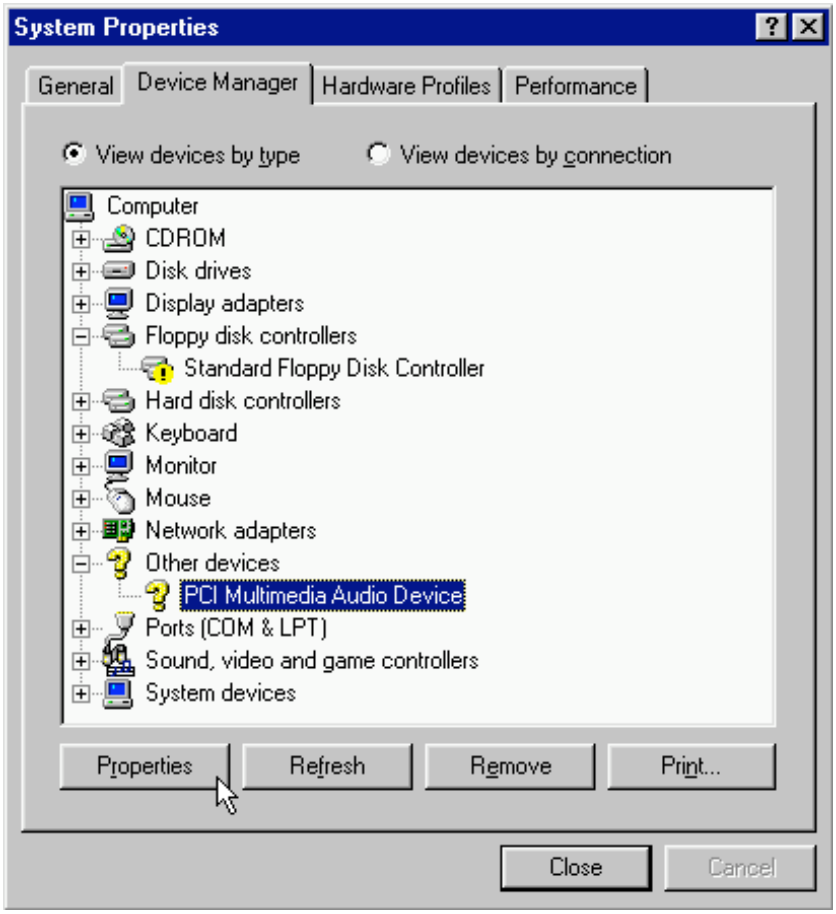
You may still be bothered by the "new hardware found" notifications. To permanently cancel them, please first allow Windows 95 to find a driver for this PCI Audio Device:



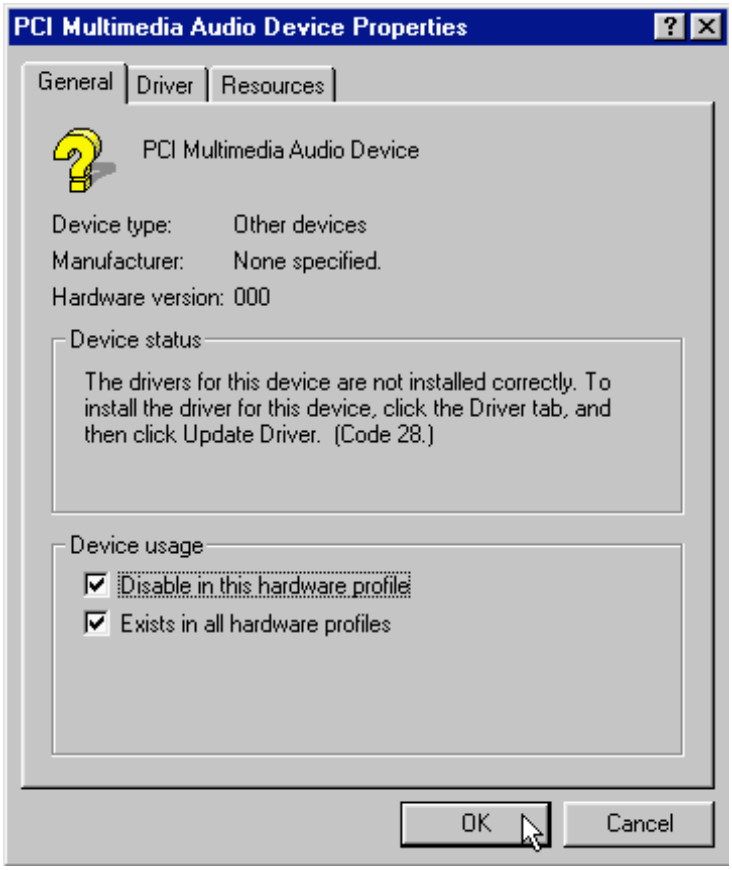
Windows 95 will not be able to locate an appropriate driver, but that's alright! Please click "Finish":

Next, open your Control Panel again, and this time double-click on the “System” icon:

Click on the “Device Manager” tab, and click the plus sign next to “Other Devices”. Click “PCI Multimedia Audio Device” once, and then click the “Properties” button:



You can then Click the “Disable in this hardware profile” checkbox, and click ok:

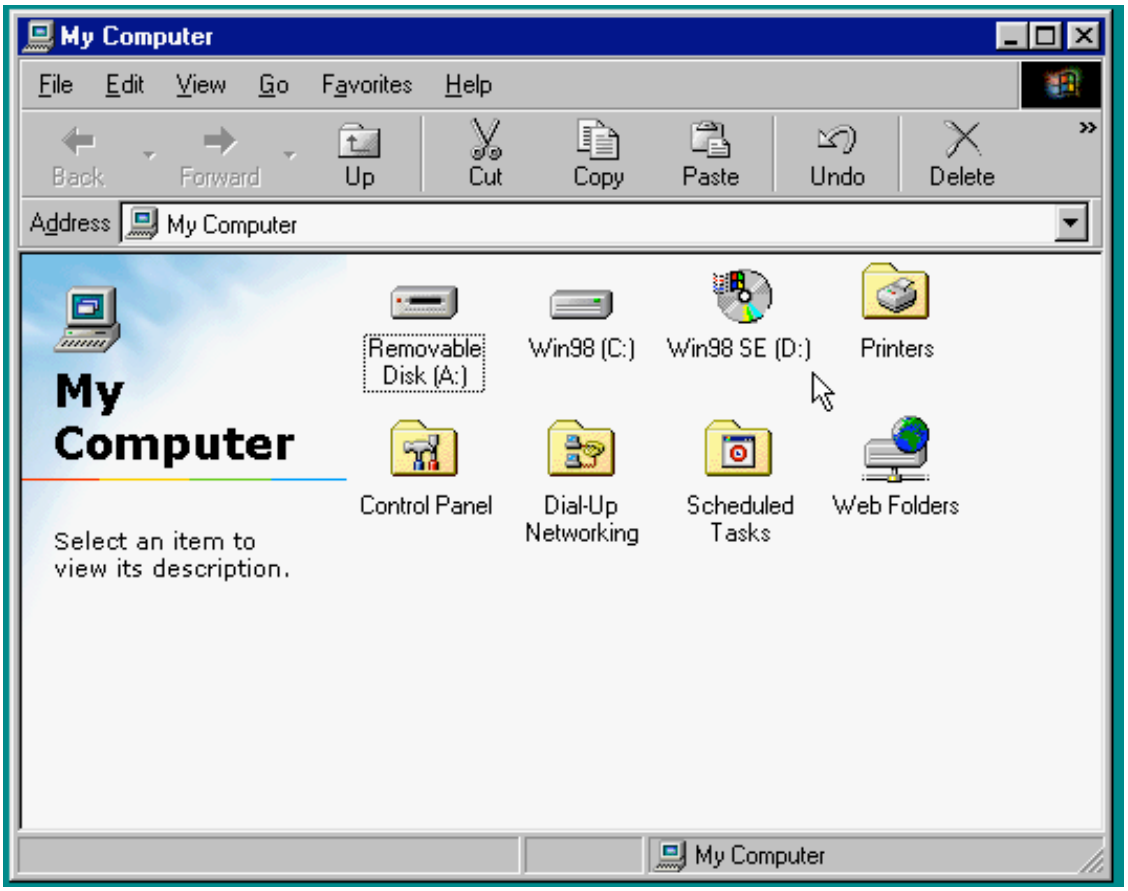


That’s it! Simply close all of your control panel windows, and you shouldn’t be bothered again.

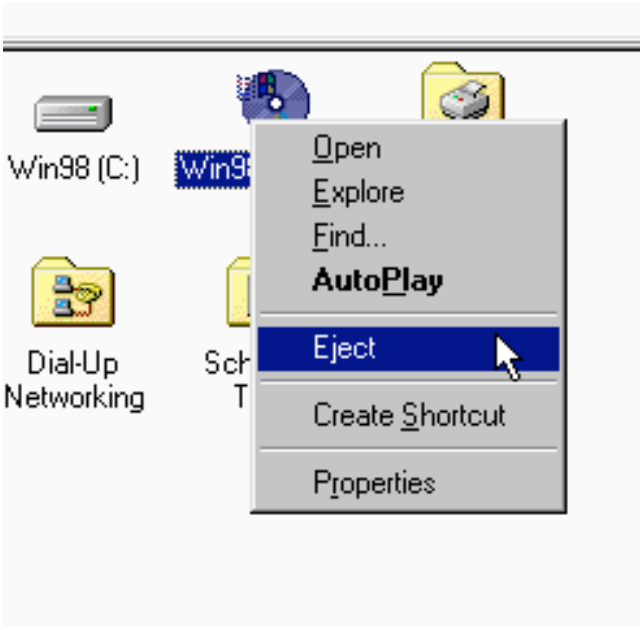
Swapping CD Images without re-configuring iEmulator

You don't need to reconfigure your emulated PC (and have to wait for Windows to reload) every time you want to change the CD image you wish to use! Simply use the Swap CD button. Here's how.

We're going to use a Windows 98 emulated PC for this example. We've launched the PC, and double-clicked on the "My Computer" icon on the Windows Desktop:



We are currently using a Windows 98SE installation CD image as our CD-ROM. Let's say we wish to install Microsoft Office, though. First, we need to create an image of the Office installation CD, as described earlier in this document. Once that's finished, we only need to "Eject" the CD image from within Windows. Please hold down the "Apple" key and click once on the CD icon in the above window, or right-click on it if you have a two-button mouse. When the pop-up menu appears, please click on "Eject":



Windows will “Eject” the CD image, and the icon will change to:

Indicating that the emulated CD-ROM drive is now “empty”.

Please go back to the iEmulator interface, and click on the “Swap CD” button () at the top of the emulated PC window. You can then choose in the drop-down menu whether to use a CD image as the Windows CD-ROM, or the CD that’s currently inserted in your Mac’s CD-ROM drive.

If you choose to select a CD image, you will then be asked to locate the new CD image you wish to use in the currently running emulated PC. We’re going to choose our MS Office Installer CD, and click “Open”.

Within a few seconds, the new CD image will be accessible by Windows!

Please note that if you don't see the CD appear within a few seconds, please select the "My Computer" window within Windows and either press "F5" on your keyboard or select "Refresh" from the "View" menu.

You can use the "Swap Floppy Image" button () to do the same with floppy disk images, but please note that not all Windows versions will recognize the floppy image swap.

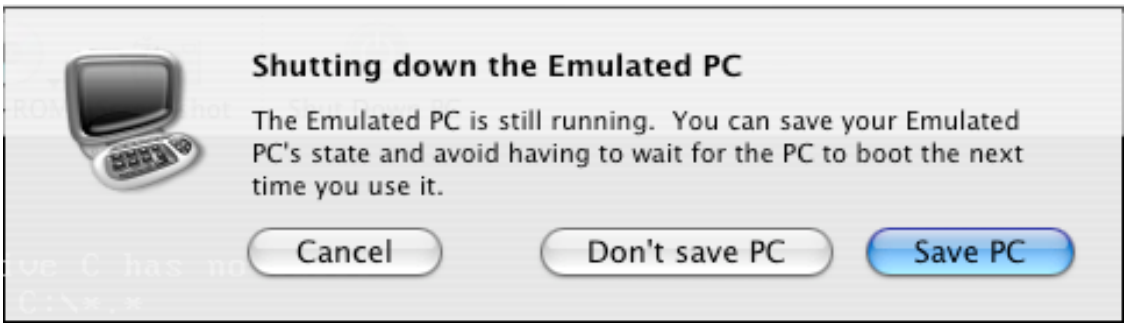
Please note that using "Swap CD" will not change your PC's configuration; the next time you launch the PC it will use the CD that is associated with the PC in the iEmulator PC Configuration window.

Saving and Loading PC States

iEmulator is great, but let's face it: waiting for Windows to load every time you want to run a Windows application can be annoying. iEmulator provides a great way around this: State management!

A "state" is simply a snapshot of your PC that can be saved and loaded within seconds, enabling you to get back to using Windows on your emulated PC very quickly.

You can save an emulated PC's state at any time once it's running, by simply clicking on the "shutdown PC" button ( ) at the top of the emulated PC window. You will then be asked if you wish to save the PC:



When you click the "Save PC" button, the save will take place automatically, and the Windows session will shut down. To retrieve the state, simply re-launch the emulated PC, and within seconds your emulated PC will be restored to exactly the same state that it was when you saved it! It's that easy, and much faster than waiting for Windows to reload!

Some notes on States

DOS-based versions of Windows (95, 98 and ME) don't like to be interrupted. You may notice some visual anomalies when you load a Windows 95, Windows 98 or Windows ME state: the cursor may temporarily be all black, and some minor display corruption may be seen. Windows 2000 and XP do not exhibit these issues.

PC States are extremely dependent on PC Configurations. For that reason you will not be able to make any changes to an emulated PC if it has a saved state associated with it. To remove a saved state, re-launch the PC and then shut it down without saving the state.

Please be careful when saving the emulated PC's state! If Windows is in the middle of writing a file, it can be corrupted if you initiate a "Save State" at the same time. Please try to ensure that Windows isn't doing anything when you save the state.

Printing with iEmulator

iEmulator is able to print to virtually any printer connected to your Mac, whether they are communicating via USB or Ethernet. iEmulator uses IPP printing on Windows to communicate with the Mac's built-in printer sharing technology. **Please note that because we're going to be using IPP, the emulated PC must have the "Network" box checked in the PC configuration window.**

If you're running Windows 95 or 98

You'll need to download a quick patch so that Windows 95 or 98 from Microsoft. Using a web browser in your emulated Windows PC, please visit:

http://www.microsoft.com/windows95/downloads/contents/WUPreviews/IPP/Default.asp

for Windows 95, and:

http://www.microsoft.com/windows98/downloads/contents/WUPreviews/IPP/Default.asp

for Windows 98

and download the IPP support file. You may then install the file, and you may need to restart your Windows PC.

If you're running Windows Me

Ensure that the Windows Me installation CD-ROM is available to your emulated PC. When in Windows, navigate the Add-on folder on the Windows Me installation CD-ROM and double-click on the wpnpins.exe file. IPP support will be installed on your Windows PC and it will then need to be restarted.

If you're running Windows 2000 or XP

You don't need to install anything! IPP support is built-in to Windows 2000 and XP.

Configuring your Mac

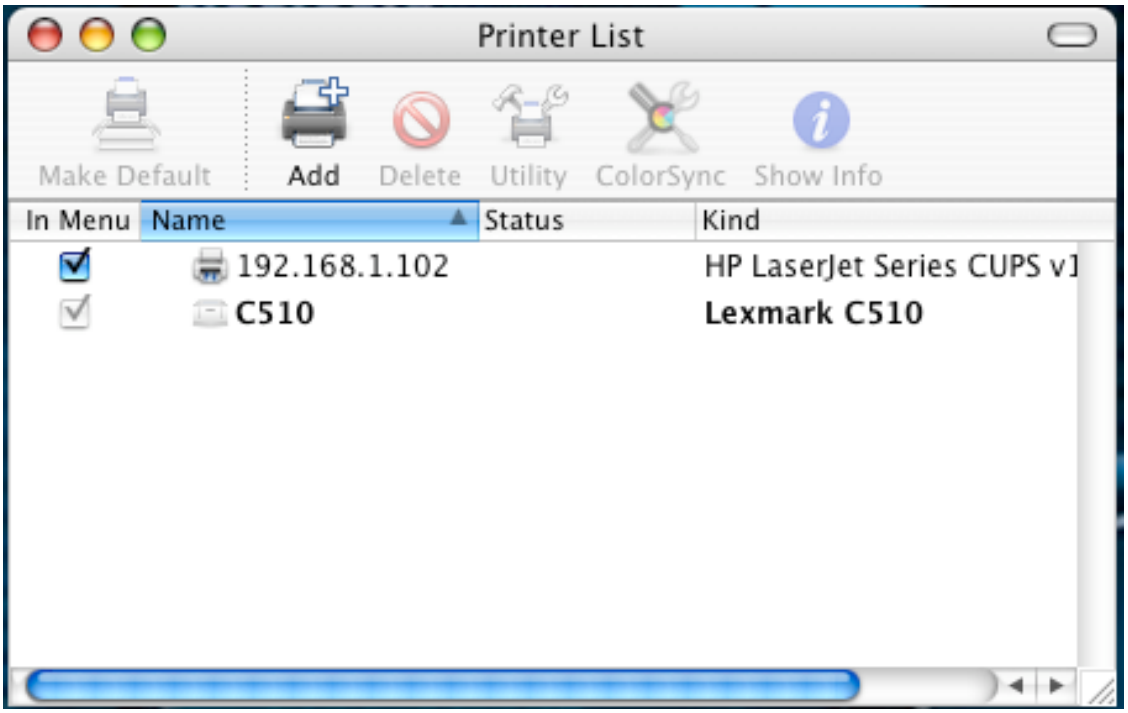
There are one or two steps you will have to take in order to support printing from your emulated Windows PCs. The first is very simple: Please open your System Preferences by selecting "System Preferences" from the Apple menu. Click on the "Sharing" icon, and ensure that "Printer Sharing" is checked. You may then close System Preferences.

If you wish to print to a printer connected to your Mac via Ethernet

No further configuration is required.

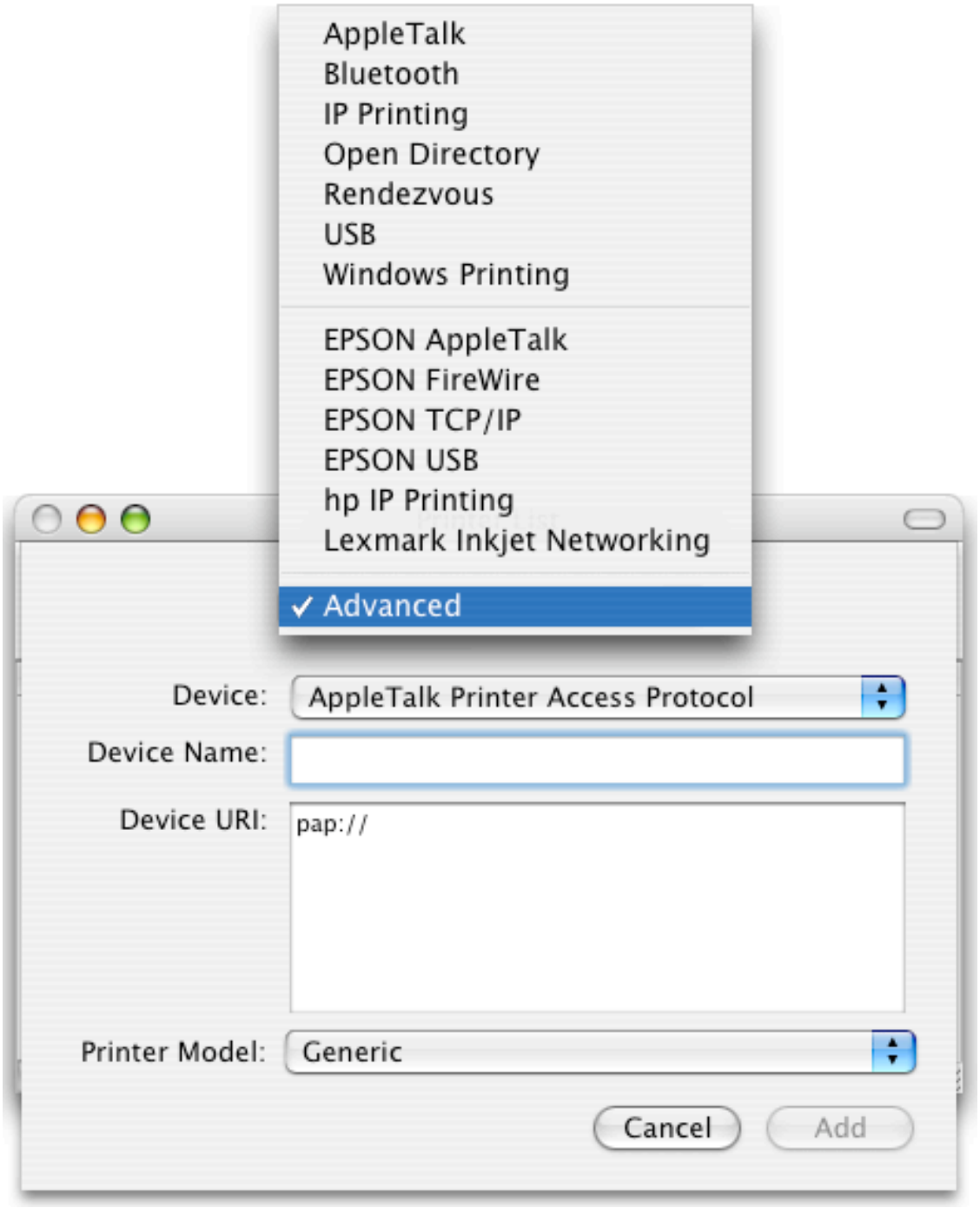
If you wish to print to a printer connected to your Mac via USB, on OS X 10.3

You'll need to set up a separate print queue, which will be used by the emulated Windows PC. Please run the "Printer Setup Utility", located in your "Applications" -> "Utilities" folder on your Mac. You should then see a window that resembles the following:



In this case, "C510" is a USB printer. We're going to create a second print queue for the C510. Hold down the "Option" key on your keyboard and click the "Add" button. **Please note that you must hold down the "Option" key while clicking the "Add" button.**

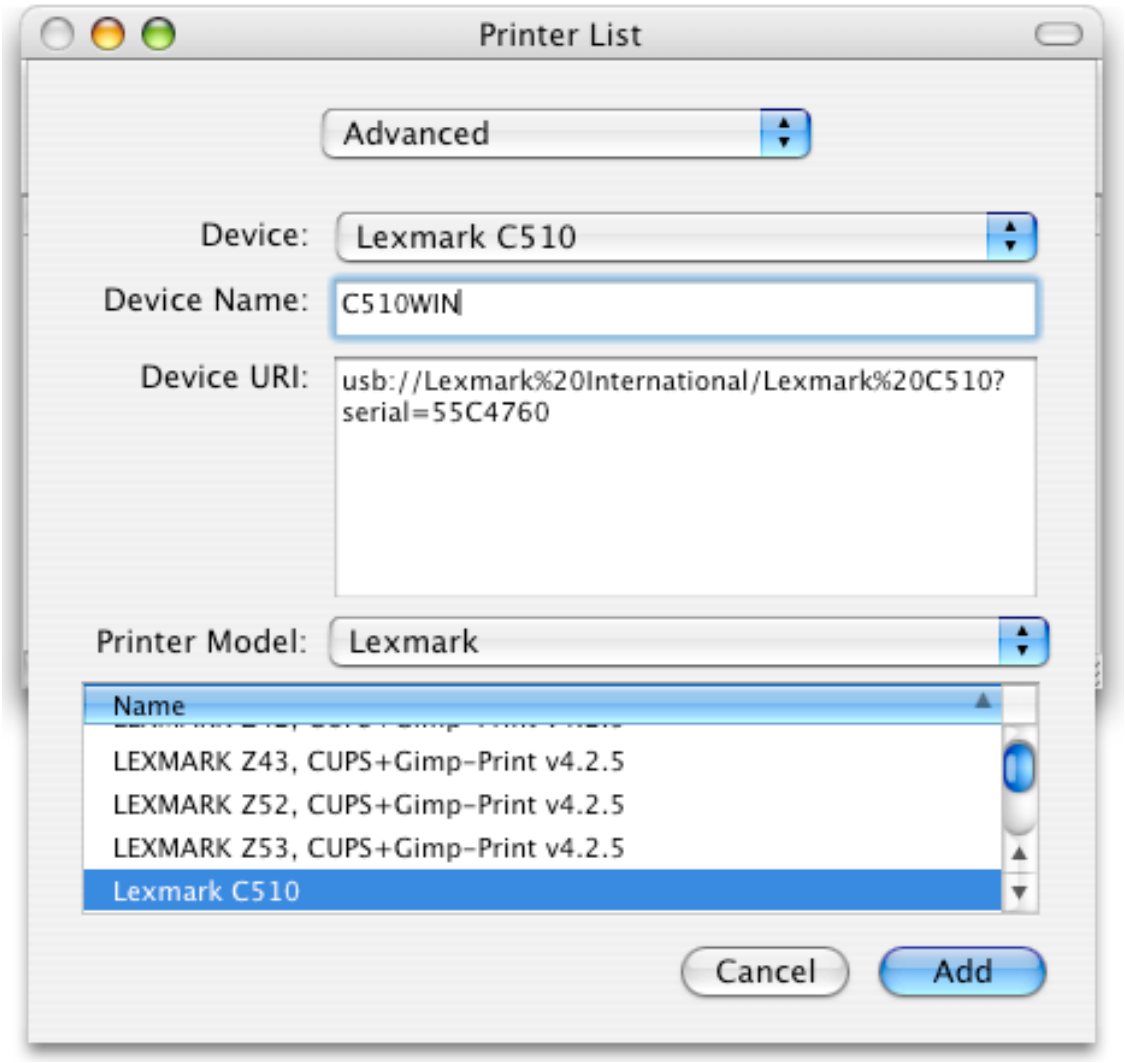
In the next window, please select “Advanced” from the top drop-down menu:



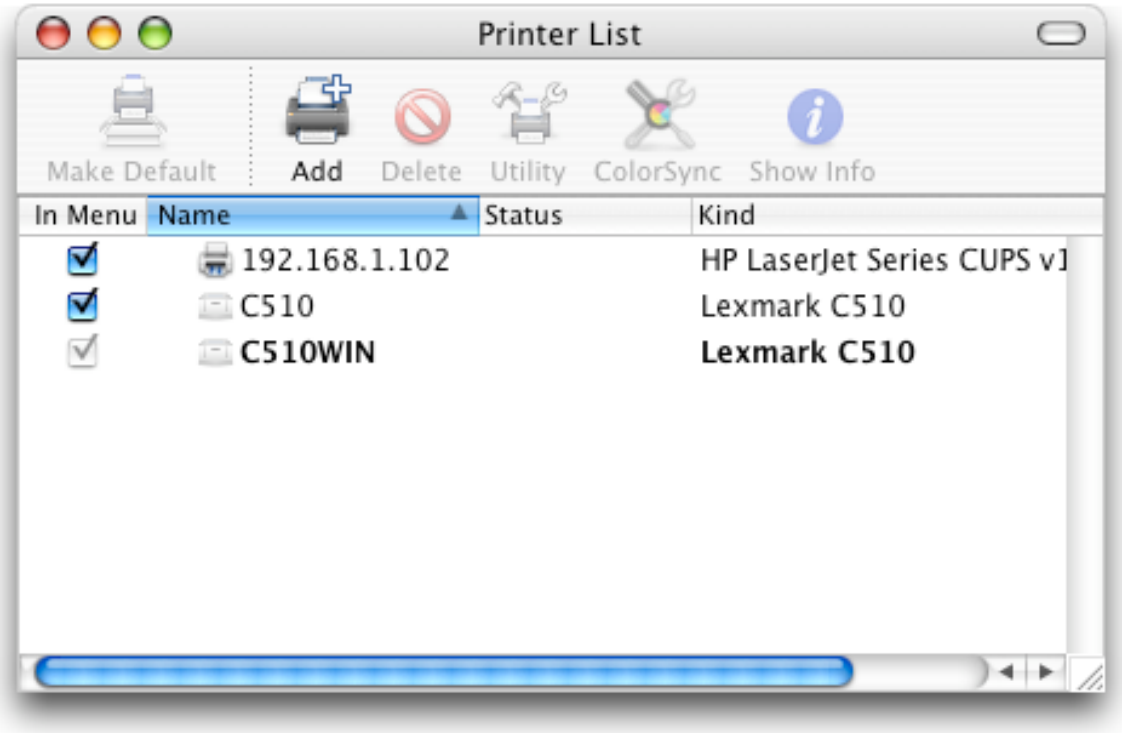
Next, we need to name the new queue, in the “Device Name:” field. Please refrain from using more than 9 characters in the device name field, as some versions of Windows will refuse to print to a queue with a name that is longer than 9 characters.

Next, we'll have to choose the device we wish to associate with this new printer queue. If you click on the "Device:" drop-down menu, your USB printer should show up at the bottom of the list. If it doesn't please cancel the queue setup and restart your Mac. After the restart, it should show up:

Finally, we need to choose the Printer Model of the printer we're associating with this new printer queue. Please choose the manufacturer in the "Printer Model:" drop down menu (in our case it's "Lexmark", and a list of supported printers will appear in the "Name" window below the "Printer Model:" menu:



Now you can simply click the “Add” button, and your new print queue will be created!

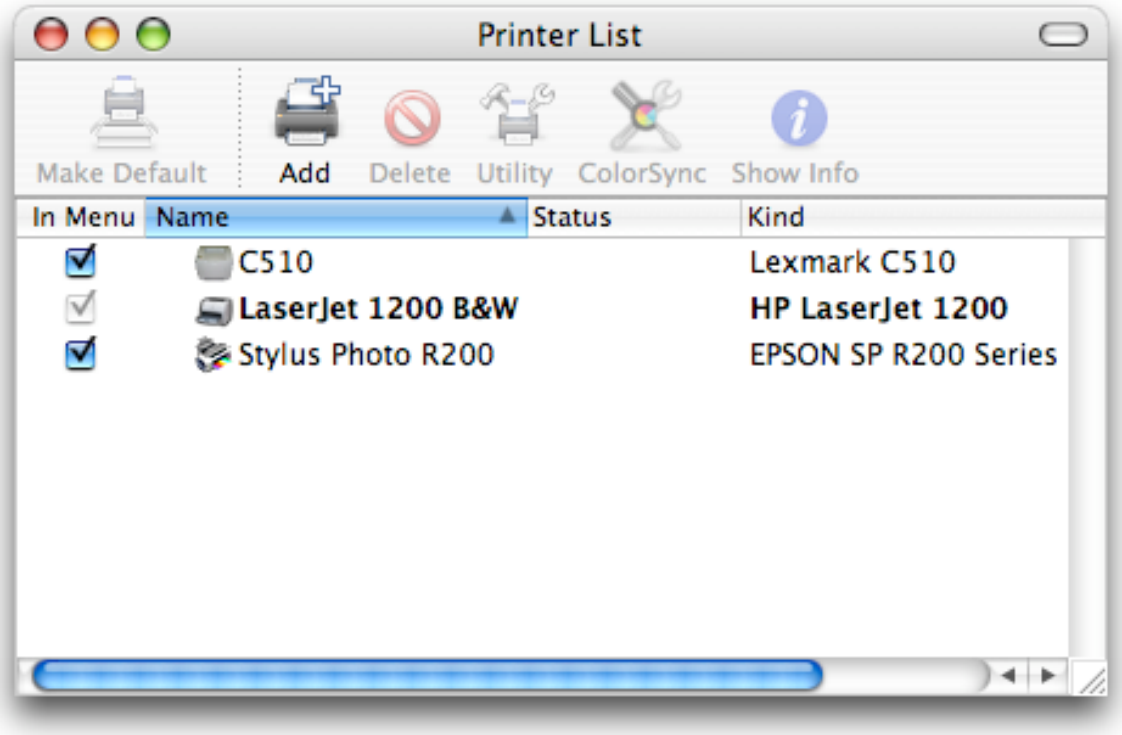


Please note that it may be set to the default Mac printer (indicated by the fact that the queue name is in **bold text**. To revert to your previously selected default printer, simply click on it and click the “Make Default” button.

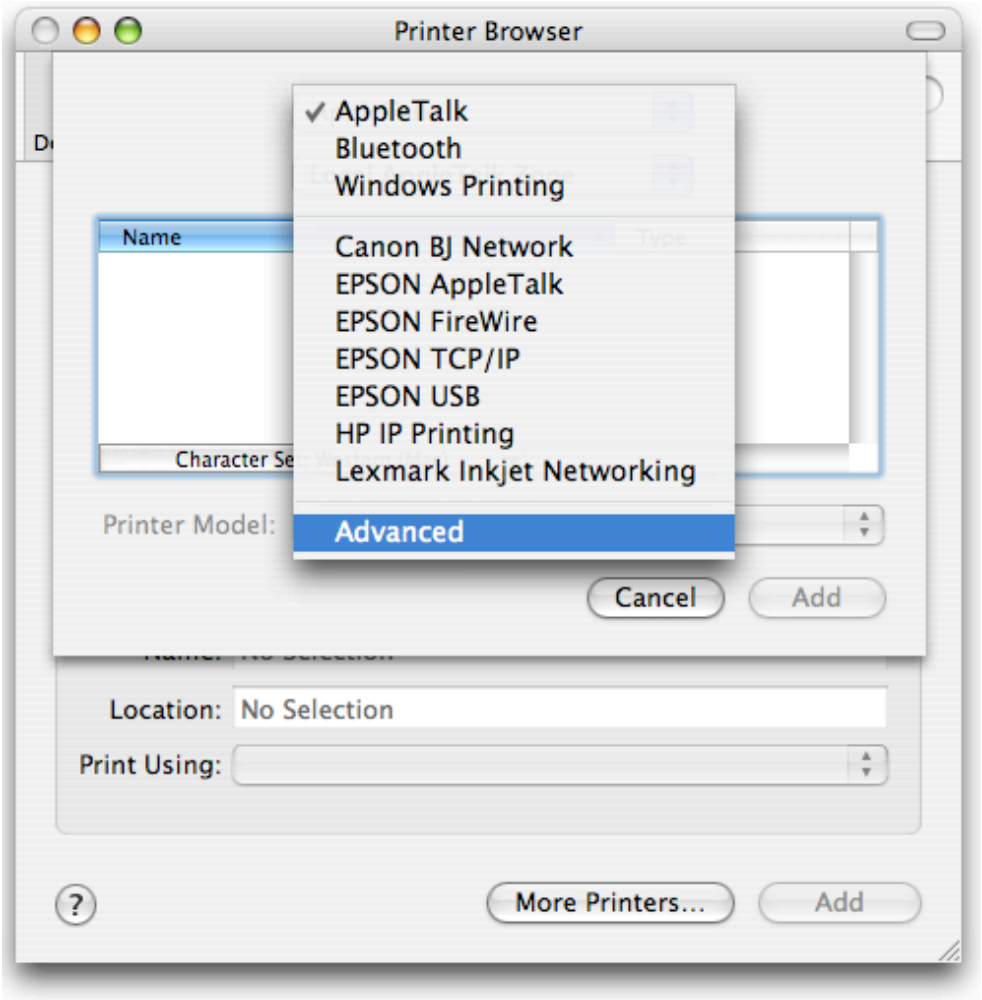
We’re now ready to configure Windows! Please launch your emulated Windows PC. We’re going to use Windows 98 as an example here, but the configuration process is very similar for other versions of Windows.

If you wish to print to a printer connected to your Mac via USB, on OS X 10.4

You'll need to set up a separate print queue, which will be used by the emulated Windows PC. Please run the "Printer Setup Utility", located in your "Applications" -> "Utilities" folder on your Mac. You should then see a window that resembles the following:



Next, hold down the "Option" key, and click the "Add" button. Then, hold down the option key again, and click "More Printers". Then, choose "Advanced" from the top drop-down menu:



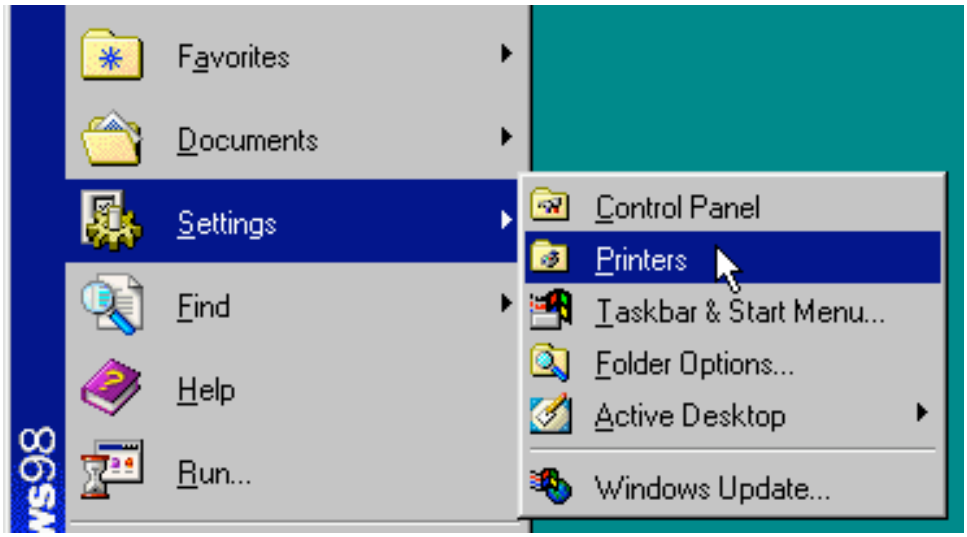
In the next drop-down menu, please choose your printer type (or the printer type that's closest to your printer model).

Then, please provide a queue name. Please try something simple, with under 9 characters, no spaces and no special characters.

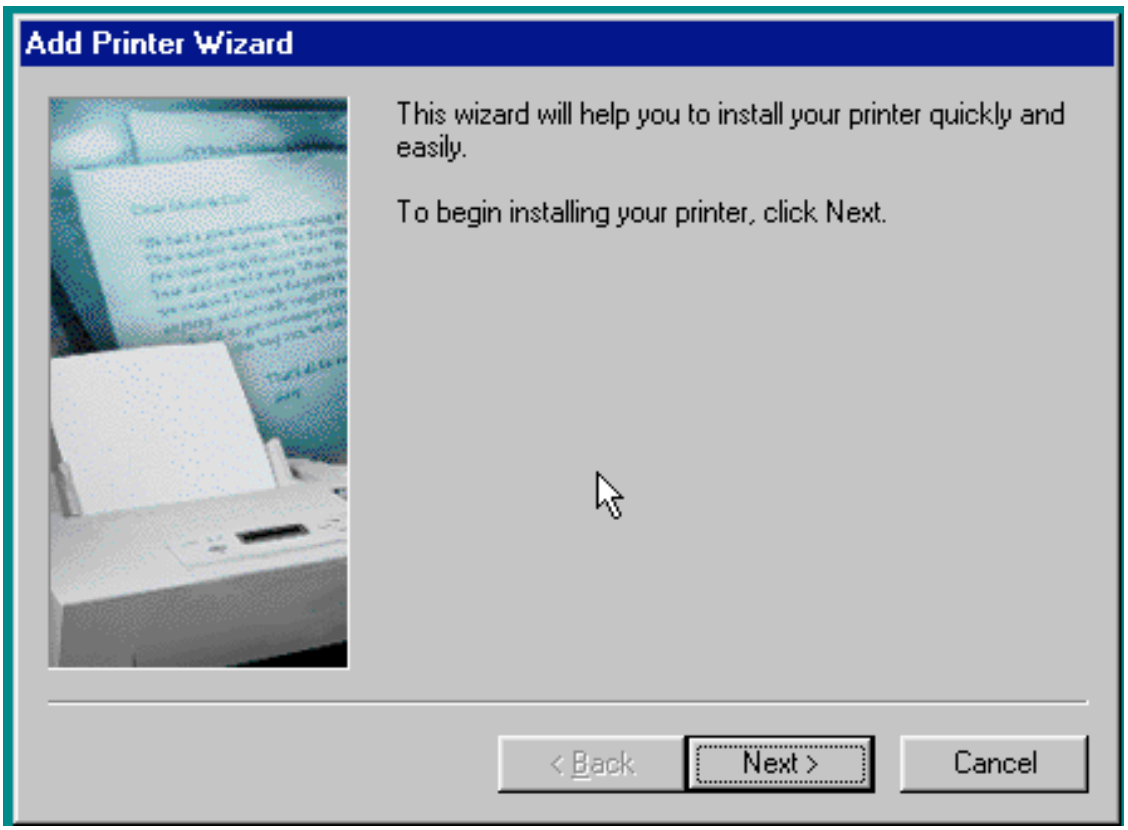
In the Printer Model drop-down menu, please choose the printer make that matches yours, and then in the box below the Printer Model drop-down, please choose the model that most closely matches your printer.

You can then click "Add" to create this new, Windows-specific print queue.

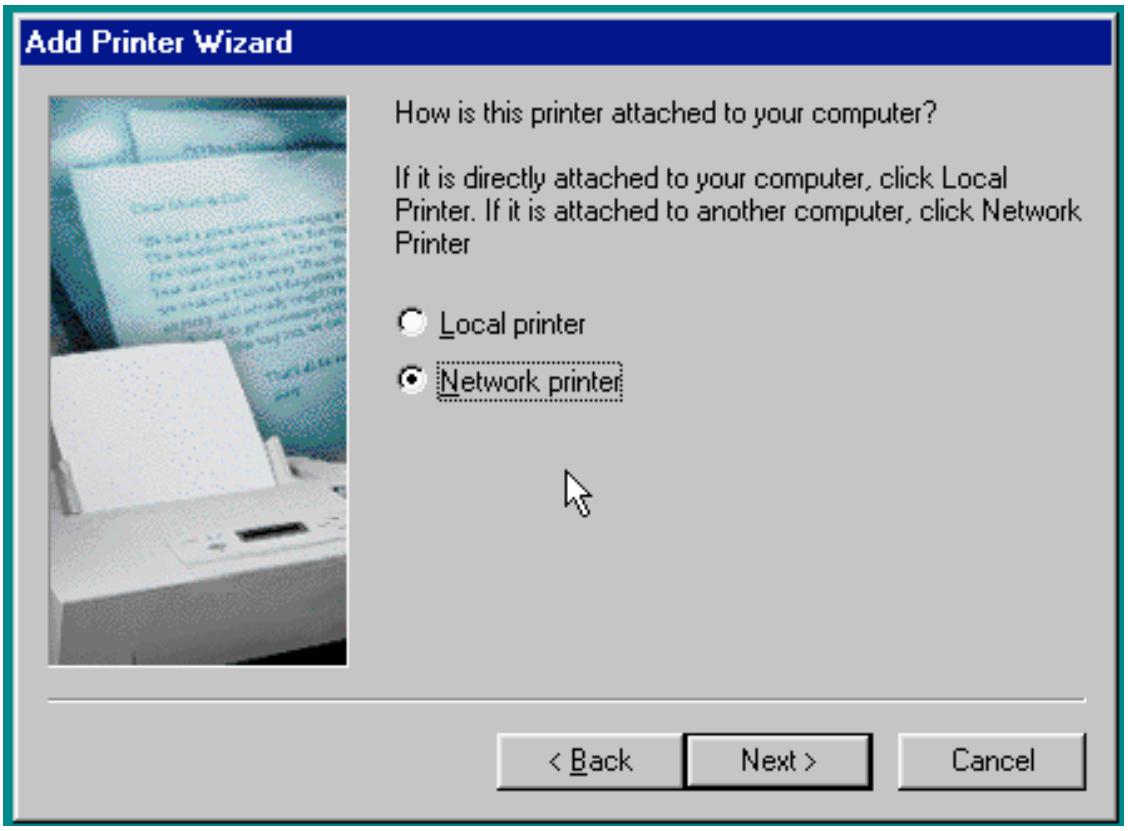
Now, in Windows, please click the "Start" menu, choose "Settings" and then "Printers".



Next, double-click the "Add Printer" icon in the window that appears. The "Add Printer Wizard" will start. Again, the Wizard may look different in other versions of Windows, but the process is almost identical.

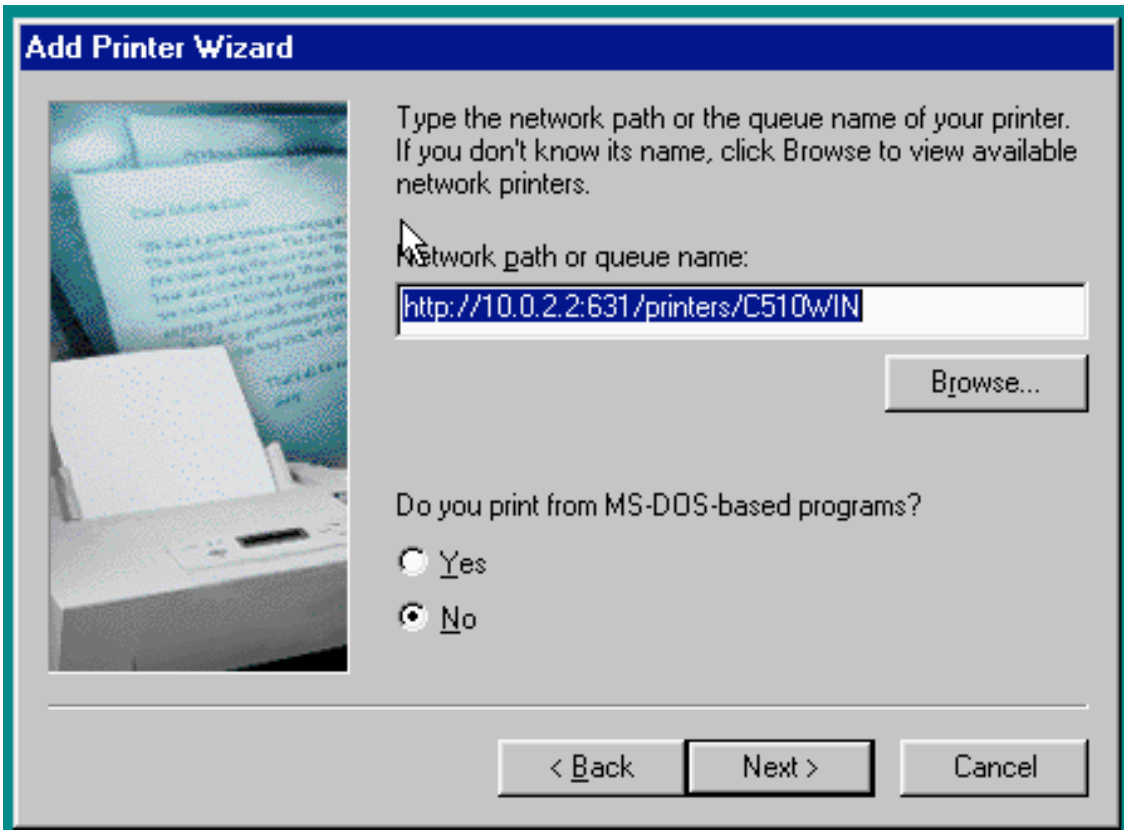


Click the “Next” button to get started. You’ll then choose a Network Printer.



Please click “Next” again.

Next you need to provide the address of the printer queue you just configured on your Mac. Please refer to the following screen-shot:



For all instances of iEmulator, the first part of the address will be the same:

http://10.0.2.2:631/printers/

The only thing that will change is the end of the address. Please append the queue name you provided when you created the new print queue on your Mac. In our case, it's C510WIN.

A helpful tip is that if you ever need to verify what the proper print queue name is, simply run a web browser on your Mac, and visit http://localhost:631/printers/ at which point you'll see a web page that's generated by the CUPS print manager on your Mac! Our queue list looks like the following on that web page:

You'll notice something interesting: the Ethernet-attached printer (the top one) has an underscore (_) in front of the IP address. You **must** remember to include that underscore when you type in the address of the printer in Windows. For example, using our top print queue, we'd provide the address:

http://10.0.2.2:631/printers/_192.168.1.102

To Windows.

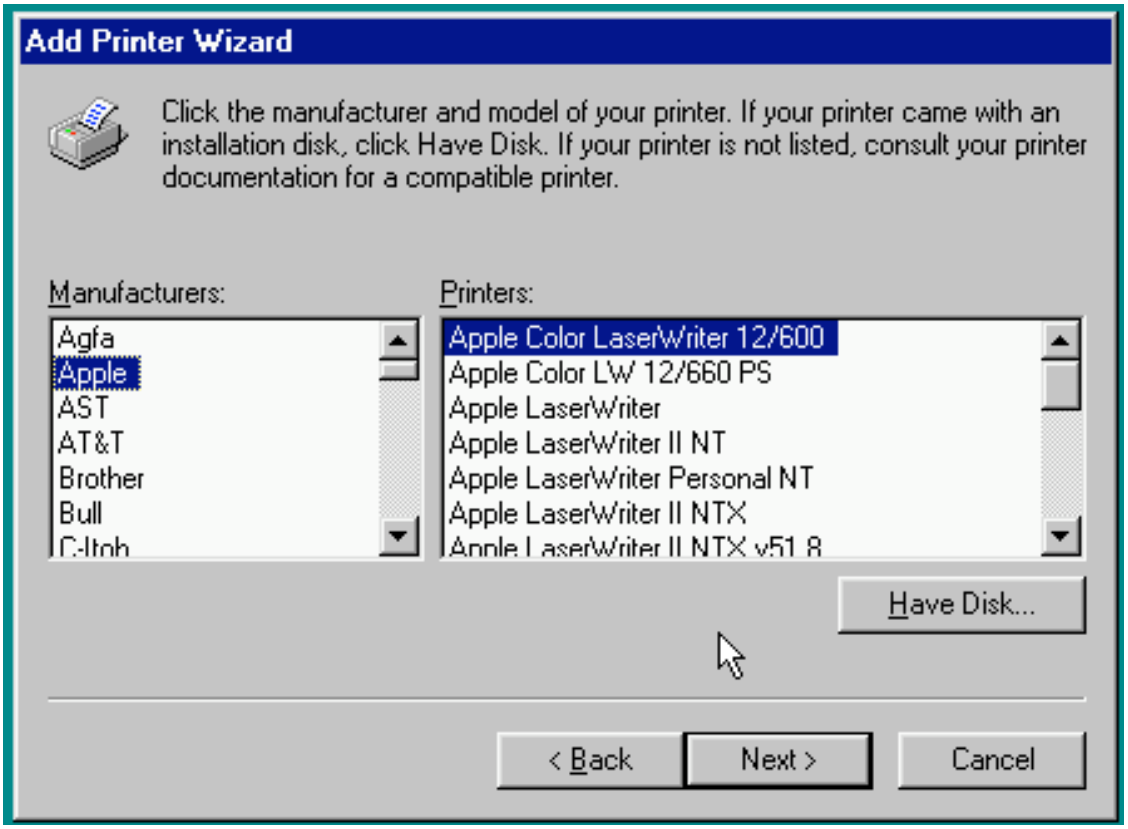
You'll also notice that any spaces in queue names are replaced with underscores as well. If we wanted to use the bottom queue, we'd provide:

http://10.0.2.2:631/printers/Lexmark_C510

To Windows.

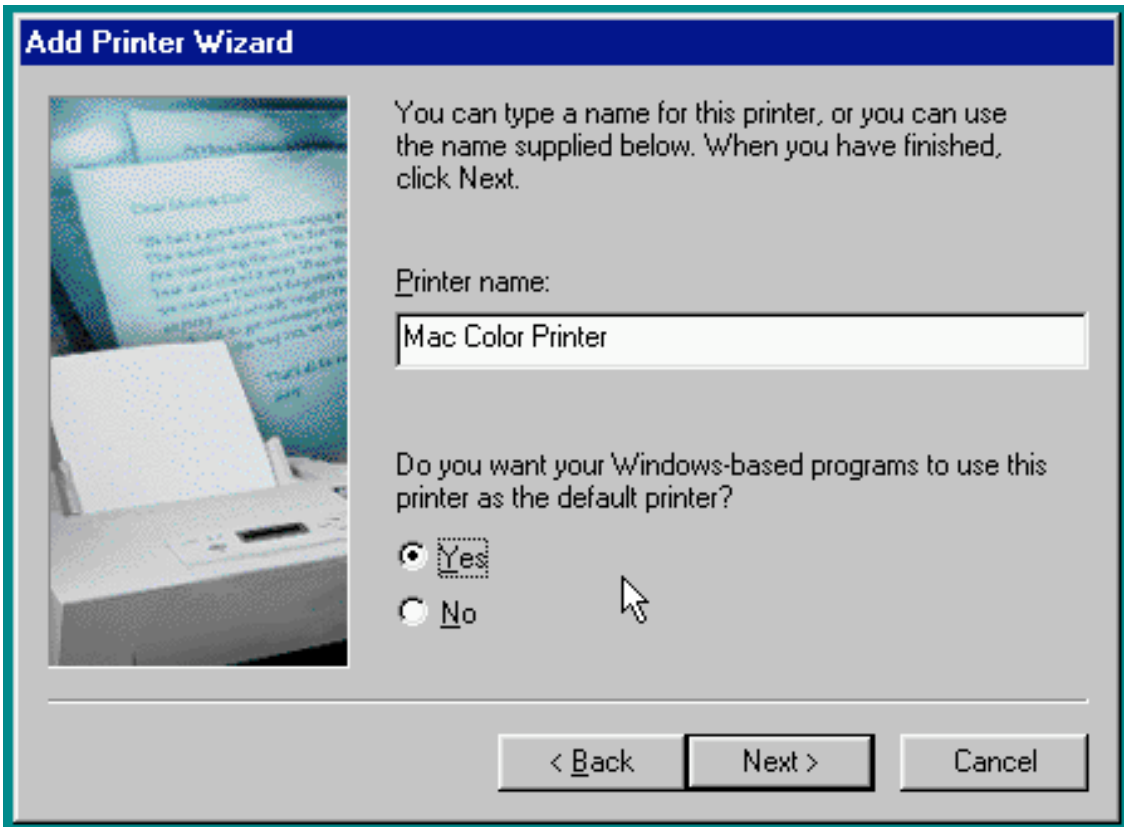
Back to Windows printer configuration! After entering the proper address in Windows, please click the "Next" button. If you see a warning that the printer is "currently offline", it could mean that either the print queue was not set up properly on the Mac, or that the address was incorrect. Please review your queue creation and the address you've provided.

Next, Windows is going to ask you what kind of printer this is. It doesn't matter what kind of printer it is, as far as Windows is concerned, we're going to use either a LaserWriter or a Color LaserWriter driver. Your Mac is smart enough to translate the LaserWriter PostScript commands to whatever your printer understands. Once again, even if you're setting up printing to a Lexmark, Epson, HP, Canon or any other printer, you must tell Windows that it's either a LaserWriter or a Color LaserWriter. We're going to use the Color LaserWriter 12/600 driver:

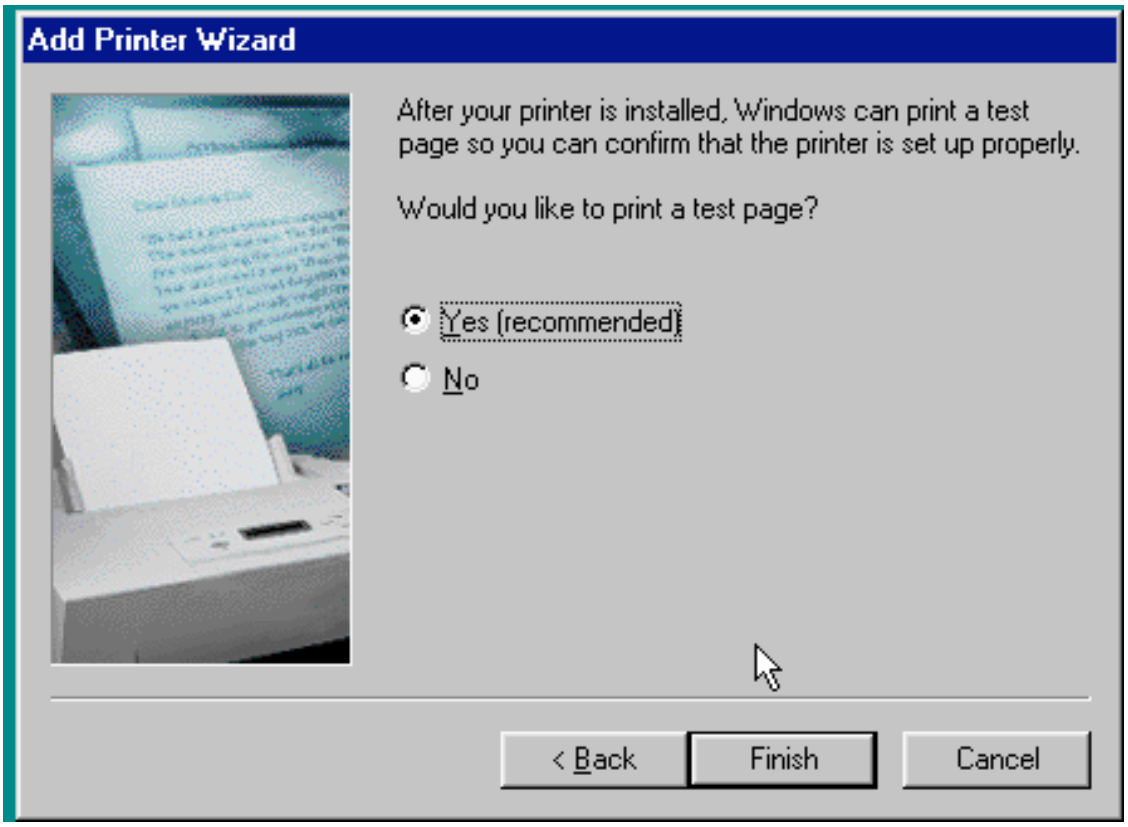


Click on "Next" once again. Windows will then load the driver. Windows may need to access your Windows Installation CD image at this point; if it's not configured for this PC, remember that you can use the "Swap CD" button to provide it to Windows.

You'll then need to name the printer. We've called ours "Mac Color Printer", and we've elected to use it as the Windows default printer.



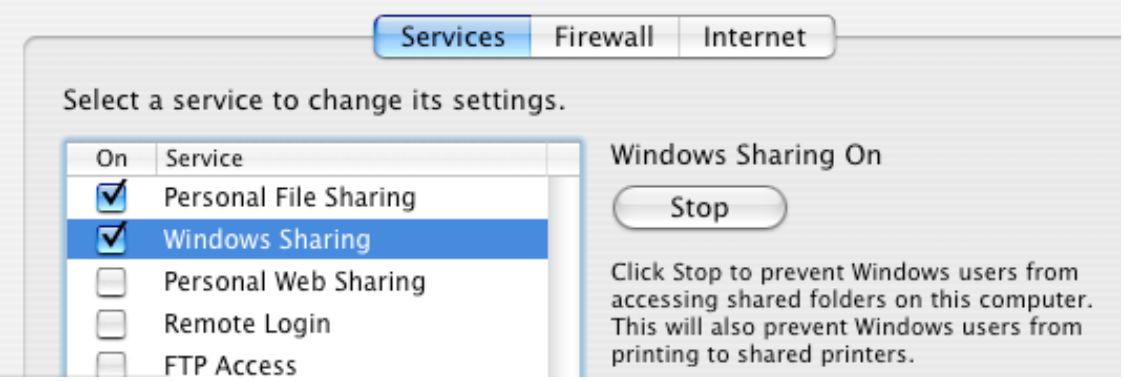
Finally, you can print a test page. If all is well, you should quickly see a Windows-generated printout generate on your Mac-based printer!



Congratulations! You can now print from your emulated Windows environment to your Mac printer!

Accessing Mac Files & Folders from Windows

iEmulator has the ability to access Mac volumes using the OS X's built-in SAMBA file sharing technology. To use this, we must first activate Windows Sharing in that Mac's "System Preferences". Please run "System Preferences", and then click on "Sharing". Please ensure that the "Windows Sharing" checkbox is checked:

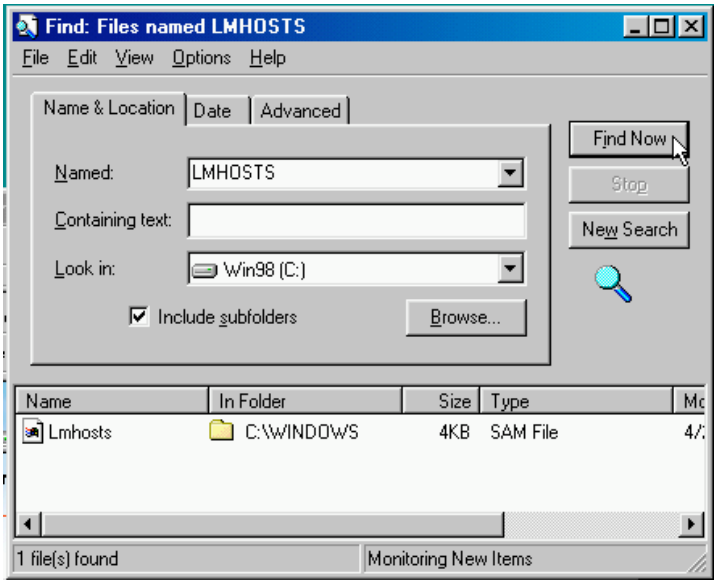


Depending on which version of Windows you're running in iEmulator, there may be some configuration required.

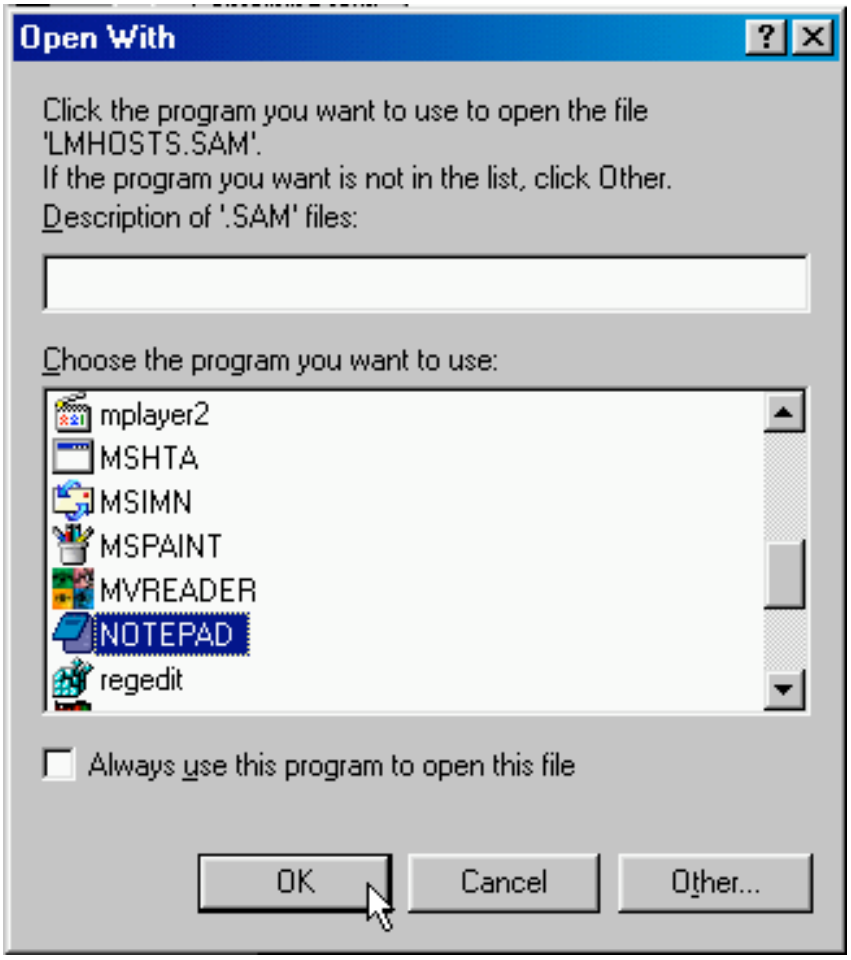
Configuring Windows 95, 98 and ME

Please launch your emulated PC, then, when the Windows desktop is made available to you, double-click your "My Computer" icon, then your "Drive C".

Press "control-F" to open the "Find" window, type "LMHOSTS" in the "Named:" area, and click "Find Now". You should find a single file, named LMHOSTS.SAM:



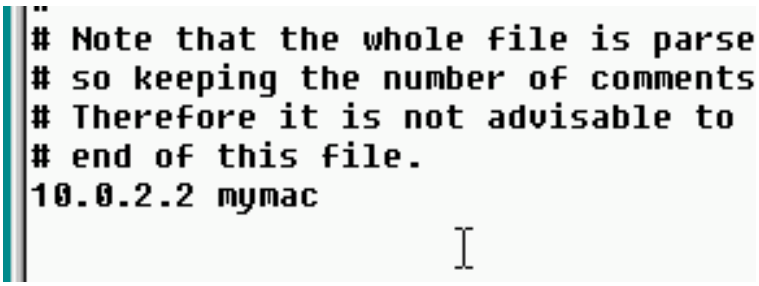
Next, please double-click on the found Lmhosts file. You'll be asked which application you wish to use to open this file. Choose "NOTEPAD" from the list, and click "OK":



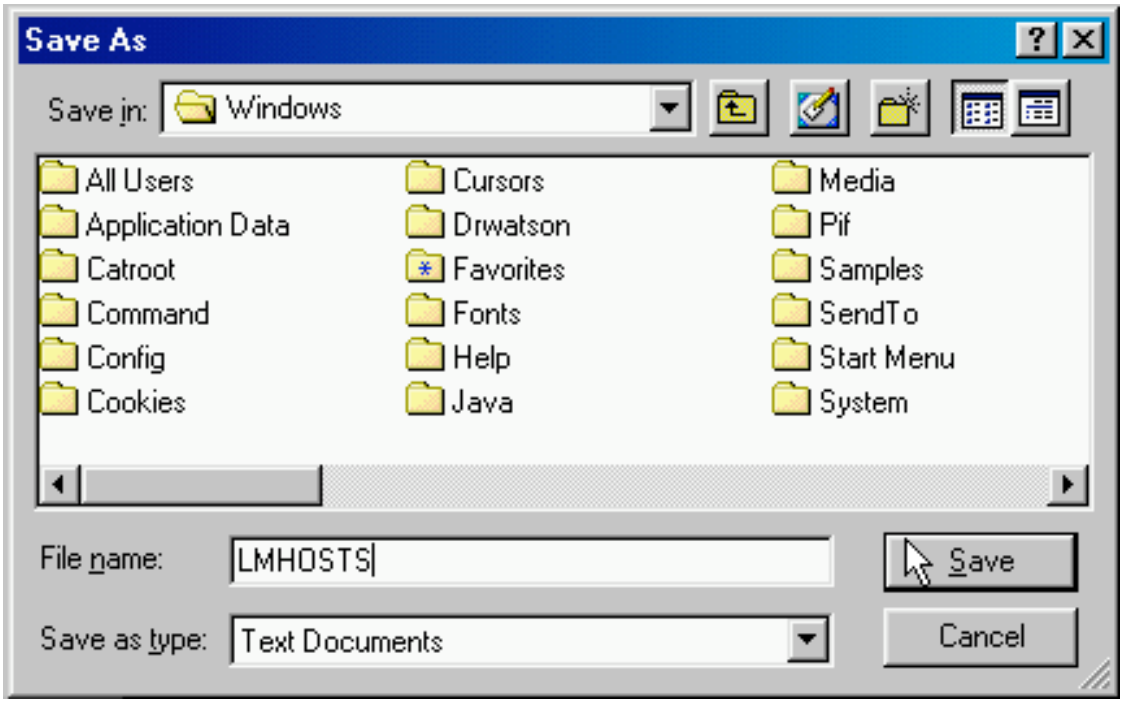
The LMHOSTS file will open in Notepad. Scroll to the bottom of the file and add the line:

10.0.2.2 mymac

(Please note that you can substitute any alphanumeric name for "mymac"):

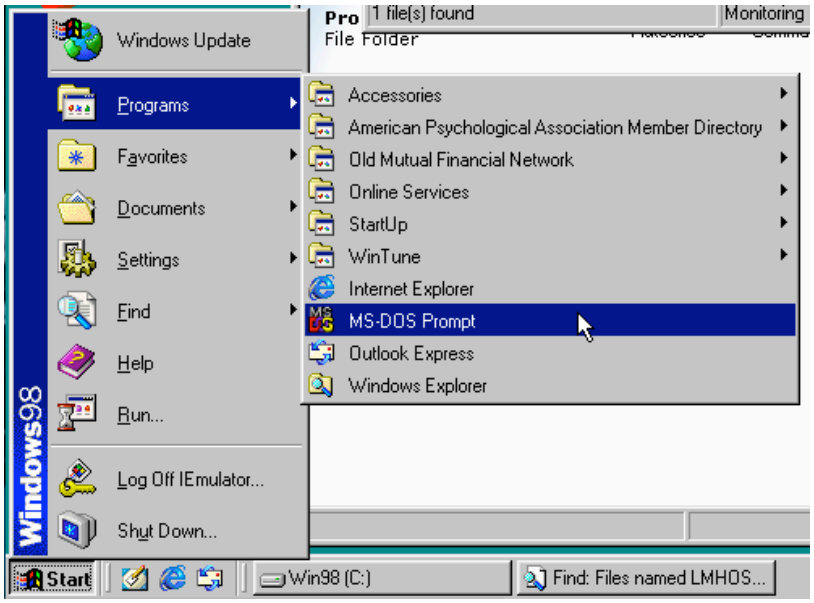


Next, please choose “Save As…” from the File Menu in Notepad, and for the file name, please enter “LMHOSTS”. Also please ensure that you’re saving this file in the C:\Windows directory:



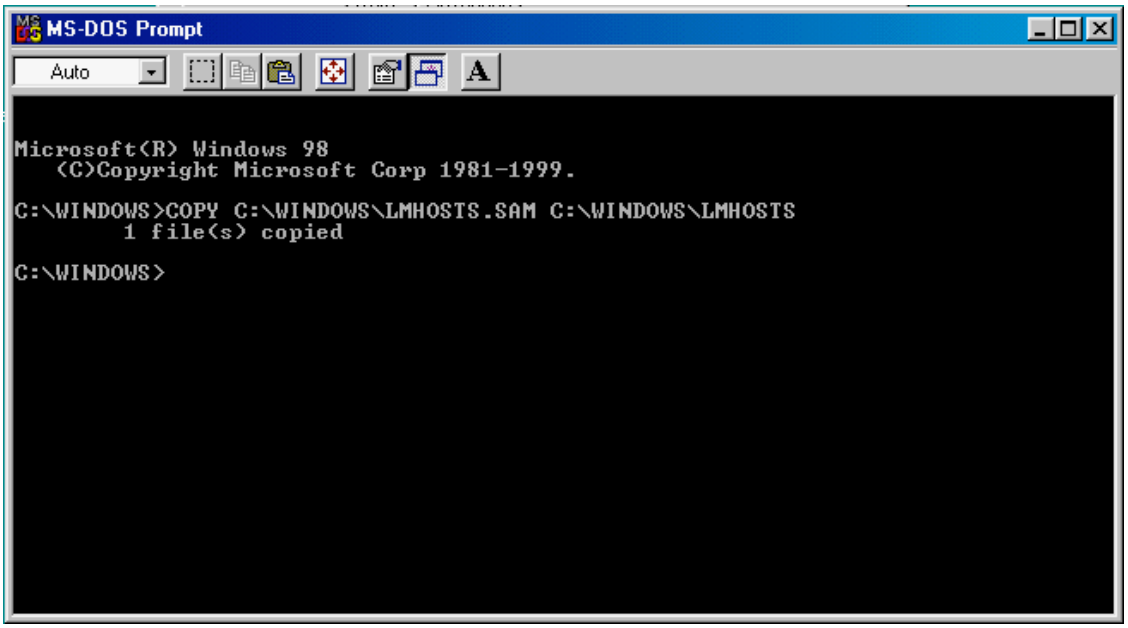
You may be asked if you wish to replace “LMHOSTS.SAM”. If you are asked this, please click “OK”. After the file is saved, you can close Notepad.

The next step is to run the MS-DOS Prompt, from the startup menu:



Once the MS-DOS Prompt starts, type:

COPY C:\WINDOWS\LMHOSTS.SAM C:\WINDOWS\LMHOSTS



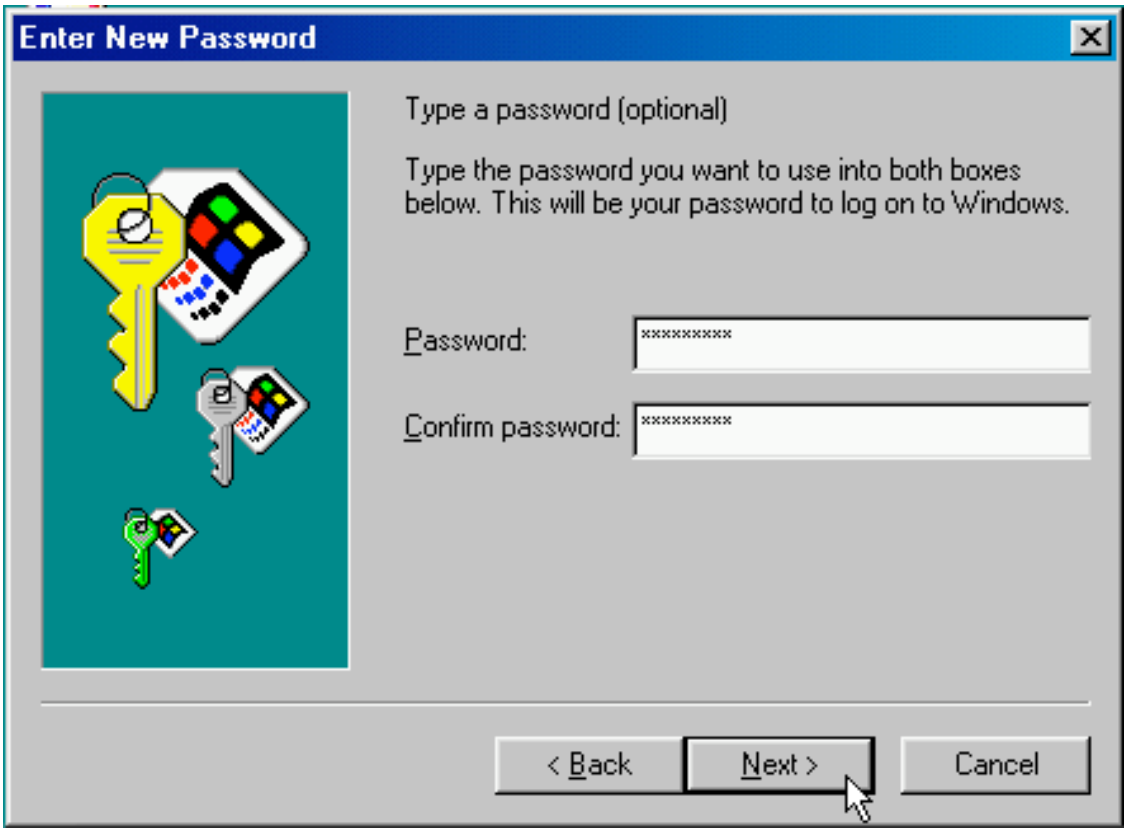
You can now close the MS-DOS Prompt window.

We now need to add a new user to your Windows installation. This user **must** have the same name as your Mac OS X "short user name"; they must match exactly.

Please open the Windows Control Panel, and double click "Users":

This will start the User Wizard. Click "Next" to start the Wizard, and you will be asked to provide the name you wish to use for this new user. **Again, this must be the same user name as your Mac user's short user name**. If you are not sure what the short user name is, you can open your Mac's System Preferences and click on the "Accounts" icon. The resulting window will show you the short name for this user. Once you've entered the user name, please press the "Next" button.

You will then be asked to supply a password for this new user. Again, please use the same password used on the Mac. When you've entered and confirmed the password, please once again press the "Next" button:



You'll then ask if you wish to personalize any Windows-related items. You don't have to for this user to work, but if you've already installed any applications or changed any Windows settings, it may be advantageous to select one or more of these items, and select "Create copies of the current items and their content". When you've made these choices, press "Next".

Finally, you can press the "Finish" button to create the new user! Windows will create the new account.

You can then shut down the emulated PC.

If you're running Windows 98, 98SE or ME, the following step is necessary:

If necessary, please reconfigure your emulated PC, assigning your Windows CD to the CD-ROM. Please ensure that the boot disk is the Hard Disk. Launch the emulated PC. When you get to the Windows 98/98SE/ME login page, please login using the user ID and password you created above.

When the Windows desktop is made available, double-click on "My Computer" to open it, then hold down the "Apple" key and click on the CD-ROM. In the menu that appears, select "Explore".

Navigate to \tools\mtsutil in the CD

Hold down the "Apple" key and click on "Ptxt_on.inf" and select "Install" from the menu that appears. You will not see any notification once it's been installed, but it should only take a few seconds.

Shut down your emulated PC, and re-launch it.

You've now completed the configuration required for Windows 95, 98, 98SE and ME. Please continue with the Windows 2000 / XP configuration, below.

Windows 2000 / XP Configuration

Log into Windows as the user name you just created above (if you're running Windows 95, 98, 98SE or ME; Windows 2000 or XP users can log in as any Windows user).

When the Windows desktop appears, hold down the "Apple" key and click on "Network Neighborhood" and select "Map Network Drive". You will now have to supply the "Path" that you wish to connect to.

If you're running Windows 95, 98, 98SE or ME, type in two backslashes ("\\") followed by the name you entered into the LMHOSTS file, above ("mymac" in our sample), another backslash ("\") and then the short user name on your Mac that matches the Windows user you created above. For example:

\\mymac\myshortusername

If you're running Windows 2000 or XP, you can type two backslashes ("\\") followed by "10.0.2.2", another backslash ("\") and finally the short user name on your Mac that you wish to log into. For example:

\\10.0.2.2\myshortusername

If your Windows 2000 or XP user name does not match the short user name on your Mac, you'll be prompted to provide your Mac's short user name and your Mac password.

It can take up to a minute to first connect to your Mac, but you should soon see a new window drawn, with the contents of your Mac user's home directory! You now have full access to these files and folders on your Mac from within the emulated Windows environment!

If you do not wish to use Window sharing to access Mac files & folders, you can alternately use the following methods:

Transferring Files from iEmulator to your Mac

Transferring a file, or a whole folder of files from your iEmulator to your Mac is very simple!

All you need to do is mount the disk image that contains the files you wish to copy. To mount the image in Mac OS X, navigate to the folder that contains the image. Simply hold down the "control" key on your keyboard and click on the image. Select "Open With" -> "DiskImageMounter".

The image will be mounted just as if it were a hard drive! You can then double-click on the mounted hard disk image, locate the files you want on the emulated PC's drive, and drag-copy them to a Mac folder.

Please note that you cannot mount "qcow (compressed)" disk images in the Mac OS X Finder.

Transferring Files from your Mac to iEmulator

Unfortunately, because Mac OS X is not currently able to write to a NTFS-formatted drive (which, if you're running Windows 2000 or Windows XP, your PC drives are likely formatted as), you cannot use this same method to transfer files from your Mac to an iEmulator drive image. In this case, we recommend using email or webmail to send files from your Mac to iEmulator.

If, however, you're running Windows with a hard drive formatted as "FAT32", you can copy certain files to the emulated PC hard drive simply by dragging and dropping them to the Mac-mounted PC hard-disk image.

Certain Macintosh applications will embed binary data within the Mac-saved files, and they will not open properly on a Windows PC. Many, however, should be able to be copied without difficulty.

Performance Tuning Your Windows Installation

The default configuration of Windows is not necessarily the highest-performance one. Please find a few tips below on speeding up your Windows installation as much as possible!

Windows 98

If you have assigned 128MB or more RAM to your Windows 98 emulated PC, the best thing you can do to increase performance is to disable what Microsoft calls "asynchronous swapfile writes". Edit your SYSTEM.INI file, scroll down to the section with the header [386Enh] and add the following line to this section:

ConservativeSwapfileUsage=1

Save the file, and restart Windows.

Windows 2000 (note: these services can also be disabled on Windows XP)

The best thing to do to increase Windows 2000's performance is to disable unnecessary background system services. You can use the Microsoft Management Console to do this.

To run the MMC, please go to your Start Menu -> Settings -> Control Panel, and double-click on Administrative Tools, then Computer Management.

Once the Computer Management tool runs, you can drill down to Services to get the Services List. You'll notice that some of the listed services start automatically, some are disabled, and some need to be started manually. We're going to focus on the services that start automatically. Here are some common system services that you may want to disable, or set to "Manual":

Alerter
Notifies selected users and computers of administrative alerts. If your PC is a standalone workstation, you can turn it off.

Indexing Service
Indexes contents and properties of files on local and remote computers; provides rapid access to files through flexible querying language. If you don't use the Find File feature very often, you can turn it off.

IPSEC Policy Agent
Manages IP security policy and starts the IP security driver. This service is needed for IP security, e.g. if you want to establish a Virtual Private Network (VPN) connection to your computer. Otherwise you can turn it off.

Messenger
Sends and receives messages transmitted by administrators or by the Alerter service. If you decided to turn off the Alerter service mentioned above, you can turn off Messenger as well.

Print Spooler
Loads files to memory for later printing. If you don't print from this computer at all, you can turn it off.

Remote Registry Service
Allows remote registry manipulation. If you don't need or want the ability to access and modify the registry remotely, you can turn it off.

RunAs Service
Enables starting processes under alternate credentials. If you don't run applications under an alias, you can turn it off.

Telephony
iEmulator does not support voice or modem communications, so you can turn it off.

Windows XP

Windows XP also benefits from disabling unnecessary system services (as listed above), but it also has a few other areas that can be tweaked for significantly better performance:

Turn off Visual Effects:

- Open Control Panel from the Start menu and choose "System."
- Choose the "Advanced" tab.
- Select the "Settings" button under the Performance section.
- Check the "Adjust for best performance" box and click "Apply" to apply the settings.

Turn off Remote Desktop:

- Click the “Remote” tab in System Properties
- Ensure that both “Allow Remote Assistance” and “Allow Users to Connect” are bot not selected

Turn off Automatic Updates:

- Click the “Automatic Updates” in System Properties
- Uncheck the “Keep the Computer Up to Date” checkbox, or check the “Turn off Automatic Updating” box

Turn off Display Special Effects:

- Right-click or hold down the “Apple” key and click on the Windows Dekstop
- Select “Properties”
- Click the “Desktop” tab
- Set the desktop background to “None”
- Click the “Appearance” tab
- Under “Windows and Buttons”, choose “Windows Classic Style”
- Click the “Effects” button
- Uncheck all options
- Click Ok, then Click OK to close the Display Properties Window

Set the Start Menu to “Classic” Style

- Hold down the “Apple” key and click on the Start button (or right-click on it)
- Select “Properties”
- Choose “Classic Start Menu”
- Click “Customize”
- Select “Show Small Icons in Start Menu”

Use Classic Folders, and Disable Automatic Searching for Network Resources

- Double-click on My Computer, then double-click on your “C:” drive
- Select “Folder Options” from the “Tools” menu
- Check the “Use Windows Classic Folders” checkbox
- Click the “View” tab
- Uncheck “Automatically Search for Network Folders and Printers”
- Click “Apply” and “Apply to All Folders”
- Click “OK”

Changes from version 1.6.0

- Configuration window now shows complete paths to disk images
- Configuration now better supports multiple users and fast user switching
- Internet / Network support can be switched on and off to support Macs that do not have a full-time connection to the Internet
- iEmulator GUI fixes
- General bug fixes
- More comprehensive documentation, including Windows installation procedures

Changes from version 1.7.0

- Emulated PCs can now be assigned up to 1024MB (1GB) of RAM
- PC State saving & loading
- CD Swapping without re-configuring the PC
- The ability to send “Ctrl-Alt-Del” without typing it
- G5 optimized version now available
- International keyboard support
- Full-screen support
- Fully documented printing support
- General bug fixes & performance improvements
- Launching multiple emulated PCs can now be accomplished with a single instance of iEmulator
- iEmulator is no longer a model / synchronous application; manipulation of a different emulated PC can take place while one is running.

Changes from version 1.7.5

- Mac file, folder and volume access (via SAMBA) directly from Windows
- General bug fixes
- Performance improvements

Changes from version 1.7.6

- A whole new interface
- No more reliance on SDL
- 6 to 10 percent better performance
- Many, many bug fixes
- Ability to access the physical CD ROM
- Basic Virtual PC™ 7.0 Import support

Changes from version 1.7.7

- Better Virtual PC™ 7.0 Import support
- Support for audio playback
- Better support for CD-ROMs

Changes from version 1.7.8

- Support for Intel Macs
- Performance Improvement on PowerPC platform
- Power Management Support in Emulated BIOS
- Improved Documentation
- New Configuration GUI
- Better, More User-Friendly Icons
- Global Preferences Support
- Support for Multiple Hard Disk Images in a Single PC

Troubleshooting

Q: Sometimes when I launch an emulated PC, the PC screen has some corrupted text on it.
A: This will occur from time-to-time on certain Macintosh models. Simply close the PC window (by clicking the "shutdown" button at the top of the emulated PC window) and re-launch it. Most times, this will solve the issue.

Q: I can't get my CD to boot!
A: Make sure the CD was imaged correctly, as described in the instructions, above. We've successfully installed Windows 95, Windows 98, Windows NT 4.0, Windows 2000, Windows XP and DOS in iEmulator, and we've heard reports of Windows Me working as well.

Q: My CD **still** won't boot!
A: Please ensure that the CD you're attempting to image and use is indeed bootable. You may have to locate a physical PC to attempt to try this.

Q: My CD is fine. What's going on?
A: In rare cases, the CD Image name can cause an issue. Please rename your CD image to have ".iso" or ".img" at the end of the file name, instead of ".cdr", or try to boot using the physical CD.

Q: I cannot connect to the Internet with my emulated PC!
A: Windows 2000 will sometimes not connect, even though your Mac has a working Internet connection. Simply shut down and re-launch the emulated PC.

Q: I **still** cannot connect to the Internet with my emulated PC!
A: Please ensure that your local area network is **not** assigning an IP address to your Mac that begins with 10.0. iEmulator uses this address range with emulated PCs, and will thus conflict with your "real" local LAN. If this is the case, please reconfigure your local DHCP server to use a different address range.

Q: Internet performance is slow!
A: With the release of Mac OS X 10.3.7, network functionality in general (both on the Mac and the emulated PC side) took a dive. This has been fixed in OS X 10.3.8. Other versions of OS X 10.3.x do not exhibit this issue.

Q: When I try to launch an emulated PC, nothing happens.
A: This can be caused by either moving hard disk, floppy or CD images and not reconfiguring the PC, or by using non-alphanumeric characters in folder names that are referenced by iEmulator. Please re-configure the problematic PCs to ensure that all images are being referenced properly, and, if necessary, rename the folder(s) that the images are located in.

Q: I'm having difficulties that aren't addressed in this document!
A: We'll do our best to assist you. Please email us at support@iemulator.com.