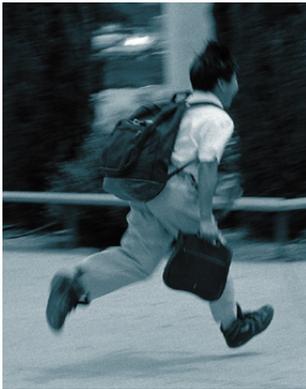
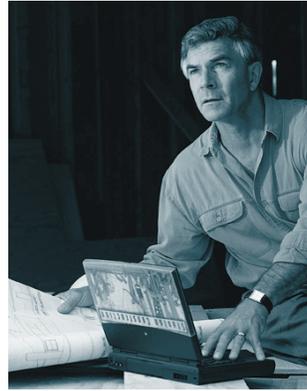




# 75 Macintosh Advantages



*Why Macintosh computers are better  
than PCs running Windows*

**Condensed version  
August 1997**

Apple Computer, Inc.

## INTRODUCTION

When Apple introduced the Macintosh computer in 1984, the nature of the personal computing experience changed forever. The first personal computer to offer a graphical user interface, the Macintosh was the “computer for the rest of us”—a system that transformed computing from a specialized task performed only by the technological elite into an everyday experience for everyone from preschoolers to grandparents.

Graphical user interfaces are the norm today, but Apple’s personal computer offerings continue to lead the competition in many ways. More specifically, the same flair for discovering innovative ways to make complex technology simpler and more widely accessible that powered the creation of the original Macintosh continues to drive our directions. Also, the fact that Apple remains the only major personal computer company to craft both the hardware and the operating system software affords many unique competitive advantages—advantages that are realized in the form of technology designed expressly to make computer users more productive and computer use more enjoyable.

Apple’s head start, history of innovation, focus on the user, and integration of hardware and software give the Macintosh an advantage in six key areas: ease of use, multimedia, Internet, power, compatibility, and value. We think that even a quick review of this paper will show why you should buy a Macintosh rather than a PC running Windows—any version of Windows. The bottom line is that a Macintosh can help you do what you want to do with a computer easier, faster, and more enjoyably.

This document is a condensed version of the complete 75 Macintosh Advantages document. Electronic versions of both documents can be found on the Internet at <http://www.apple.com/whymac>.

## EASE-OF-USE ADVANTAGES

### 1 *The Macintosh computer’s true “Plug-and-Play” capabilities make adding hardware cards easy.*

Since 1987, Macintosh users have had the ability to install a hardware card and use it in minutes, not hours. Often referred to as “True Plug and Play,” this feature enables Macintosh users to avoid the tedious delays and configuration issues that often arise with the addition of new cards in PCs.

PC users, however, have long struggled with hardware/software integration. After spending large amounts of time and money upgrading their computers to use Plug and Play or, in many cases, buying new computers, many Windows 95 users have found that Plug and Play often does not work properly. And Windows NT 4.0 has no Plug-and-Play technology.

### 2 *The Macintosh computer’s built-in SCSI port makes it easy to add peripherals.*

Today many users want to be able to quickly connect peripheral devices, such as scanners, external hard disk drives, and

recordable CD-ROM drives. Macintosh computers allow access to such devices through the use of the built-in SCSI port, a standard feature on Macintosh computers for more than 10 years. The SCSI interface allows a user to simply connect a device such as a scanner to the Macintosh and use it within minutes.

The average PC does not come with a SCSI port, so the PC user is left to struggle to add devices by installing complex SCSI cards.

### 3 *Windows has a plethora of drivers—16-bit, 32-bit, and Windows 95- and NT-specific drivers—making driver management difficult.*

Macintosh users have never had to understand the complexities of hardware “drivers.” Macintosh users don’t need to spend their time and money worrying about what drivers they have on their computers.

On the other hand, Windows users cannot avoid having to know a lot about drivers—for example, what a “real mode” or a “protected mode” driver is. Finding the correct drivers, eliminating old drivers, avoiding driver conflicts, and finding hardware that will work with the right version of Windows is the bane of every Windows user. Even the Windows 95 version of Plug and Play isn’t always foolproof when it comes to drivers, sometimes leaving the choice of what to do with a cryptic driver up to the user. There are Windows 95 drivers that will not work with Windows NT, and vice versa.

### 4 *DOS and its command-line interface still lurk in Windows, but the Mac OS has always had a graphical user interface.*

Wasn’t DOS supposed to go away when Windows 95 was released? But text files such as SYSTEM.INI and WIN.INI still exist in Windows 95 and Windows NT in many cases. In addition to these complex files, Windows 95 and Windows NT now add two Registry files, SYSTEM.DAT and USER.DAT. If your PC is not running correctly, you might need to edit some or all of these files in a text editor or the special Registry editor. A mistake here could mean that these text-based files might be irreparably damaged, making the PC unusable.

Macintosh computers, on the other hand, have never had a command-line interface. Because of the Macintosh computer’s true graphical user interface, you will never have to type obscure system commands.

### 5 *Windows is loaded with “mystery” files such as DLLs, INFs, and SYSs.*

Even the latest Windows 95 or Windows NT systems are loaded with hundreds of mysterious files, with names such as: NDDEAPI.DLL, MSCDEX.EXE, BOOTSECT.DAT, CONFIG.SYS, AWUPD.INF, VFINTD.386, and ODBCINST.INI. Do these sound like files left over from DOS? Well, they are. Many users hoped (in vain) that Windows 95 and Windows NT would eliminate these kinds of files in the “8.3” name format in favor of names that are more recognizable, especially since the icons for these

files do not always provide a clue as to where they might need to go or what they might do.

Since the Mac OS has always supported long filenames, there are no “ghosts” from the past—unlike Windows. A Mac OS system-level file has a more user-friendly name, such as “Startup Disk,” “Sound Manager,” or “Extensions Manager Preferences.”

**6** *Macintosh computers offer easier, more versatile networking.*

Every Macintosh since 1984 has included easy-to-use, built-in networking. The AppleTalk protocol allows you to connect a network of multiple Macintosh computers and printers together in just a few minutes. Every Macintosh includes simple and inexpensive LocalTalk networking, and most Macintosh computers also include industry-standard Ethernet, a claim most PCs cannot make. And Macintosh computers can communicate with virtually any other computer, since TCP/IP is a standard protocol.

Networking in the Windows world, however, can be difficult and confusing. For example, in Windows 95, you might see the “Network Neighborhood” icon even if you aren’t connected to a network. And, though Windows 95 and Windows NT include networking capability, there is no guarantee that the computer has the hardware to support this, nor is it capable of being set up for networking as quickly as the Macintosh.

**7** *Macintosh computers offer more flexible monitor support.*

Connecting additional monitors to your Macintosh is easy. Because of the superior design of the Macintosh, the operating system will automatically treat the multiple displays as a single, contiguous workspace. All you have to do on the Macintosh is add a video card for each extra monitor. The Mac OS will automatically recognize the extra video cards.

Standard PCs aren’t designed to support more than one monitor at a time, so adding even a second monitor is much more expensive and complex. Windows users need to buy a special video card that typically costs hundreds of dollars more than standard cards. And since these PC cards may not support the monitor you already have, you might also have to buy two new monitors.

**8** *The GeoPort serial port included on Macintosh offers better integrated modem and telephony features than a PC modem.*

The Macintosh GeoPort is a sophisticated serial port that can be controlled by software for a variety of uses. When used in conjunction with the GeoPort Telecom Adapter, a GeoPort can become a software-upgradable modem. Instead of throwing away a modem every time a faster speed becomes available, GeoPort users can simply download the latest free upgrade software from Apple and be running at a faster speed in minutes.

A GeoPort can also be a digital answering machine, a fax machine, a full-duplex speakerphone with audio recording capability, or a high-tech switchboard for incoming and outgoing calls, all on a single line. Unfortunately for PC users, no card that supports all the features of the GeoPort is available—at any cost.

**9** *The Mac OS is easier to install than Windows.*

Fewer steps are needed to install the Mac OS. One of the leading guides to Windows NT 4.0 lists more than 30 steps for installing the OS, in sharp contrast to the “single-button” installation of the Mac OS.

The Mac OS will make all the installation decisions for you. The Mac OS has a smart installer that will install only the files needed for your particular computer. In the case of Windows, particularly Windows NT, the installation process includes several steps involving dialog boxes that require you to make complex installation decisions. In each case, the wrong decision could be disastrous—requiring you to start the installation all over again or, in some cases, to reinstall all applications.

**10** *Macintosh computers are ready for the year 2000.*

The problem with the year 2000 is that the BIOS in many of today’s PCs operates under a date format that uses two digits to represent and store the year, so they will falsely claim that the year 2000 (or “00”) falls before the year 1999 (or “99”). If a computer’s system clock reads the date incorrectly, then all mission-critical applications, all file time stamping, and even scheduled backups are predicted to fail.

But this problem will not afflict the Macintosh. Since its introduction, the Macintosh has had the ability to correctly handle the year 2000 and beyond. The Macintosh operating system uses a 32-bit value to store seconds, meaning that the Macintosh clock will work correctly until the year 2040.

**11** *The complexity of the Windows 95 and Windows NT Registries is a disadvantage compared with the Mac OS.*

Windows 95 and Windows NT both contain a “Registry,” a complex text file that keeps track of OS settings. A single character in the wrong place in the Registry file can render Windows unusable. Because of Registry incompatibilities, upgrading Windows is not as easy as upgrading the Mac OS. For instance, it is not possible to upgrade an existing hard disk from Windows 95 to Windows NT because of differences in the Registry file.

Resolving system-level problems on a Macintosh is easy when compared with editing the Windows Registry. End users calling for PC support are frequently directed to edit their system files to resolve problems, and any erroneous entries will often make the Windows-based PC unusable.

**12** *Every Macintosh can start up from a bootable CD-ROM.*

Starting up from a CD-ROM makes the software installation process easier. On a Macintosh, the computer can easily “boot” (start up) from the system software located on a CD-ROM. If the software on the hard disk becomes corrupted somehow, you can easily insert a CD-ROM and get going again.

But this process is not nearly as simple on a Windows-based PC. In most cases, PCs running Windows cannot boot from a CD-ROM—you need at least a version of DOS with appropriate CD-ROM drivers installed present on a floppy disk or the hard disk. Nothing is more frightening to Windows users than seeing the “Blue Screen of Death”—what appears on the screen when their PC can’t start up because of a corrupted system file on the hard disk. They know it will be a long day, because they can’t easily boot from a CD-ROM and get back to work.

**13** *Macintosh files stay linked to the applications that created them; with Windows, this isn’t always the case.*

Double-clicking a Macintosh document icon automatically opens the application that created it—no matter where the application resides on your hard disk (or connected server) and no matter what the file is called. With Windows 95, it’s not that simple. The association between applications and files is still governed by pathnames and the three-character filename extension. That means that double-clicking a document sometimes opens the application that created it and sometimes doesn’t.

**14** *Utilities to uninstall applications are very popular for Windows. Macintosh users don’t really need them.*

There is a reason why one of the most popular utilities on the Windows platform is uninstaller software. As it is installed, Windows software tends to scatter parts of itself all over a user’s hard disk. Those parts can have cryptic names, such as “DWSPTDLL.DLL” or “W3CTRS.INI,” making it impossible to determine whether a file is necessary. And while Windows 95 and Windows NT include an “Add/Remove Programs” feature, it doesn’t always work for every program or get rid of all the correct files, or it tries to eliminate files that shouldn’t be eliminated.

Macintosh users know that deleting most Macintosh applications is as easy as dragging the application or its folder to the trash. If the application installed extensions or control panel files, the updated Extensions Manager in Mac OS 7.6 can locate them quickly, enabling you to easily disable and delete them.

**15** *Windows “DLL” files cause many problems.*

The numerous “DLL” files that Windows applications install all over the hard disk drive can conflict with each other and cause serious system problems. In some cases, installing a new application installs new DLL files that overwrite DLL files installed

by older applications, rendering the old applications unusable. Resolving such complex DLL conflicts are nightmares that Macintosh users never have to endure.

**16** *The Mac OS provides active assistance; Windows doesn’t.*

The Mac OS includes Apple Guide, an innovative help system that not only tells you what to do, but also coaches you through the process by showing you exactly where to click the mouse and where to type. In fact, in many cases, you can simply ask Apple Guide to perform tasks for you. The help systems offered by both Windows 95 and Windows NT simply don’t offer the same level of active assistance.

**17** *It’s easier to troubleshoot problems on a Macintosh than on a PC.*

We’ve already seen that a Macintosh has no “mystery” files and no Registry to contend with, so, by nature, the Macintosh is easier to troubleshoot. A study by Norris and Wong Associates substantiates this, showing that Macintosh maintenance requires less time, less knowledge of computers, and less technical support, and results in less user frustration than similar maintenance required by Windows 95.\* Macintosh users are also fortunate because one call to Apple provides both hardware and software support. Many Windows users have to call a different vendor for every card or piece of hardware installed in their PC.

\*Norris and Wong Associates, “Maintenance Comparison: Macintosh vs. Windows 95,” November 1995. See [www.apple.com/wbymac](http://www.apple.com/wbymac).

**18** *The Mac OS Extensions Manager offers capabilities unmatched by any Windows feature.*

On a Macintosh, you have superior control of system-level files—the Extensions Manager allows you to control them with ease by simply selecting items from a list. How do you turn on and off individual drivers on a PC? One at a time, and if you make a mistake, it may mean calling tech support or restoring your application, or even performing a complete reinstallation of Windows.

The Mac OS tells you which software extensions belong to which applications. The Extensions Manager in Mac OS 7.6 and Mac OS 8 allows you to view extensions and control panel files by the applications to which they belong. Under Windows, however, you are left to guess which driver belongs to which program.

The Mac OS also gives you information about what each extension does. But with Windows you are left to wonder what “3C5X9A.DLL” truly is, what it is supposed to do, and whether you really need it.

**19** *It’s easier to add resources to a Macintosh.*

When you add capabilities to your Macintosh, it anticipates what you’re doing. For example, to add fonts or desk accessories, all you have to do is drag them to the System Folder.

The Mac OS places all of the items into the folders in which they belong—automatically. Windows users are often left to manually place each file where it is supposed to go—if they know where that is.

**20** *The Macintosh makes it easy to add input devices.*

The Apple Desktop Bus (ADB) peripheral interface lets you easily connect multiple input devices—such as a trackball, a keyboard, a mouse, a graphics tablet, a joystick, or a pen input device—to a Macintosh. Because of the superior integration of the hardware and software on a Macintosh, the system will “know” which one is being used without requiring reconfiguration. Standard PCs have no such equivalent keyboard bus. To connect multiple input devices to a PC, a PC user would often face multiple card installations, as well as the conflicts that would result from having so many similar devices connected to the PC at once.

**21** *The Apple System Profiler provides more complete and easier-to-understand information about your Macintosh.*

Only Mac OS 7.6 and Mac OS 8 have the Apple System Profiler. Simply run it from your Apple menu and you can determine most Macintosh settings, such as microprocessor type and speed in megahertz, status of virtual memory, devices that are connected to the computer and their settings, and much more.

Windows makes it hard to find out exactly what is going on with a PC. To determine the status of various functions, you'd have to search through many panels of information to find what is needed. No one source of information is available for what you need to know. And some information can't be determined on many systems, such as the processor's exact speed.

**22** *The Macintosh works better with files over a network.*

Because Windows 95 is built on DOS, working with files over a network is a much more difficult process with a PC running Windows than with a Macintosh computer.

With a Macintosh, you can move documents and applications, and the Mac OS will keep track of where they are. So, for example, if someone on the network moves or renames the Microsoft Excel folder on your server, you can still double-click your Excel alias or an Excel spreadsheet file—the Mac OS will find and launch Excel. By comparison, Windows 95 will lose track of the application when copied to a server, so the links between your files and the application will be broken.

**23** *The Mac OS has few limits for filenames, as opposed to Windows.*

The Mac OS has always allowed long filenames, so there are no complex filename issues. But the Windows world is just getting long filenames, and transitioning from the 8.3-character limit from DOS is a complex issue. First, PC users must buy new applications to be able to use long filenames. Running

older DOS and Windows 3.1 applications in Windows 95 or Windows NT still requires 8.3-character filenames.

And when a file with a long name is given to a user of Windows 3.1 or DOS, the file is renamed to an 8.3 format, causing much confusion to all users involved.

**24** *The Macintosh has easier access to alternate character sets.*

Many users want easy access to characters that aren't available on a standard keyboard, such as bullets (•) and trademark symbols (™ and ®). It's much easier to produce these characters on a Macintosh. You can type characters with accents, special symbols, and intelligent script in two key presses or less in most Mac OS-based applications. Special characters are much less generally available across multiple fonts in Windows 95 than is the case with Macintosh. For example, nearly all Macintosh fonts include “√” and many other useful special characters that are likely to be found only in the Wingdings font on PCs running Windows 95.

**25** *The Macintosh has superior folder management compared with Windows.*

A Macintosh can tell you folder sizes within a window, while a Windows-based PC cannot. A Macintosh will automatically calculate the sum of all the folder and file sizes contained within a folder and display that information in the window containing the folders and files. With Windows, you cannot at first glance determine the folder size, nor can you sort both folders and files by size, since folders will simply be listed alphabetically.

On a Macintosh, you can create as many folders within folders as you like, without ever having to worry about long pathnames. In Windows 95 and Windows NT, pathnames are limited to 260 characters, and since pathnames grow longer each time you add a folder to another folder, you might reach this limit sooner than expected.

And with Mac OS 8, a feature called spring loaded folders allows you to easily navigate through many levels of folders by simply dragging an item over a folder.

**26** *The Mac OS provides superior on-screen window management.*

When you add a new file to a Macintosh folder, the Mac OS automatically knows where to put the new file in the list. In Windows 95, however, the file is always dropped to the bottom of the list.

Another window management feature on the Macintosh is that you can close all open windows easily by pressing Command-Option-W. But in Windows, you must close every window manually.

Only the Mac OS allows you to print a window's contents from the graphical user interface. The “Print Window” com-

mand prints a disk directory, while Windows users must return to the DOS level for this feature.

Mac OS 8 adds pop-up windows, allowing you convenient access to frequently used windows.

**27** *The Macintosh trash can is easier to use than the Windows recycle bin.*

All Macintosh files stay in their correct folders when they're placed in the trash can, making it easy to recover your data if required. When you put files or folders into the Windows 95 recycle bin, however, all the folders vanish, making it impossible to easily retrieve a folder of information.

When you work with floppy disk files, the Macintosh trash works better than the Windows recycle bin. If you drag items from a floppy disk to the Windows recycle bin, you'll see them "flying" to the recycle bin. But they are actually being deleted, not moved to the bin. You will not be able to recover these items. The Macintosh, however, stores those files and does not delete them from the floppy disk until you select "Empty Trash."

**28** *An advanced industrial design makes Macintosh computers superior to PCs.*

The award-winning design of Macintosh desktop and portable computers provides a number of features that combine to enhance ease of use:

- *Easy-to-open cases.* All Macintosh computers today provide easy access to components.
- *Multiple, multi-use ports and connections.* Every Macintosh comes with enough connectors to hook up at least seven storage devices or scanners, ten input devices, two serial devices, a microphone, speakers, a monitor, and a network connection.
- *Automatic startup, operation, and shutdown.* Many Macintosh computers can be easily set up to work remotely—turning on at a designated time, performing scripted functions, and then shutting down automatically; whereas "Shut Down" on Windows doesn't turn the computer off.

**29** *Floppy disk management is easier with Macintosh computers.*

The Mac OS recognizes when a floppy disk has been inserted and automatically shows the disk's icon on screen. When you eject the disk, the Mac OS indicates that it has been removed. But when you insert a floppy disk into a PC running Windows 95, nothing happens. To see the contents of the disk, you have to double-click "My Computer," then double-click the correct disk drive icon. And if you eject the disk, Windows 95 leaves its window unchanged on the screen—even after you've placed a different disk in the floppy disk drive.

Also, a floppy disk left in a Macintosh is ejected automatically on startup, and the Macintosh will continue to boot. But not so on a PC—a floppy disk left in the PC usually generates an error message and stops the start-up process.

**30** *The two-button mouse used with Windows can cause confusion.*

The whole idea behind the use of a mouse in conjunction with a graphical user interface, as opposed to the keyboard and a command-line interface, centered around ease of use. This concept is fully realized on a Macintosh computer with its one-button mouse. But the PC's two-button mouse often makes things nearly as complicated as DOS did: Right-click on mouse versus left-click—when to do which at what areas on the screen? This is particularly frustrating for novice users.

**31** *Applications launch once on the Macintosh; with Windows 95, some applications may launch multiple times.*

If you double-click an application on your Macintosh and that application is already open, the Finder will simply take you to the running application. Windows will often launch additional instances of the application each time you open it, which adds confusion and consumes memory. In addition, Windows allows you to load multiple versions of the same drivers, creating a potentially unstable system software situation.

**32** *The Macintosh provides easier security customization features.*

Apple's At Ease software is a security program that protects important applications and documents in a shared environment against unauthorized users and unauthorized configuration changes. And the Simple Finder option in Mac OS 8 lets novice users enjoy an even easier Macintosh user interface.

Unlike Windows 95, Macintosh lets you easily match the user interface to each person's age and level of computer experience. Menus let you quickly designate which desktop each person will use. You can easily control each user's ability to open, delete, copy, or rename specific files. You can also assign passwords to each user.

## MULTIMEDIA ADVANTAGES

**33** *The Mac OS comes with QuickTime technology built in.*

QuickTime, which is built into the Mac OS, provides a medium through which digital video comes alive. Desktop video can be saved in standard high-quality QuickTime format and in MPEG-1 format that works entirely in software—no separate hardware card is needed. You can even watch movies on video CDs. QuickTime authoring tools also include the ability to create closed captions and karaoke sing-alongs, insert text, and create chapters on video. And for the music professional, QuickTime offers full MIDI compatibility with 41 voices standard in QuickTime Musical Instruments. In addition, QuickTime video can be incorporated into QuickTime VR 2.0, Apple's virtual-reality software.

**34** *The Macintosh has superior three-dimensional graphics capabilities.*

QuickDraw 3D makes workstation-class three-dimensional graphics a standard part of the Macintosh. QuickDraw 3D includes a human interface that makes it easy and intuitive to draw and edit three-dimensional graphics, and software tools for drawing three-dimensional objects with high-end features such as shading, texture mapping, and lighting effects. QuickDraw 3D also includes a cross-platform file format, so users can share three-dimensional drawings, and has an open architecture that lets Apple and others accelerate its performance. Windows does not include integrated system-level three-dimensional graphics capabilities.

**35** *The Macintosh has built-in virtual-reality software.*

QuickTime VR, Apple's virtual-reality software that's included with every Macintosh, offers users superior speed and smoothness on the Macintosh, thanks to the PowerPC RISC architecture. QuickTime VR lets personal computers display 360-degree panoramic movies from photos taken by a standard 35mm camera or from computer-generated images. Users can move forward and backward through the images, pan left to right and up and down, and select objects for close-up 360-degree views.

Panoramic movies made with QuickTime VR use as little as 150K of storage space. That means thousands of panoramas can fit on a single CD-ROM, providing developers with the opportunity to create a rich and realistic three-dimensional user experience. And all of these capabilities are available on the Macintosh without the need to purchase add-on hardware or graphics accelerator cards.

**36** *Desktop video works better on Macintosh computers.*

Several Macintosh models come with RCA and S-video connections that connect to VCRs and camcorders. You can easily capture and then edit QuickTime movies on the computer from a video source and even save the edited movie back to videotape. With the Avid Cinema card available on some Macintosh models, just connect a cable and you can "print" to videotape as easily as you can print to a laser printer.

On a PC running Windows, setting up and using desktop video capture can be extremely difficult. PCs don't ordinarily ship with video connectors for hooking up a camcorder or a VCR, so the user must open the computer case, install an expensive card, configure the software, and test the system. Since few PC peripherals adhere to the Plug-and-Play standard, the difficulties of installing and configuring PC hardware remain. And video card add-ons do not necessarily include the appropriate Windows drivers.

**37** *Macintosh computers provide sophisticated color-matching capability.*

Apple's ColorSync software provides sophisticated color-matching technology that ensures consistent color from input to monitor to output device. ColorSync 2.0 is supported by a wide variety of third-party scanners, monitors, printers, and applications, making it the default industry standard for color-matching technology. Windows comes with no standard color-matching technology. And Apple is also leading the way in output technologies, with FinePrint, PhotoGrade, and Color PhotoGrade software technologies that help to ensure that your printed output of text and images has the highest-quality appearance.

**38** *The Mac OS is ahead of Windows in speech capabilities.*

The Mac OS also has superior speech synthesis, or "text to speech" capabilities. Apple's speech-synthesis software allows the Macintosh to read text aloud as it appears on screen in any of 22 reading voices.

Mac users can also easily add the PlainTalk speech-recognition software to allow the Mac to respond to voice commands. Just move an alias of the item into the Speakable Items folder, and the built-in PlainTalk and Speakable Items technologies take care of the rest.

By comparison, Windows 95 does not have system level speech recognition. And much of the third-party speech-recognition software available for the Windows 95 platform requires dedicated hardware support, is poorly integrated with the overall computer system, and must be trained repeatedly to eliminate "misfires." Macintosh speech-recognition technology can recognize virtually any English-speaking voice, even one with an accent, and includes features that nearly eliminate misfires.

**39** *Installing and using CD-ROM titles is easier with Macintosh computers.*

Macintosh computers have a single, built-in standard for sound and graphics, so no special drivers are required to make CDs work correctly. In contrast, today's PCs have multiple standards for sound and graphics, and each standard and piece of hardware requires a different software driver. As a result, PC owners often have problems matching the hardware and software in their systems to the hardware and software requirements of different CD-ROM titles, and different titles can run much differently.

CD-ROMs are mounted automatically on the Macintosh desktop. Windows machines require the user to go to Explorer, File Manager, or "My Computer"; find the CD-ROM drive letter; and select "Refresh" or press the F5 key to make sure that the CD-ROM shown is the current one in the drive.

**40** *It's easier to work with graphics and multimedia content on the Macintosh.*

Macintosh graphics and multimedia formats are more standardized, and therefore more flexible. On a Macintosh computer, the PICT file format is supported by most applications that can deal with graphics, which allows for easy cut and paste between applications. In fact, the OS-level integration between three-dimensional and video data formats provided by Apple's QuickTime Media Layer even allows you to cut and paste three-dimensional data and motion video.

Windows users are often subjected to dozens of different formats for graphics and multimedia. Windows users have no assurance that what they create in one graphics application can be cut and then pasted into a different graphics application for further processing or modification.

**41** *Macintosh computers have superior sound capabilities compared with PCs running Windows.*

Every Macintosh sold today has 16-bit CD-quality stereo sound capable of handling a sampling rate of 44.1 kilohertz. Every Macintosh also has MIDI capability built in, so driving complex sound modules and synthesizers is simple. The QuickTime Musical Instruments extension that comes with QuickTime 2.5 includes 41 instruments (and more can be added), allowing a Macintosh to output sampled MIDI files in multi-voiced sound through any speakers. QuickTime can even be used to sample tracks right off an audio CD. Add to all this the built-in speech capability of PlainTalk, and Macintosh becomes the platform of choice for sound professionals.

Windows users must first make sure that their systems include a sound card, and that it is capable of handling CD-quality sound. But the very real problem lies in conflicts with sound cards—the source of many of the incompatibilities that PC users experience when trying to use games or sound software.

**42** *Games for the Macintosh work better than their Windows counterparts.*

Macintosh games do not suffer from the driver problems that Windows games do. Because so many games on the Windows platform have unique drivers for running sound cards and other devices, the driver difficulties encountered by the average Windows user are well known. Because most Windows games are actually written for DOS and use older DOS drivers, many will not work at all on Windows NT.

Macintosh games utilize the same drivers built into each and every Macintosh, so this problem doesn't exist on the Macintosh platform. And Macintosh games frequently use advanced Macintosh technologies such as QuickTime movies, QuickTime VR, QuickDraw 3D, and PlainTalk speech.

**43** *Every Macintosh comes with the ability to capture screen shots.*

For those who have ever tried to create manuals or publications, capturing images of on-screen menus, windows, and commands is a snap with Macintosh. Simply press Shift-Command-3 to capture the entire screen. In Mac OS 7.6 and Mac OS 8, you can also use Shift-Command-4 to insert a cursor that allows you to select just part of the screen. Windows does not offer such a built-in feature.

**44** *The Macintosh has more sophisticated font manipulation.*

One of the reasons for the Macintosh computer's popularity in the publishing world comes from the fact that Macintosh fonts are more versatile than their Windows counterparts. For example, PCs simply don't include "outline" or "shadow" versions of a font. In addition, the fact that Windows NT doesn't handle Adobe Type Manager (ATM) fonts means that text posted on the Internet can be viewed much more clearly on a Macintosh.

The Macintosh comes with QuickDraw GX, which provides a rich drawing environment and excellent font capabilities—even for complex languages such as Cyrillic and Chinese. Microsoft's closest answer to QuickDraw GX is a font format called TrueType Open, which is simply a specification for a font format and is not directly usable by users.

## INTERNET TECHNOLOGY ADVANTAGES

**45** *The Macintosh makes Internet authoring easier.*

The QuickTime Media Layer (QTML) makes it easier for Internet content creators to use the Macintosh to enhance their online offerings with images, sounds, video, 3D, and virtual reality. Perhaps that's why Macintosh is the number one platform for World Wide Web authoring, and why more than half of the digital video content available on the Internet today was created using QuickTime technology. In addition, Apple peripherals such as the QuickTake digital camera and the Apple OneScanner scanning devices are extremely easy to use—and ideally suited to web content creation.

**46** *The Macintosh makes Internet access easier.*

Apple's commitment to making Internet access as easy as possible has led to a variety of powerful built-in capabilities. Mac OS 8 includes a wealth of Internet technologies that make it easy to access the Internet, including Netscape Navigator, Microsoft Internet Explorer, Pointcast Network, Marimba Castanet, America Online, and CyberDog. And the Internet Setup Assistant on Mac OS 8 lets users set up their Internet connection in seconds. Windows simply does not come with this wealth of Internet tools, nor is it as simple to set up Internet services from a Windows PC.

In addition, only the Macintosh keeps track of the source of files downloaded from the Internet. Every Macintosh file downloaded retains its URL in the Get Info box, making it easy to catalog or return to the file's source for more information or files.

**47** *The Macintosh makes running an Internet server easier and more secure.*

Another way that Apple is broadening Internet use is by providing the tools to make publishing information on the Internet much more accessible. The Apple Internet Server Solution is a collection of easy-to-use, best-of-class products that includes all the functionality needed to publish information on the World Wide Web. Since this software comes pre-installed on the Apple Workgroup Servers, your server can be up and running in as little as 15 minutes. A Mac OS based server is far easier to set up and maintain than a Windows NT or Netscape Internet server.

And Mac OS 8 provides powerful personal web sharing, which lets a user set up a web site in minutes from their own Macintosh. It can be accessed from any Mac or Windows user in the world, either as HTML pages or a simple list of files to share.

**48** *The Macintosh gives you 100 percent pure Java.*

With the Macintosh Runtime for Java, Apple has built Java directly into Mac OS 8. Java is the revolutionary computer language that will enable new technologies on the Internet and beyond. As a committed partner with Sun Microsystems, the developer of Java, Apple Computer is providing industry-standard "100% Pure Java" for the Macintosh.

There is widespread speculation that Microsoft is attempting to "own" the Internet by creating their own proprietary version of Java. Microsoft has elected to make modifications to their implementation of Java that raise serious compatibility questions. Microsoft Java applets may not work correctly with other platforms. Also, Microsoft is bypassing the use of certain features of Java as implemented in Sun's Java Developers Kit 1.1 in favor of their own ActiveX, which has been shown to have serious security problems that are not an issue with 100% Pure Java.

**49** *Configuring TCP/IP on a Macintosh is much easier.*

Since Apple builds in TCP/IP into every Macintosh, connecting to the Internet is a simple process. The Internet Setup Assistant in Mac OS 8 will configure everything you need automatically—no confusion with IP addresses, flow controls, and modem speeds. But for the power user who wishes to have multiple ISPs or other TCP/IP connections, configuring PPP and Open Transport is a snap. Windows users have a much harder path to achieve the same result.

**50** *The Macintosh has Cyberdog.*

Cyberdog, a standard part of Mac OS 7.6 and Mac OS 8, is a breakthrough approach to the Internet that provides easy and intuitive access to all the Internet resources you use most. Cyberdog brings Internet connectivity into mainstream applications and documents.

Because Cyberdog uses OpenDoc component technology, it's completely integrated into the operating system and can be extended with other OpenDoc components. This integration allows you to drag and drop files from the Internet right to your desktop, copy URLs to your desktop to revisit them or embed them into e-mail, and much more. Using Cyberdog's DocBuilder, you can create your own custom applications to access the Internet.

This type of advanced Internet component technology is not available for Windows.

## **POWER ADVANTAGES**

**51** *Macintosh computers are faster—and getting faster yet.*

Independent tests prove that today's Power Macintosh computers, with the RISC-based PowerPC processor, outperform comparable machines based on the Intel Pentium processor. The PowerPC processor is based on RISC technology, which provides tremendous performance at extremely low cost. For more details see [www.apple.com/whymac](http://www.apple.com/whymac).

And because the PowerPC uses much less power and runs much "cooler" than a Pentium processor at the same speed, Apple is able to build the PowerBook 3400 computer, which utilizes a blisteringly fast 240-megahertz processor.

**52** *The PowerPC processor offers many significant advantages over the Intel Pentium MMX processor.*

The PowerPC processor doesn't need special instructions to implement the newest multimedia technology. To try and catch up with the PowerPC processor, Intel needed to add new MMX instructions to their Pentium processors. Unfortunately, PC users will need to buy not only new software written to utilize MMX, but also a new computer that has the MMX chip and the new BIOS chip needed to work with it.

The PowerPC processor provides a superior notebook solution because of its small size and low heat output. Unfortunately, because the Pentium MMX chip is nearly 50 percent larger than a regular Pentium processor, it generates an enormous amount of heat, making it a poor choice for notebook computers.

Also, the PowerPC processor speeds up every multimedia application, not just certain ones. On the other hand, only specific operations can benefit from the MMX instructions that were added to the Pentium chip.

**53** *The Mac OS has AppleScript automation.*

A big part of the next generation of personal computing is end-user automation—giving users the ability to automate their computers and tasks using plain English and point-and-click commands. AppleScript—the built-in, systemwide scripting capability of the Mac OS—lets you automate routine and highly complex tasks, giving you extremely powerful ways to extend and customize the features of the Macintosh.

Windows does not include any systemwide scripting or automation capability.

**54** *The Mac OS is superior to Windows NT for mobile computing.*

Macintosh PowerBook computers feature better PCMCIA card management, such as their hot-swappable operation. Windows NT has no hot swapping of PCMCIA cards and limited drivers for such cards, which makes Windows NT a poor choice for portables.

The Macintosh is also more efficient with battery power. Unlike computers running the Mac OS, there are no power-management/sleep features in Windows NT. Also, because of the way Windows NT uses virtual memory, hard disk drive access is increased dramatically, quickly depleting battery power in Windows NT notebooks.

**55** *WorldScript technology makes the Mac OS a better global solution.*

Apple designed Macintosh to be the first truly international personal computer, so it offers a variety of support technologies for languages that use non-Roman alphabets. A unique OS-level technology called WorldScript enables the Macintosh to support the complexities of many languages, including “two-byte” character sets, graphics, line layout, and even typing direction. Apple even offers a series of software “Language Kits” that provide fonts and system software for a variety of languages.

Apple also recently released the Chinese Language Dictation Kit, a groundbreaking speech dictation system that converts Mandarin (Putonghua) speech into either simplified or traditional Chinese text. It’s the most affordable Chinese dictation product on the market, and requires no additional hardware to operate on a Power Macintosh computer.

**56** *The Mac OS has fewer viruses.*

Macintosh-hosted viruses are much less common than viruses specific to Windows and DOS. The Antivirus Research Center, a Symantec web site dedicated to tracking existing viruses on both Macintosh computers and PCs, shows that there are more than 8,000 PC viruses in existence, with two or three new ones appearing every day. In contrast, there are currently only 47 known viruses specific to the Mac OS.

**57** *Macintosh computers have many unique, powerful applications.*

The power of the PowerPC processor and the Mac OS is enabling software developers to create products that offer capabilities that simply weren’t possible before. As a result, the Macintosh has gained a clear lead over PCs in terms of powerful applications—from three-dimensional rendering to flight simulators to speech recognition. (A list of Macintosh-only applications is available at [www.apple.com/whymac](http://www.apple.com/whymac).) The speed of the PowerPC processor also gives Macintosh applications a performance advantage in digital video, component software, and software emulators.

**58** *Printing functions are more powerful on a Macintosh.*

The new LaserWriter software included with Mac OS 7.6 and Mac OS 8 provides many advanced printing capabilities, including inverted or flipped images, color matching, automatic border printing, and mixing of paper types within one document. For those who rely on Adobe PostScript, print jobs can be saved as a PostScript file.

As a print job is queued, an icon of the printer appears on the Macintosh desktop with a visual image of the file that’s printing, so with one glance a user can see how far along a print job is. If a different printer is needed, one can be selected from a convenient menu on the menu bar.

Windows users will find that few of these options are available to them. Worse yet, every application may have its own printer options, making it more difficult to produce high-quality output.

**59** *Apple component technology provides unique benefits.*

With OpenDoc, Apple is providing powerful component software in Mac OS 7.6 and Mac OS 8. The idea behind component technology is to get away from large, monolithic programs that are difficult to develop and even more difficult to use by creating smaller programs with more specific functionality—which users could combine to create their own custom solutions.

Apple has consistently taken an open approach toward components, offering our component technology as an open, non-proprietary cross-platform standard, as well as working actively with a variety of industry partners to ensure its widespread proliferation. In contrast, although Microsoft recently announced that it was “opening” its component architecture (originally called OLE and now known as ActiveX), it is in fact retaining control of a number of key component technologies.

**60** *The Mac OS supports multiprocessing.*

Numerous advanced applications for the Mac OS can support multiprocessing—the ability to use the power of multiple PowerPC microprocessors in the same Macintosh computer.

For example, the Power Macintosh 9600/200MP has two 200-megahertz PowerPC processors for maximum processing capability. While Windows NT supports multiprocessing, Windows 95 has no multiprocessing support.

**61** *The Mac OS makes much better and more effective use of hard disk drives than Windows NT.*

The extensive use in Windows NT of virtual memory and “swap files” (files that are stored briefly on the computer’s hard disk drive and then deleted) means that Windows NT needs a rugged, high-speed hard disk drive to achieve acceptable performance. The constant creation and subsequent deletion of these swap files can cause hard disk drive fragmentation, which in turn will degrade hard disk drive performance, since it causes the computer to skip around to various locations to access a complete file.

The Mac OS is a much more efficient operating system than Windows NT and does not need to use nearly as much virtual memory and do as much “swapping” to operate effectively.

**62** *PCs can lose valuable information if their batteries fail.*

Basic information about the setup of a PC is stored in a chip whose contents are maintained by battery power. In the case of a battery failure, a PC might lose information about its hard disk drive, causing it to be unable to access the drive for start-up. But on a Macintosh, no vital information depends on battery power, so you can still use your system even if battery power is lost.

## COMPATIBILITY ADVANTAGES

**63** *Macintosh computers let you run more applications.*

With Insignia’s SoftWindows application, Connectix Virtual PC software, or an Apple PC Compatibility Card installed in a Power Macintosh computer with PCI slots, you can run applications written not only for the Mac OS, but also for DOS, Windows 3.1, and Windows 95—more applications than any other mainstream personal computer. Macintosh users can run PC software and still take advantage of the unique Macintosh features.

**64** *You can easily work with PC files on your Macintosh.*

Every Macintosh sold today comes with software that lets you read PC media and work with PC files. PC Exchange software makes it possible for a Macintosh to read and format PC floppy disks. Macintosh Easy Open will suggest a particular Macintosh application to open a PC data file type if one has not been assigned in PC Exchange. File translation is not a problem between Macintosh computers and PCs, either, since many of the most popular programs on both the Mac OS and Windows platforms—such as Microsoft Word and Excel, Corel WordPerfect, and Adobe Photoshop—have identical file formats

between Macintosh computers and PCs. In cases where this is not accomplished inside an application, DataViz MacLinkPro translators, included with every Macintosh, will translate files from one format to another.

**65** *A Macintosh running Windows can share data between OS environments.*

When you configure a Macintosh with a PC Compatibility Card from Apple, you essentially get two personal computers in one. The Macintosh shares a clipboard with Windows, so you can copy and paste text, graphics, and other information between the two operating systems. CD-ROM and network drives connected to the Macintosh can be mapped to drive letters on the Windows side, enabling easy common file access.

**66** *A Macintosh computer can be a client in virtually any network.*

Macintosh computers can be connected to virtually any computer network system or host computer environment, often adding significant value and ease of use over other access methods. For example, Apple’s Open Transport networking architecture, with its inherent support for TCP/IP, makes Macintosh an ideal platform for accessing the Internet—as well as the perfect choice as a client to an organizational intranet. In addition, Novell NetWare and Windows NT Server support the Macintosh platform and are often popular methods for sharing information between Macintosh computers and PCs. Apple also provides a range of options for connecting with other network types, including networks supporting IBM’s SNA, Digital Equipment Corporation’s DECnet, Novell’s IPX, and other protocols.

## VALUE ADVANTAGES

**67** *Macintosh computers include many features that cost extra on PCs.*

It’s a common belief that PCs cost less than Macintosh computers. But while some PC clones offer a lower “base price” than Macintosh computers, a feature-by-feature comparison shows that Macintosh computers provide the better overall value. That’s because Macintosh computers include many key features that either cost extra or simply aren’t available on most PCs—such as networking, SCSI expansion, high-quality video, sound, Apple Desktop Bus expansion, and in some models—video in and out.

**68** *The Macintosh platform provides better customer support.*

Apple supports not only Macintosh computers, but also all Apple software. One call gets you the answers you need for both your Apple hardware and software questions. But many Windows users find that the manufacturer of their hardware

will not support the preinstalled software, including Windows.

You won't be on the phone forever with Apple. According to *PC World*, Apple had the fastest response time, with a hold time of only 5.5 minutes.<sup>1</sup> *Home PC Magazine* also showed that Apple technicians diagnosed the problem over the phone faster than any of the 15 companies they checked.<sup>2</sup>

With Apple, you'll get the right answer. Among the 15 major computer vendors, Apple technicians were shown to be the most accurate in diagnosing a computer problem, according to *Home PC Magazine*.<sup>3</sup>

Maybe all these reasons are why *InfoWorld* magazine rated Apple technical support the best of all companies, not only those that manufacture computers, but also all other hardware and software companies.<sup>4</sup>

<sup>1</sup> PC World, "Goodbye to Good Support," December 1996, page 145.

<sup>2,3</sup> Home PC Magazine, "The Best in Customer Support," November 1996, page 158.

<sup>4</sup> InfoWorld, "Best of 1996: Technical Support Award," January 31, 1997.

### **69** *Macintosh computers retain their usability and value longer.*

Computer Intelligence and NFO conducted a study in which they concluded that the average Macintosh computer's life span is 25 percent longer than that of its Windows-based counterpart.<sup>1</sup>

You don't have to buy a new Macintosh every few years to keep up with the latest software technology. This is not true with the Windows market. Most PCs sold just three years ago are unable to run Windows NT 4.0. Many PCs sold just five years ago cannot run Windows 95. But the Macintosh IIci, which was introduced in 1989, can run Mac OS 8 today.

Macintosh computers have higher resale value. A Macintosh Quadra 605 computer (released in 1993) with 4 megabytes of RAM and a 160-megabyte hard disk retains 30 percent more resale value over the same time period than a comparable 486SX/25 PC from Packard Bell. Over a no-name PC clone, the figure rises to almost 50 percent more.<sup>2</sup>

<sup>1</sup> Computer Intelligence Installation Database, October 1996, and NFO Consumer Panel Survey, October 1996.

<sup>2</sup> Figures based on calculations from United Computer Exchange's PC Appraisal software.

### **70** *The Macintosh is rated more reliable—for the third year in a row.*

No one wants a computer that is plagued with problems. For the third year in a row, *PC World* magazine has rated Apple best in reliability among the 15 major computer vendors.\* This means that you can purchase a Macintosh with confidence, knowing that you will be more productive than those with PCs who are left holding on the phone to the repairs department.

\* PC World, "Goodbye to Good Support," December 1996, page 144.

### **71** *Macintosh has better backward compatibility.*

The Macintosh has long provided excellent backward software compatibility, ensuring that users can run their older software on new Macintosh models or on new versions of the Mac OS. Even as Apple was transitioning to the PowerPC processor with its RISC architecture in 1994, we made certain that the new computers would run older software. And we will continue to provide this backward compatibility in the future.

The Windows world does not have this same assurance. Every new version of Windows has included features that make backward compatibility of existing applications an issue. What ran on DOS or Windows 3.1 didn't necessarily run on Windows 95; and DOS, Windows 3.1, and Windows 95 software didn't necessarily run on Windows NT. The advent of the Intel MMX processor also makes it necessary for users to abandon current software for rewritten MMX versions. When combined with changes in Windows, PC users are caught in a never-ending struggle to keep their brand-new computers working with their software—a complex and expensive proposition.

### **72** *Macintosh computers require less hardware than PCs running Windows to run similar applications.*

To run Mac OS 8, Apple recommends a minimum of 12 megabytes of physical RAM with virtual memory set to make a total of 20 megabytes. But what about Windows NT? Microsoft says that Windows NT can be run on a 486DX/25 computer with 16 megabytes of physical RAM and 117 megabytes of hard disk space. However, several Windows publications, including *PC Magazine*, say Windows NT Workstation 4.0 really needs a minimum of a 75-megahertz Pentium processor and 32 megabytes of RAM to be usable. But to run really well, they recommend even more RAM—64 megabytes.\* And an old video card, BIOS chip, and hard disk drive might not be sufficient enough or might not even work with Windows NT because of driver incompatibilities.

\*PC Magazine, "The Big Business Upgrade," by Jim Seymour, September 10, 1996.

### **73** *The Mac OS is more stable than Windows 95.*

One of the greatest frustrations encountered by computer users is a system crash or freeze. The Mac OS is less prone to freeze unexpectedly or crash than its Windows 95 counterpart, according to a study by Evans Research Associates. This study shows that users who have used both Macintosh computers and PCs find, by a margin of two to one, the Mac OS to be more stable than Windows 95.\* And the new Mac OS 8 makes the Mac even more stable by providing numerous reliability and stability improvements.

\*Evans Research Associates, "Personal Computer Satisfaction," May 1996, available on [www.apple.com/whymac](http://www.apple.com/whymac).

**74** *Macintosh users are the most brand loyal of all computer users.*

One excellent indication of user satisfaction is brand loyalty—how likely a user is to buy their next computer from the same manufacturer. According to a study conducted by Computer Intelligence in June 1996, Apple is the number one computer company worldwide in brand loyalty. In fact, an astounding 87 percent of Macintosh users repurchase Macintosh computers, far more than any other vendor.

**75** *“Dual users” prefer their Macintosh.*

Perhaps the best comparison of Macintosh computers versus Windows-based PCs comes from users who know both systems very well. Evans Research Associates found in an independent study that “dual users”—those who routinely use both Macintosh computers and PCs running Windows 95—preferred the Macintosh in many important categories, including productivity, satisfaction, ease of use, multimedia, and more.\*

So before you buy your next computer system, make sure to do a hands-on test of both a Macintosh and a Windows-based PC. That’s the best way to truly understand the Macintosh Advantage!

\*Evans Research Associates, “Personal Computer Satisfaction,” May 1996.

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