

# Hewlett-Packard HP 9000 Multiuser Systems

## Product Enhancement

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Hewlett-Packard has entered the fault-tolerant computer market with the introduction of the UNIX-based HP 9000 Model 1240, the first in a 1200 Series of fault-tolerant systems. HP also announced peripheral support for the Model 1240, including disk and tape drives, terminals, and printers.

This is the latest in a series of enhancements to the HP 9000 Series which so far this year has included the addition of five new Series 800 systems plus price reductions on previous models.

The new Model 1240 is the result of an original equipment manufacturer (OEM) agreement between HP and Sequoia Computer Systems. HP has repackaged the Sequoia Series 300 fault-tolerant system. In return, Sequoia received a sizable equity investment, access to HP's RISC technology for future product development, and HP's marketing of the product in the telecommunications industry.

### Product Definition

The Model 1240's fault tolerance is built into the tightly coupled hardware design; the central processor, memory, and input/output (I/O) are duplicated, and a dual, segmented

system bus provides communications among these components. The Model 1240 is also load balanced, allowing all processors to share the work load.

The Model 1240 supports an open architecture and can be integrated into current user operations. All HP peripherals, service, and support carry over to the new fault-tolerant line.

Model 1240 runs the UNIX-based HP-FX operating system as well as the Sequoia-developed STORM file management system. Major relational database management system (RDBMS) packages are also supported.

Communications software includes support for standard protocols such as X.25 and Ethernet, IBM-compatible standards such as 3270 SNA, and UNIX-standard software including uucp and remote logon.

On-line maintenance software continually monitors the system, and if a component failure is detected, the system automatically notifies an HP service center.

**Table 1. System Comparison**

| Model  | 832S   | 845S/845SE   | 870S/100,<br>870S/200  |
|--|--|--|--|
| <b>System Characteristics</b>                                  |  |  |  |
| Date of Introduction   | January 1990   | January 1990   | January 1990   |
| Date of First Delivery   | March 1990   | 1Q90   | 4Q90   |
| Operating System   | HP-UX  | HP-UX  | HP-UX  |
| Upgradable from  | Not applicable   | 825S, 835S,<br>835SE   | 850S,855S;<br>870/100  |
| Upgradable to  | Not applicable   | Not applicable   | 870/200; Not<br>applicable   |
| MIPS   | 15   | 23   | 50/95  |
| Relative Performance (based on a<br>rating of the 825S at 1.0) | —  | —  | —  |
| <b>Memory</b>  |  |  |  |
| Minimum Capacity (bytes)                                       | 16M  | 16M/32M  | 96M/128M   |
| Maximum Capacity (bytes)                                       | 64M  | 128M   | 768M   |
| Cache Memory (bytes)   | 128K   | 256K   | 1,024K   |
| <b>Input/Output Control</b>                                    |  |  |  |
| Number of Channels   | —  | 2 to 8   | 2 to 12  |
| <b>Maximum Disk Storage (bytes)</b>                            |  |  |  |
| Number of Workstations   | 64   | 56/100   | 256/304  |
| <b>Communications Protocols</b>                                |  |  |  |
|  | IEEE 802 Ether-<br>net, NS/9000<br>(NFT), TCP/IP,<br>ARPA/Berkeley,<br>NFS, uucp,<br>SNA/3770,<br>SNA/3270,<br>NS/DEC<br>VAX/VMS | IEEE 802 Ether-<br>net, NS/9000<br>(NFT), TCP/IP,<br>ARPA/Berkeley,<br>NFS, uucp,<br>SNA/3770,<br>SNA/3270,<br>NS/DEC<br>VAX/VMS | IEEE 802 Ether-<br>net, NS/9000<br>(NFT), TCP/IP,<br>ARPA/Berkeley,<br>NFS, uucp,<br>SNA/3770,<br>SNA/3270,<br>NS/DEC<br>VAX/VMS |
| <b>Purchase Price (basic) (\$)</b>                             | 51,200   | 59,500 for 845S;<br>130,000 for<br>845SE   | 419,000 for<br>870/100;<br>689,000 for<br>870/200  |

A dash (—) in a column indicates that the information is unavailable from the vendor.

Hewlett-Packard now has the largest offering of UNIX computers in the industry. The HP 9000 Family includes the Series 300 workstations, the Series 600 servers, the Series 800 midrange systems, and the Series 1200 fault-tolerant computer.

The current HP 9000 Series 800 line comprises Models 808S, 815S, 825S, 832S, 835S, 835SE, 845S, 845SE, 850S, 855S, 870S/100, and 870S/200. HP announcements earlier this year added five new models to this Series:

- Model 832S enhances the entry level; it is more powerful than Model 815S and Model 825S, offering 15 MIPS, 16M bytes of main memory, and support for up to 64 users.
- Models 845S and 845SE similarly extend the midrange; both models offer performance of 23 MIPS. Board upgrades are available from Models 835S and 835SE to the Model 845S or 845SE.

- At the high end, HP expanded performance with the use of new chip technology in Models 870S/100 and 870S/200. These models offer up to four times the performance of the previous high-end model and six times the main memory. A board swap upgrade is available from the Model 850S or 855S to the new models.

A comparison of HP 9000 Series 800 Models 832S, 845S, 845SE, 870S/100, and 870S/200 appears in Table 1.

**Characteristics**

System characteristics of the Model 1240 are highlighted in the following table.

Use regular system comparison tables for more than one model, otherwise, use this specially-created table that can be placed on the front page:

| <b>Characteristics</b>               | <b>Model 1240</b> |
|--------------------------------------|-------------------|
| Date of Introduction                 | 4/90              |
| Operating System                     | HP-FX             |
| Upgradable to/from                   | NA                |
| MIPS                                 | 4.0               |
| Memory                               |                   |
| Min. capacity (bytes)                | 16M               |
| Max. capacity (bytes)                | 2G                |
| Cache Memory (bytes)                 | 256K              |
| Disk Storage                         |                   |
| Min. capacity (bytes)                | 760M              |
| Max. capacity (bytes)                | 19.5G             |
| Number of Processors                 | 2-64              |
| Number of Workstations               | 100-3,000         |
| Central Processor                    |                   |
| Computer Type                        | 32 bit            |
| Processor Model                      | 68030             |
| FP Co-Processor                      | 68882             |
| Proc. Clock Speed                    | 20MHz             |
| Purchase Price (basic configuration) | \$450,000         |
| Memory/Storage Included (bytes)      | 64M/4.6G          |

NA—Not applicable.

### Analysis

Hewlett-Packard's Model 1240 is essentially the Sequoia Systems Inc. Series 300. As a result of an agreement between the two vendors made in December of 1989, HP will market its new fault-tolerant system to the telecommunications industry, and Sequoia will incorporate HP's Precision Architecture (HP-PA) reduced instruction set computing (RISC) technology in future products.

Following on the heels of Digital's and IBM's fault-tolerant computer announcements, Hewlett-Packard's entry into fault-tolerant computing is not a breakthrough in technology. As with Digital and IBM, the fault-tolerant system merely rounds out the product line. The market for pure fault-tolerant machines is not a large one; HP hopes to capitalize on the growing telecommunications industry in such areas as telephone network management, on-line telephone service changes, and customer billing. The new fault-tolerant product will probably not take much business away from the current products; Hewlett-Packard already offers several models which provide a certain degree of continual operation/fault tolerance.

HP plans continued enhancements of the operating system, networking, hardware, and software tools for the new Series 1200. HP intends to eventually offer common user and application-developer environments for the entire HP 9000 product line.

HP nearly doubled the Series 800 product family with its introductions earlier this year. Customers now have the option of a more powerful entry-level system with Model 832S, and the growth capability has been enhanced with Models 845S and 845SE. By filling gaps in the price/performance range, Hewlett-Packard has significantly improved the upgrade options within the Series 800 family and has extended the life expectancies of its midrange models.

The new high-end Models 870S/100 and 870S/200 offer mainframe performance levels thanks to HP's new CMOS chip technology. Performance levels up to 95 MIPS are available, providing customers with extensive growth capabilities in this superminicomputer family.

### System Features

The HP 9000 Series 1200 Model 1240 achieves its performance through a design that features:

- Tightly coupled architecture, with duplicated CPU, memory, and I/O.
- Multiprocessing capabilities from up to 64 CPUs.
- High-speed memory cache for CPU data and instructions.
- A floating-point co-processor.

The HP 9000 Series 800 models feature:

- HP Precision Architecture.
- NMOS CPU chip (CMOS CPU on Models 870S/100 and 870S/200).
- High-speed memory cache for CPU data and instructions.
- A floating-point co-processor.

### System Configurations

The HP 9000 Model 1240 comes with an SPU containing:

- Two central processors with 256K bytes of cache memory and a floating-point co-processor
- Two 16M-byte memory modules
- 32 asynchronous I/O ports

The Series 800 Model 832S comes with an SPU containing:

- One central processor with 128K bytes of cache memory and a floating-point co-processor
- 16M bytes of main storage
- High-capacity backup with 1.3G-byte digital audiotape
- One asynchronous six-channel multiplexer
- One HP-IB interface

The Series 800 Models 845S and 845SE configure as follows:

- One central processor with 256K bytes of cache memory and a floating-point co-processor
- 16M bytes (32M bytes on Model 845SE) of main storage
- Battery backup system (optional on Model 845S)
- One asynchronous six-channel multiplexer
- One HP-IB interface

The Series 800 Models 870S/100 and 870S/200 configure as follows:

- CMOS CPU chip (two chips on Model 870/200)
- 96M bytes (128M bytes on Model 870/200) of main storage
- One HP-IB interface

#### **Availability**

The HP 9000 Model 1240 is available immediately. All HP 9000 Series 800 models are available now, except for Models 870S/100 and 870S/200, which will be available in the fourth quarter of 1990.

#### **Base Configuration Pricing**

Model 1240: \$684,900 (2 CPUs, 128 users).

Model 832S: \$51,200.

Model 845S: \$59,500.

Model 845SE: \$130,000.

Model 870S/100: \$419,000.

Model 870S/200: \$689,000.

#### **Price Reductions**

The cost of a Series 800 Model 835S was reduced 18 percent to \$37,000. The cost of Model 835SE was reduced 21 percent to \$80,000. ■