

Business Day

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The New York Times

1984

I.B.M.'s New Powerhouse AT

Twice as Fast As Old PC's

By DAVID E. SANGER

Special to The New York Times

DALLAS, Aug. 14 — The International Business Machines Corporation, apparently seeking to tighten its hold on the market for sophisticated desk-top computers, today introduced an advanced version of its personal computer that experts said was so powerful it could best be compared with far more expensive systems.

The new Personal Computer AT is an office computer capable of performing numerous tasks at once. It can support the work of up to three people simultaneously, with two of them at remote terminals.

Because the AT uses a new microprocessor, the Intel 80286, the computer works at two to three times the speed of older I.B.M. models. But its cost, \$4,000 to \$6,000, depending on the configuration of the equipment, is far lower than most dealers and experts had expected.

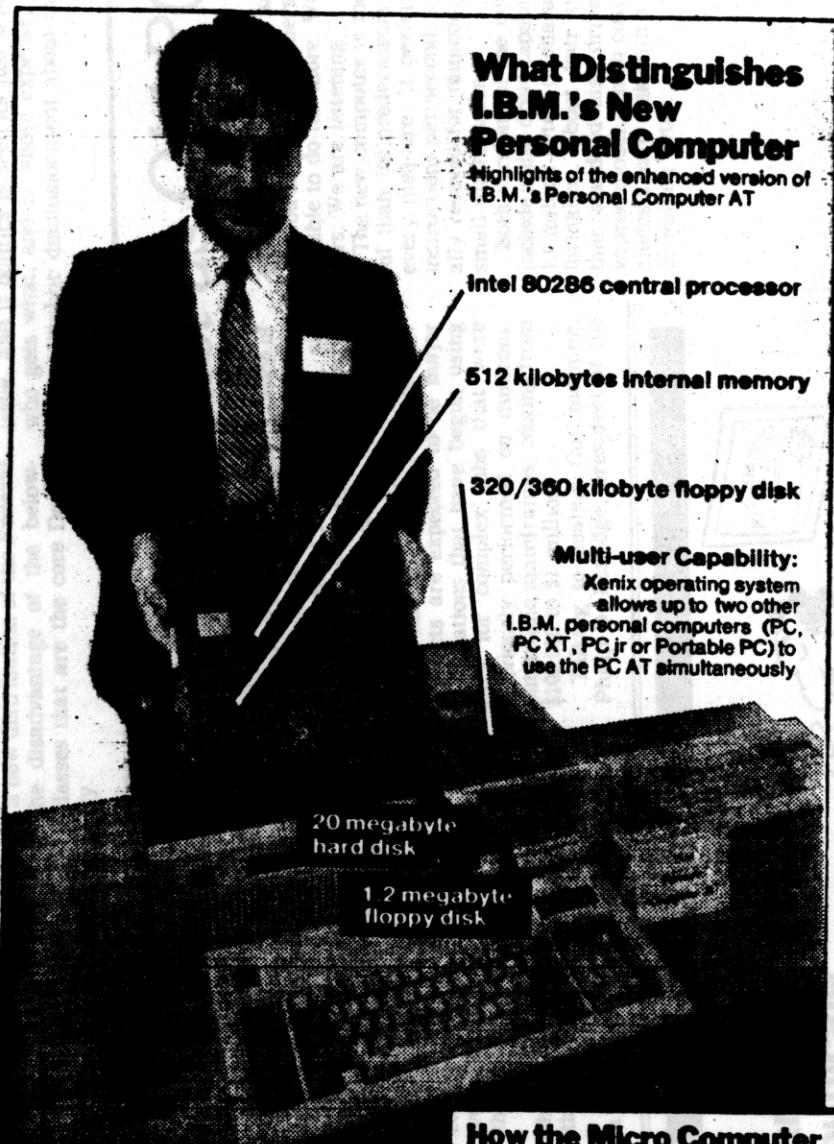
A Network Introduced

The company also showed its first local area network for personal computers, considered a key element for linking the thousands of personal computers now used by the nation's largest companies. The new system enables up to 1,000 PC's to exchange information and to share printers and other devices.

Today's moves seemed aimed directly at the American Telephone and Telegraph Company, which recently introduced its own I.B.M.-compatible personal computer, and at small companies, such as Fortune Systems, Altos Computer Systems and Televideo, which market similar personal computers.

"This is a very impressive response," said Michelle Preston, the technology analyst at L. F. Rothschild, Unterberg, Towbin. "I.B.M. is making it clear that it is pressing to create every solution to every problem for every user."

The introduction was the focal point of an unusual and lavish three-day meeting here, sponsored by I.B.M., for more than 2,000 retailers and soft-



The New York Times / William Z. Sanger

ware developers. The event seemed to be part Texas revival meeting and part Las Vegas stage show, with barbecue and magicians.

But beneath the light-heartedness was a realization that the company has some serious problems to resolve. Dealers contend that although the Personal Computer line has been an enormous success since it was introduced three years ago, they have been badly hurt in the last year — mostly by I.B.M.'s own actions.

The company's entry into the home computer market, the PCjr, was

What Distinguishes I.B.M.'s New Personal Computer

Highlights of the enhanced version of I.B.M.'s Personal Computer AT

Intel 80286 central processor

512 kilobytes internal memory

320/360 kilobyte floppy disk

Multi-user Capability:

Xenix operating system allows up to two other I.B.M. personal computers (PC, PC XT, PC Jr or Portable PC) to use the PC AT simultaneously

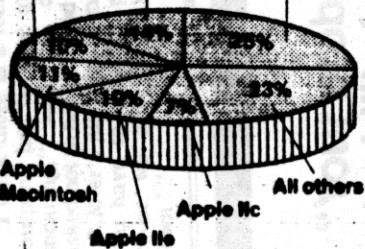
20 megabyte hard disk

1.2 megabyte floppy disk

How the Micro Computer Market Is Divided

Share of June 1984 microcomputer sales based on dollar value

Compaq 4.5% I.B.M. PC XT 1.2% I.B.M. PC



Source: Infocorp

Continued on Page D2

X-TEST SOURCE

- 1 -

UNIX System V/286
Kernel and Shell Transmittal
Digital Research Inc.
Chuck Hickey

1. Introduction

On June 19th, 1984 the UNIX System V/286 successfully executed the init, su, and the shell in single user mode on the Intel 286/310 computer. The code provided here is a snap shot of our source code and development tools in their current state. All cross development tools have been hosted on UNIX System V release 2. The tape was created with the following command line: "cpio -oBc" A directory listing of the tape contents is not included. Future pre-releases will contain detailed documents regarding tape contents, product quality, and performance, as well as known bugs.

The current tape contains the source and object to the kernel, drivers, SGS, and a handful of utilities. It should be possible to build a running kernel from the contents of this tape but it is not recommended.

2. Disclaimer

The source code provided here is in no way intended for development purposes, nor will support be provided for this purpose. Any intention to use this code for anything other than reference purposes is not advisable. The UNIX kernel is currently in a stage where bugs are being found at the rate of two per week which means that the kernel has approximately two dozen bugs remaining to be fixed. Compiler bugs are being found at the rate of one per day. There will no doubt be another fifty bugs discovered and fixed by the release date.

The single biggest area of improvement in the next release of the compiler will be in the quality and generated code size. We currently have a version of the compiler that produces code 2.6X times faster than are current version.

Dave -

cpio -iBcd < /dev/rmt??

will undo this tape.

Rhondo

1600 bits per inch
& rewind

Probably
rmt0 or rmt8

UP FRONT

Spate of Unix boxes that run MS-DOS software due this year

Some five Unix-based hardware products sporting a built-in or optional MS-DOS emulation environment will likely be introduced by year end, probably at Comdex/Fall. That word comes from Phoenix Software Associates Ltd., a Norwood, Mass., microsystems software specialist. Computers or work stations based on 68000s or other processors can run MS-DOS as a task under AT&T Bell Laboratories' Unix operating system through the addition of an Intel Corp. processor—such as an 8086 or a 80286. Manufacturers of Unix hardware can thus enable their customers to run thousands of programs written for the IBM Corp. Personal Computer and compatibles, in addition to (and at the same time as) software written for Unix. □

Despite slight April gain, component book-to-bill is still off

For the first time since last December, component distributors' book-to-bill ratio has moved slightly higher. It was 0.97:1 in April, up from 0.93:1 in March. However, the National Electronic Distributors Association (NEDA) is quick to add that the marginal increase stems from a deeper April decrease in shipments than in bookings. Overall, NEDA reports, the April daily-average shipment rate declined 8% from March, and stood 20% lower than in April 1984. Year-to-date shipments are running 13% behind last year's. Bookings, which are off 4% from March, are running 33% behind the rate at the same time last year. □

ROM to ease software task for briefcase computers

After July it should become easier to build software and character fonts into briefcase computers. That's when NEC Corp. will start selling its 2-Mb CMOS mask read-only memory, the μ PD23C2000. It uses 1.2- μ m silicon-gate CMOS technology to squeeze about 2.4 million elements onto a 6.63-by-8.42-mm chip. Access time is 250 ns maximum, and standby current is 100 μ A maximum. The price in lots of 1,000 is expected to be \$32.

Also due this summer, and suitable for some types of portable equipment, is the μ PD42832 32-K pseudo-static memory chip designed for moderate-interval battery backup. This chip, which actually is a 256-K dynamic random-access memory with CMOS peripheral circuits designed for self-refresh operation, is available with maximum standby current as low as 100 μ A. □

TI sues voice-technology firm after office search

Claiming highly confidential documents were copied and misappropriated from its speech-research lab by former employees, Texas Instruments Inc. has filed suit charging theft of trade secrets against Voice Control Systems Inc., a small Dallas company. The focus of a Dallas County investigation and a controversial search warrant, the charges allege theft by former TI researchers—including Thomas Schalk, who joined Voice Control Systems in 1983 as chief technical officer. Before leaving TI two years ago, Schalk had been deeply involved in the development of speech-recognition algorithms. Voice Control Systems licenses its phonetic-based technology for speaker-independent recognition applications. In March, the firm introduced a voice-activated system for telecommunications, providing speaker-independent control regardless of the user's age, gender, accent, tone of voice, or elocution. A spokesman for Voice Control Systems tersely denies the allegations, saying a raid on the firm's office by district-attorney investigators was "totally out of character." The investigators are reported to have searched offices for 26 hours, cutting phone lines, preventing employees from leaving, and restricting use of computers, complains the spokesman. □



David A. Butterfield
Systems Development Manager
Locus Computing

Unraveling OS-Merge

OS-Merge allows a DOS process to run under Unix and can be implemented in several ways. For one, DOS and Unix can be run on the same Intel 80286 microprocessor. This is the approach taken in AT&T's PC 6300 Plus computer where DOS runs in the real address mode and Unix runs in the protected mode. For another, Unix can be run on one microprocessor (not necessarily an Intel family member) and DOS run on a separate 8086/8088/80186 or 80286 family microprocessor.

On the PC 6300 Plus, additional hardware support is provided; on the motherboard, this control hardware protects the DOS program running in an unprotected environment from exceeding its bounds and possibly damaging the Unix environment. By running the DOS environment in the real address mode, the application can run at full speed without the system performing any address-mode emulation.

At the system's heart is PC-Interface, which bridges DOS to Unix. It intercepts, examines and passes some DOS system calls to DOS while passing remaining calls to a server process running on Unix. The server interprets the DOS system calls and services them by executing Unix system calls to the Unix kernel.

To the DOS application, the entire Unix file system appears as an additional DOS drive. For example, the Unix file system appears as "drive C:" on the PC 6300 Plus. The DOS user invokes the usual command "cd /usr name" on this drive. This approach is transparent at the DOS system call level, so DOS applications can automatically take advantage of the Unix file service.

In OS-Merge, the network is implemented as shared memory in the computer hardware. Both the DOS environment (with the application, the bridge and MS-DOS) and the Unix environment (with the

server and the kernel), run on the same machine. When the bridge needs service from Unix, it changes the processor to the protected mode and passes control to the server.

After the server has serviced the request, it changes the processor back to real address mode and returns control to the bridge. Interrupts can also require processor-mode switches. Moreover, Unix time-sharing is still in operation. The Unix scheduler, therefore, can preempt the server/DOS process to run other Unix processes in the usual way.

The control hardware prevents the DOS application from writing on memory outside its bounds and also prevents it from writing inappropriate values to I/O ports. In addition, what's known as a sanity timer prevents the application from disabling interrupts for an excessive time period. The DOS application, however, may mask off interrupts for devices that DOS currently controls.

DOS programs can run either from the Unix shell prompt (actually the Unix exec system call) or from the DOS command interpreter (the DOS exec system call). The Unix exec system call recognizes DOS programs and causes an OS-Merge server to be invoked. The server then sets up the DOS environment and passes the necessary information to it so that it will run the program requested by the user.

Exec on a DOS program is transparent at the Unix system call level; the shell is unmodified. In fact, no Unix programs except the kernel were modified to support OS-Merge. Shell scripts and make files may freely execute DOS programs.

For programs that perform their I/O through DOS system calls, the standard output of a DOS application program is passed to the standard output of the server. The standard input is similarly redirected. This means that pipes and redirection operate between DOS programs and Unix programs.

6300 runs either Xenix or DOS, but not concurrently. The 6300 Plus runs Unix System V and DOS concurrently, whereas the 7300—AT&T's Unix personal computer—runs DOS on a coprocessor board (the DOS-73). Without the coprocessor board, the 7300 can read DOS files but can't execute DOS programs.

AT&T's new Unix personal computer, the 3B1, offers a 40-Mbyte or 67-Mbyte disk as well as a DOS coprocessor and behaves like a low-end minicomputer with DOS capability. With time, the 3B1, and all of the 3B line of minicomputers, including the recently announced 3B2/400, will be able to commu-

nicate with other DOS machines and IBM mainframes (through the Starlan local area network, for example.) AT&T is promising an IBM 3270 terminal communications capability for the 6300 Plus later this year and it's already available on the 7300 and 3B1.

AT&T is also making a Unix connection to IBM mainframes in a different fashion. Its new System V-VM lets IBM System/370-compatible mainframes support Unix System V functions through a communications link and IBM's VM/SP control program, which runs on the VM operating system. Through VM/SP, System V-VM allows the sharing of main-

AT&T Information Systems

subject: Meeting Notice Simul-Task
Training
- Case W60140

date: May 29, 1986

from: D. W. Eldridge
SF 62545413
1-250 x6139

David Butterfield of Locus Computing Corp will be conducting a one day class on Simul-Task. The morning session will cover the highlights of Simul-Task with emphasis on helping testers find and isolate bugs. The afternoon session will be slanted towards software developers and the internals of Simul-Task. Everyone is welcome to attend both sessions.

The training session on Simul-Task will be held on:

Date: 6/12/86 (Thursday)
Place: HL 2B-327 (Short Hills)
Conf. Room Phone 564-2962

Morning Session
time: 9:30 AM - 11:30 AM

Afternoon Session
time: 1:30 PM - 4:00 PM

SF-62545413-DWE-dwe

D. W. Eldridge
D. W. Eldridge

Copy to
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- **Merge 286** Invokes DOS commands and programs from the UNIX® environment as easily as UNIX® commands. This allows users to develop software by combining DOS and UNIX® programs and commands.
- **Merge 286** is multi-tasking. It allows you to run a DOS program while running one or more programs under UNIX®. (DOS is inherently single-user, so you can only run one DOS application at a time).
- **Merge 286** runs all the major MS-DOS and PC-DOS programs without modifications. These include LOTUS 1-2-3, Flight Simulator, WordStar, Displaywriter, Multi-Mate, and much more.
- **Merge 286** provides all the security capabilities of UNIX® including password protection.
- **Merge 286** will be available from Microport 1st Quarter, 1987.

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