

# Portable Computers Provide Mobile Productivity

by Johanna Ambrosio

*These feature-rich machines continue to extend the desktop computer's reach with increasing flexibility*

**L**ook around on any airplane, and chances are you'll see several people busily tapping away on their portable computers. As recently as a year ago that sight would have raised a few eyebrows, but now portables have begun to enter the mainstream of American business.

The increasing popularity of portables owes much to improved technology, which has largely solved many of

the problems inherent in the early machines. At the same time, there's been increasing visibility of computers as strategic tools to solve business problems. Finally, there are more portables than ever before on the market, with a wide variety of features and functions to handle just about any application.

Between 240,000 and 250,000 portable units were shipped in 1986; that number is expected to rise to 920,000

in 1990, according to Venture Development Corp., a Natick, MA, market research firm. The firm defines a portable computer as a machine weighing between five and 15 pounds. Some vendors' machines, however, are true portables simply weighing a bit more.

There are two major applications markets for portables: where the machine is viewed as a supplement to the office computer; and where one machine doubles as both a desktop and portable computer. This dual-use area, considered the high end of the marketplace, has been slower to develop due to the lack of machines that can fit the bill, but that situation is changing. Compaq Computer Corp., Houston, recently introduced its Portable III to target just this segment.

"The concept of using a computer as a portable or as a desktop just isn't taking hold," states John Connell, founder of the Office Technology Research Group, Pasadena. "Portables are used as portables and that's it. It's a non-issue; large companies aren't concerned about it." Most portables are purchased by individuals or by some departments, and are not as yet a matter of general corporate policy, he says.

Most observers expect the dual-use segment of the market to grow over the next few years. "You'll see significant growth in this area, especially with the higher-priced models," says Scott Marshall, manager of desktop product marketing for Wang Laboratories, Lowell, MA.

Although precise figures are difficult to come by, observers agree that the larger market is by far for portables to supplement and not replace desktops. Here, the machines are used primarily by the so-called mobile professionals—salesmen, tax auditors, lawyers and others whose work is done primarily on the road.

A subset of this portable market involves machines used by executives and managers when traveling or when taking work home. In all cases, however, the emphasis is on portability, with the traditional features found in desktop computers—business software, communications capabilities, readable displays and sufficient memory and disk storage—quickly growing in importance.

According to Barbara Nolan, product manager of portables for Data General Corp., Westboro, MA, most of the firm's portables are being sold to "outbound professionals." At one client,



**Compaq's new Portable III addresses the dual-use portable market specifically.**



**Zenith's Z-183 has 640K RAM expandable to 1.64 MB using add-on EMS board.**

only 40 of the 360 portables are used by managers and executives when they travel or when taken home. The rest are used by the field sales force. "That's about the ratio we usually see," Nolan says.

Portables are making inroads into the management group, however, especially in banking and other areas where employees have come to rely on desktop machines for their everyday work. For them, when it comes time to travel or if they need to take work home, portables are a natural extension of their workplace.

"Convenience is a big factor," says James D. Bartlett, marketing manager

of computer products for NEC Home Electronics, Elk Grove Village, IL. "If it's convenient to take it with them, they'll put in more hours and see large productivity improvements."

It is to be noted, however, that the vendors listed in this article, while representative of the market as a whole, are only a few of the many quality vendors currently in the marketplace (see Buyers' Guide to Portable Computers, page 32).

#### **Reducing audit time**

Robert O'Toole, premium audit manager at The Hartford Insurance Group's Detroit regional office, calls

himself "a working manager." He both manages the office and performs audits to establish the progress of customers' policies. He and about 200 other Hartford employees use Data General's DG/One portable. O'Toole has been using the portable since October, 1986.

"As a manager, it has cut an amazing amount of paper off my desk. Reports come off the printer letter perfect," he says. And it has reduced time from the processing of an audit.

Before, an auditor would turn in a paper audit and it would lay in a pile for a reviewer to see. By the time the reviewer checked it, it could have taken two weeks for money to be booked or returned to the client. Now, however, the auditor transmits the audit to the ITT Xtra desktop computer back in the regional office, and it is printed and processed by the next day. "The portables have cut 10 or 12 days from the processing time," O'Toole says.

**'Increasingly, executives and managers are using portables when traveling or taking work home.'**

At this point, the portables have not yet cut time from the audit itself. "It still takes me the same amount of time to perform an audit," O'Toole says, "but maybe that's not true for someone who types better than I do."

Typing skills aside, he expects that by early next year the portables will indeed cut much time from the audits. When the auditors visit clients, they create a template with Lotus 1-2-3 and fill in the appropriate numbers. The templates are stored on diskette, and the next time that customer is visited—typically in a year's time—the auditor can simply call up the template and fill in the appropriate numbers. "It will cut 45 minutes from a 1½-hour audit," he says.

When The Hartford purchased the DG/One portables, key selection criteria included portability, a readable display, a hard disk, the ability to work off a battery, the use of industry-standard software and the ability to communicate with the ITT Xtra desktop machines.

"We chose an arbitrary weight limit



**MultiSpeed from NEC features 3½-inch drives for added storage capacity while on the road, plus a 9.54 MHz speed for fast processing.**

of 12 pounds," according to Michael Fontana, group leader of micro-processing evaluation. "We figured most people could handle something that weighed as much as a bowling ball. And we learned from experience that 32 pounds just isn't reasonable, even if it has a handle."

In fact, The Hartford used the lessons learned from its earlier experience with portables. "At one point our business needs required a desktop computer that could be packed up and moved," Fontana said. In 1984, the company installed 50 Compaq Portables in regional offices. Some are still being used, but the majority are not because they are bulkier, and they weigh more.

Another problem with the early portables was the lack of battery operation. "You don't always have a plug for the computer, so now the use of batteries is crucial for us," Fontana adds.

### **The IRS portable project**

At the Internal Revenue Service's Automated Examination Project, portability was an important selection criterion. But the IRS also needed a computer to do all those things that computers normally do—eliminate bottlenecks, cut down on paper and help introduce consistency in procedures.

**'The average price will fall from the current \$2,200 to \$2,500 to about \$1,850 by 1990'**

The IRS has between 14,000 and 15,000 Zenith 171 portables used by its field agents. "We started receiving delivery last February, and are getting around 1,000 per month," says John Emerson, program analyst. Some 3,000 more are due to come in, and then the entire field force will have a machine.

Once that phase is completed, the IRS will begin providing its revenue agents, tax auditors and tax examiners with desktop computers. "Our goal is to automate the entire examination process," Emerson says. They started with the portables, and will build from there.

The portables have already made a difference, even though Emerson says they're "still new and we're still phasing them in." Besides helping to automate the data entry function and eliminate the rekeying of information, the portables also assist in tracking cases, performing complex calculations and reducing the number of math errors.

Emerson reckons the machines are up at around 23 pounds, including the battery. The weight is not a problem, although luggage carts are available for "the lighter people," he says.

The field agents are using the laptops with Enable software, which includes a spreadsheet, database management system, word processor, telecommunications and graphics features. Eventually, the agents will also use "homegrown" software which is being developed.

Although Emerson says he's well pleased with the purchase, there are some things he would like to change. The Zeniths use 5 1/4-inch diskettes, and he would prefer the 3 1/2-inch micro-cassette variety for their larger storage capacity and ease in handling and storage.

Also, he says he's looking into ways to add memory to the 640K limit and to use a hard disk drive to replace one of the diskette drives. The problem, though, is that the diskette drive is a third-height drive while the removable hard disk drives are half-height. Finally, he's looking into changing the screen to a supertwist LCD because the current screen is harder to read.

### **Technological improvements**

The experiences at both The Hartford and the IRS illustrate the technological improvements that have become available in just the past 12 to 18 months.



**Managers can travel with Data General's DG/One Model 2T to present figures at remote locations.**

Data General's Barbara Nolan describes the change more clearly.

"In September 1984 we introduced the DG/One. It had 128K of memory and an LCD screen, and sold for \$2,895. Our new model 2T has 512K of memory, a faster processor and a backlit LCD. It sells for \$1,695."

In today's machines, weights and dimensions are reasonable, the displays are readable from several angles and in varying degrees of light, and the computers have enough memory to accommodate most popular business software. And because of display improvements, the portables can now handle more sophisticated graphics.

Further, there's more software available in the 3½-inch diskette formats used by almost all the portables. Now that IBM has adopted 3½-inch diskettes for its PS/2 family of desktop computers, the number of business programs for that format will increase substantially. In addition, most of the current machines can communicate fairly easily with desktop computers and host machines.



Wang's LapTop model features a 10 MB hard drive and optional built-in printer.

Specifically, displays are more readable thanks to backlighting (also called electroluminescence), which improves the contrast by lighting up the back of the screen. Another new

technology is the twisted-crystal display, which diffuses light in a variety of directions. Users can thus stand at numerous angles to view what is on the screen. Gas-plasma and regular LED screens are also still in use, although the trade-off with gas-plasma is that it requires a lot of power to run, dramatically shortening the battery's life.

Portables have also become lighter and easier to handle due to improvements in component miniaturization. Disk storage technology has allowed even the smaller portables to offer hard disk drives. A few years ago, only the 15-pound-plus models could house the fixed drives.

Users can look forward to yet more advances in technology and even better prices. Leone Johnson, manager of the office and computer divisions at Venture Development, figures the average price will decline from the present \$2,200 to \$2,500 to around \$1,850 by 1990. She also maintains that resident memory within the portables will increase to accommodate the new software now being developed.

It's no secret that portables are a fine complement to the desktop computers, allowing the power of the desktop to extend beyond the reach of the work-surface and into the field. Increasingly, mobile professionals as well as executives and managers are becoming pleased with the discovery that they have the power of a micro right in their lap. 

## Considerations When Buying A Portable

**E**xperts agree that the most important selection criterion is to determine how you will be using the portable, and to plan accordingly.

Figure out how much you will be on the road, to see if it justifies both a portable and a desktop machine. If you're out of the office only occasionally, you can save money by purchasing one computer which can double as both.

Determine what the most important factors are, and what can be traded off. It's almost always a case of trading anything—a hard disk, modem and battery pack, for example—for extra weight and higher cost.

Again, these factors must be thought out in terms of how you will use the computer. If you will be near an AC outlet all the time, perhaps a battery pack is not necessary. If you plan to send information from the portable into the office on a regular basis, an internal modem might fit the bill better than an external one which is more cumbersome to carry around. Regarding the disk drive question, if the unit will be used to store a lot of programs or data, it may pay to invest in a hard-disk drive; flipping floppies around in front of a prospect while making a presentation may not be your idea of professionalism.

Regarding weight, the most important thing is it be comfortable. The best way to determine this, of course, is to try it out for a few days by using it how you normally would. But if you're making the decision for a group of people who cannot all test it out for themselves, try to keep in mind the physical size of the people. For a 90-pound person, a 20-pound computer can be a heavy burden indeed.

Another key criterion is the quality of the display. Many manufacturers have several options available; the one you pick depends on the kind of lighting the portable will be used most in. Again, it pays to try it out before buying.

Beyond those few tips, remember that a portable is, above all, a computer, and the same criteria apply to it that apply to any computer. Make sure the keyboard arrangement is comfortable and that it fits with the software you will be using. Double check the availability of the software itself to make sure it can run on the portable's disk format.

Make sure the computer has enough memory and storage capacity for applications you need. Also, check to see that the computer can handle any expansion boards, peripherals and so on you may require in the future. 

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