

# Make ours “reg-lee-er”\* Windows

**MAURY WRIGHT, TECHNICAL EDITOR**

**F**or six years now, I've been hearing about the set-top box (STB) of the future—a multitasking wonderkind that can deliver movies, live sports, and interactive computer games on demand and offer broadband access to e-mail and the Web. This zero-billion-dollar market has attracted acute attention from IC, software, system, and service vendors. For example, the market potential has convinced RTOS vendors that the STB could be their opportunity to dominate a huge market in the same way that Microsoft dominates the PC-software market.

When you read about what consumers want in an STB, however, you're really reading about what an STB vendor or service provider wants the consumer to want. It's time to hear from real consumers, and I would like to voice my opinion. I'm not sure how soon we'll see an STB that does more than decode TV channels. My seven-year-old son, Nicholas, and I have discussed the issue, and, when we do see such an STB, we want ours with Windows—“reg-lee-er” Windows.

I know some of you may think I'm crazy, given Windows' reputation for crashing, but I believe I can win you over to my way of thinking and, in the process, debunk some popular misconceptions. For starters, an STB does not need an RTOS to function successfully. Back when the MPEG-video and audio-decoding process required a dozen ICs, including one or more RISC  $\mu$ Ps, the STB may have required an RTOS. Today's single-chip decoders make the RTOS unnecessary. In fact, SGS-Thom-

son claims it will soon integrate an MPEG-2 decoder on the same IC with a Pentium-class  $\mu$ P. Just as digital versatile disks (DVDs) add-in cards for PCs have proven, you no longer need an RTOS to decode video streams.

You've probably also read that a PC-like STB can't meet consumers' cost requirements. The people selling that



theory must be using what one famous politician dubbed “voodoo economics.” Let's compare a living room using a Windows-based STB with one using a non-Windows-based STB. In the non-Windows case, you will almost assuredly see some type of video game device—a separate game console, an STB with gaming capabili-

**Computer experts Maury Wright and son Nicholas play at the computer.**

*\*The way Nicholas pronounces “regular” and the one word I hope he never learns to pronounce correctly.*

ty, or both. Presumably, Nintendo and Sony have proven that consumers will pay \$200 for a game console. What you may not realize is that Nintendo and Sony can't make a profit selling consoles for \$200. They can make a handsome profit selling razor-blade-like proprietary games for \$75 each. Service providers such as cable companies would like nothing better than to rent these games on demand at a similarly outrageous price.

A PC-like STB may cost slightly more than a proprietary STB, but the price gap is shrinking. This year, for less than \$500, you will be able to buy a Pentium-based PC that uses a TV as the monitor and includes a wireless keyboard and a mouse. Considering that you eliminate a game console and proprietary software, the effective cost of a PC-based STB is far less than \$500, and you have access to an open software environment with competitive prices. You can realize additional savings with combined DVD and STB functions because both require similar video and audio decoders.

I bet you're partially buying my argument but cringing at the thought of indecipherable error messages and five-minute boot processes in the living room. I admit that the current PC needs refinement to move into the living room, but Microsoft

([www.microsoft.com](http://www.microsoft.com)), Intel ([www.intel.com](http://www.intel.com)), and other companies are furiously moving to address these problems. At the WinHEC show in Orlando, FL, this April, these companies described the latest instant-on initiatives. The companies' descriptions convinced me that reg-lee-er Windows can be made consumer-friendly before broadband pipes are readily available for home use.

So what is reg-lee-er Windows? It's any version of Windows that runs software designed for the Win95 platform and supports the DirectX application-programming interfaces. Reg-lee-er Windows is certainly not some "lite" version of the OS that makes me wince. Reduced-function

versions will never host DirectX. Nicholas finds this situation totally unacceptable, because without reg-lee-er Windows and its DirectX support, he can't run *Monster Truck Madness*, *Pitfall*, *Sonic*, or several other titles. I don't care so much about games, but my STB of the future had better let me preview presentations using a program like reg-lee-er PowerPoint and let me use a full-function browser with 3-D and video acceleration.

Today, only Windows 95 and Windows 98 meet the requirements of reg-lee-er Windows. Soon, however, Windows NT will meet those requirements, too. At WinHEC, Microsoft announced that when it ships Windows NT 5 early next year, it will include DirectX support. The company also demonstrated a beta release of Windows NT 5 that performs a number of multimedia functions. Microsoft made it clear that the Windows-NT code base will eventually supplant the Win-9x code base in all PCs. This development actually bodes well for the STB I want. Windows NT is surely more reliable than Windows 9x. Microsoft recommends 64 Mbytes of RAM for NT 5, but, by the time broadband pipes reach most homes, a suitable NT box will still cost much less than

\$500.

Future STB choices are quite simple when you step back and examine the situation from a consumer's perspective. Many consumers want nothing more than an STB that decodes hundreds of channels. These consumers don't care how you build the STB or what processor is in the box. In fact, the TV-only STB probably doesn't even need a commercial OS. If you decide you need Web browsing, gaming, or other PC-like features, however, a PC makes the most sense. I can't imagine browsing the Web without a large hard disk to cache pages and download data. Java and other multimedia content benefits greatly from graphics and video acceleration.

It's funny to think it took Nicholas to crystallize my thoughts about STBs, but kids are the ultimate unbiased consumers. After all, it was Nicholas who deemed that a dual 300-MHz Pentium II PC is unsuitable because the installed version of Windows NT can't support his software. So, Nicholas and I have made a firm decision. If you want to sell us an STB that does more than TV, make ours Windows-based—reg-lee-er Windows.

## Linux, anyone?

**BRIAN DIPERT, TECHNICAL EDITOR**

**A**s some of you may have figured out by now from reading my articles, I'm a big fan of Internet discussion groups, mailing lists, and newsgroups. No, not the alt.sex. ones; I'm talking about the newsgroups in the comp. and sci. categories. These are the places where I also find some of you, sharing your problems, your successes, and your overall impressions of vendors and their products. The discussion is sometimes humorous, sometimes heated, but rarely boring. I rely

on your experiences to balance the hype I get from the vendors themselves, to fill in the blanks on the things they forgot to tell me about, and, therefore, to improve both the balance of my write-ups and the breadth and depth of information I cover.

One of the hottest topics of late, spanning newsgroups on EDA tools, embedded software, handheld computers, and even PC peripherals (though, thankfully, not yet on rec.climbing, rec.pets, or rec.photo), is

industry support for Linux. Engineers designing with ASICs or programmable-logic devices or doing multichip-board designs demand that their EDA vendors support Linux running on their workstations. Embedded-system developers want to port Linux to single-board computers and can't figure out why microprocessor vendors won't develop Linux-aware compilers. Some adventurous souls are attempting to run Linux on their palmtop PCs (though why, aside from the visceral "just-because" challenge, is beyond my comprehension). And everybody's complaining because their favorite modem, scanner, joystick, or printer manufacturer doesn't supply drivers for Linux.

For the record, I think Linux (along with Gnu, FreeBSD, the Apache Web server, and all the other software that dedicated groups of engineers continually enhance and distribute for little or no cost) represents all that's good about our industry and the people who work in it. I'm so intrigued by Linux, that, one of these days, in the not-too-distant future, I'm going to clear out a hard-drive partition and install it (when I'll find the time, I don't yet know), and, if I like what I see, I'll try to convince management to let me devote an article to it. In certain company, individual, system, and application scenarios, Linux deserves serious consideration as both a development platform and an end-system OS.

However, I can also understand the viewpoint of the companies that have not as yet taken the Linux-support plunge. I humbly submit that some of you more prolific newsgroup posters, in your enthusiasm for and devotion to Linux, may be approaching the issue from a somewhat-biased viewpoint. Therefore, as I brace my e-mail inbox for the anticipated onslaught of emotional responses, I'd like to offer a few observations "from the other side"

that may help you better understand how they view you, and therefore help shape your actions to achieve your goals. I didn't come up with them on my own, by the way; I had input from key contacts at several software companies that are at various stages of considering support for Linux.

- They think you're a minority. Statistics on the number of Linux users are difficult to come by. Although

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you can purchase Linux in a store, thanks to companies such as Caldera, Debian, RedHat, and Walnut Creek, you can also download it for free from a number of FTP sites. (A fast modem or tolerance for tying up a phone line for a long time is essential, however.) In lieu of high-confidence data on the number of potential customers for their products, companies find it easy to ignore you.

- They think you're cheap. Why use Linux? Many companies can't get beyond the fact that you're using it because, if you're willing to deal with the downloading hassle, you can get it for free. They think that cost is your only motivation. If you're unwilling to buy the operating system, what makes them think you'll buy the vendor's software that supports Linux? Forget about turning a profit; how will the vendor recoup their development expenses?

- They think you're rooting for the underdog. The other commonly cited theory of why people use Linux

is that they can't stand financially supporting a company with a large market share (Microsoft/Sun/Hewlett-Packard/Silicon Graphics/insert your favorite embedded-OS vendor here). You're a compiler vendor, an EDA-tool developer, another application developer, or a single-board computer or peripheral manufacturer. You have a dominant leadership position in the markets you sell into. Why would you think that if a Linux user prefers an "underdog" operating system, they'd show any preference or long-term loyalty for your products?

- They think you're a support nightmare. Linux is a fluid operating system that users revise on a fairly haphazard and unorganized basis. Standard versions and upgrades offered through the retail channel by various companies have created some stability, and, yes, I'm

aware of the multiple service packs issued for more mainstream operating systems, but there's still a night-and-day difference between most software and Linux in this respect. If a technical-support engineer can't assume a known operating system scenario, how can they help you debug a driver or application?

So what do you do? Instead of operating purely out of fanaticism, come up with logical reasons why Linux support makes sense, and make the companies aware of your presence in a mature, intelligent manner. Organize petitions. Give them some tangible feeling for the potential upside market opportunity that Linux support would give them. Heck, offer to do the development yourself if the company will test and distribute the software for you. And, most of all, send me your comments. I'll be glad to pass them along when I can. Whether in operating systems or politics, choice is good.