PC MAGAZINE FIRST LOOKS

Model 80 at 20 MHz: As Fast as a Deskpro 386/20?

PC HANDS ON

BY JOHN DICKINSON

Wow—it seems as if IBM'll do just about anything to get you to buy one of its PS/2 personal computers. It's even built a decently fast one. Unfortunately, it's not indecently fast.

It took a while, but we finally got our hands on a PS/2 Model 80-111—that's the one with the 20-MHz 80386 microprocessor, 2MB of fast RAM, and a just-right-for-power-users 115MB hard disk, which IBM scheduled for fourth-quarter 1987 delivery back in April when it introduced the PS/2 line. Inevitably, the new Model 80 has to be compared with Compaq's new Deskpro 386/20, and inevitably, or so it seems, the PS/2 comes up short.

An impressive package: with the oversized PS/2 display, the Model 8514, IBM's PS/2 flagship, delivers a lot of performance, but at top dollar.

Don't get me wrong. The new Model 80 is a nice computer that's easily fast enough for single users and probably fast enough to use as a server on most local area networks. But it seems strange to me that the biggest computer company on earth spent all those engineering dollars on its new Micro Channel Architecture only to get beat out—and not by a little—by the upstarts from Texas using a supposedly outdated PC-compatible bus design.

PC Labs processor benchmark tests yield a tie between the big PS/2 and the fastest Deskpro when they're running the NOP test, but that's not much of a surprise since that test just measures clock speed. The surprise is that the Compaq does the 80386 instruction mix a solid 10 percent faster than IBM's performance leader. Other PC

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ThinkTank Runs Under OS/2 and DOS: One Price, Two Versions

PC ANALYSIS

BY BARBARA KRASNOFF

When OS/2 was finally released last December, it was born into a world where no applications could run under it, except in the DOS compatibility mode. Much to everyone's surprise, the first program to make the transition to life under OS/2 is *ThinkTank*, a modest outline facility that has been on store shelves for years. And much to the relief of all, its publisher, Living Videotext, will not charge a premium price for the new version.

While outliners are not exactly a staple of the software market, they have become fairly popular, especially as add-ons to fully featured word processors. *ThinkTank* was one of the first to be sold, and it hasn't changed much in the intervening years. Using a series of point-and-shoot menus (supplemented with some function key and keyboard commands), *ThinkTank* gives users the ability to move topics around a flexible outline format, expand or contract the outlines, move text between files, and create "clone" outlines, in which changes to one will be reflected in the other. You can attach text to each heading with a simple, *WordStar*-like text editor; the manufacturer also includes several templates that enable *ThinkTank* to be used as a sort of primitive database.

ThinkTank for OS/2 does not differ substantially from its DOS twin. In its new package, Living Videotext (which is now a division of Symantec Corp.)

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PS/2 Model 80-111

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Labs processor benchmark tests yield similar results, all of which point to Compaq's implementation of a static RAM cache as a better idea than IBM's dependence on its new 80-nanosecond, 1MB chips and MCA bus design.

Making matters worse for IBM, Compaq's new VGA adapter and display outdistance IBM's PS/2 version by a healthy 3-to-1 performance margin.

PC MAGAZINE FACT FILE

IBM PS/2 Model 80-111
IBM Corp.
(Contact your local authorized IBM dealer)
List Price: $10,995 with 70MB hard disk; 115MB hard disk upgrade, $3,495; 80387 coprocessor, $1,195; 8503 monochrome display, $250; 8512 color display, $595; 2MB upgrade, $1,295; external 5¼-inch 1.44MB disk drive, $245; DOS 3.3, $120; OS/2 Standard Edition 1.0, $325.
In Short: IBM's new flagship for the PS/2 line, a 20-MHz 80386-based Micro Channel computer.

CIRCLE **448** ON READER SERVICE CARD

Ready, Set . . . First PS/2 Micro Channel Logic Chips Finished

PC PREVIEW

BY GUS VENDITTO

In December, we reported that two chip makers, Western Digital and Chips and Technologies, were along in their efforts to produce the system logic for the Micro Channel Architecture (First Looks, page 35, *PC Magazine*, December 8, 1987).

The cloning efforts continue on schedule. Chips and Technologies announced on January 20 that it's now ready to sell chips with PS/2 system logic to any hardware manufacturer prepared to build and market a PS/2-compatible computer.

And Phoenix Technologies, the pioneer in writing a PC-compatible BIOS, said that its work is complete and the Chips and Technologies chip set can be ordered with a Phoenix BIOS.

Chips are available to build any of the PS/2s—a Model 30, 50, 60, or 80, according to Gordon Campbell, president of Chips and Technologies, the Silicon Valley design firm that rose to prominence when it produced the first widely available EGA chip set, leading to lower prices for EGA adapters.

The system logic chips include a system board VGA that is compatible with the hardware registers of the IBM VGA. Chips and Technologies has already shipped a VGA adapter chip set that is compatible only at the BIOS level.

Campbell said that the cost of PS/2 chips would be in line with the cost of PC chips; Phoenix said its BIOS would be licensed at rates that are comparable to the fees charged for the PC and AT BIOS.

Phoenix confirmed that Western Digital will also distribute a Phoenix PS/2 BIOS in the PS/2 logic chips that it is designing.

It's a little early to say exactly when a computer based on a Micro Channel Architecture might be sold by somebody other than IBM, but prototypes are now running and Chips and Technologies is betting that a computer manufacturer will have a saleable machine by the end of the spring. PC

IBM's original VGA is fast enough to persuade PS/2 disbelievers, but the new Compaq unit—if marketed separately by the company—could keep a lot of AT-class machines hopping along at a lively pace for a long time to come. And even when you're looking at the sharpness of character display, Compaq's $1,000 VGA monitor/adapter combination offers a blacker screen background with higher contrast and better readability than IBM's top-of-the-line $1,550 high-resolution Color Display 8514.

The bigger (can you believe it?) disappointment is the PS/2's 115MB hard disk. The disk's new Enhanced Small Device Interface (ESDI) is supposed to provide superb performance, and while it's about 20 percent faster than an AT's 30MB drive, it's not nearly as fast as the 70MB drive installed in the Compaq. That drive reads and writes at least 30 percent faster than IBM's, and more than twice as fast as the AT drive.

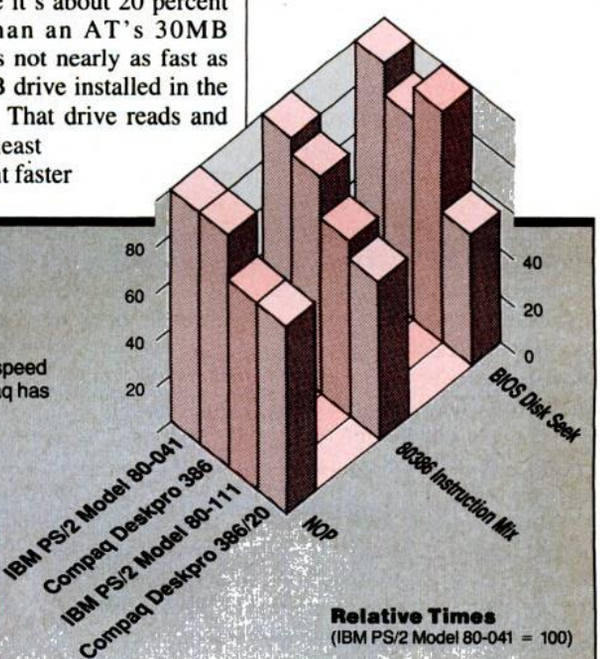
The good news is that you can buy the Model 80-111 for less than an equivalently equipped Compaq. But if it's raw performance you're after, you may not want to. PC

PC LABS Benchmark Tests: IBM PS/2 Model 80-111 vs. Compaq Deskpro 386/20 and IBM PS/2 Model 80-041

The Compaq's use of static-column RAM helped it beat IBM's 32-bit machine when the speed limit was 16 MHz. Now that both companies have machines running at 20 MHz, Compaq has stayed a notch ahead of the Micro Channel by using an Intel memory cache controller.

Performance Times
(Times given in seconds except where noted)

	NOP	80386 Instruction Mix	BIOS Disk Seek (milliseconds)
IBM PS/2 Model 80-041	2.1	4.3	33.0
Compaq Deskpro 386	2.1	4.0	28.5
IBM PS/2 Model 80-111	1.7	3.2	32.7
Compaq Deskpro 386/20	1.7	2.9	18.5



The **NOP** benchmark test is designed to measure raw clock speed and memory access time while minimizing differences in microprocessors and the effect of memory caching. This test executes almost nothing but NOP ("No Operation") machine code instruction in a big 128K loop.

The **80386 Instruction Mix** benchmark test measures the time it takes to execute a selected series of processor-intensive tasks. The test program uses 80386 instruction code. These instructions are a subset of the total processor instruction set. The 80386 Instruction Mix implements a number of 32-bit operations. In the 80386 processor these become single instructions, whereas in the 8086 and 80286 versions of the benchmark test they remain multiple instructions.

The **BIOS Disk Seek** benchmark test measures the time it takes to do a random seek using the disk's ROM BIOS. The test result includes minimal software overhead and may not parallel the manufacturer's claimed average access time. The test program performs 1,000 seeks. The average result is shown in milliseconds.

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