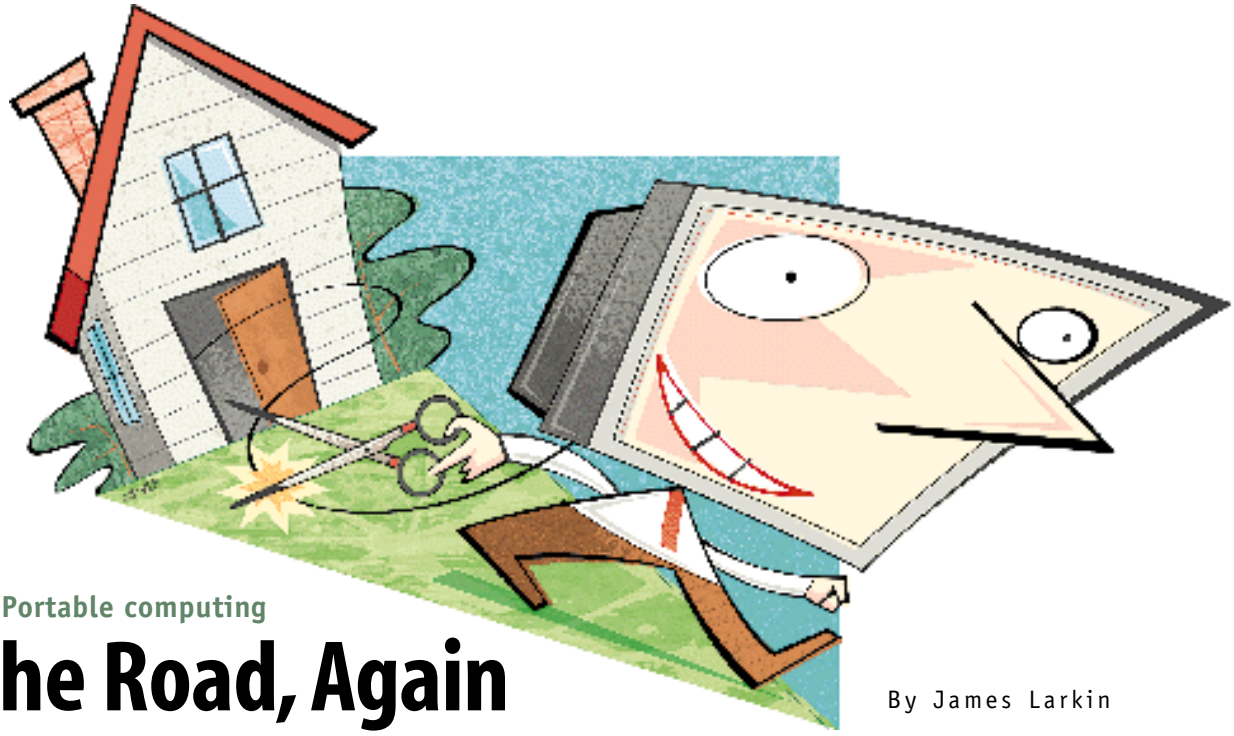

Hardware: Portable computing

On the Road, Again

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It's no secret that the last few years have seen an explosion in portable-computing devices—not just the computers themselves, but the other machines and peripherals we use with our computers. Taken together, these devices can unhook you from your office; or, to put it another way, they can let you take your office with you.

Is this such a good thing? Sometimes yes, sometimes no. But you do at least have a choice about where you do what you do. And today's portable machines deliver remarkable power and capabilities in small packages—like a little sports car that's fun to drive and easy to park, but can pull a camper trailer with all the comforts of home.

A year and a half ago we purchased two portables—a budget-priced 486 monochrome PC from Micro Express and a Macintosh PowerBook 540c—for the *Adobe Magazine* staff (see November 1994, page 19). Both have been exceptionally well used. The PC, despite its limited battery life and monochrome screen, has been a solid, consistent performer on many an airplane ride and in many a hotel room—not to mention the times it's been used for taking work home on the occasional weekend or evening. The 540c, like the PC, helped a lot of work get done on the road and at staffers' homes, but we've also pressed it into service in our offices. Connected to a 17-inch monitor, the corporate network, and an external keyboard and mouse, it's been used to lay out quite a few pages of this magazine.

Since we made those purchases, the market has come a long way in a short time. In this article, we'll take a brief look at some of those developments—not just in computers themselves but in portable printers, display/presentation devices, and peripherals.

Portable computers

More and more companies, large and small, are giving employees portable machines instead of desktop models. They can do this because the trade-offs aren't nearly as steep as they once were. Nonetheless, those trade-offs still exist.

One trade-off is financial: a portable computer typically costs around $1,000 more than an equivalent full-size machine. For instance, the Dell Latitude XPi P75D—a laptop with a 75-MHz Pentium chip, 8 MB of RAM, and a 420-MB hard disk—sells for $2,499. A comparable Dell desktop machine sells for $1,499, and comes with a CD-ROM drive that the laptop lacks.

You'll also never find a portable that's as powerful as the current top-of-the-line desktop machine. Portables don't lag too far behind, though—Mac PowerBooks now sport PowerPC processors, and many portable PCs feature Pentiums that run at speeds up to 120 MHz. The processors usually have lower power requirements that let you work on battery power for hours. This, together with hard disks of 1 GB or larger, bigger and better screens, easier-to-use keyboards, and expandability, has driven these machines into the mainstream.

As the portable-computing market grows, vendors quickly introduce add-ons that bring laptop units up to desktop performance levels—especially those housed in PC Cards (see the section "Other peripherals" for more on these). In addition, new

machines increasingly integrate extended capabilities into the portable itself. A case in point is the Macintosh PowerBook 5300 series, which includes Ethernet and infrared communications out of the box, as well as video-out capabilities—all of which were add-ons not so long ago, or weren't even available for the PowerBook line. Similarly, new PC portables commonly come with built-in quad-speed CD-ROM drives, 16-bit audio, and removable hard drives. At the same time they're integrating more components, some manufacturers are making them more modular as well. The NEC Versa 4000, for example, comes with built-in audio, speakers, and a microphone, but also lets you pop out the floppy drive and swap in an extra battery, a second hard drive, or a CD-ROM drive. (Of course, you'll pay for these extras; spare batteries, for example, typically cost $200 to $300 from most manufacturers.)

One way to combine the mobility of a portable computer with the ergonomics and connectivity of a desktop unit is to buy a "docking" setup, which lets you quickly and conveniently connect (and disconnect) your laptop to the peripherals you'd have with a desktop machine—typically a full-sized keyboard, a monitor, and an external mouse. Many docking stations also provide slots for full-sized add-ons such as video-capture boards, network cards, and the like. Depending on the features, the cost can be around $200 for mini-docking stations that simply replicate the ports on your laptop; $300 to $600 buys you a dock that accepts full-size add-on cards or—in the fanciest cases—lets you set up complete workstations around your laptop CPU. Of course, that doesn't include the cost of the peripherals—the monitor, keyboard, mouse, and anything else you add.

Beyond features and capabilities, the aggregate quality of laptops has improved markedly during the past few years. Macintosh PowerBooks have long been sturdy and well-designed, but—with the notable exception of Toshibas, IBMs, and a few others—many PC laptops suffered from squishy or cramped keyboards, weird pointing devices, and outright flimsiness. Quality still varies, but the overall level has risen. Keyboards are better (one, on IBM's ThinkPad 701 series, even folds out to the size of a regular desktop keyboard). And although a number of strange mouse substitutes still proliferate, a few designs have some staying power, including the Trackpoint found on Toshiba and IBM machines (which takes some getting used to), the touchpad on PowerBooks and some PCs, and larger trackballs and buttons located in front of the keyboard.

Laptop computer screens will get bigger, better, and cheaper in the near future. Right now, an active-matrix screen (which is the brightest and most readable kind currently available for laptop machines) is a major component in the cost of a laptop. In part, these screens are expensive because they're difficult to manufacture. Since even slight imperfections can produce blank pixels on a finished screen, many have to be discarded at the manufacturing stage. Newer technologies that use more phosphors to light each pixel will be more forgiving, reducing the spoilage and therefore the price of the screens.

Printers

Not too long ago, the best available way for most of us to "print" on the road was either to lug a sizable printer around or to fax ourselves documents to various fax machines. Recently, though, a few manufacturers have focused on the portable market and have provided small, capable printers. These tend to come in two sizes: small and *really* small.

Among small printers, you can get desktop-quality monochrome or color output from the HP DeskJet 340 and Canon BJC-70, both of which use the inkjet technology found in their larger desktop cousins. Several other manufacturers (including Citizen, DEC, and Olivetti) offer small monochrome units. These printers aren't exactly pocket-sized, and most weigh in at three to five pounds. But they're small enough to take along when your office needs to go mobile, or if you simply need a small printer for a small space, such as a home office. These printers are in the $300 to $450 range.

The tiniest printer is the Pentax PocketJet, a $449 (list price) thermal-paper printer that's about the size of a large breadstick and weighs just over a pound. For this portability you sacrifice flexibility—you'll need to use special thermal paper for this monochrome printer, which can print 30 to 35 pages (at up to 3 pages per minute) on a single battery charge. This printer has received respectable reviews from the trade press, although you're clearly buying the convenience and not the features.

Resources

Publications

The major trade magazines—*PC Computing, PC Magazine, Macworld, MacUser,* etc.—review portable-computing hardware regularly. At this writing, there hadn't been any major roundups published recently enough to be very useful, but reviews of individual models are pretty easy to find. Keep your eye on the newsstand, or on those magazines' online sites. Here are a few useful pointers:

Ziff-Davis's Web site, at *http://www.zdnet.com*. Provides searchable access to *PC Magazine, PC Computing, MacUser, MacWeek,* and Ziff's many other titles.

***Macworld* magazine's Web site, at *http://www.macworld.com*. Provides searchable access to articles from the magazine.**

***Portability Online*, at *http://www.info-stream.com/*. The online version of the print magazine *Portability;* both focus on portable-computing equipment.**

***PC Magazine*, August 1995. Their portable-computing issue.**

***MacUser*, February 1995. Includes a review of Mac PowerBooks.**

***Laptop Buyer's Guide and Handbook*. This monthly magazine from Bedford Communications offers lots of product comparisons, plus articles related to using them. Available on newsstands for $5.95.**

Vendors

There are many. Your best bet is to get on the Web and search for keywords related to the product or product category you're interested in—for example, "LCD" or "Portable." Here are a few vendors that specialize in products for portable machines:

Road Warrior Outpost: *http://warrior.com/indexa.html*

Presenting Solutions: *http://www.presentingsolutions.com/*

ComputeRent: *http://haven.ios.com/~comprent/*

Envoy Data Corporation, (602) 892-0954 (offers a catalog of PC cards)

Portable display devices

Those who travel and give presentations—salespeople and consultants, for example—are among the early adopters of portable computing hardware. Particularly important for this market are tools for projecting what's on the computer screen. Although many companies have facilities for hooking your laptop into an on-site projection system, you can't always rely on one being available—or compatible. That's what portable display devices do for you, of which there are several varieties.

One is high-quality LCD (liquid crystal display) panels that you plug into your portable and simply lay atop a standard overhead projector. Such panels, for both PC and Mac, currently start around $1,800 for a basic passive-matrix, 640-by-480 panel; $2,000 for an active-matrix model; or $2,500 for one that's capable of displaying full-motion video and includes an on-board amplifier for multimedia presentations (Boxlight's ColorShow 1200, ProColor 1301, and ProColor 1800 are representative of these three types). Midrange models—those in the $3,500 to $6,000 range—typically include higher-resolution options (up to 1024-by-768), and may accept input from other sources and formats, such as laser disc, NTSC, SECAM, and PAL; InFocus Systems offers a line of Panelbooks that fall in this range. These LCD panels have most of the features of their larger, semi-portable cousins, except for their size and, in some cases, price—at the high end, the largest, ultra-high-resolution panels such as the Polaroid HR2500 can cost around $10,000. Other LCD-panel vendors include nView and Dukane.

If you're considering an LCD panel, don't overlook a few new laptop computers that are designed for presenters, such as the IBM ThinkPad 755CV (about $7,000 list) and the Wedge ShowBIZ (about $6,500 list). These machines feature detachable screens that you simply remove and place on the projector.

If you're not sure what—if any—equipment will be available when you're making an on-site presentation, you can take it with you in another way: several manufacturers now offer portable projection systems, which include a light source and projector. (The word "portable" in this case means the units weigh up to 20 pounds and fit in an overhead luggage compartment on a plane.) One such machine is the Boxlight LitePro 760, a high-resolution (1024-by-768 with 24,389 colors) passive-matrix box that sells for $7,999. It'll work with Macs, PCs, and workstations. For the same price, Boxlight offers a brighter (albeit lower-resolution, at 640-by-480) active-matrix model that weighs four pounds less, the ProColor 3080. Other manufacturers include Lightware (which offers a nine-pound model, the smallest we've heard about), Proxima, and Epson.

Note that specifications, features, and prices for LCD panels and projectors vary widely, and it's well beyond the scope of this article to do justice to this variety. If you're in the market for this kind of equipment, you'll need to do your homework. Also, if the prices seem prohibitive, keep in mind that many vendors rent or lease their machines—another way to take it with you.

Other peripherals

If you own a laptop, you have a great opportunity to go gadget-happy—for a price, of course.

The industry has pretty well settled on PC Cards (formerly called PCMCIA cards) as the standard interface for adding peripherals to laptop computers. These cards come from a variety of vendors and now house fast 28.8-kbps fax-modems, Ethernet network connections, sound cards, video-capture cards, or SCSI cards for external devices such as CD-ROM players or hard drives. Some combine two or more features, such as modem/network cards or SCSI/sound cards. Prices vary depending on the peripheral in question, starting at just over $100 for a network card, but expect to pay a 20 to 40 percent premium over the cost of a non–PC Card version of the peripheral.

One exotic-sounding but potentially practical feature available via PC Cards is infrared (wireless) ports. These ports allow you to beam signals via infrared light to a compatible printer such as the HP LaserJet 5MP, without physically connecting your laptop to the printer or network. You can add more specialized capabilities, such as radio-based wireless networking, MPEG video playback, subminiature camera systems, even satellite-based global-positioning-system devices, merely by adding to your deck of PC Cards.

Finally, if you get to someplace on earth where you might actually need the global positioning system, you may not be near a power source. If so, you may want to consider a portable solar panel to power your laptop. Keep It Simple Systems of Helena, Mont., sells a line of them for PowerBooks and many PC laptops (as well as for Apple Newtons).

Mobility in motion

Like all aspects of the computer industry, the portable-hardware business is moving rapidly. Devices that would have seemed farfetched a few years ago have become commonplace, and human ingenuity—and the market for mobile gear—will likely cause that trend to continue. Keep an eye on the trade press, and research before you buy.

And once you do buy, use portable-computing devices with care. It's seductive to be able to work anywhere, anytime; don't forget to unplug once in a while. ◗

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