

He Who Controls the Bootloader

End of an Era

Scot Hacker, August 2001

The day before I submitted this column, news hit the net that the other shoe had finally dropped. After months of waiting and wondering what was to become of Be, **we learned that** Palm, Inc. will be purchasing Be's technology, intellectual property, and assets. While we don't yet know exactly what Palm plans to do with Be, my guess is that the company intends to beef up and extend its product line -- make palm-sized devices more media-friendly, and possibly build appliance-like units for the home. As analyst William Crawford **recently said**, "Where they have to go, Be already is." Be's lightweight footprint and excellent media handling capabilities make the technology a good fit. Be will receive \$11 million in Palm stock, which they intend to liquidate to pay off debts. Considering that Apple allegedly once considered paying \$125 million for Be, Palm got Be for a song -- a fire-sale blowout.

Palm initially stated that they don't intend to develop a desktop version of BeOS, which means the version of BeOS you're using now may be the last one you'll ever see. However, users who have corresponded with Palm's top ranks have been met with an open ear, and **BeFAQs** is currently preparing a full report on the state and potential of the BeOS user base for the big cheeses at Palm. Whether the report will have any effect is anybody's guess, but barring a miracle, it seems that BeOS is now officially dead in terms of its prospects for further evolution. That, however, doesn't necessarily mean it's dead to the users who already have it installed. The BeOS userbase will likely become similar to the Amiga userbase - hanging on to those souped-up boxes out of sheer love for years, maybe decades.

Some in the community met the news with relief. Others simply seem exhausted by the endless process of battling ridiculous odds, and are ready to move on to something else. But many still believe deeply in what Be is and what they've created. Believe that there is a way to best Microsoft at its own game (without having to tread the open source quagmire). Believe that there is no better desktop user experience, period.

But the reality is that Be's failure has made a point to the world, to wit: "Don't bother trying to create a better commercial desktop OS -- it doesn't matter how hard you try, how many engineers you throw at the problem, how much money you spend, or how many years you put into it. Microsoft owns that space and, worse, the public is totally complicit with that fact. People will not stop using Windows. It is a losing battle."

It is unlikely now that anyone will ever again attempt what Be, Amiga, and IBM attempted. And that's the saddest thing of all -- the insidious ways in which the monopoly has wormed itself into the fabric of our economy and culture. The message that "resistance is futile" has been hammered home. The only OS projects that stand a chance are open source, because they don't play by the rules of the economy. But open source projects seem either unable or unwilling to create a system that approaches the elegance, speed, and ease-of-use of BeOS. If you want an x86 system with a future, you're now bound either to the mess of GNU/Linux or to the Windows donkey cart, with all of the political and technological baggage that entails.

Speaking of the insidious tendrils of The Monopoly and its effect on small companies like Be who dare to set foot in the ogre's front yard, on with this month's intended column.

Peaceful Co-Existence? Right.

It is statistically unlikely that a person purchasing a new computer is ever going to change its operating system -- the OS that comes with the computer you buy at the local computer mega-store is probably going to be the OS you use for years, if not forever. And while it is technically trivial for a hardware vendor to set up hard drives to dual- or triple-boot multiple operating systems, very few people have the interest -- or the *huevos* -- to repartition their hard drives and install additional OSes after the original point of purchase. Therefore, few things could be more financially critical to an operating system vendor than to have one's product pre-installed on consumer computers.

There is no technical reason why CompUSA customers shouldn't be able to walk out of the shop with a machine that asks "Which OS do you want to use today?" upon boot. And yet, even today, after several years of relentless news about how Linux is ready for the general desktop and business customer, one does not find dual-boot Win/Linux machines from large commercial OEMs at any consumer outlet or web shop I know of. Yes, you can get dual-boot machines at some of the smaller shops, but these are the ones that slip under Microsoft's radar, and there's no guarantee that Microsoft won't decide to take action against these vendors at some point. And yes, you

can buy Linux-only machines from vendors such as IBM. But think about it: Why would IBM sell Windows machines and Linux machines, but no dual-boot Win/Linux machines? The absence is conspicuous.

A few years ago, Be's CEO Jean-Louis Gassée used the phrase "peaceful co-existence with Windows" to describe his company's intended relationship with Microsoft on the consumer's hard drive. Later, when it became clear that Microsoft had no intention of co-existing with a rival OS vendor peacefully, Gassée recanted, **saying**, "I once preached peaceful coexistence with Windows. You may laugh at my expense -- I deserve it."

With so little profit margin in the computer retail business, and with so little to set one brand of computer apart from another, it would seem that out-of-the-box dual-boot capabilities would be a tremendous differentiating factor for hardware vendors. It would seem that there would be financial incentives for computer vendors to be asking Be for 10,000-license deals. These bundling arrangements would be good for Be, good for OEMs, and good for consumers.

In his own column, Gassée has written several times about Microsoft's Windows OEM License and the ways in which it limits the freedoms of PC OEMs. In July 2001, I spoke with Gassée to find out why no dual-boot computers with BeOS or Linux installed alongside Windows can be purchased today.

In the 1998-1999 timeframe, ready to prime the pump with their desktop offering, Be offered BeOS *for free* to any major computer manufacturer willing to pre-install BeOS on machines alongside Windows. Although few in the Be community ever knew about the discussions, Gassée says that Be was engaged in enthusiastic discussions with Dell, Compaq, Micron, and Hitachi. Taken together, pre-installation arrangements with vendors of this magnitude could have had a major impact on the future of Be and BeOS. But of the four, only Hitachi actually shipped a machine with BeOS pre-installed. The rest apparently backed off after a closer reading of the fine print in their Microsoft Windows License agreements. Hitachi did ship a line of machines (the Flora Prius) with BeOS pre-installed, but made changes to the bootloader -- rendering BeOS invisible to the consumer -- before shipping. Apparently, Hitachi received a little visit from Microsoft just before shipping the Flora Prius, and were reminded of the terms of the license.

Be was forced to post **detailed instructions** on their web site explaining to customers how to *unhide* their hidden BeOS partitions. It is likely that most Flora Prius owners never even saw the BeOS installations to which they were entitled.

Bootloader as Trade Secret

So why aren't there any dual-boot computers for sale? The answer lies in the nature of the relationship Microsoft maintains with hardware vendors. More specifically, in the "Windows License" agreed to by hardware vendors who want to include Windows on the computers they sell. This is not the license you pretend to read and click "I Accept" to when installing Windows. This license is not available online. This is a confidential license, seen only by Microsoft and computer vendors. You and I can't read the license because Microsoft classifies it as a "trade secret." The license specifies that any machine which includes a Microsoft operating system must not also offer a non-Microsoft operating system as a boot option. In other words, a computer that offers to boot into Windows upon startup cannot also offer to boot into BeOS or Linux. The hardware vendor does not get to choose which OSes to install on the machines they sell -- Microsoft does.

"Must not?" What, does Microsoft hold a gun to the vendor's head? Not quite, but that wouldn't be a hyperbolic metaphor. Instead, Microsoft threatens to revoke the vendor's license to include Windows on the machine if the bootloader license is violated. Because the world runs on Windows, no hardware vendor can afford to ship machines that don't include Windows alongside whatever alternative they might want to offer.

The essence of the government's antitrust beef with Microsoft is that the company limits competition by leveraging its dominant position in the marketplace (it's important to remember that monopolies are not illegal -- abusing them is). To prove its case, the government focused on the browser wars and the harm done to Netscape by Microsoft's inclusion of a free web browser in the operating system.

In my opinion, the browser issue pales in comparison to the egregiousness of the bootloader situation. The browser is arguably an essential component of modern computing - a commodity product as worthy of inclusion in the OS as a text editor or calculator. Be, too, bundles a web browser with its OS, and I'm glad they do. Questions of *how* the browser is integrated are much more interesting, since they connect to the point of whether Microsoft's browser bundling *intent* was anti-competitive or not. In BeOS, for example, it's always been possible to remove the browser from the OS simply by dragging it to the Trash, which is very different from the situation under Windows.

But I digress. The point is that the browser situation is easily debatable, while the bootloader situation is far more cut-and-dried. I would wager that few lawyers could come up with a cogent argument to describe how Microsoft's bootloader policy is not anti-competitive in the strictest sense of the term. After all, Microsoft is first and foremost an operating system vendor. Be and Microsoft were competing on much more similar territory than were Netscape and Microsoft.

But when it came to the DOJ vs. Microsoft antitrust trial, things got even more interesting.

DOJ Misses the Point

On request of the DOJ, Gassée had several pre-trial conversations with prosecuting attorney David Boies* and Assistant Attorney General Joel Klein. Gassée explained the bootloader situation to them. They listened and heard. *But they did not ask Gassée to testify on the bootloader issue.* Instead, they asked Gassée to testify on the matter of browser integration. Gassée warned them that he would be a "dangerous witness," since his feelings on browser integration were actually sympathetic with Microsoft's. Gassée wanted to testify on the bootloader issue, where he felt the core of the case really rested. Klein and Boies told Gassée he could testify with focus on the "malicious intent" aspect of the browser integration question, but not on the bootloader matter.

Needless to say, Gassée declined to participate in the rest of the case. The bootloader issue was raised during the trial, however. Raised, but not actually addressed, because Microsoft claimed (in a court session closed to the public and the media) that the Windows License was a "trade secret." However, Microsoft never denied that the license exists, and never denied that it works as I've described here.

In November of 1999, Judge Jackson released his **Findings of Fact**, which legally established that Microsoft had been engaging in anti-competitive practices. The Findings mentioned Be and BeOS in several places. However, the only reference to the bootloader situation was found tucked in the middle of paragraph 49, and merely obfuscated the significance of the issue:

Although the BeOS could run an Intel-compatible PC system without Windows, it is almost always loaded on a system along with Windows. What is more, when these dual-loaded PC systems are turned on, Windows automatically boots; the user must then take affirmative steps to invoke the BeOS. While this scheme allows the BeOS to occupy a niche in the market, it does not place the product on a trajectory to replace Windows on a significant number of PCs.

Despite the convoluted summary, Be's stock price skyrocketed over the next few days as a result of the BeOS mentions in Jackson's findings, eclipsing even RHAT and APPL in trading volume. But that blip on the radar did nothing to mitigate the real issue - the greatest opportunity Be had ever had to inform the government and the public of this stunningly obnoxious example of anticompetitive behavior -- one that, in my opinion, eclipses the browser integration issue -- had come and gone, leaving Be no closer to securing those all-important bundling deals with the world's largest PC hardware vendors.

The burning question, of course, is why Boies and Klein didn't want Gassée to testify on the bootloader issue, especially when it could have substantially helped their case? The answer provided to Gassée was that the case was by then already too well established. Including the bootloader issue would have meant rewriting many of the arguments and calling in a new collection of witnesses. In other words, *it wasn't convenient* for the U.S. government to get to the meat of the matter. It would have been too much of a hassle to address Microsoft's anti-competitive behavior in its purest form. In addition, no PC OEM was willing to testify on bootloader issues. And why would they? The threat of losing favor with Microsoft easily would have outweighed any potential benefit from being able to pre-load the unproven Be operating system alongside Windows on their machines. Finally, Be didn't have the brand recognition that Netscape did; Netscape made for a much better poster child.

** Boies, by the way, did not even have email as of August 2000 -- the highest technology case in the land was prosecuted by a man who could fairly be described as technologically illiterate.*

Controlling the Hardware Landscape

One might wonder, as I did, why Be did not file separate suit on this issue. It would seem that Be's case would be extremely strong, especially with the precedent and backing of the Findings of Fact. In winning such a suit, Be would stand to make a pile of quick cash and to greatly extend their public visibility. Oh, and they might just win the opportunity to ship alongside Windows on consumer computer hardware.

But Be did not sue Microsoft, and as far as I can tell, is not currently in the process of suing Microsoft. Why not? First of all, a lawsuit against Microsoft would be incredibly expensive and time-consuming. Unfortunately, Be cannot currently afford either the time or the money, not to mention the distraction of a major lawsuit. But couldn't Be have filed suit in early 2000, in the window that opened immediately after the Findings of Fact were released? Yes, answers Gassée, but Be was waiting to see what the court's recommended remedy would be. After all, it seemed likely at the time that Microsoft would be forced to change many of its business practices. Why should Be have sued to accomplish what it looked like the government was going to do anyway?

So here we are in 2001, and guess what? It's still not possible to purchase a dual-boot Win/Linux machine. Doesn't that seem kind of odd? With all of the hype Linux has gotten, and with the technical simplicity of shipping dual-boot machines, not a single PC OEM is shipping such a beast. The technology marketplace is glutted with options. Vendors use even the smallest opportunities to trumpet their differentiating factors. Linux is free. And yet there are *no commercially available dual-boot machines on the market*. Not one. The silence of the marketplace speaks volumes. There is no other way to explain this phenomenon other than as a repercussion of the confidential Windows License under which every hardware vendor must do business.

Last time I checked, x86 computer hardware is supposed to be operating system agnostic. My **System Commander** operator's manual tells me there are more than 80 known operating systems capable of being booted on x86 hardware (most of them obscure, of course). And yet, Microsoft has managed to massively influence the course of the supposedly OS-neutral hardware marketplace. Compaq, Dell, Hitachi, and all the rest of them work under Microsoft's terms and conditions. Microsoft has shaped and controlled the hardware landscape as much as they have shaped and controlled the software landscape.

They're getting away with it. They slipped through the DOJ trial without the bootloader issue becoming the thorn it should have. As far as I know, the terms of the Windows OEM License have not changed. The recommended legal remedies against Microsoft have largely been stricken, and Microsoft is currently **deflecting attention** from the real issues by agreeing to remove some icons from the XP desktop (as if that mattered in contrast to the larger issues at stake). Klein and Boies helped to prevent the bootloader issue from becoming a central component of the DOJ's case. And we were never the wiser.

As a result of all this, Be's business may have suffered in ways that will never be possible to measure. I'd go as far as to suggest that successful bundling arrangements with large PC vendors could easily have made the difference between the obscure BeOS of today and what could have been a popular, user-friendly and profitable alternative to Windows for the masses. On the other hand, Be may have failed to gain mass acceptance even with major vendor bundling deals. But we would have **had the opportunity** to "experience what a truly competitive situation might be like." In any case, the miscarriage of justice was absolute.

What we know for sure is that Microsoft treated the PC hardware platform as if it owned it, and thus hurt consumers, software developers, PC OEMs, OS competitors, and the industry in general. That's a layman's definition of abusing a monopoly.

- Jean Louis Gassée, July 2000

Postscript: My copy of the San Francisco Chronicle for August 17 contains **an article** on the Palm purchase and includes the following extremely interesting paragraph:

Although it will cease operations, Be said that it will retain certain rights and assets, including its cash and cash equivalents -- \$4.9 million as of June 30 -- and "rights to . . . bring certain causes of action, including under antitrust laws."

In other words, Be may yet opt to sue Microsoft, which could be a very interesting case to watch. Let's just hope the media figures out where the real antitrust issues are this time.

Final Column

I am sorry to announce that this, my 30th column on BeOS for Byte.com, will be my last. It's been a fantastic ride, and I'd like to thank CMP, Byte, and my editor Daniel Dern for having the werewithal to sponsor monthly coverage on a niche OS not because they thought it was going to take over the world, but because they believed it was worthy technology. This kind of dedication is a too-rare commodity in the tech press, and I think I speak for the entire BeOS community in thanking them for their persistence and courage. Thanks also to the loyal base of readers who have helped this column to continue for as long as it has.

My love for BeOS is deep, but not blindly unswerving. It is time for me to move on and pursue other interests. Until we cross paths again, keep the faith. There *is* life beyond Windows.

BeView Content Archives