

“PCs are Cheaper Than Macs...”

We will not contest the claim that PCs are made cheaper than Macs.

Macs however, have never been competing with PCs strictly on the basis of purchase price, but rather:

- 1) the total cost of ownership, and**
- 2) the quality of the computing experience.**

As an example, consider a car buyer trying to decide whether they should purchase a Ford Escort or a Mercedes Benz.

Believe me, despite both being cars, Mercedes does not feel that they are in the same market as the Escort is. Mercedes are aimed at people whose emphasis is on a **high quality, highly featured vehicle**, vs those whose concern is good basic transportation.

Now let's assume that the Escort is selling at \$15,000, while a new Mercedes is available for \$16,000. Exactly how many people would be buying the "less expensive" car???

That is essentially the situation here comparing PC boxes to Macs: possible, small initial price difference, but **BIG** quality, performance and ease of use differences. [We say "possible", as we have seen **several** examples where when accurately comparing it to a *comparable* PC, that the **purchase price of a Mac is less**. But, for a worst-case scenario, let's assume here that the initial cost of the Mac is slightly higher.]

As a second point, if an organization (or person) is financially sensitive, then the **Total Cost of Ownership** (TCO) should be the **only** important criteria – not the initial outlay.

Let's look at another car analogy. You tell me which new car is the better buy:

Comparing Ownership Costs of Two Cars

	Car P	Car M
Initial Cost	\$15,000	\$16,000
Gas Mileage	10 MPG	40 MPG
Annual Service Costs	\$1000	\$200
Annual Insurance Cost	\$600	\$300
Lifetime of Car	4 years	6 years

The message should be clear: **anyone whose primary focus is on the initial price will be making a BIG financial mistake.**

If you are in the unfortunate situation where your school (or business) is seriously considering switching from Macs to Windows/PCs, then ask the MIS people (or whoever is promoting this change) to:

1 - Please provide a written detailed calculation as to the Total Cost of Ownership of Macs vs PC computers, which should (as a minimum) include:

- a) initial hardware cost,
- b) annual maintenance expenditures,
- c) usable lifetime of the computer,
- d) software costs (license, support, upgrades),
- e) networking expenses (hardware, software, licenses, maintenance, etc.),
- f) operating costs (e.g. electricity),
- g) teacher training costs,
- h) teacher preferences, satisfaction and efficiency,
- i) ability to provide student with an enjoyable and productive learning environment.

2 - Please provide a written detailed explanation as to how using Windows/PC computers will guarantee a discernible benefit over using Macintosh computers:

- a) for the students
- b) for the teachers
- c) for the technical support staff
- d) for the taxpayers.

Their written answers will provide you with information as to how to proceed. [And, if they say something like they don't know how to do a Total Cost of Ownership Calculation, then suggest they check out [Taking TCO To The Classroom](#) written by the independent Consortium for School Networking.]

Essentially every survey that has taken these factors into account {e.g. [one by IDC](#) (PDF)} has shown that Macs are **less expensive to own than comparably equipped PCs** – typically by something like **\$400 per year per computer**.

A more recent study by [IDC](#) reviewed the satisfaction of several school systems using Macs. Results showed very high satisfaction rates, minimal support costs and where support was needed Apple received high marks for customer service.

In January of 2004, after doing a thorough analysis, the large Brookfields law office (hundreds of computers) said that they were going to buy Macs. [Read](#) where Brookfield's general manager Kevin Hall said the cost per desktop unit was lower. "Our IT staff numbers would need to double if we were to run the equivalent amount of PCs."

This December 2002 Consulting Technology Newsletter [report](#), done about Mac OSX, says: "The Macintosh has for years been known as a tool for graphic designers and other 'creative types', while Windows is what you use for real business. A lot has changed over the years, and believe it or not, for many businesses the Macintosh offers compelling ROI advantages." They then go on to delineate three areas where Macs offer cost savings: **Productivity**, **Licensing**, and **Security**.

A recent review of security issues and costs was done by Paul Murphy of [CIO Today](#) (April, 2005). Mr. Murphy found the Mac OS X to be the answer to security and compatibility. He states: "...if security concerns are your most important driver for desktop change, and Microsoft Office compatibility is your most significant barrier, then switching to Macs actually offers you the best of all possible worlds."

The absolutely profound [Gistics report](#) (which surveyed over 30,000 business professionals) concluded, "One justification for substituting Wintel computers for Macintosh computers is that it would be less expensive to support a single Wintel platform. **Numerous studies, however, have shown that this common perception is false.**"

In fact this report went on to state, "In a fully accounted 36 month cost-of-ownership of a system purchase, a Macintosh user saves \$2211 more than a Windows user." **This amounts to over \$700 per year per computer!**

[Note: click on these links if you want to download PDF files that are a [summary](#), or the [complete](#) (670K) Gistics report.]

This [article](#) summarizes a comprehensive study (by respected technology research company Gartner) completed in July of 2002. Their research found that **"Macs are up to 36 percent cheaper to own and run than competing Windows PCs."**

"The report utilized Gartner's Total Cost of Ownership (TCO) methodology, which takes into account both the direct and indirect costs of owning IT infrastructure. Direct costs include all hardware and software costs for desktop and mobile computers, servers and peripherals as well as upgrades, technical support and annual depreciation. Indirect costs cover the costs of end-users supporting themselves and each other, end-user training time and non-productive downtime."

The research was conducted at Melbourne University's Faculty of Arts, which included 4,676 Apple computers and 5,338 Windows machines. The report compares the TCO for the University's Mac environment with its PC environment. It also compared the University's Mac environment with similar-sized PC installations around the world.

Read a thorough [discussion](#) as to why the Urbana school district chose to standardize on Macs. The site gives several references for Total Cost of Ownership readings. It includes a particularly good [TCO reference for educators](#)... And a North Carolina K-12 computer tech support specialist writes a very comprehensive TCO [article](#), again concluding that Macs are far less expensive to own.

Gannett News Service [tested](#) a loaded Gateway Profile 4 XL compared to a high end iMac, computers that were similarly priced. "On paper, the Apple and the Gateway seem closely matched in features and bundled software... **When you look between the lines, though, the Gateway shows evidence of cutting some corners.** Its LCD, for example uses an analog rather than digital connection, which is somewhat cheaper to produce. The result: The iMac's picture is visibly crisper, with truer colors. In addition, the iMac's stainless steel arm provides an immensely flexible range of vertical and horizontal adjustments for the display. Despite all the leaping and jumping the Profile 4 manages in its TV commercial, you only can tilt its display vertically."

"What's more, the Profile 4 contains 4-pin FireWire ports, rather than the 6-pin variety used on all of Apple's computers. Unfortunately, a 4-pin FireWire port doesn't supply power to external devices, such as the iPod digital music player, which means you'll need an add-on power cable when using FireWire devices with the Profile... Also, while the iMac's power supply is self-contained, The Profile 4 uses an oversized power brick.

"Apple's flat-panel iMacs sales include the SuperDrive, a drive that creates both CDs and DVDs, Gateway doesn't offer a comparable option for the Profile 4. The fully equipped Gateways have a combination CD writer and DVD reader, which create CDs but only play – not record – a DVD video."

In a comprehensive [IBM assisted study](#) a few years ago, the conclusion was that the estimated Total Cost of Ownership of **Windows/PCs** (per desktop unit; Direct costs + Indirect costs) would be between **\$3,520 and \$18,000 per year**. (*This annual amount sort of dwarfs a possible one-time \$200 initial price difference!*)

In the [Single Platform Lie report](#) (PDF) R.M. Terence, M.S. says, "Total Life-cycle Costs are the most valid and important measure of the cost of a system. Study after study from [Evans Research](#), Ingram Labs, J.D. Powers and other industry leaders has shown that Macintoshes are:

- easier to support than Wintel systems
- cheaper to support than Wintel systems
- more plug and play than Wintel systems
- easier for users to learn than Wintel systems
- have greater user satisfaction than Wintel systems
- longer lasting than Wintel systems

"Single Platform Wintel is incredibly stupid. **It cannot be justified from an economic standpoint, and it cannot be justified from any other standpoint.** If you have to go single platform anything, it should be single platform Macintosh -- at least this platform has a **proven track record for lowest life cycle costs, reliability, customer satisfaction, ease-of-use, ease-of-learning and lowest costs of support.**"



Charles Moore [writes](#) that "**None of this is new.** Study upon study over the years has shown that the total cost of ownership, user/worker satisfaction, and productivity facilitated by the Macintosh leaves the cranky, clunky Windows platform eating dust."

And, oh yes, there is considerable evidence that (in many cases) Macs are actually **LESS EXPENSIVE to buy initially.** Skeptical? Here is a detailed, 2005 example of [PC/Mac price comparisons](#)

This December 2003 piece is titled "[PC users are still clueless when it comes to Apple.](#)" It states that "It's time PC users dropped the propaganda about how expensive Macs are when compared to PC's. In fact, it's time for PC users to admit the truth; Macs are actually less expensive than PC's, so look for another argument. Or better yet, buy a Mac, you know you want one."

Harry Rider of [OSViews](#) has figured out that a Macintosh is actually even cheaper than a "build it yourself PC" machine.

Or this December 2003 *MercuryNews* [report](#) about the Gateway 610, which they call "the closest thing to an iMac killer." Trouble is that when buying similarly featured computers, the Gateway is **more expensive than the iMac, every time.**

Of course the iMac is not even Apple's most affordable computer – the eMac is even more affordable. Read [this](#) about the eMac's excellent value. Additionally [ZDNet](#), in their September 2003 analysis, says that students who want the most **economical** good performing computer, should get an eMac. And this August 2003 *Boston Globe* article, [Power Without The Premium](#), comes to the same conclusion.

This [blog](#) illustrates the all too common pitfalls shoppers face when trying to compare machines. The author concludes; "All in all, nothing compared to the entry-level eMac, especially when you take into account the peripherals, the operating system and all the software that Apples ships with it, which includes the iLife suite..."

The latest addition to Apple's lower cost line-up is the [Mac mini](#), at less than \$500. This [article](#) at AnandTech provides an extensive review and comparison to a similarly priced Dell. It concludes that the Mac mini is a great low cost entry into a Macintosh, very small, quiet, powerful yet affordable, this latest low cost Mac makes great sense.

Many other organizations have reached similar conclusions including: [CBS News](#), [USA Today](#), [TrustedReviews](#), [N.Y. Times](#), and [The Wall Street Journal](#).

Tom Gromak, writing for [The Detroit News](#) had this to say: "...even my performance-oriented, home-built PC is getting a run for its money from Apple's latest, greatest product... the Mini just runs and runs and runs. And it does its job very, very quietly..."

PCWorld author Rebecca Freed concluded the following in her [review](#) of the mini: "My bottom line? If I were recommending a starter system to someone (who hadn't already taken a side in the Mac versus Windows holy war), I wouldn't hesitate to send them in the direction of the Mac mini."

And from [BusinessWeek Online](#), Stephen H. Wildstrom writes: "I don't know if the Mini will increase Apple's market share, but it should. It is all the computer most homes, schools, and small businesses need, in a tiny, elegant package"

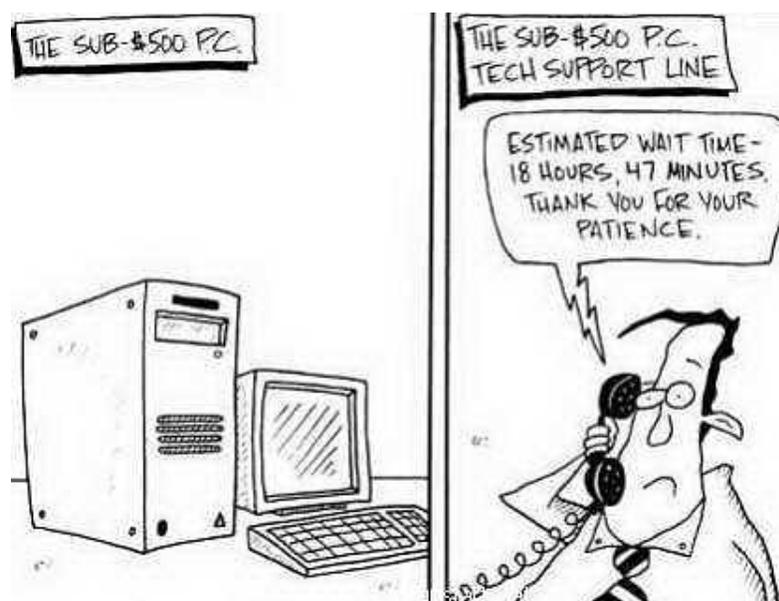
David Pogue, in a January 15, 2005 [article](#) in the New York Times, outlines Apple's lower cost options including the Mac mini. He concludes; "The iPod Shuffle and the Mac mini are bold attempts to shatter the common wisdom that Apple makes gorgeous, expensive things. For the first time in its history, Apple has begun to make gorgeous, **inexpensive** things."

So we now have all that makes Macs less expensive to operate (good hardware integrated with great software) wrapped up in a simple even more affordable consumer computer.

In April of 2003 this [OSCast](#) story (PDF copy as original site has disappeared) tells of a PC person who did a thorough investigation into buying a new laptop. "What surprised me most, is that in nearly every laptop price comparison I made (seven total), I found that Apple's hardware was less expensive than Dell's - this even after Dell out-priced its PC competition. For the first time in my life, **I found myself unable to justify the purchase of a Windows PC**, instead discovering that **Apple offered more for the money**. If you're in the market for a new laptop, I'd suggest that you make a similar comparison before making a purchase."

[Computer Shootouts](#) is a simply **extraordinary** site where you will find EXCEPTIONALLY detailed comparisons of every Mac model, to essentially all of the "competitive" Windows/PC machines. The clear conclusion is that (when looking at the WHOLE picture) that Macs are **VERY price competitive**.

Our local NY newspaper has a column with computer advice for Wintel people, written by a PC expert. In mid 2003 he wrote an insightful [piece](#) about why cheap Wintel PCs are not as inexpensive as they may appear on the surface.



NASA Langley Research Center did a 19 page [study](#) (PDF) where they compared a G4 Mac to a Compaq Alpha and a generic Pentium III. When adjusting the systems to give equivalent performance, NASA's conclusion was: **"The G4 is roughly 8X less expensive than a Compaq XP1000 Alpha system, and 5X less expensive than an off the shelf Pentium III system... These results are impressive ... and show the potential cost effectiveness of an Altivec enabled Mac computing system."**

The Wall Street Journal (certainly not a pro-Mac source) published an [article](#) about the iMacs introduced in 2002. They said that "...it's a thing of pure beauty. You feel as if you're typing onto a gorgeous palette that's floating in the air. You're no longer conscious of the computer at all..." They then listed the price of "comparable" Dell desktops. **The iMac was HUNDREDS of dollars LESS EXPENSIVE!**

A SIGNIFICANT reason for the Mac's TCO advantage is the MUCH higher MIS support expenditures required by Windows/PCs. [Check out our more thorough discussion of the MIS problem: [MIS Management](#).] After reading hundreds of comparisons, the range is anywhere from **four to ten times as many support people are required by the Windows/PCs.**

Here is a typical email received: "I was the **ONLY** Macintosh support person/ technician in a school district with an installed base of 2,500+ Macs. We had 4 PC support people for some 900 Windows/PCs." – Bill Storey (Education Consultant/ Service Provider for schools in St. Louis, Missouri)

And another: "There is a school district just north of Ft. Worth, Texas called Keller ISD. In 1996-97 the school district decided to replace all 3000 Macintosh computers in the district, with PCs running Windows 95 and have continued to upgrade since from Pentium I and IIs to PIIs and Win98SE, etc. When the Macs were in place they had three (3) techs managing those 3000 machines without any difficulty. Today, with the same number of boxes they have 18+ techs on the payroll. And at a minimum fully benefited annual salary of \$30,000...do the math."

(Ed: The answer is that just the extra MIS expense alone adds over \$150 to the cost of each Windows/PC, per year.)



This report ([Why The Price Of The Computer Means So Little](#)) provides a detailed calculation and explanation showing how the initial cost is dwarfed by subsequent expenses, especially MIS costs... This LENGTHY [OSData write-up](#) (with **dozens** of references) concludes the same thing, as does [Children Are Power Users](#).

Carefully read this **whole** 2002 [ZDNET article](#), written by a tech support person, at a school that switched from Macs to Windows/PCs. In part he says:

"Regardless of how often technical-support people come (to look at our PCs), or how many things they fix, more problems show up as soon as they leave. If it's not bad memory, it's bad power supplies. If it's not bad motherboards, then it's bad hard drives. And when it's none of those, it's a software glitch that nobody has a clue how to fix.

"THE TOTAL AMOUNT of staff time required just to keep these machines functional is an order of magnitude higher than what we experienced with the Macs. It almost defies belief.

"Worse, the false economy of PCs is mostly buried under a ton of paper somewhere in the yearly budget document. In our case, personnel costs come from an entirely different piece of the budget pie than computer hardware."

[Conduit Systems Inc.](#) executive vice president Dan Tully certainly seems to think so, and he would know: Conduit Systems specializes in providing Information Technology (IT) services to small Boston-area companies that would rather hire an outside firm to manage their computer systems than keep a full-time IT person on staff. From his perspective, it's more economical and more convenient to do that when it's an Apple environment. Tully estimates that "a company running a Windows-centric server environment will spend about two thirds less time and money managing its IT resources by doing the same things with Mac OS X Server and an Xserve instead."

In the business world, the industry standard for Windows systems is **one support technician for every 40± computers**. By contrast, the standard for Macintosh support is **one person for every 160± machines**. [McDonnell Douglas Corp](#) found that **PC support costs are at least 8 times higher than Mac costs!**

Kevin Legester, at [OSViews](#) agrees for many of the same reasons, he sums it up this way, "When you add your costs for support, purchase price, and user productivity, you will find that the Macintosh is a viable platform for you to run your business on."

Even at Intel, where many employees are **true computer experts**, their Data Processing department assigns **one support person for every 30 Windows computers**. [Their DP department was astonished to learn that one Intel division had 120 Macs and got along fine with a single support person...] In other words, the higher percentage of Macintosh computers, the lower the technical support costs.

In late September of 2002, I received the following email from a technical consultant. His company was trying to decide whether to add more Macs. To determine whether this made economic sense, he had done research about Mac vs PC support costs which included asking a list of cross-platform managers what their experiences were.

"Here's a small summary of the mails I received regarding to the cost of maintenance of Macs vs PCs. The majority of mail indicated that Macs generate fewer problems than Windows machines and thus need less people to support them. **The figures range between 1 person for every 150 - 250 Macs vs 1 support person per 50 - 60 PCs.**

"From the information that I read on the web I concluded the same thing, including increased productivity because the Mac OS hinders one less while doing his/her work than Windows does (which confirms my personal experience)."

Just in case you think I would pick a site that has some Apple bias (!), read what **LinuxWorld's** very thorough [discussion](#) of servers says: "Apple's Xserve ...**costs substantially less than roughly comparable Dell hardware with a Microsoft OS... Performance** is, of course, a hot issue here because the entire systems architectures, from CPU type to operating system file management, are very different between these two classes of machine. Recent benchmarks by xinet show the **Apple server well ahead of the Dell** running Windows 2000."

A [more recent](#) review by the same author found similar results. After comparing various desktops, servers, laptops he concludes: "So, bottom line, are PCs cheaper than Macs? No, despite what you read in the PC press, it's the other way around. Compare Apples to apples, and Macs are cheaper than PCs."

And this [eWeek](#) report says Apple's Xserve "is impressive" and "more economical when compared with similar Intel-based offerings from Microsoft and Novell."

While we are on networks, here is an interesting [article](#) about how an experienced business person made up a super low cost network with used legacy Macs. His conclusion is: "I have used networks with Windows NT, 98, and 2000 OS under Pentium III and 4 servers at my former corporate employer; with none of them was transfer data any faster than on my network. The Pentium III and 4 networks required weekly technical support for log-in errors, screen freezes (the blue screen of death randomly appearing), and loss of network printing capabilities.

"Not once has my network had any difficulties running OS 7.6.1 with the G3/450 server and the 604e 200 MHz stations. **The Macintosh is an extremely stable network that keeps the total cost of ownership low, as most Macintoshes do not need technical support repairs weekly. It is a pleasure to use the Mac hardware and OS.**"

Another of the many reasons why the TCO for Macs is less, is that **Macs last longer**. Several educators have written us something to the effect that "Most Macs are in service running the latest software for up to 10 years. The average Windows/PC can't run the latest software after being in service only 4 years."

A detailed survey by PC Magazine (August 2001) bore this out when they determined that the **average** useful life of Macs was 3.9 years, while the average useful life of the top seven PCs was only 2.4 years... In other words, they found that Macs typically last sixty percent longer than Windows/PCs...

This is important as when calculating the total cost of any item, the incurred amount is spread over the lifetime of that item. So the longer the lifetime, the bigger the denominator of the equation is. Furthermore, the longer the lifetime, the less frequently any initial purchase price factor will be encountered. Both of these effects add up to **BIG** financial savings for Mac owners.

A less often considered Mac cost benefit is the utilities cost of operation. In the vast majority of cases, Macs use less electricity (and generate less heat) than do comparable Windows/PCs. The net affect is often startling.

For instance, the computer our school district was choosing (Dell Optiplex GX-110 + 15" monitor) uses 50 watts more power than a comparable iMac. Multiplying this out (3500 computers x 8 hours per school day x 200 school days x 7¢/KWH) results in enough savings to get some **25 brand new iMacs for FREE: EVERY YEAR**. And this does **not** take into account the extra cost of air-conditioning. **THINK** about this...

There are now more people picking up on this fact. Read about this university [report](#)... Also, Terra Soft co-founder and CEO Kai Staats told [NewsFactor](#) (March 2002) "A NASA JPL lab was forced to spend \$15,000 on new electrical circuits and air conditioning due to a small, 32-node Pentium cluster. **That would not be required if the system had been PowerPC**, and that money could have been spent on more nodes."

This school district published a brief [summary](#) of why they bought more Macs, and included **ten different reasons** – one of which was less utility costs.

THE POLICE STATE – 2004



An important part of the financial equation is to consider the Windows (i.e. Microsoft) aspect. According to several published reports, Microsoft has announced planned increases of their software licensing fees. It seems that part of the deal is that organizations that upgrade **less frequently** will see their costs go **higher.(!)** The Gartner Group probably puts it most clearly by [stating](#) that:

"The substantial, complex changes Microsoft has made to its licensing programs will affect **ALL Microsoft software products and customers**... Microsoft believes it has simplified its licensing. Gartner believes Microsoft confuses simplification with the elimination of options. Either way, **most enterprises will pay much more.**"

A similar Reuters report stated that Microsoft is changing the way it licenses its software, a move that will "reduce its dependency on sluggish PC sales and squeeze more revenue from existing users. Microsoft will now be requiring customers to continue paying for software like the Windows operating system and Office suite of business applications even after original contract send..."

These fees inspired a strong article on NewsFactor titled "[Why Schools Should Shun Microsoft.](#)"

A thorough ComputerWorld discussion [states](#) "Analysts and users have viewed the move as a less-than-subtle attempt to induce customers to upgrade more often and provide Microsoft with a more steady and predictable cash stream as revenue growth wanes."

And this Microsoft mentality will be adversely affecting a school near you. The [Oregonian](#) reports that "school districts are considered guilty of software piracy until they can prove they're in licensing compliance." Read why another [article](#) says that "Microsoft should go to the bottom of the class", and still another (from [PC World](#)) that Microsoft is "Bullying schools... and has earned a failing grade."

I find one new Microsoft tactic particularly enlightening. Microsoft requires schools to register any machine capable of using its products. Sounds OK on the surface. What is new is that they now require schools to include Macintoshes! (Get it? Microsoft agrees that Macs are capable of running Windows.)

Here are a few other facts to ponder:

-> A study by the Law Practice Technology Center shows **total cost of ownership** for the Macintosh is significantly lower than for Windows, DOS, or Unix: by **21% to 61%**...

-> The average Wintel home user spends **over 50 hours each year troubleshooting** their computer. The average **Mac user spends less than 5.**

-> As one astute observer asked: "If switching to a Windows/PCs saves money, how come no IS manager that went all Windows has EVER asked for a cut in budget and/or staff?"

Go here to read a very reasoned [explanation](#) of why Macs cost less than PCs.

Conclusion: Standardizing on Macs will result in a lower total cost of ownership than standardizing on PCs or in having a mixed environment.

This section's Haiku
(see the bottom of page 1 for more explanation):

***First snow, then silence.
This thousand dollar screen dies
So beautifully.***

rev: July 15, 2005

This section was co-authored with Jeff Van Dyke.