

FireWire Finally Comes Home

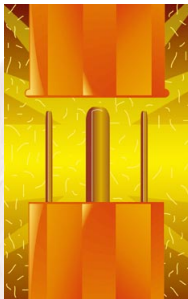
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In February 1997, I wrote a *Computer* column titled “Linking Computers and Consumer Electronics,” which described the IEEE 1394 networking standard, otherwise known as FireWire. FireWire was designed to link personal computers, digital cameras, televisions, DVD players, printers, and other home electronics equipment.

In one sense, FireWire represented the technology behind all the talk we’ve heard about convergence because it promised a wide range of consumer-electronics connectivity from a single plug on the back of a computer. Because FireWire included power, it also promised to enable the development of low-power devices that did not need any external power supplies, which meant that FireWire’s potential as *the* convergence-fostering technology was vast.

Indeed, FireWire seemed like a perfect idea whose time had come, but there was one small problem: A competing technology, called Universal Serial Bus (USB), promised to do nearly the same thing.

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USB GETS ALL THE PRESS

Like FireWire, USB (<http://www.usb.org>) can connect multiple peripherals to a single port on the back of our computers. But USB is designed to be a simpler, slower interface that is less expensive to manufacture. USB only offers a 12-Mbps transfer rate. Compared to FireWire’s transfer rates of up to 400 Mbps—and eventually even 1 Gbps—USB is slow but is more than adequate for many consumer applications like videoconferencing or high-fidelity audio. And USB adds very little to system cost, which explains why it has been so readily adopted.

Because both technologies arrived at about the same time, hardware and software vendors had to make a choice as to which technology to develop and support. USB got the nod in the Wintel world—with Windows driver support for USB peripherals as early as October 1996—but it wasn’t until Windows 98 that consumers got full OS support for USB. Early support on the Wintel platform, however, could account for the large number of USB components that have been popping up over the past two years, such as speakers, joysticks, printers, video cameras, and the like, all of which have made it to market much more quickly than FireWire-based technologies.

And now—since the middle of 1998—very few new computers are being manufactured *without* USB. The Apple iMac, for example, relies on USB as the computer’s primary connection to its keyboard and other peripherals, including floppy disk, scanner, printer, removable hard disks, and joysticks (<http://www.apple.com/imac/usb1.html>). The iMac reliance on USB is an ironic turnabout because FireWire has its roots in Apple technology and in the original AppleTalk networking design.

The iMac reliance on USB instead of FireWire could have something to do with FireWire getting a slower start than USB. And even though we’re already seeing Apple offer FireWire as an option on the new G3-based Macs, I doubt we’ll be seeing FireWire-based keyboards any time soon.

FIREWIRE RESURFACES

I had heard very little about FireWire recently until I walked into my local computer store and saw a Compaq 5630 system. Low and behold, right next to the two USB connections at the base of the front of the system, I saw a funny-looking D-shaped connector that looked like a cross between an old Centronix printer connection and a video game connector.

The documentation described the system as a “digital creativity center” and called the D-shaped connector a 1394 port. The sales representative knew that the 1394 port was very nifty but could

not tell me what could be connected to it. The owner's manual was equally vague.

But since I figured that 1394 is a standard—and everything should work properly once I found something to fit the plug—I bought the system right then and there. After all, I had written a column predicting how FireWire would take over the world.

Next I began to search for something to plug into the FireWire port. My first stop was the Sony store. There was a new digital camcorder—the TR9V—which purported to have a FireWire connection. Unfortunately, the connector looked much different. It was a smaller, more square connection than on my Compaq, but the sales representative insisted that the smaller connector was the only connector he had ever seen.

I didn't buy the camera that day, but one of my friends bought the camera a week later.

MY KINGDOM FOR A CABLE

My favorite digital video site (<http://www.videoguys.com>) made reference to a cable connecting 1394 to 1394PC, but that cable was provided with one of their FireWire capture cards, which I didn't need. I also checked the Compaq support page and found a number of 5630 owners asking where they could get the cable. Now I was confident that all I needed was the right cable.

I turned to the rec.video.desktop newsgroup and within 24 hours I had been told about Newnex, a company that supplies various FireWire cables. From their site's technical specifications (<http://www.newnex.com>), I found that the larger connector has six pins and includes power, while the smaller connector has four pins and does not supply power—different ports for different peripherals, depending on power needs.

However, Newnex *did* sell a cable with a six-pin (1394PC) connector on one end and a four-pin (Sony-style) connector on the other end. Now the only remaining task was to borrow my friend's new camcorder and plug it into my new computer and experience the joy of multimedia networking. It took me

The Future of FireWire

The need for copy protection is a nagging problem that slows the deployment of 1394-capable consumer electronics like VCRs. Companies are rightfully nervous about giving consumers the ability to make unlimited digitally perfect copies of copyrighted materials. But as they did with DVD, the big media companies will no doubt find a way to alleviate their concerns and jump on the FireWire bandwagon.

Much like the venerable serial and parallel ports that have coexisted for many years, it appears likely that both USB and FireWire have a long, friendly future ahead of them, with USB being used primarily for things like mice and printers and FireWire being used for higher bandwidth connections. In many ways, these two technologies have divided the peripheral and network market evenly. Both seem intent on maximizing the product availability in their strength areas rather than fighting with each other for market share.

More than 60 vendors now belong to the 1394 Trade Association. Computer companies backing FireWire include Adaptec, AMD, AT&T, Cirrus Logic, IBM, Microsoft, National Semiconductor, Philips, Seagate, and Texas Instruments. And a number of consumer electronics companies are backing FireWire, including Sony, Matsushita, Mitsubishi, Fuji, Panasonic, Canon, Toshiba, and Yamaha.

While it has taken FireWire longer than USB to appear in the market, its future seems very strong indeed.

several weeks to pry it from him with a promise of a full replacement if anything bad happened to it.

THE GREAT EXPERIMENT

To perform the FireWire experiment, I assembled about \$6,000 of electronic equipment in my basement. If something went wrong, though, I had no plan B. I was stuck with the equipment, working or broken.

Heart pounding, I plugged in one end of the FireWire connector. It didn't go in easily. Unlike serial or parallel connections, the 1394PC connector clicks into place, so it requires a bit more pressure than I'm used to. Then I plugged the cable into the camcorder and tentatively turned it on, sniffing the air for smoke.

There was no smoke, so I started the video capture application. I pressed the play button on the program and the camcorder began to play and the video appeared on the screen. I pressed the stop button and the camcorder stopped. Buoyed with this success I rewound the tape and copied the video to my hard disk.

Since that day, I have done many wonderful things with the camcorder using FireWire. My friend is now buying a FireWire card for his computer and I plan on buying a digital video camera very soon. The awesome performance of a high-end PC makes video and audio editing with digital quality an absolute joy. For someone who has worked with video and computer equipment separately for the past 20 years, this last month has seemed like science fiction, despite the few snags that often come with being an early adopter.

It is important to note that the hard work that ultimately made these 1394 components from different vendors work so well together started many years earlier in endless meetings in nameless hotels around the world (<http://www.1394ta.org>). Groups of dedicated engineers quietly hammered out every single detail from the connector shape to how the video would be displayed on the screen.

I have only one thing to say to those engineers who spent all that time, never knowing if their technology would be successful: *Thanks.* ❖