HEWLETT–PACKARD
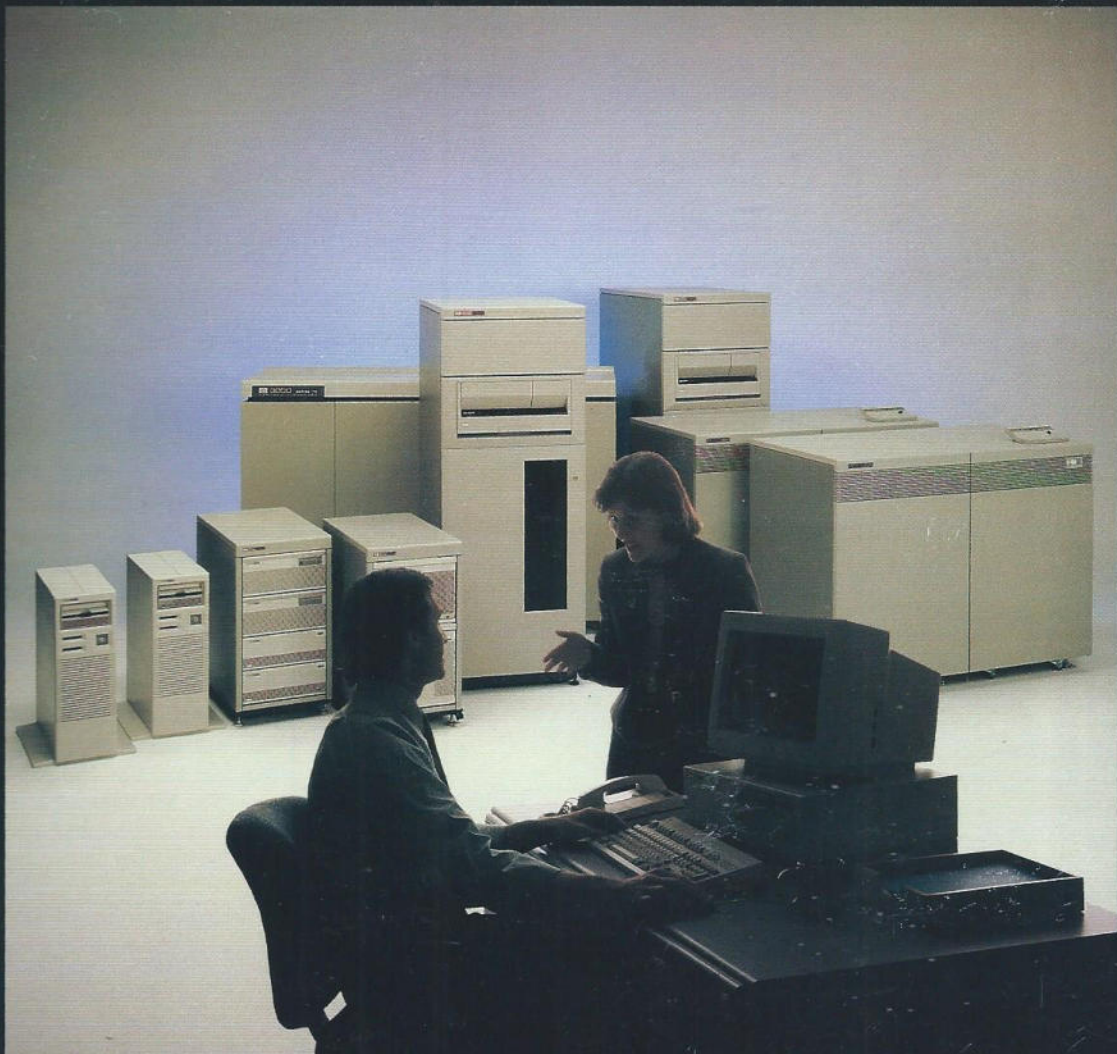# UPDATE

COMPUTER SYSTEMS FROM **HP**

MARCH/APRIL 1988
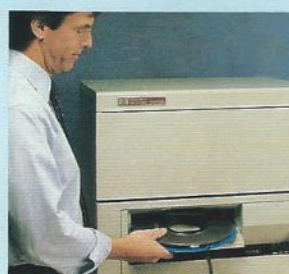

HEWLETT PACKARD

Calculator line expands with four new products

Four new calculators are now available from Hewlett-Packard. The two business and two scientific calculators are attractively priced and are packed with the functions required by business and technical professionals:
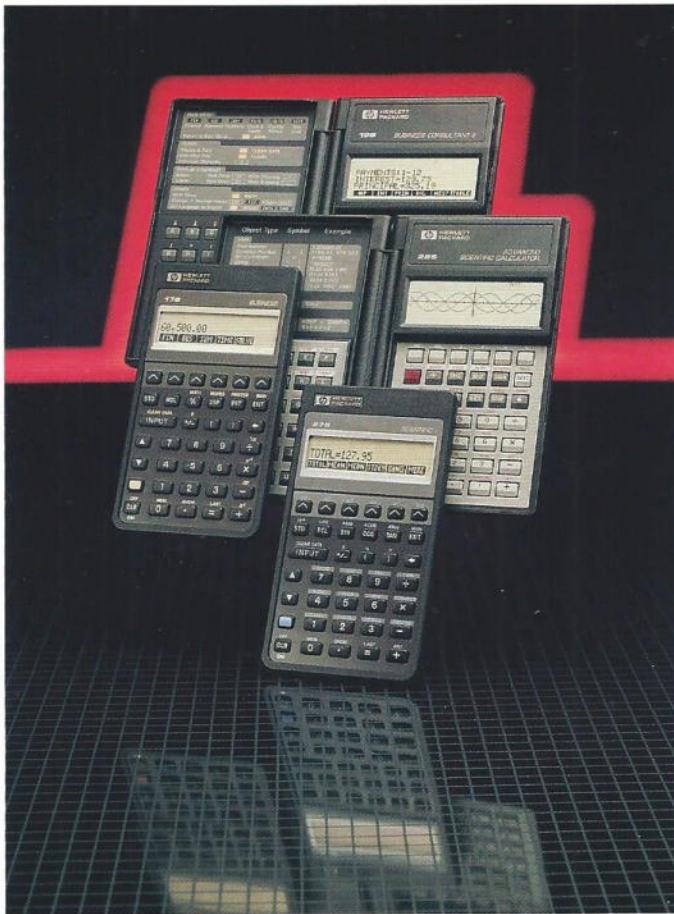
- Menus and softkeys that let you get to your solutions quickly and easily.
- HP Solve, a feature that lets you personalize your calculator without programming.
- Multiline displays to let you see more of what you're doing.
- An invisible infrared link that permits you to operate the HP 82240A Infrared Printer, eliminating the need for cords.

Profession-specific solution books are available in English for all the new calculators.

HP Business Consultant II

HP's top-of-the-line business calculator can visually present relationships between numbers on its four-line by 23-character alphanumeric display. A graphics package plots histograms, scatter diagrams, and four different curve-fitting models for statistics and forecasting, plus net present value vs. interest rate for investment analysis.

The Business Consultant II includes advanced math, data and time-management

All four new calculators are packed with innovative features that make them powerful and easy to use.

depreciation, a two-line by 22-character alphanumeric display, appointments and time calculations, 6500 bytes of RAM, and an algebraic entry system.

In Europe and Latin America the HP-17B is available with messages and prompts in German, Spanish, French, Italian, and Portuguese in addition to English.

HP-28S Advanced Scientific Calculator

The HP-28S Advanced Scientific Calculator is HP's most sophisticated handheld for scientific problem solving. It has 32K bytes of user-available RAM and includes memory management features. The HP-28S also features an advanced graphics package plus HP Solve for finding precise roots based on graphic estimates.

The HP-28S, believed by HP to be the only calculator on the market with symbolic algebra and calculus capability, also has matrix, vector, and complex-number arithmetic, advanced programmability through a high-level programming language, user-defined unit conversions, including 120 built-in units of measure, a four-line by 23-character alphanumeric display, and enhanced reverse Polish notation with algebraic entry.

HP-27S Scientific Calculator

The HP-27S is a "two-in-one" calculator designed for technical professionals in management. Its technical and financial functions include logarithms, trigonometry, hyperbolics, statistics, standard math, time value of money, amortization, and forecasting. The HP-27S stores any number of lists in the 6.7K bytes of memory available to you. Other features include one or two-variable statistics, four different models for curve fitting, 10 alarms, four number bases, and a two-line by 22-character alphanumeric display. The HP-27S has an algebraic entry system.

The HP Business Consultant II (HP-19B) is $175. The HP-17B is $110. The HP-28S is $235, and the HP-27S is $110. The HP 82240A printer is $135.

*For more information, check **A** on the HP Reply Card.*

functions, number list with running totals and subtotals, conversion applications for 39 world currencies and 63 different unit measurements, separate keyboards for numbers and letters, 6500 bytes of user-available RAM, and an algebraic entry system.

The new HP Business Consultant II can be used to display messages and prompts in German, Spanish, French, Italian, and Portuguese. Documentation in these languages is available separately when the calculator is purchased in the U.S.

HP-17B Business Calculator

The HP-17B delivers extremely high price/performance. This easy-to-use machine features number lists with running totals, a powerful package of business and financial functions, including time value of money, cash flows, bonds and

High-end PC is powerful and expandable

The HP Vectra RS Personal Computers are the high-end members of the HP Vectra PC product family, providing superior performance for your most demanding personal-computer applications. Using an 80386 microprocessor and HP's high-performance disc drives, the HP Vectra RS/20 (20-MHz microprocessor) and RS/16 (16-MHz) PCs have the power and expandability required for such applications as CAD/CAE, local-area-network servers, and multi-user systems.

The HP Vectra RS PC features eight IBM PC/AT-compatible expansion slots, six half-height mass-storage shelves to support up to 620 Mbytes of disc memory, a 330W peak power supply, and a floormount design. One or 2M bytes of RAM come standard on the RS systems with a maximum capacity of 16M bytes.

Add-on disc drives

Three new add-on ESDI (enhanced small device interface) hard disc drives are available in 103, 155, and 310-Mbyte storage capacities. The same high-performance, high-reliability ESDI drive mechanisms are standard in the HP Vectra RS/20 Models 100, 150, and 300.

These are available also as add-on drives, which can be used as second hard disc drives in HP Vectra RS PCs already equipped with one ESDI drive. With them you can configure an HP Vectra RS/16 or RS/20 with up to 620 Mbytes of disc storage capacity. No additional cabling or controller is required to install a second drive.

The ESDI drives feature a 17-ms average seek time and 40,000-hour MTBF (mean time between failures), an extremely high reliability rate for a 5¼-inch mechanism.

Internal tape backup

A new half-height tape drive provides 40 Mbytes of formatted data storage on a com-

The HP Vectra RS PC provides superior performance and expandability.

pact data cartridge. The drive connects to the existing HP Vectra PC flexible disc drive cable and power cables. It interfaces with an optional flexible disc expander board, which enables HP Vectra RS systems to support an additional two—for a total of four—flexible disc interface devices.

The software utilities provided with this drive enable you to back up and restore the HP Vectra RS 103, 155, and 310-Mbyte hard discs in a smooth manner. Incremental back-ups generally can be done on a single 40-Mbyte cartridge even for the 310-Mbyte disc, enabling you to back up even the larger disc drives in unattended mode. The drive operates under a variety of operating systems and networking environments.

New accessories

New 1M-byte and 8M-byte memory expansion kits allow you to configure systems of 2, 4, 8, 10, and 16M bytes of RAM or main system memory.

A 20-MHz 80387 numeric coprocessor is available for the HP Vectra RS/20 PC, and a 16-MHz 80387 is available for the HP Vectra RS/16 PC. Installing a coprocessor can substantially enhance the performance of software applications that support them.

The HP Vectra RS/16 PC starts at $6,495. The HP Vectra RS/20 PC ranges from $7,495 to $14,695. The ESDI add-on drive mechanisms range from $2,995 to $5,495.

The internal 40-Mbyte tape drive is $795, and the optional disc expander is $125. The 1M-byte memory expansion kits (100 ns and 80 ns) are $575 and $649, and the 8M-byte kits (100 ns and 80 ns) are $4,595 and $5,195. The 16-MHz and 20-MHz coprocessors are $795 and $1,195.

*For more information, check **B** on the HP Reply Card.*

Two new versions of Microsoft Windows unleash PC power

Microsoft Windows 2.0 is now available with new features and enhanced performance for all your HP Vectra Personal Computers. And Windows/386, available for the high-end HP Vectra RS PC, lets you take advantage of the powerful 80386 hardware technology and run existing MS-DOS® application software with more efficiency and productivity.

New features in Version 2.0

- OS/2 Presentation Manager "look and feel." The graphical interface in Windows 2.0 has been enhanced to offer consistency with Presentation Manager, the user interface for OS/2.

- Improved use of memory. Windows 2.0 supports the use of expanded memory, EMS LIM 4.0 specification, to run multiple Windows applications simultaneously at their full performance.

- Switching between active applications.

- Enhanced graphics functionality and performance. Windows 2.0 provides additional graphics and bitmap capabilities, including support within the Clipboard for larger images up to 128K bytes.

Windows/386 for the HP Vectra RS PC

Windows/386 offers the best of both worlds—the ability to run existing MS-DOS application software in a more efficient and productive manner, and full compatibility with existing Windows applications. Features include:

- Greater functionality for MS-DOS applications. Windows/386 overcomes the 640K-byte memory limitation of the 8086 and 80286-based PCs by using the virtual memory capabilities of the 80386.

- Ability to multitask existing MS-DOS applications. For example, you can edit a document in Executive MemoMaker while Lotus 1-2-3 is calculating a large spreadsheet in the background.

- Window or full-screen viewing. Windowing lets you run MS-DOS applications in a window alongside Windows-based applications. Full-screen mode allows you to work with the application exactly as if it were running only under MS-DOS.

- Expanded memory support. A new memory manager in Windows/386 provides emulation of the LIM 4.0 expanded memory specification, using conventional memory.

Windows/386 and Windows 2.0 share the same user interface and provide a consistent application environment for Windows applications. Microsoft Windows 2.0-based applications can be used interchangeably with either Windows product.

Microsoft Windows 2.0 Presentation Manager for the HP Vectra PC (available in 5¼ or 3½-inch discs) is $149. Microsoft Windows/386 Presentation Manager for Personal Computers using the Intel 80386 Processor is $195.

For more information, check **C** *on the HP Reply Card.*

MS-DOS® is a U.S.-registered trademark of Microsoft Corporation. Lotus® 1-2-3® is a registered trademark of Lotus Development Corporation.

Double your microfloppy capacity

The new 2-Mbyte HP 9122C features quiet operation and HP reliability.

The new HP 9122C Microfloppy Disc Drive is ideal for backup, increased storage, and file transfers among systems. Available in a single or dual-drive configuration, the HP 9122C is tailored for the measurement automation and technical systems markets. It replaces the HP 9122D and 9122S and uses the SUBSET/80 protocol. (SUBSET/80 is similar to CS/80 but includes fewer commands.)

The HP 9122C gives you twice the capacity of other HP floppy-only products—a full 2 Mbytes (1.42 Mbytes formatted)—with no increase in price. The 2-Mbyte microfloppy costs the same as its lower-capacity predecessors.

Understanding media compatibility is important. The HP 9122C employs an ANSI-standard format-sensing mechanism to differentiate 2-Mbyte diskettes from those of other capacities. However, 2-Mbyte media should not be used in any disc drive other than a 2-Mbyte one. Your existing 0.5-Mbyte and 1-Mbyte media can be used with confidence in the HP 9122C, although 2-Mbyte media is required to obtain the increased capacity storage.

The HP 9122C comes standard in a dual-drive configuration and is priced at $1,465. A single-drive configuration is $1,150.

For more information, check **D** *on the HP Reply Card.*

Industry-standard SCSI interfaces and discs for technical computers

Now you have the choice of a cost-effective disc solution with the flexibility provided by an industry-standard interface definition. A new family of products from HP implements the Small Computer Systems Interface (SCSI), which has become popular in the computer industry as a general-purpose peripheral interface.

The SCSI products from HP include two interface cards designed for HP 9000 workstations, and three new disc drives, the HP 7957S, 7958S, and 7959S.

HP's new SCSI discs use 5¼-inch Winchester mechanisms and are available in capacities ranging from 107 to 323 Mbytes. These discs provide some of the fastest data access available in the industry today.

The SCSI interfaces are used to connect compatible discs to their host workstations. One interface is designed for the HP 9000 Models 330 and 350, both as a system option (Opt. 011) and as a customer-installed product (HP 98265A). The other is used with the new Model 319C+ and is available as Opt. 011. SCSI is available only on the HP-UX operating system.

HP has designed the SCSI interfaces to conform to the ANSI standard. While HP's discs are fully supported, the interface is flexible enough to permit connection of other vendors' products, too. We can supply you with documentation if the interface software must be modified to add features other than those provided. Software changes of this nature require systems programmers experienced with the HP-UX operating system.

The SCSI interface is $1,100 for HP 9000 Models 330 and 350 and $795 for Model 319. The HP 7957S, 7958S, and 7959S discs are $5,675, $7,300, and $9,350.

For more information, check **E** *on the HP Reply Card.*

New low-end, midrange,

Two terminals added to HP 700 family

The HP 700 terminal family, which offers HP quality and reliability at low prices, has two new members: the HP 700/44 and 700/43 Display Terminals. The HP 700/44 is HP's first terminal for personal-computer-based multiuser environments. The HP 700/43 is a general-purpose ASCII terminal.

Terminal for multiuser PCs

The HP 700/44 PC terminal was designed for use in many alphanumeric multiuser PC environments. It can operate in ANSI mode (as a DEC VT220 terminal with an AT2 keyboard) or in PC terminal mode (as a terminal transmitting PC-keyboard-like key scanning codes to the host PC).

The HP 700/44 has the IBM PC character set and enhanced PC keyboard layout. Its screen has both 80 and 132-column modes.

The HP 700/44 offers both the DEC VT220 character set and the IBM PC character set. A user running a monochrome, alphanumeric (nongraphics) application on the HP 700/44 will use the same AT2 keyboard and see the same display (IBM character set) as if the application were running on a standalone PC.

Lower price, more features

Designed for business, technical, and manufacturing applications, the HP 700/43 Display Terminal offers more features at a lower price than competing ASCII terminals.
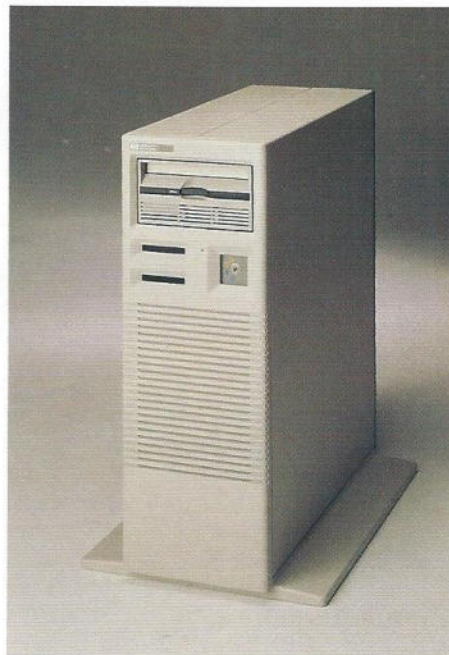
It includes four pages of memory, 80 and 132-column modes, 58 programmable keys, and 12 emulation modes. A half-dot shift creates smoother curves in characters, and a 72-Hz refresh rate reduces screen flicker, making the terminal easier on the eyes.

Both terminals have a 14-inch display screen available in amber, green, or soft-white phosphor.

The HP 700/44 is $575, and the HP 700/43 is $475.

For more information, check **F** *on the HP Reply Card.*

New minis at micro prices

The HP MICRO 3000LX and GX offer MICRO 3000 power and ease of use for a low price.

Introducing the lowest-priced HP 3000 computers ever: the HP MICRO 3000LX and MICRO 3000GX. And price isn't the only thing small about these two systems. Using an innovative packaging scheme, the HP MICRO 3000LX and GX are so compact they can easily fit under a desk.

New entry point into HP 3000 family

The HP MICRO 3000LX is approximately half the price of the previous entry-level HP 3000. The new system comes equipped with five direct-connect ports, 2M bytes of memory, a 67-Mbyte cartridge tape, and 81 Mbytes of disc storage. The HP MICRO 3000LX also offers optional local and wide-area networking capabilities.

Lower-priced replacement for HP MICRO 3000

The HP MICRO 3000GX directly replaces the HP MICRO 3000 at an approximately 25% lower price. The HP MICRO 3000GX offers greater configurability than the LX model. The basic HP MICRO 3000GX model comes equipped with eight direct-connect ports, 2M bytes of memory, a 67-Mbyte cartridge tape, and 152 Mbytes of disc storage. The HP MICRO 3000GX also allows you to connect external parallel disc, tape, and print devices through an HP-IB connector.

Both the MICRO 3000LX and GX come standard with an HP 700/92 console, the MPE operating system, HP Easytime user-interface software, and disc caching.

Flexibility for future growth

The HP MICRO 3000LX and GX have been designed to support larger configurations for customers who need extra capabilities up front, or who want future flexibility as departments or businesses grow. Specifically, the HP MICRO 3000LX can support up to eight direct connections, 4M bytes of memory, and 304 Mbytes of disc storage. The HP MICRO 3000GX can support up to 16 direct connections, 4M bytes of memory, and 2 Gbytes of disc storage.

Entry-level configurations of the HP MICRO 3000LX and GX are $10,950 and $15,950, respectively.

For more information, check **G** *on the HP Reply Card.*

high-end systems strengthen HP 3000 family

HP-PA now available in midrange business computers

Three new HP Precision Architecture systems, the new HP 3000 Series 925, 925LX, and 935, deliver exceptional price/performance in midrange business computing and offer you an excellent growth path as well.

Supermini performance in a small cabinet
The Series 925 has the power of a super-minicomputer in a very small package. This 3.2-million-instructions-per-second (MIPS) system supports up to 152 users, 16 disc drives, and 48M bytes of memory. The Series 925 provides a sixty-percent increase in performance over the Series 58 at close to the same cost. An entire entry-level system can be rack-mounted into a single 63-inch cabinet.

HP-PA entry system
If you're interested in an HP 3000 Series 900 solution but have smaller configuration requirements, the Series 925LX is the answer. This entry-level HP Precision Architecture system delivers the performance of the Series 925 for a lower price. The Series

925LX supports up to 32 users, eight disc drives, and, like the Series 925, up to 48M bytes of memory. Most important, this entry-level system can be easily upgraded on-site to the Series 925.

High-performance midrange system
If you require more performance than the Series 925 offers, the Series 935 is available. The Series 935 offers seventy percent more performance than the 925 yet is contained in the same compact cabinet. And Series 925 customers can upgrade to the 935 with a convenient on-site board replacement. In addition to a Series 925 field upgrade, the Series 935 is offered as a standalone system. It will be available in the second half of this year.

Excellent return on investment
The price/performance and convenient field upgrades mean that your investment with HP is solid today and protected in the future.

The HP 3000 Series 925LX is $50,000. The Series 925 is $80,000, and the Series 935 is $150,000.

For more information, check **H** *on the HP Reply Card.*

High-end extension available next year

The high end of the HP 3000 line of business computers has also been extended—the Series 955 is an 11 MIPS system that offers fifty percent more throughput than the Series 950. The Series 955 will be sold as a field upgrade to the Series 950 and also as a stand-alone system.

Single-board design
The 11 MIPS processor power of the Series 955 is implemented on a single CPU board. The simplicity of this single-board design means higher hardware reliability with fewer parts to fail and consequently lower support costs.

The Series 955 will be available in the first half of 1989.

The HP 3000 Series 955 is $390,000.

For more information, check **I** *on the HP Reply Card.*

An entire HP 3000 Series 925 or 935 system fits in a single compact cabinet.

Programming language for HP 3000 users is portable

HP C/XL is HP's new implementation of C for the HP 3000 Series 900 systems. It is a general-purpose programming language that provides the convenience and portability of a high-level language with the flexibility and efficiency of an assembly language.

Compatibility across systems

C is very compatible across operating environments. Since HP Precision Architecture systems use identical compiler technologies, HP C/XL is completely compatible with HP C/HP-UX for the HP 9000 Series 800. HP C/XL is also highly compatible with CCS C/3000 (for MPE V-based systems) from Corporate Computer Systems, C/9000, and VAX C (C running under UNIX 4.2 BSD).

The CCS C/3000 compiler for MPE V-based systems is marketed and supported by Corporate Computer Systems, Inc., an HP Plus-referenced software supplier headquartered in New Jersey. HP and CCS continue to work closely to ensure that CCS C/3000 and HP C/XL remain highly compatible.

HP C/XL (HP 31506A/R) is available on MPE XL system release 1.0.

HP C/XL is priced at $7,650 for the HP 3000 Series 930 and 950 systems.

For more information, check **J** *on the HP Reply Card.*

HP-UX is HP's version of AT&T's UNIX System V operating system. UNIX is a registered trademark of AT&T in the U.S.A. and other countries.

High-performance emulation at an entry-level price

The new HP 64700 Emulation Series offers entry-level in-circuit emulators and analyzers for the Z80, MC68000, 80186, and 80188 microprocessors. These products include features not even found in most high-performance development systems:
- Triggering capabilities in the emulation and external analyzers that feature eight-level sequencing, time tags, and prestore.
- An optional 16-channel external analyzer that functions as a fully independent 100-MHz timing analyzer as well as a 25-MHz state analyzer.
- Real-time code coverage analysis implemented in hardware.
- Dual-bus architecture for real-time emulation.
- Hybrid foreground/background emulation monitor for full target system support.

All of the HP 64700 features can be accessed from a basic terminal that communicates with the emulation/analysis tools over a standard protocol network or an IBM-compatible PC. Larger design teams can integrate the HP 64700 Series into the more powerful HP 64000-UX Advanced Integration Environment, which supports more than forty 8, 16, and 32-bit microprocessors.

Up to 32 HP 64700 Series emulators can be interconnected over a coordinated measurement bus. Once connected, the HP 64700 tools can be synchronously started, cross-armed, cross-triggered, and halted.

The coordinated measurement bus also can be linked to the HP 64000-UX inter-module bus for synchronized measurements.

Prices for an HP 64700 emulator and emulation analyzer range from $8,900 (8-bit emulation support) to $11,300 (16-bit emulation support). Prices for an emulator, emulation analyzer, external analyzer, PC interface, and assembler/linker range from $12,250 (8-bit) to $14,650 (16-bit).

For more information, check **K** *on the HP Reply Card.*

Midrange computer's floating-point performance tripled

HP's new CPU upgrade more than triples the floating-point performance—a key measure of execution speed and accuracy—of the HP 9000 Model 825S computer and 825SRX workstation. The board upgrade boosts the Model 825's floating-point performance to greater than 2.0 million floating-point operations per second (MFLOPS).

The MIPS (millions of instructions per second) rating for these upgraded systems is increased from eight to 14. HP believes this to be forty percent higher than the best of competitive workstation offerings.

The Model 825S is a multiuser computer and server well-suited for software development, scientific, engineering, and business applications. The Model 825SRX combines high CPU power with a high-resolution, 3D-graphics engine to provide a workstation for design automation applications. Both systems are based on HP Precision Architecture, derived from the principles of reduced-instruction-set computing (RISC).

The upgrade is a field-installable CPU board set for Models 825S and 825SRX. It can be installed in minutes, and no changes to application software are required to gain full advantage of the improved performance.

The upgrade requires HP-UX version 2.1, which will be free of charge for customers with SMS support contracts.

The performance upgrade is priced at $10,000. The HP 9000 Model 825S is priced at $42,000, and the Model 825SRX is $69,500.

For more information, check **L** *on the HP Reply Card.*

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