All About Supermini Systems

Computer technology is changing rapidly, with more and more power available in ever smaller and cheaper packages, and the ways in which computers are used are also changing. As computing expands beyond the mainframe-oriented computer room into the office and onto desktops, changes have inevitably occurred in the structure of information systems. The charter of the information center and even of the technology itself has changed from data calculation to the management and distribution of information for use throughout an organization. Computer buying decisions now rest more firmly with users, whose demands have led to many of the recent developments in the market. In addition, smaller organizations in need of cost-effective answers to growing computing needs are demanding increased power at affordable prices.

The proliferation of personal computers has created a need to connect the PCs to each other and to departmental and organizational hosts. In response, superminicomputer vendors have addressed the twin issues of standardization (both formal and de facto) and connectivity among diverse machines. The implementation of various protocols such as X.25, IBM's SNA, TCP/IP, and SDLC, and others is one of the methods used to achieve open communications. Additionally, adherence to local area network (LAN) standards based on the IEEE models, such as Xerox' Ethernet and AT&T's STARLAN NETWORK, is growing. Communications continue to improve. Nearly all systems in the supermini category are suitable for use as standalone systems, up to the level of an organizational host, and as gateways or servers in distributed environments, providing connectivity between mainframes and remote or local PCs.

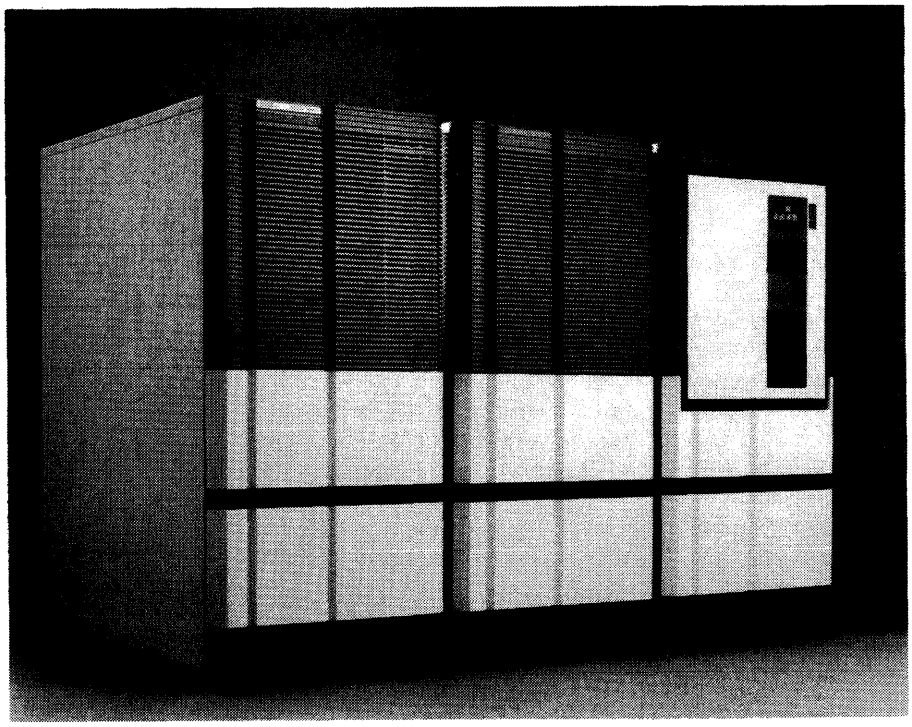
Superminis continue to grow in importance and gain market share as users add more departmental systems. Activity in this market segment remains high, with new introductions and upgrades of existing systems. This report examines the market, new supermini technologies, and vendor marketing strategies. Also included are detailed comparison columns covering 125 systems from 32 vendors.

The supermicro/mini/supermini segment continues to defy the creation of neatly separated classifications, with decreases in the size and special environment requirements of mainframes confusing the high end and 32-bit microprocessor-based machines confusing everything else. This difficulty notwithstanding, we have provided a look at the developments in the superminicomputer market, vendor strategies in the market, and an examination of current trends. In addition, information on 125 systems from 32 vendors is presented in easy-to-understand comparison column form to assist in the selection of a system suited to your needs.

SUPERMINI CHARACTERISTICS

A superminicomputer is generally characterized by the following features:

- A word length of at least 32 bits.
- A data path at least 32 bits wide between the CPU and main memory.



The 9840 is the top of the Pyramid Series 9000 family. The Series 9000 is a five system, object code-compatible family of computers based on Reduced Instruction Set Computing (RISC) technology.

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- Main memory capacity between 4 megabytes (MB) and 128MB.
- Disk storage capacity between 2 gigabytes (GB) and 100GB.
- Support for 16 to 512 users.
- Prices for base configurations beginning around $500,000, with fully configured, high-end systems priced as high as $1,000,000.

We still consider the 32-bit word the lowest common denominator differentiating superminis and traditional minis, although some superminis use 48- or 64-bit word lengths (Elxsi's System 6400 is an example of a 64-bit machine). However, while word size does distinguish superminis from 8- and 16-bit machines, it does not clarify the differences between superminis and the 32-bit microprocessor-based systems which range from barely more than a micro to near supercomputer performance. For example, CSI, an Austin, TX firm, builds the HS4000, an Intel 80386-based machine that uses 64 microprocessors, supports up to 1,000 users, and reports performance of over 250 million instructions per second (MIPS). Since word length cannot be used as a definitive feature, other factors are now considered more important in classifying these systems, primarily their "family history" (that is, the architectures from which present models are derived), their functionality and applicability, and which systems are considered competition. Prices and memory and disk capacity are other important considerations. Superminis generally support more memory and disk capacity and tend to cost significantly more than 32-bit supermicros.

ADVANTAGES

The advantages of using superminicomputers derive from their architectural characteristics, processing power, and high degree of configurability. They also offer cost-effective alternatives to centralized mainframes, encouraging their use as departmental systems.

Superminis possess architectural features that provide many advantages over minicomputers, including addressability (the 32-bit address provides access to up to 4.29 billion storage locations), increased precision in scientific and technical computations, more powerful instruction sets, and increased performance overall. These features result in increased overall performance, and other power-boosting features such as storage interleaving and cache memory further improve performance.

Although the once omnipresent MIPS rating is now largely out of favor, both among vendors and users, nothing else has emerged as a universally accepted performance standard. Nonetheless, those vendors that did provide MIPS ratings for our survey indicated a range from 0.5 MIPS to as high as 200 MIPS. This processing power makes the high-end superminis well suited to computation-intensive, CPU-bound applications. With the increasing number of users interested in specialized applications such as simulation, artificial intelligence, and CAD/CAM/CAE, raw power is a major advantage of these systems.

Superminis' disk and memory capacities provide sufficient storage for applications involving very large data bases. Applications such as computer-integrated manufacturing (CIM) and inventory control demand this level of memory and storage. (For additional information about superminicomputers in CIM applications, see *Datapro Manufacturing Automation Series.*)

The power and flexibility of superminis also allow them to integrate a variety of functions that have traditionally been divided among separate minicomputer systems. Both technical and commercial applications and support functions can be handled by a single supermini system, providing a cost-effective method of consolidating diverse organizational activities.

THE MARKET

IDC's figures for 1986 show that unit shipments in the medium-scale market as a whole fell 21 percent. However, an increase in the number of high-performance, high-priced superminis shipped in 1986 helped to offset the disappointing shipment figures. The value of shipments increased slightly worldwide on the strength of these higher priced systems at the high end of the market. This somewhat disappointing performance in a market that was widely thought to be on a fast track upward can be attributed to the rapid rise of multiuser supermicrocomputers, many based on the new 80386 chip.

Despite slower growth, competition in the supermini segment continues unabated as vendors target new markets and broaden the scope of their marketing programs. Across the industry, vendors that have long marketed systems specifically for technical applications are now offering their machines to more general markets. Sequent Computer Systems, Inc. and Pyramid Technologies have reputations as technical systems vendors and responded to last year's "Target Market" portion of our survey accordingly. In responding to this year's survey, the companies indicated targets including banking and finance, MIS, government and telecommunications, in addition to the more traditional CAD/CAM and engineering/scientific application areas. Though growth in technical markets is steady, it is not rapid and it is not expanding. At the same time, the rise of distributed/departmental processing has expanded the role of low-end superminis in commercial environments, while increasing power and configurability have made high-end systems attractive even as organizational hosts, especially to smaller companies. The technically oriented vendors cannot afford to ignore the new revenue opportunities represented by these changes.

High-end systems continue to produce much of the activity in the supermini arena. A number of vendors have announced new or enhanced systems which push perfor-

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mance levels to new extremes. Among the vendors announcing new machines or significant upgrades of existing equipment in the last year are Harris, Prime Computer, Data General, Digital Equipment, and IBM, along with a host of smaller vendors.

IBM's announcement of the 9370 in October 1986 was perhaps the biggest news in the medium-range market for some time. With this announcement, IBM finally answered the question of when, and how, it would provide medium-scale compatibility with its System/370 mainframe architecture. At the high end of IBM's line, the 9377 Model 90 outperforms the company's former top-end medium-range system, the 4381. The so-called VAX-killer has a lot of work to do, however, with Digital Equipment shipping its own high-end machines, the 8974 and 8978 VAXcluster systems, early in 1988. Data General announced the Eclipse MV/15000 series with three models positioned opposite Digital's VAX 8300, 8500, and 8550 and IBM's 9377. Prime announced the 6350 and 6550 systems offering VLSI and dual processor architectures that the vendor claims boost performance up to 270 times over its 9955 II, the high-end machine announced only last year. Harris has continued to expand the H-series with the announcement of six new systems, including the 32-bit HCX family, which extend the high end of the series.

If leaps in raw performance are the hallmark of the high-end supermini systems, better price/performance is the driving force at the low end. The need for power is no longer restricted to the *Fortune* 1000, and as smaller companies' computing activities have grown, their computing budgets have not always followed suit. In order to reach these firms, supermini vendors have been forced to offer increasing performance at stable or decreasing costs.

A parallel issue for smaller organizations is systems expandability. Many supermini vendors market modular systems which can be expanded in the field, through add-on units. Users can purchase more power as it is needed, making the expansion process easier and cheaper and protecting investments in hardware, software, and training.

There is no shortage of power in this market and, as competition continues to intensify and users' demands spur ongoing R & D efforts, both the high and low ends of the market will continue to be very active. Further, with IBM now a valid contender in the departmental computing arena, we should see an increase in the use of mid-range systems as departmental processors.

Trends

Architectural innovations, a move towards standards, and improvements in connectivity are among the continuing trends seen in the medium-scale systems market. Also, user demands and competitive pressures from third-party maintenance companies and from other vendors (many of whom now service competing vendors' products) are beginning to have a positive effect on customer service levels. All of these developments are closely linked to the increasing use of microprocessors in system design and the use of industry-standard interfaces and even operating systems, which provide the vendors with shorter, and therefore cheaper, development cycles.

The use of multiple standard microprocessor-based architectures to achieve performance increases at very low costs is noticeable, especially among the newer, and smaller, companies in the market. Some major vendors offer multiple microprocessor-based configurations in addition to their proprietary systems, and some systems employ a mix of industry-standard and proprietary chips.

Reduced Instruction Set Computing (RISC)-based systems have also grown in number. Vendors offering RISC-based superminis include Hewlett-Packard, with its much talked about 3000 Series 900. (HP has yet to ship these systems, but user response to the firm's 9000 Series RISC machine is reported to be positive.) Pyramid Technologies continues to offer strong secondary competition for Digital's high-end systems with its RISC-based machines that offer up to three times the performance of comparable Digital VAX systems at approximately half the price. MIPS Computer Systems is an OEM supplier of a compatible family of RISC-based system building blocks. These systems offer industry-standard communications, I/O architectures, programming languages, and data formats.

One problem that has been associated with the RISC architecture is the result of comparatively slower I/O speeds. Any benefits derived from improved CPU performance are quickly negated if data cannot be transferred with sufficient speed. RISC-based systems vendors are expanding on strictly theoretical RISC implementations to overcome some of the technology's inherent limitations. For example, Pyramid has added more complex instructions to the basic 32-bit instruction set to improve handling of I/O functions.

Parallel processing continues to prove itself as an interesting and useful supermini technology. The number of companies offering parallel architectures, based on both conventional processors and standard microprocessors, continues to grow. Among the firms in this area are International Parallel Machines, Elxsi, Flexible Computer Corporation, Sequent Computer Systems, and Concurrent Computer.

This architecture provides substantially increased processing speed by allowing multiple processors to execute various parts of a program simultaneously. Software must be properly configured in order to run in parallel, however, and unless the vendor provides assistance in the conversion of existing software, the process may require a large investment of the user's time and personnel resources. Further information on parallel processing can be found in Report 70C-000CH-101, "Parallel Processing—Advancing Technologies."

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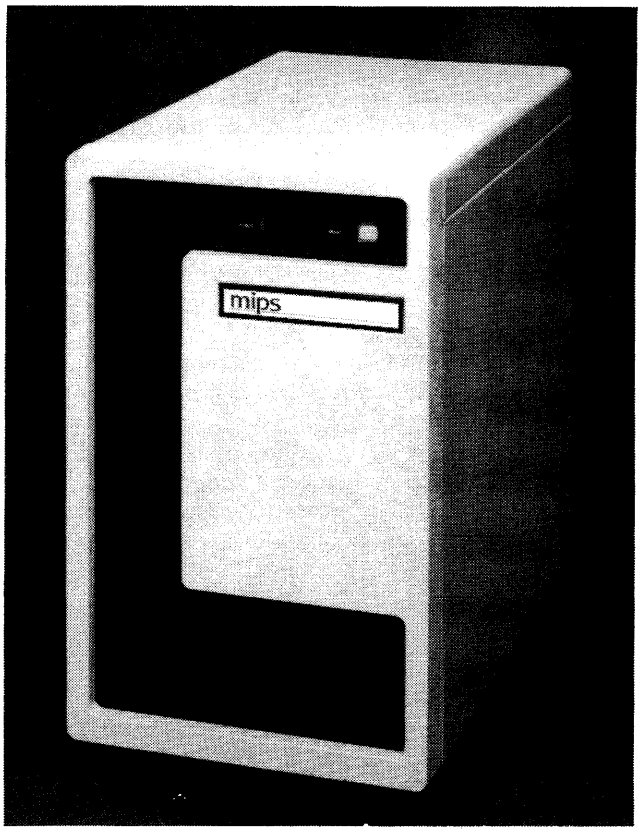

MIPS Computer Systems' MIPS M/500 is a development platform designed to fit easily into networks of computer systems running Unix. MIPS markets its systems to computer manufacturers and system integrators.

While growth rates in the fault tolerant market have slowed in the last couple of years, that technology continues to attract attention, especially in the areas of on-line transaction processing (OLTP), certain office automation applications, and industrial process control. These applications all demand very high reliability with a minimum of downtime.

Fault tolerance is a form of multiprocessing wherein a single program is run simultaneously by separate processors, or two processors are coupled, one running the program, and the other standing by to take over in case of a failure of the primary processor. Typically, fault tolerant computers are used in cases where the loss of data or of monitoring activities would prove catastrophic. Tandem and Stratus continue to lead this market, with Stratus' agreement to provide fault tolerant systems to IBM boosting its reputation considerably. Other vendors include Sequent, Geac, Concurrent, and Sequoia.

Use of Unix grows . . . slowly. The imminent explosion in the use of the Unix operating system that has been alternately predicted and dismissed in recent years has yet to occur. While government RFP requirements for Unix have led most vendors to provide some form of Unix capability or compatibility on their machines, only 5 percent of those responding to Datapro's 1987 survey of minicomputer and supermicro users plan to add the Unix system in 1987. For mainframe users, the figure was 3 percent. These results represent only a very slight increase over last year (2 percent for minis and supermicros and 1 percent for mainframes). Obviously, users are generally satisfied with proprietary operating systems and want to protect existing investments in software written to proprietary systems.

The growing number of microprocessor-based superminis may affect the number of Unix-based systems installed in the future, but the main determinant in this area is and will continue to be the amount of applications software available. Until true standards appear, enticing software developers to provide packages for the system, Unix will continue as the "other system," useful in certain specific application areas, but not overly attractive to the medium-range market as a whole. One trend to watch here is the growing interest in a single, unified operating environment combining Unix with Pick. Conversation with representatives of various vendors have even indicated that systems combining features of Unix, Pick, and DOS are under development in labs around the industry.

Customer service is improving throughout the market, driven both by customer demand and increasing competition in the service sector. Third-party maintenance firms are aggressively pursuing customers, providing users with an alternative to manufacturers' maintenance programs. Improved connectivity has resulted in the increasing implementation of multivendor solutions, and users are looking for maintenance programs that offer support for a variety of vendors' equipment.

System and component reliability go hand in hand with service, and improvements in this area were also noticeable over last year, with a number of the major vendors offering extended warranty periods on both systems and peripherals.

One final trend that deserves notice is that of system and peripheral capacity. In the past, many high-powered superminis have suffered from a lack of storage capacity, both in memory and on disk. Vendors have begun to address this problem, increasing memory and storage capacity while the price per megabyte for disk drives continues to drop.

THE COMPARISON COLUMNS

The key functional characteristics of 125 commercially available superminis from 32 manufacturers are presented in the accompanying comparison columns. The staff at Datapro Research greatly appreciates the vendors' cooperation in providing information for the preparation of these columns. A detailed vendor list appears after the comparison column explanations. All of the comparison column entries are explained in the following paragraphs.

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The absence of a company or a product from the comparison charts indicates: the company failed to respond to our repeated requests for information; the product is no longer actively being marketed; or the company is no longer in business.

Note: A dash (—) *for an entry indicates that the information has not been obtained from the vendor.*

WORD LENGTH

Traditionally, one of the most distinguishing characteristics of a computer has been its word length, that is, the number of bits that can be stored in or retrieved from main storage during a single cycle. All of the superminis currently on the market have at least a 32-bit word length, still the most frequently used criterion for distinguishing between the superminis and their smaller minicomputer relatives. However, with the advent of the 32-bit supermicrocomputers, this characteristic has lost much of its significance.

DISK STORAGE CAPACITY

This entry indicates the minimum and maximum on-line storage capacities offered by the system, expressed as millions of bytes (MB) or billions of bytes (GB). The figures indicate the capacity of a single disk drive or the total capacity of two or more drives that can be connected to the system. (Some of the maximums provided by the vendors are theoretical limits unlikely to be attained in an actual working environment.)

MEMORY RANGE

We list the minimum and maximum amount of main storage available for each computer, expressed in millions of bytes (MB).

NUMBER OF WORKSTATIONS SUPPORTED

A very important consideration for many potential computer users is the number of workstations the system can support. Workstations, in this case, can mean most types of devices that can input and/or receive data from the computer.

PRICE RANGE

Ideally, these figures represent the top and bottom of the price range for system hardware, from the minimum processor complex to a fully configured system. The figures actually presented in the columns can vary according to vendor response. In cases in which only one figure is quoted (e.g., "From $100,000"), the price is usually that of the minimum processor complex only.

TARGET MARKET

This entry indicates the industries toward which the system is geared. We asked for specific submarkets, including computer-aided design, manufacturing and engineering (CAD, CAM and CAE, respectively), banking and finance, and transaction processing.

CENTRAL PROCESSOR

CPU manufacturer and model. This information is included largely because many superminis are now built around multiple microprocessors from Intel and Motorola. We also indicate proprietary chip model numbers, if available.

CPU cycle time, nanoseconds. Cycle time is defined as the time that elapses between the CPU's call for data from a storage device and the delivery of that data by the I/O section of the processor.

MIPS. The MIPS rating indicates how many millions of instructions the computer can execute per second. The MIPS measurement has some validity as a measure of relative performance among members of the same product family, particularly in the same application environments. In some cases, the MIPS rating is given as a factor of a specific machine's performance. (e.g. " . . . with the PDP-11/780 rated at 1.0").

Hardware floating point. This facility is included in the standard instruction repertoires of most currently available superminis. A hardware floating point removes from the CPU the burden of performing floating-point arithmetic. The entries under this heading usually indicate that the system's hardware floating point is single-precision (SP), double-precision (DP), triple-precision (TP), quadruple-precision (QP), or a combination of the above.

Virtual memory. Virtual memory simplifies programming by providing a large addressable space on a high-speed disk storage unit that appears to the user as real main storage. The number of addressable bytes of virtual memory is provided in this entry.

Cache memory. Cache is a high-speed storage unit that can significantly increase the performance of a computer by serving as a fast-access buffer between main storage and the CPU or the I/O subsystem. The entry indicates the capacity in bytes of the cache memory unit, if applicable to the system.

Battery backup. This facility permits an orderly shutdown of the system in the event of an electrical failure or other sudden interruption. The entry indicates whether battery backup is standard, optional, or not applicable to a system.

Realtime clock or timer. A realtime clock enables the program to determine the time of day, while an interval timer usually indicates the amount of time that has elapsed since the occurrence of some significant event. In many cases, the timer can trigger an interrupt signal when a predetermined interval of time has elapsed. The entry

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indicates whether the clock or timer is standard, optional, or not applicable to the system.

MAIN STORAGE

Cycle/access time, nanoseconds. The *cycle time* is a minimum time interval that must elapse between the starts of two successive accesses to any one storage location. One cannot assume that the computer with the fastest cycle time will be the best overall performer in a particular application. Other parameters that have an important effect on a computer's performance include the flexibility and power of its instruction repertoire, the number of storage cycles it requires to execute each instruction, and its I /O capabilities. *Access time* is the actual elapsed time between the CPU's request for data and the time when that data is received (read) from memory.

Storage protection. This is a feature that prevents unauthorized writing to or reading from certain areas of main storage. The protection can be accomplished through hardware, software, or a combination of both. The entry indicates whether storage protection is standard, optional, or not applicable to the system, and what type of protection scheme is used.

Increment size, bytes. The size of the add-on units used to increase the system's main memory is listed.

INPUT/OUTPUT CONTROL

Type of bus. This entry indicates whether the system uses an industry standard Multibus or VMEbus, or names the proprietary bus, if applicable.

Number of I/O channels. We list the maximum combination of high-speed and low-speed channels that can be used to connect peripheral controllers to the CPU.

Aggregate bandwidth. Sometimes referred to as the "I/O bandwidth," the aggregate bandwidth is a measure of the computer's ability to transfer data to and from peripheral devices or other external sources through all available I/O channels, buses, and ports. The transfer rate is indicated in thousands or millions of bytes per second (KB/sec or MB/sec).

COMMUNICATIONS

Maximum number of lines. Here is listed the number of data communications lines that can be handled by a particular system. The types of lines are specified in the next two entries.

Synchronous. These lines transmit bits or characters (composed of 5 to 8 bits) of data in blocks at a relatively constant rate regulated by synchronizing characters at the beginning of each block. The entries indicate whether synchronous lines are standard, optional, or not applicable to the system. Where possible, the maximum data rate, or speed, of each line in bits per second (bps) is noted.

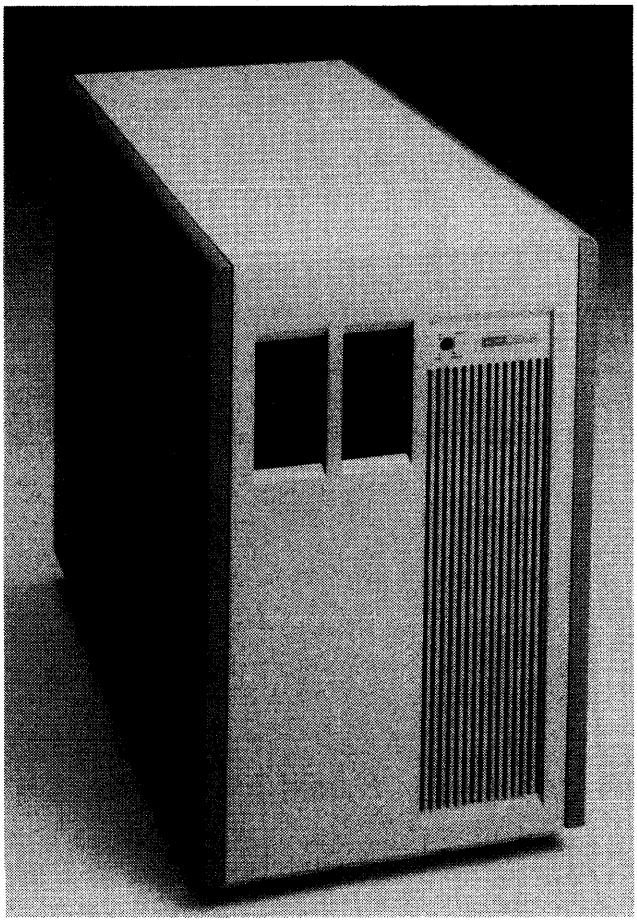
Asynchronous. Asynchronous lines transmit characters individually at irregular rates. A start bit precedes each character, and a stop bit follows it. The entry tells whether asynchronous lines are standard, optional, or not applicable, and also notes the line speed in bps.

Protocols supported. This entry indicates which intersystem communications conventions, if any, are supported through the availability of appropriate hardware and software facilities.

LAN supported. We list the local area network(s) that can be used to link the system to other computer systems within a limited area, such as an office building. Examples are the IEEE standards 802.3 (Ethernet) and 802.5 (Token-ring). The name of a proprietary LAN, if any, is also given.

RJE terminals supported. This entry indicates which of the popular remote job entry terminals, if any, the system can be equipped to emulate. Programs that emulate the functions of the IBM 2780, 3780 and 3770, and Hasp terminals are available for most current superminis.

IBM 3270 emulation. We note whether the system can be equipped to emulate the functions of the widely used IBM



The Power 6/32SX is a 5 MIPS supermini from Computer Consoles, Inc. that supports up to 96 users and can be upgraded in the field to provide 8 MIPS performance. The Power 6 family supports a full range of industry standard communications protocols.

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3270 display terminals and whether emulation is accomplished through IBM's BSC protocol or System Network Architecture (SNA).

PERIPHERAL EQUIPMENT

These entries provide details on the standard peripheral devices available for use with each computer system.

Disks supported. The types of disk media available for use on the system are listed. Most responses indicate a mixture of fixed and removable disk drives. This entry also supplies the storage capacities of the disk devices that are compatible with the system.

Cartridge tape drives. This entry indicates the availability of I/O devices that accommodate low-cost magnetic tape cartridges. Also listed are the recording densities in bits per inch (bpi) and speed in inches per second (ips).

Streaming tape drives. These devices permit data to be transferred to a tape without the tape's stopping between data blocks. This entry indicates the speed of the tape in ips and, where applicable, the presence of a start/stop mode that permits the streaming tape drive to emulate conventional tape subsystems.

Reel-to-reel tape drives. Listed here are the recording density in bpi and the speed in ips of tape drives that accommodate industry-standard magnetic tape.

Line printers. These devices operate at speeds of 100 to 2000 or more lines per minute (lpm) and are used most frequently in large configurations.

Serial printers. These printers generally range in speeds from about 30 to 600 or more characters per second (cps), employ various matrix and daisywheel technologies to print a character at a time, and are frequently able to print bidirectionally. This entry indicates the speeds of the serial printers available for the system.

Letter-quality printers. These low-speed serial printers (generally 30 to 55 cps) are used in office automation applications to produce correspondence-quality documents. This entry provides the speeds of the letter-quality printers available for the system.

Nonimpact printers. Printers in this category include laser, liquid crystal shutter (LCS), thermal transfer, ion deposition, and ink jet printers. We have indicated the type supported and the speed in lpm or pages per minute (ppm).

Other peripherals supported. Any additional peripheral devices available for each system are listed under this entry. Typical entries include optical character readers, scanners, and plotters and other graphics devices.

SOFTWARE

Prospective supermini buyers should carefully note whether the software they will require is included in the cost of the system or offered at extra cost. Detailed information on many supermini software packages can be found in the Volume 3 of *Datapro 70.*

Operating system name. We have indicated the name of the proprietary operating system as well as the name of any Unix derivative available as a primary or, more commonly, secondary operating system. (An operating system name that ends in "x" or "ix" generally indicates a Unix-based system.)

Operating system type. Typical entries describing the available operating systems include "batch," which means that the system processes one or more jobs sequentially and requires all data to be supplied before initiation; "realtime," which means that the system responds to external demands on a priority basis; "multiuser" which means that the system allows multiple users to access the system and share all its resources at the same time; or "multitasking", which indicates that more than one task or program can be run on the system simultaneously. The operating systems for many of the current superminis are capable of supporting two, three, or all four modes of operation simultaneously.

Data base management system (DBMS). The availability of an effective DBMS can greatly simplify applications programming tasks and increase the overall value of a data processing system. This entry provides the names and types of the principal DBMS available for the computer.

Assembler. With an assembler, programmers can write their own programs in a simplified format that uses mnemonic operation codes and symbolic operand addresses. The assembler program then converts these symbolic instructions into their machine-language equivalents, producing computer programs ready for loading and execution. Entries here indicate the availability of an assembler, a macro assembler, or both.

Compilers. These software tools shift part of the program preparation task from the user to the computer itself by converting programs written in a simplified, procedure-oriented language into machine-language object programs. Entries in this section of the columns include widely used high-level programming languages like Cobol, RPG, Fortran, Basic, C, APL, PL/1, and Pascal; more specialized languages, like Lisp, which is used for artificial intelligence applications; or proprietary languages available from a vendor for use on a particular system.

Principal applications available. This entry indicates the principal types of software packages available for the computer's target market. Principal applications for the engineering/scientific market would include CAD/CAE and solids modeling. Principal applications for the commercial market would include transaction processing, office automation, and general business packages. In some cases, the vendors have supplied the names of specific application packages for their target industries.

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Other applications available. This entry lists those software products that are not principal market applications for the system; rather, they are secondary packages available for use in the target market and collateral markets. For example, a vendor in the commercial market might list an office automation package as the principal industry application and a general accounting package—useful but not primary for the target market—as the other package.

PRICING AND AVAILABILITY

Typical system configuration and price. Intended to provide an accurate guide to the cost of the system, this entry includes a processor/peripheral configuration that would typically be used in the vendor's stated target business environment.

Although we requested full configurations and applicable prices, some vendors did not comply. Some provided only processor configurations and prices; others neglected altogether to provide hardware and pricing data. Where components and pricing for processor complexes only were supplied, we have left the information as is; potential buyers should thus be aware that the actual cost of a full system configuration could be many times that of the base processor price provided in the comparison column. When vendors supplied no information, we developed our own sample configurations in many cases. Although we believe each configuration to be realistic and accurate, the reader must realize that, depending upon the configuration and pricing rules imposed by the vendor, the actual price of a workable system could vary from that listed.

If you wish to buy two or more computers, it is worth noting that most of the manufacturers offer discounts from their list prices on orders for more than one computer.

Monthly maintenance of typical configuration. In this entry we have provided the amount to be paid to the vendor per month for service and repair of the typical configuration, under the maintenance contract.

Date of first delivery. The date when the first production model of each computer was delivered (or is scheduled to be delivered) to a customer is indicated.

Number installed to date. This entry shows how many systems of each type had been delivered to customers as of first quarter 1987.

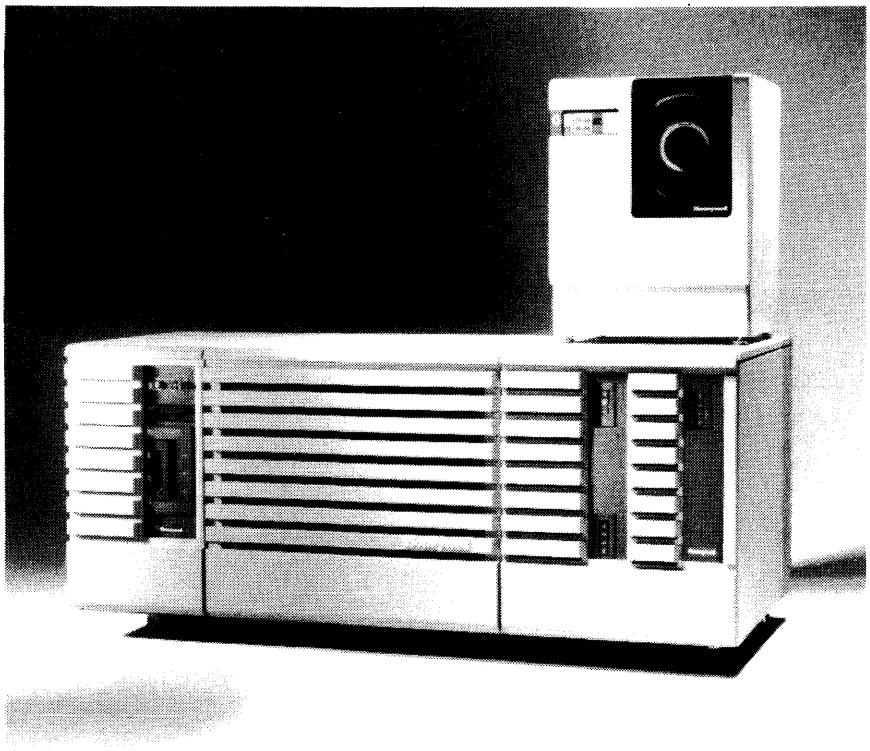
COMMENTS

This final entry on the comparison columns is used to explain or amplify the preceding entries and to provide other pertinent information about each system's hardware, software, pricing, applications, or characteristics.

SUPERMINI MANUFACTURERS

Listed below, for your convenience in obtaining additional information, are the full names, addresses, and telephone numbers of the 32 vendors whose products are listed in the specification charts that follow.

AT&T Information Systems, 1 Speedwell Avenue, Morristown, NJ 07690. Telephone (201) 898-2000.



Honeywell-Bull's DPS 6 PLUS is a new family of superminicomputers employing modular microprocessor architecture. This architecture allows processing power to be expanded incrementally, without disrupting daily business operations. The DPS 6 PLUS is compatible with Honeywell's older DPS 6 product line.

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Barrister Information Systems, One Technology Center, 45 Oak Street, Buffalo, NY 14203. Telephone (716) 845-5010.

BTI Computer Systems, 870 West Maude Avenue, Sunnyvale, CA 94086. Telephone (408) 733-1122.

Celerity Computing, 9692 Via Excelencia, San Diego, CA 92126. Telephone (619) 271-9940.

Computer Consoles, Inc. (CCI), 9801 Muirlands Blvd., Irvine, CA 92718. Telephone (714) 458-7282.

Computer Designed System Inc., 10911 Olson Memorial Highway, Minneapolis, MN. Telephone (612) 545-2855.

Concurrent Computer Corporation (formerly Perkin-Elmer Corporation, Data Systems Group), 197 Hance Avenue, Tinton Falls, NJ 07724. Telephone (201) 758-7000.

Control Data Corporation, 8100 34th Avenue South, Minneapolis, MN 55440. Telephone (612) 853-5130.

Counterpoint Computers, 2127 Ringwood Avenue, San Jose, CA 95131. Telephone (408) 434-0190.

Data General Corporation, 4400 Computer Drive, Westboro, MA 01580. Telephone (617) 366-8911.

Digital Equipment Corporation (DEC), 146 Main Street, Maynard, MA 01754-2571. Telephone (617) 897-5111.

Elxsi, 2334 Lundy Place, San Jose, CA 95131. Telephone (408) 942-0900.

Encore Computer Corporation, 257 Cedar Hill Street, Marlborough, MA 01752. Telephone (617) 460-0500.

Flexible Computer Corporation, 1801 Royal Lane, Building 8, Dallas, TX 75229. Telephone (214) 869-1234.

Gould Inc., Computer Systems Division, 6901 W. Sunrise Blvd., Fort Lauderdale, FL, 33313-4499. Telephone (305) 587-2900.

Harris Corporation, Computer Systems Division, 2101 West Cypress Creek Road, Fort Lauderdale, FL 33309. Telephone (305) 974-1700.

Hewlett-Packard Company, 1820 Embarcadero Road, Palo Alto, CA 94303. Contact local sales office.

Honeywell Bull, Inc., 300 Concord Road, Billerica, MA 01821. Telephone (617) 895-6000.

International Business Machines Corporation (IBM), Old Orchard Road, Armonk, NY 10504. Contact your local IBM representative.

International Parallel Machines, Inc., 700 Pleasant Street, New Bedford, MA 02740. Telephone (617) 990-2977.

MAI Basic Four, Inc., 14101 Myford Road, Tustin, CA 92680. Telephone (714) 731-5100.

McDonnell Douglas Computer Systems Company (formerly Microdata Corporation), 17481 Redhill Avenue, P.O. Box 19501, Irvine, CA 92713. Telephone (714) 250-1000.

MIPS Computer Systems, 930 Arques Avenue, Sunnyvale, CA 94086. Telephone (408) 720-1700.

NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45479. Telephone (513) 445-4158.

Prime Computer, Inc., Prime Park, Natick, MA 01760. Telephone (617) 655-8000.

Pyramid Technology Corporation, 1295 Charleston Road, P.O. Box 7295, Mountain View, CA 94039-7295. Telephone (415) 965-7200.

Ridge Computers, 2451 Mission College Blvd., Santa Clara, CA 95054. Telephone (408) 986-8500.

Sequent Computer Systems, Inc., 15450 SW Koll Parkway, Beaverton, OR 97006. Telephone (503) 626-5700.

Stratus Computer, Inc., 55 Fairbanks Boulevard, Marlboro, MA 01752. Telephone (617) 460-2000.

Tandem Computers, Inc., 19333 Vallco Parkway, Cupertino, CA 95014. Telephone (408) 725-6000.

Unisys Corporation, P.O. Box 500, Bluebell, PA 19424. Telephone (215) 542-4011.

Wang Laboratories, Inc., One Industrial Avenue, Lowell, MA 01851. Telephone (617) 459-5000. □

All About Supermini Systems

MANUFACTURER & MODEL	AT&T 3B5	AT&T 3B15	AT&T 3B20	Barrister Information Systems Corporation Model 3200 32 bits
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	40MB-2.2GB	40MB-2.2GB	256MB-8.8GB	160MB-3.2GB
MEMORY RANGE	2MB-16MB	2MB-16MB	2MB-16MB (per CPU)	4MB-8MB
NO. WORKSTATIONS SUPPORTED	128 (32-48 active)	128 (60 active)	256 (100-150 active)	16
PRICE RANGE, $	From 34,500	From 54,500 (3B15-101)	From 139,000	From 46,750
TARGET MARKET(S)	General business	General business	Custom applications	Legal Office Automation and Management
CENTRAL PROCESSOR				
CPU Manufacturer and Model	WE 32000	WE 32000	WE 32000	Bar. Bits Slice & MC68020
CPU Cycle Time, nanoseconds	—	—	—	62
MIPS	0.8-1.0	1.40	1.0-1.8	3.4
Hardware Floating Point	SP, DP	SP, DP	SP, DP	68881
Virtual Memory (addressable bytes)	Up to 4GB	Up to 4GB	Up to 4GB	—
Cache Memory, bytes	8KB	16KB	16KB	4KB
Battery Backup	—	Standard	Standard	Standard
Realtime Clock	—	—	—	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	245	245	400	400
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	1MB, 2MB	2MB	2MB	4096KB
INPUT/OUTPUT CONTROL				
Type of Bus	—	—	—	—
No. of I/O Channels	16	16	4	28
Aggregate Bandwidth, bytes/sec.	—	—	1MB-4MB	2.5MB/sec
COMMUNICATIONS				
Max. Number of Lines	—	—	—	8
Synchronous	Optional, 56K bps	Optional, 56K bps	Optional, 56K bps	Optional, 9.6K bps
Asynchronous	Optional, 19.2K bps	Optional, 19.2K bps	Optional, 9600 bps	Optional, 9.6K bps
Protocols Supported	BSC, SNA, TTY, RJE	BSC, SNA, TTY, RJE	X.25, HDLC, RJE, DDCMP, Hyperchannel	—
LAN Supported	Ethernet, 3BNet, ISN	Ethernet, 3BNet, ISN	Ethernet, 3BNet, ISN	Barrister/Net
RJE Terminals Supported	HASP	HASP	HASP	Optional
IBM 3270 Emulation	Yes	Yes	Yes	Optional
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 134MB, 279MB F/R: 40MB	Fixed: 134MB, 279MB F/R: 40MB	Winch: 279MB, 550MB Rem: 256MB	Fixed: 80MB-2400MB
Streaming Tape Drives	S/S, 25/75 ips	S/S, 75 ips	S/S, 75 ips	90 ips, S/S
Cartridge Tape Drives	—	—	—	—
Reel-to-reel Tape Drives	25/75 ips, 1600/6250 bps	75 ips, 1600/6250 bps	75-100 ips/1600/6250 bpi	None
Line Printers	600 lpm	600 lpm	600/1000 lpm	430-730 lpm
Serial Printers	120/200 cps	120/200 cps	—	25-270 cps
Letter Quality Printers	—	—	—	25-80 cps
Non-Impact Printers	—	—	—	Laser 10-24 ppm
Other Peripherals Supported	Plotters	Plotters	—	OCR
SOFTWARE				
Proprietary Operating System Name	UNIX System V Rel 3.1	UNIX System V Rel 3.1	UNIX System V Rel 3.1	MBX
Operating System Type	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser	RT, multiprocessing
Unix Derivative				Yes
Database Management System	dBase II, Ingres, Unify	dBase II, Ingres, Unify	Ingres	Barrister RDBMS, BIMS
Assembler	—	—	—	Macro
Compilers	C, Basic, Pascal, RM/Cobol	C, Basic, Pascal, RM/Cobol	C, Basic, Pascal, Cobol	Trial, C
Principal Application Available	General business	General business	General business	Legal
Other Applications Available	OA, communications, mgt control	OA, communications, mgt control	Third party	WP, Law acct'g, fin. mod info mngt, elctr mail
PRICING & AVAILABILITY				
Typical System Configuration and Price	Contact vendor	CPU, 4MB mem, 3 async cntrl, 24 term, 1600 bpi tape, 279MB & 134MB disk 200 cps prntrs, UNIX V — $158,209	CPU, 6MB mem, 5 async cntrl, 48 term, 1600 bpi tape/cntrl, 2 675MB disk 1000 lpm prntr, console, UNIX V — $326,605	4MB mem, 300MB disk, 55MB tape dr, system console, disk & tape cntr — $46,750
Monthly Maintenance of Typical Configuration	Contact vendor	Contact vendor	Contact vendor	$500
Date of First Delivery	—	—	—	—
Number Installed to Date	October 1985	December 1985	December 1985	—
COMMENTS	—	—	—	—

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MANUFACTURER & MODEL	Barrister Information Systems Corporation Model 3300 32 bits	BTI Computer Systems BTI-8000	Celerity Computing C1260	Computer Consoles Power6/32EX
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	160MB-3.2GB	67MB-9GB	337MB/44GB	278MB-13.3GB (fmtd.)
MEMORY RANGE	4MB-64MB	2MB-24MB	4MB/24MB	8MB-32MB
NO. WORKSTATIONS SUPPORTED	16	8-512	256	64
PRICE RANGE, $	From 124,350	100,000 - 750,000	110,000-150,000	145,000
TARGET MARKET(S)	Legal Office Automation and Management	Gen. Bus., Trans., MIS, Hospital lab, T.V.	Sci/Eng, CAD/CAM/CAE, Image Animation	Gen. Bus., Sci/Eng, CAD/CAM/CAE, Off. Auto.
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Prop, & up to 4 MC68020	TTL	Proprietary - RISC	CCI POWER 6/32EX
CPU Cycle Time, nanoseconds	40	67	100	100
MIPS	5-20	1.5-4.8	20	5
Hardware Floating Point	68881	DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	—	—	4GB/Process	4GB
Cache Memory, bytes	4KB	—	320KB	40KB
Battery Backup	Standard	Standard	Optional	None
Realtime Clock	Standard	Standard	Standard	None
MAIN STORAGE				
Cycle/Access Time, nanoseconds	400	—	N/A	400/100 (dpnd # bds.)
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4096KB	2MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	—	Proprietary	Multibus	VERSABus
No. of I/O Channels	28	Up to 32	2	1
Aggregate Bandwidth, bytes/sec.	2.5MB/sec	60MB/sec	Up to 16MB/sec	13.3MB/sec
COMMUNICATIONS				
Max. Number of Lines	8	512	128	384
Synchronous	Optional, 9.6K bps	—	Optional, 64K bps	Optional, 9600 baud
Asynchronous	Optional, 9.6K bps	Standard	Standard, 34.4K bps	Optional, 19.2K bps
Protocols Supported	—	—	HDLC, X.25, MAP, BSC, TCP/IP, SNA, TTY	SDLC, HDLC, X.25, BSC, TCP/IP, SNA, TTY
LAN Supported	Barrister/Net	—	IEEE 802.3	IEEE 802.3 (Ethernet)
RJE Terminals Supported	Optional	2780/3780	2780/3780, HASP	2780/3780, 3770
IBM 3270 Emulation	Optional	None	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 80MB-2400MB	Fixed: 67MB, 279MB Removable: 67MB, 254MB	140, 337, 474, 689MB Removable: 300, 337	Fixed: 278MB & 416MB
Streaming Tape Drives	90 ips, S/S	—	1600/25 ips	1600/6250 bpi, 100 ips
Cartridge Tape Drives	—	1/4", 6400 bpi	60MB	N/A
Reel-to-reel Tape Drives	None	1600 bpi - 45 ips	1600/6250, 125 ips	N/A
Line Printers	430-730 lpm	300, 600, 900 lpm	300/600 lpm	300, 600 lpm
Serial Printers	25-270 cps	—	120 cps	400 cps
Letter Quality Printers	25-80 cps	—	30 cps	55 cps
Non-Impact Printers	Laser 10-24 ppm	—	Laser	N/A
Other Peripherals Supported	OCR	—	High-resolution graphics displays	
SOFTWARE				
Proprietary Operating System Name	MBX	Virtual Resource Mgr	UNIX	CCI System V
Operating System Type	RT, multiprocessing	Batch, RT, mltsk, mltuse	Multiuser	Multitasking & multiuser
Unix Derivative	Yes	No	Berkeley 4.3	Yes
Database Management System	Barrister RDBMS, BIMS	MARS II- Relational DBMS	Informix & Ingres Rela.	UNIFY, BRS/SEARCH
Assembler	Macro	Relocatable	Celerity MACRO Assembl.	Yes
Compilers	Trial, C	Basic, Pascal, Fortran, Cobol, COMP (4GL for use with MARSII DBMS)	Pascal, C, Fortran, Lisp	Basic, Pascal, Fortran, Cobol, C
Principal Application Available	Legal	ASAPII-4GL Acctg;QuickII 4GL Distribution	Ansys, Patran (MCAE)	Off. Auto. -Office Power
Other Applications Available	WP, Law acct'g, fin. mod info mngt, elctr mail	Newstech (TV char. gen.) Rcoms (Real Estate), TRIAM, Modulus (both Lab Management)	Over 100 software pkgs are avail.	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	4MB mem, 800MB disk, 400MB tape dr, system console, disk & tape cntr — $124,350	CPU, 279MB fixed disk 254MB remov. disk, 24 ports—$98,950	C1260 Dyadic CPU, 4MB memory, 337MB disk, serial lines, printer port, realtime clock, Unix—$110,000	5MIPS CPU w/Floating Pt Accel,8MB mem, 340MB disk w/contrl, 1 1600bpi tape drv & contrl, 1 async I/O contrl w/32 RS-232 ports, 22 I/O expansion slots,UNIX Sys. V license for 32 users—$181,350
Monthly Maintenance of Typical Configuration	$745	$1,320	$905	$1,203
Date of First Delivery	—	—	—	—
Number Installed to Date	—	—	January 1986	New
COMMENTS		65+	100+	Easy upward migration path, field upgradable

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MANUFACTURER & MODEL	Computer Consoles Power6/32MP	Computer Consoles Power6/32S	Computer Consoles Power 6/32SX	Computer Consoles Power6/32X
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	278MB-13.3GB (fmtd.)	337MB-1.3GB (fmtd)	337MB-13.3GB (fmtd.)	278MB-13.3GB (fmtd.)
MEMORY RANGE	16MB-32MB	4MB-16MB	4MB-16MB	16MB-32MB
NO. WORKSTATIONS SUPPORTED	180	64	96	128
PRICE RANGE, $	257,000	89,950	109,950	173,000
TARGET MARKET(S)	Gen.Bus., Sci/Eng, CAD/CAM/CAE, Off. Auto.	Gen. Bus.,Sci/Eng, CAD/CAM/CAE, Off. Auto	Gen. Bus., Sci/Eng, CAD/CAM/CAE, Off. Auto.	Gen.Bus., Sci/Eng, CAD/CAM/CAE, Off. Auto.
CENTRAL PROCESSOR				
CPU Manufacturer and Model	CCI Power 6/32MP	CCI Power6/32S	CCI Power 6/32 SX	CCI POWER 6/32X
CPU Cycle Time, nanoseconds	100	100	100	100
MIPS	15	5	8	8
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4GB
Cache Memory, bytes	56KB	40KB	56KB	56KB
Battery Backup	None	None	None	None
Realtime Clock	None	None	None	None
MAIN STORAGE				
Cycle/Access Time, nanoseconds	400/100 (dpnd # bds)	400/100 (dep on # bds)	400/100 (dep. on # bds)	400/100
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4MB	4MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	VERSABus	VersaBUS	VersaBUS	VERSABus
No. of I/O Channels	1	1	1	1
Aggregate Bandwidth, bytes/sec.	13.3MB/sec	13.3 MB/sec	13.3MB/sec	13.3MB/sec
COMMUNICATIONS				
Max. Number of Lines	384	96 async, 48 sync	96 async, 48 sync	384
Synchronous	Optional, 9600 baud	Optional, 9600 baud	Optional, 9600 baud	Optional, 9600 baud
Asynchronous	Optional, 19.2K bps	Optional, 19.2K bps	Optional, 19.2K bps	Optional, 19.2K bps
Protocols Supported	SDLC, HDLC, X.25, BSC, TCP/IP, SNA, TTY	SDLC,HDLC,X.25, BSC, TCP/IP,SNA,TTY	SDLC, HDLC, X.25, BSC, TCP/IP, SNA, TTY	SDLC, HDLC, X.25, BSC, TCP/IP, SNA, TTY
LAN Supported	IEEE 802.3 (Ethernet)	IEEE 802.3 (Ethernet)	IEEE 802.3 (Ethernet)	IEEE 802.3 (Ethernet)
RJE Terminals Supported	2780/3780, 3770	2780/3780, 3770	2780/3780, 3770	2780/3780, 3770
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 278MB & 416MB	Fixed: 337MB	337MB fixed	Fixed: 278MB & 416MB Unform: 340MB & 515MB
Streaming Tape Drives	1600/6250 bpi, 100ips	1600 bpi,100 ips,25ips s/s	1600 bpi, 100 ips	1600/6250 bpi, 100 ips
Cartridge Tape Drives	N/A	QIC-24 format,90 ips	QIC-24 format, 90 ips	N/A
Reel-to-reel Tape Drives	N/A	N/A	N/A	N/A
Line Printers	300, 600 lpm	300, 600 lpm	300, 600 lpm	300, 600 lpm
Serial Printers	400 cps	400 cps	400 cps	400 cps
Letter Quality Printers	55 cps	55 cps	55 cps	55 cps
Non-Impact Printers	N/A	N/A	N/A	N/A
Other Peripherals Supported				—
SOFTWARE				
Proprietary Operating System Name	CCI System V	CCI System V	CCI System V	CCI System V
Operating System Type	Multitasking & multiuser	Multitasking & multiuser	Multitasking & Multiuser	Multitasking & multiuser
Unix Derivative	Yes	Yes	Yes	Yes
Database Management System	UNIFY, BRS/SEARCH	UNIFY, BRS/SEARCH	UNIFY, BRS/SEARCH	UNIFY, BRS/SEARCH
Assembler	Yes	Yes	Yes	Yes
Compilers	Basic, Pascal, Fortran Cobol	Basic, Pascal, Fortran, Cobol, C	Basic, Pascal, Fortran, Cobol, C	Basic, Pascal, Fortran, Cobol, C
Principal Application Available	Off. Auto., OfficePower	Off. auto. - Officepower	Off. Auto - Office Power	Off. Auto. - OfficePower
Other Applications Available		—	N/A	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	15 MIPS CPU w/2 floating Point Accel., 16MB mem, 2 515MB disks w/contrlr 1 6250bpi tape drive & control,1 async I/O cont w/32 RS-232 ports, 22 I/O expans. slots, UNIX V license for 32 users—$325,900	5MIPS CPU, 8MB mem, 380 MB disk w/contrl, cart. tape drv & contrl, 5 I/O expansion slots, 1 async I/O contrl w/32 RS-232 ports, UNIX Sys V lic. for 32 users.—$106,900	1 CPU, 8MB mem, 380MB disk w/contrl, cart. tape drive & controller 5 I/O expans. slots, 1 async I/O control w/32 RS-232 ports, UNIX System V license—$126,900	8 MIPS CPU w/Floating Point Accl, 16MB mem, 1 515MB disk w/contrlr, 1 6250 bpi tape drv & con 1 async I/O contrl w/ 32 RS-232 ports, 22 I/O expan. slots, UNIX Sys V license for 32 users—$221,050
Monthly Maintenance of Typical Configuration	$1,753	$874	$954	$1327
Date of First Delivery	—	—	—	—
Number Installed to Date	February 1987	January 1987	January 1987	1987
COMMENTS		N/A		—
				Easy upward migration path, field upgradable

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MANUFACTURER & MODEL	Computer Designed Systems Adviser 2200	Concurrent Computer Corporation 3203	Concurrent Computer Corporation 3205	Concurrent Computer Corporation 3230
WORD LENGTH	32 bit, 64 bits optional	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	58MB min; 22.8GB	51MB-170MB	51MB-1.2GB	51MB-144GB
MEMORY RANGE	2MB-200MB	2-4MB	2-4MB	4-16MB
NO. WORKSTATIONS SUPPORTED	840 maximum	16	16	128
PRICE RANGE, $	39,600 - 2,400,000	27,500-36,000	19,500-28,000	82,250
TARGET MARKET(S)	Gen Bus, Trans, MIS, Sci/Eng, CAD/CAM/CAE	General-purpose commercial, scientific	General-purpose commercial, scientific	General-purpose commercial, scientific
CENTRAL PROCESSOR				
CPU Manufacturer and Model	CDS 2264-012	—	—	—
CPU Cycle Time, nanoseconds	45 (25 ns 64 bit)	—	—	—
MIPS	—	0.397	0.397	0.98
Hardware Floating Point	SP, DP, TP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	Up to 12GB per process.	16MB	16MB	16MB
Cache Memory, bytes	Up to 2MB per process.	None	None	1K
Battery Backup	Std. (High duration opt)	None	Optional	Standard
Realtime Clock	Standard (Dual opt.)	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	55/85	400	400	500
Storage Protection	Standard, redundant	Standard	Standard	Standard
Increment Size, bytes	Variable	2MB	2MB	1M, 2MB, 4MB, 8MB
INPUT/OUTPUT CONTROL				
Type of Bus	ADVISER bus (prop.)	—	—	—
No. of I/O Channels	Variable	1	1	8
Aggregate Bandwidth, bytes/sec.	Over 64MB per channel	1.5MB/sec	1.5MB/sec	8MB/sec
COMMUNICATIONS				
Max. Number of Lines	840	16	24	128
Synchronous	Standard, over 72MB/sec.	Standard, 19.2K bps	Standard, 19.2K bps	Optional, 2M bps
Asynchronous	19.2K bps std., 56K opt.	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	SDLC, HDLC, X.25, LU6.2, TCP/IP, SNA	ADCCP, SDLC, HDLC, SNA, X.25, X.29	ADCCP, SDLC, HDLC, SNA, X.25, X.29	ADCCP, SDLC, HDLC, SNA, X.25, X.29
LAN Supported	802.3, .5, Adviser XNA	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	2780/3780	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	SNA	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: from 58MB Removable: from 300MB	Fixed & removable: 51MB-85MB	Fixed & removable: 51MB-676MB	Fixed & removable: 51MB-850MB
Streaming Tape Drives	Optional - various	90 ips	90 ips	90 ips
Cartridge Tape Drives	Optional - various	Does not apply	Does not apply	Does not apply
Reel-to-reel Tape Drives	Optional - various	Does not apply	800/1600/6250 bpi	800/1600/6250 bpi
Line Printers	300-2800 cpm	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm
Serial Printers	100-550 cps	180 cps	180 cps	180 cps
Letter Quality Printers	35-75 cps	55 cps	55 cps	55 cps
Non-Impact Printers	Laser	—	—	—
Other Peripherals Supported	All RS-232 devices	Does not apply	Card reader	Card reader
SOFTWARE				
Proprietary Operating System Name	AVOS, UNIX Optional	OS/32; Xelos	OS/32; Xelos	OS/32; Xelos
Operating System Type	RT, Multitasking & User	Realtime; multitasking	Realtime; multitasking	Realtime; multitasking
Unix Derivative	Sys V, optional	—	—	—
Database Management System	Adviser Relational	Reliance Plus	Reliance Plus	Reliance Plus
Assembler	N/A	Cal, Cal Macro	Cal, Cal Macro	Cal, Cal Macro
Compilers	Basic, Pascal, C, Cobol, PL/1, ADA, ABOL	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA
Principal Application Available	General business, engineering	General-purpose commercial	General-purpose commercial	General-purpose commercial
Other Applications Available	OA, various third-party	Numerous third-party applications	Numerous third-party applications	Numerous third-party applications
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, Memory, floating point, network, licenses —from $125,000	CPU; 2MB memory; loader; 8-line communications controller; one 82MB disk; streaming cartridge tape; console—$27,500	CPU; 2MB memory; loader; 8-line communications controller; floating point; one 182MB disk; streaming cartridge tape; console Video Display Unit—$30,800	CPU; 4MB memory; MPC; battery backup; console Video Display Unit—$82,250
Monthly Maintenance of Typical Configuration	Contact Vendor	$202	$295	$360
Date of First Delivery	1987	February 1985	1983	1981
Number Installed to Date	—	—	—	—
COMMENTS	Multiple CPU configuration, including hardware/software redundancy	Vendor says system designed for multiuser sites requiring ease of installation/operation	Can be used in fault-tolerant dual-processor configuration	Can be used in fault-tolerant dual-processor configuration

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MANUFACTURER & MODEL	Concurrent Computer Corporation 3230XP	Concurrent Computer Corporation 3230MPS	Concurrent Computer Corporation 3250XP	Concurrent Computer Corporation 3260MPS
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	51MB-288GB	51MB-288GB	51MB-288GB	51MB-576GB
MEMORY RANGE	2MB-16MB	2MB-16MB	2MB-16MB	2MB-16MB
NO. WORKSTATIONS SUPPORTED	128	128	256	256
PRICE RANGE, $	93,500-156,000	140,000-439,000	143,750-185,000	200,000-300,000
TARGET MARKET(S)	General-purpose commercial, scientific	General-purpose commercial, scientific	General-purpose commercial, scientific	General-purpose commercial, scientific
CENTRAL PROCESSOR				
CPU Manufacturer and Model	—	—	—	—
CPU Cycle Time, nanoseconds	—	—	—	—
MIPS	0.97	1.9-5.0	1.332	2.2-9.2
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16MB	16MB	16MB	16MB
Cache Memory, bytes	4K	4K	8K	12K base, 4/APU
Battery Backup	Standard	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	500	500	500	500
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M
INPUT/OUTPUT CONTROL				
Type of Bus	—	—	—	—
No. of I/O Channels	16	16	8-32	16-32
Aggregate Bandwidth, bytes/sec.	20MB/sec	20MB/sec	10-40MB/sec	20-40MB/sec
COMMUNICATIONS				
Max. Number of Lines	128	128	256	256
Synchronous	Optional, 2M bps	Optional, 2M bps	Optional, 2M bps	Optional, 2M bps
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	ADCCP, SDLC, HDLC, SNA, X.25, X.29	ADCCP, SDLC, HDLC, SNA, X.25, X.29	ADCCP, SDLC, HDLC, SNA, X.25, X.29	ADCCP, SDLC, HDLC, SNA, X.25, X.29
LAN Supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed & removable: 51MB-825MB	Fixed & removable: 51MB-825MB	Fixed & removable: 51MB-825MB	Fixed & removable: 51MB-825MB
Streaming Tape Drives	90 ips	90 ips	90 ips	90 ips
Cartridge Tape Drives	Does not apply	Does not apply	Does not apply	Does not apply
Reel-to-reel Tape Drives	800/1600/6250 bpi	800/1600/6250 bpi	800/1600/6250 bpi	800/1600/6250 bpi
Line Printers	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm
Serial Printers	180 cps	180 cps	180 cps	180 cps
Letter Quality Printers	55 cps	55 cps	55 cps	55 cps
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	Card reader	Card reader	Card reader	Card reader
SOFTWARE				
Proprietary Operating System Name	OS/32; Xelos	OS/32; Xelos	OS/32; Xelos	OS/32; Xelos
Operating System Type	Realtime; multitasking	Realtime; multitasking	Realtime; multitasking	Realtime; multitasking
Unix Derivative	—	—	—	—
Database Management System	Reliance Plus	Reliance Plus	Reliance Plus	Reliance Plus
Assembler	Cal, Cal Macro	Cal, Cal Macro	Cal, Cal Macro	Cal, Cal Macro
Compilers	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA
Principal Application Available	General-purpose commercial	General-purpose commercial	General-purpose commercial	General-purpose commercial
Other Applications Available	Numerous third-party applications	Numerous third-party applications	Numerous third-party applications	Numerous third-party applications
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU; 2MB memory; loader; 8-line communications controller; battery backup; 80MB disk; console Video Display Unit—$116,000	CPU; 2MB memory; Auxiliary Processing Unit (APU); floating-point processor; writable control store; loader; console Video Display Unit; 8-line comm. controller; 80MB disk—$163,500	CPU; 1MB memory; loader; writable control store; 2-line communications controller; battery backup; console Video Display Unit—$143,750	CPU; Auxiliary Processing Unit (APU); 2MB memory; floating point processor; writable control store; loader; 2-line communications controller; console Video Display Unit—$200,000
Monthly Maintenance of Typical Configuration	$585	$1,193	$763	$1,240
Date of First Delivery	—	—	—	—
Number Installed to Date	July 1985	July 1985	1983	1983
COMMENTS	—	—	—	—
	Can be used in fault-tolerant dual-processor configuration	Supports up to 5 APUs; can also be used in fault-tolerant dual-processor configuration	Can be used in fault-tolerant dual-processor configuration	Supports up to 9 APUs. Can also be used in fault-tolerant dual-processor configuration

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MANUFACTURER & MODEL	Concurrent Computer Corporation 3280MPS	Concurrent Computer Corporation XF/400	Concurrent Computer Corporation XF/600	Concurrent Computer Corporation XF/610
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	51MB-576GB	51MB-170MB	51MB-2.4MB	51MB-2.4MB
MEMORY RANGE	8M-128M	2MB-4MB	4MB-16MB	4MB-16MB
NO. WORKSTATIONS SUPPORTED	512	16	64	64
PRICE RANGE, $	287,100-1,061,400	24,195-35,305	35,500-37,500	49,500-51,500
TARGET MARKET(S)	General-purpose commercial, scientific	General-purpose commercial, scientific	General-purpose commercial, scientific	General-purpose commercial, scientific
CENTRAL PROCESSOR				
CPU Manufacturer and Model	—	—	—	—
CPU Cycle Time, nanoseconds	—	—	—	—
MIPS	6.4-33.8	0.387	0.98	.98
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16MB	16MB	16MB	16MB
Cache Memory, bytes	16K	None	None	None
Battery Backup	Standard	Optional	Optional	Optional
Realtime Clock	Standard	Optional	Optional	Optional
MAIN STORAGE				
Cycle/Access Time, nanoseconds	500	400	500	500
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	8M, 16M	2MB	1MB, 2MB, 4MB, 8MB	1MB, 2MB, 4MB, 8MB
INPUT/OUTPUT CONTROL				
Type of Bus	—	—	—	—
No. of I/O Channels	16-32	1	8	8
Aggregate Bandwidth, bytes/sec.	20-40MB/sec	1.5MB/sec	8MB/sec	8MB/sec.
COMMUNICATIONS				
Max. Number of Lines	512	16	64	64
Synchronous	Standard, 19.2K bps	Does not apply	Does not apply	Does not apply
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	ADCCP, SDLC, HDLC, SNA, X.25, X.29	SNA, BSC, X.25	SNA, BSC, X.25	SNA, BSC, X.25
LAN Supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed & removable: 51MB-825MB	Fixed: 51MB-85MB	Fixed & removable: 51MB-850MB	Fixed & removable: 51MB-850MB
Streaming Tape Drives	90 ips	90 ips	90 ips	90 ips
Cartridge Tape Drives	Does not apply	Does not apply	Does not apply	Does not apply
Reel-to-reel Tape Drives	800/1600/6250 bpi	None	800/1600/6250 bpi	800/1600/6250 bpi
Line Printers	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm
Serial Printers	180 cps	180 cps	180 cps	180 cps
Letter Quality Printers	55 cps	55 cps	55 cps	55 cps
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	Card reader	—	—	—
SOFTWARE				
Proprietary Operating System Name	OS/32; Xelos	Xelos, derived frm UNIX	Xelos, derived frm UNIX	Xelos, derived frm UNIX
Operating System Type	Realtime; multitasking	Timesharing, multitasking	Timesharing, multitasking	Timesharing, multitasking
Unix Derivative	—	—	—	—
Database Management System	Reliance Plus	Unify	Unify	Unify
Assembler	Cal, Cal Macro	Assembler Language	Assembler Language	Assembler Language
Compilers	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Cobol, C, Fortran, Unibol, RM/Cobol	Cobol, C, Fortran, Unibol, RM/Cobol	Cobol, C, Fortran, Unibol, RM/Cobol
Principal Application Available	Simulation/scientific computing	General business, technical	General business, technical	General business, technical
Other Applications Available	Numerous third-party applications	Numerous third-party applications	Numerous third-party applications	Numerous third-party applications
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU; 8MB memory; 80MB disk; 8-line comm. controller; Auxiliary Processing Unit (APU); writable control store; loader; console Video Display Unit; floating-point processor—$477,500	CPU; 2MB memory; loader; 8-line comm cntrl; 51MB disk; str tape; console; Xelos—$57,820	CPU; 4MB memory; loader; 8-line comm cntrl; 298MB disk; str tape; console; 16 ports; Xelos — $57,820	CPU; 4MB memory; loader; 8-line comm cntrl; 298MB disk; str tape; console; 32 ports; Xelos—$17,820
Monthly Maintenance of Typical Configuration	$1,970	$170	$345	$393
Date of First Delivery	—	—	—	—
Number Installed to Date	November 1985	September 1985	September 1985	September 1985
COMMENTS	—	—	—	—
	Supports up to 5 APUs; can also be used in fault-tolerant dual-processor configuration			

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MANUFACTURER & MODEL	Concurrent Computer Corporation 3212	Control Data Corporation Cyber 180 Models 810A & 830A	Counterpoint Computers System 19K	Data General Corporation Eclipse MV/2000
WORD LENGTH	32 bits	64 bits	32 bits	32 bits
DISK STORAGE CAPACITY	51MB-7.2GB	402MB-1.6GB/drive	100MB-4.3GB	38MB-320MB
MEMORY RANGE	4-16MB	8MB-64MB	2MB-40MB	2MB-5MB
NO. WORKSTATIONS SUPPORTED	64	—	6-96	24
PRICE RANGE, $	42,000-44,000	121,000-175,000	14,850-100,000	From 17,500
TARGET MARKET(S)	General-purpose commercial, scientific	Gen Bus, Trns Proc, Scientific	Gen. Bus., Trans, MIS, Scientific	OA, Mfg, Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	—	Proprietary	Motorola 68020	DG MV/2000
CPU Cycle Time, nanoseconds	—	—	—	—
MIPS	.98	0.8-1.2	2 per proc., 8 CPUs max.	—
Hardware Floating Point	SP, DP	SP, DP	SP	SP, DP
Virtual Memory (addressable bytes)	16MB	—	1GB Per Process	4GB
Cache Memory, bytes	1K	None	None	None
Battery Backup	Optional	—	Optional	Standard
Realtime Clock	Standard	—	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	500	400	270	160
Storage Protection	Standard	Standard	Optional	Standard
Increment Size, bytes	1M, 2MB, 4MB, 8MB	—	1MB	2MB
INPUT/OUTPUT CONTROL				
Type of Bus	—	—	Multibus, Prop, SCB, IPB	DCH
No. of I/O Channels	8	8-16	N/A	16
Aggregate Bandwidth, bytes/sec.	8MB/sec	—	45MB/sec	1.4MB/sec
COMMUNICATIONS				
Max. Number of Lines	64	32	96	14
Synchronous	Optional, 2M bps	Optional, 128K bps	1 std. & 18 opt.	Standard, 56K bps
Asynchronous	Standard, 19.2K bps	Optional, 38.4K bps	6 std. & 90 opt.	Standard
Protocols Supported	ADCCP, SDLC, HDLC, SNA, X.25, X.29	HDLC, X.25, others	SDLC, X.25, BSC, TCP/IP, TTY	X.25, SDLC, SNA, XNS, Xodiac
LAN Supported	Ethernet	IEEE 803.2, CDCNet	IEEE 802.3	IEEE 802.3
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	3770	2780/3780, HASP
IBM 3270 Emulation	Yes	BSC	SNA	SNA
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed & removable: 51MB-850MB	Fixed: 402MB-1.6GB	600MB Int., 4.3GB Ext.	—
Streaming Tape Drives	90 ips	1600/6250 bpi, 25/75 ips	60MB	30 ips, 6400 bpi
Cartridge Tape Drives	Does not apply	1600/6250bps, 100-200 ips	1600/3200 bpi & 6250 ips	60 ips, 6400 bpi
Reel-to-reel Tape Drives	800/1600/6250 bpi	—	—	50/75 ips,800/ 1600/6250
Line Printers	300/600/1200 lpm	300/600/1200/1600/2000	Centronics compatible	230-1200 lpm
Serial Printers	180 cps	—	—	—
Letter Quality Printers	55 cps	—	—	20/35/40 cps
Non-Impact Printers	—	Laser, 70 ppm	—	Laser, 8-12 ppm
Other Peripherals Supported	Card reader	—	—	—
SOFTWARE				
Proprietary Operating System Name	OS/32; Xelos	NOS	—	AOS/VS,AOS/DVS,AOS/ RT
Operating System Type	Realtime; multitasking	RT, multitask, multiuser	Multitasking & multiuser	Multitask, multiuser
Unix Derivative	—	NOS/VE	C-XIX based on UNIX V	MV/UX, DG/UX
Database Management System	Reliance Plus	DMS-170	Informix, Unify	DG/DBMS, DG/SQL
Assembler	Cal, Cal Macro	No, Cybil	Yes	—
Compilers	Cobol, Fortran, Basic, Pascal, RPG II, C, ADA	Basic, Pascal, C, Cobol, Fortran, Lisp, Prolog, APL, Algol	Basic, Pascal, Fortran Cobol, Lisp, C	Cobol, Fortran, C, PL/1, Pascal, DG/L, APL, RPGII
Principal Application Available	General-purpose commercial	Sci/Eng.	OEM & VAR sales only	OA
Other Applications Available	Numerous third-party applications	OA, Bus mngt, finance, WP, education	Q-Off, Off. auto. s'ware Locus PC Interface	Mfg, Sci/Eng
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU; 4MB memory; MPC; selector channel; disk subsystem; one 182MB disk; console Video Display Unit; OS/32 right of copy—$58,190	CPU, 8MB mem, 10 PPUs, 8 I/O channels, console, 804MB disk, 2 tape units, cntrl, line prntr, NOS—$202,851	1 processor, 2MB, 100MB disk, dskette Ethernet — $14,850 64 User sys w/4 proc, 16 MB RAM, 700MB disk,cart. tape, Ethernet—$107,200	CPU, 2MB mem, 70MB disk, 4 ser ports, prntr, 4 workstations, OS lic.—$25,635
Monthly Maintenance of Typical Configuration	$330	$1,334	$1,000	—
	—	—	—	—
Date of First Delivery	1981	August 1986	August 1985	January 1987
Number Installed to Date	—	—	750	—
COMMENTS	Can be used in fault-tolerant-dual processor configuration		Multiproc. sys. offering expandability. 1-10 proc support for 6-96 users on 1 chassis. Field upgradable.	

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MANUFACTURER & MODEL	Data General Corporation Eclipse MV/7800	Data General Corporation Eclipse MV/15000	Data General Corporation Eclipse MV/20000	Digital Equipment Corporation (DEC) VAX 8250
WORD LENGTH	32 bits	32 Bits	32 bits	32 bits
DISK STORAGE CAPACITY	70MB-9.4GB	592MB-16.5GB	Up to 27GB	205MB-3.6GB
MEMORY RANGE	2MB-14MB	4MB-32MB	4MB-64MB	4MB-32MB
NO. WORKSTATIONS SUPPORTED	48-128	432	Up to 1,008	16-64
PRICE RANGE, $	From 27,550	From 57,200	From 271,000	From 65,000
TARGET MARKET(S)	OA, Mfg, Sci/Eng	OA, Mfg, Sci/Eng	OA, Mfg, Sci/Eng	Gen. bus., Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	DG MV/7800	DG MV/15000	DG MV/20000	Proprietary
CPU Cycle Time, nanoseconds	—	—	—	200
MIPS	1	—	—	1.2
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4GB
Cache Memory, bytes	None	16KB	20KB	8KB
Battery Backup	Standard	Standard	Standard	Optional
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	320	85	85	600
Storage Protection	Standard	Standard	Standard	ECC
Increment Size, bytes	2MB	2MB	2MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	DCH, BMC	DCH, BMC	DCH, BMC	VAXBI, Unibus
No. of I/O Channels	16	16	16	2
Aggregate Bandwidth, bytes/sec.	14.2MB/sec/CPU	14.2MB/sec/CPU	14.2MB/sec/CPU	13.3MB/sec
COMMUNICATIONS				
Max. Number of Lines	4	432	32-1,008	
Synchronous	Standard, 56K bps	Standard, 56K bps	Standard, 56K bps	Standard
Asynchronous	Standard	Standard	Standard	Standard
Protocols Supported	X.25, SDLC, SNA, XNS, Xodiac	X.25, SDLC, SNA, XNS, Xodiac	X.25, SDLC, SNA, XNS, Xodiac	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA
LAN Supported	IEEE 802.3	IEEE 802.3	IEEE 802.3	IEEE 802.3, DECnet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780
IBM 3270 Emulation	SNA	SNA	SNA	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 50MB Rem.: 192MB, 277MB	Fixed: 50MB-592MB Rem.: 192MB, 277MB	Fixed: 50MB-592MB Rem.: 192MB, 277MB	Fixed: 456MB Rem.: 205MB
Streaming Tape Drives	30 ips, 6400 bpi	30 ips, 6400 bpi	30 ips, 6400 bpi	75/25 ips, 1600/6250 bpi
Cartridge Tape Drives	60 ips, 6400 bpi	60 ips, 6400 bpi	60 ips, 6400 bpi	—
Reel-to-reel Tape Drives	50/75 ips,800/ 1600/6250	50/75 ips, 800/1600/6250	50/75 ips,800/ 1600/6250	125 ips, 1600/6250 bpi
Line Printers	230-1200 lpm	230-1200 lpm	230-1200 lpm	600 lpm
Serial Printers	—	—	—	240 cps
Letter Quality Printers	20/35/40 cps	20/35/40 cps	20/35/40 cps	30 cps
Non-Impact Printers	Laser, 8-12 ppm	Laser, 8-12 ppm	Laser, 8-12 ppm	Laser, 8-12 ppm
Other Peripherals Supported	—	—	—	Plotters, voice synthesis module
SOFTWARE				
Proprietary Operating System Name	AOS/VS, AOS/DVS,AOS/RT	AOS/VS, AOS/DVS,AOS/RT	AOS/VS, AOS/DVS,AOS/RT	VAX/VMS
Operating System Type	Multitask, multiuser	Multitask, multiuser	Multitask, multiuser	Batch, multiuser
Unix Derivative	MV/UX, DG/UX	MV/UX, DG/UX	MV/UX, DG/UX	Ultrix-32
Database Management System	DG/DBMS, DG/SQL	DG/DBMS, DG/SQL	DG/DBMS, DG/SQL	VAX DBMS, VAX/Rdb/VMS
Assembler	—	—	—	Macro
Compilers	Cobol, Fortran, C, PL/1, Pascal, DG/L, APL, RPGII	Cobol, Fortran, C, PL/1, Pascal, DG/L, APL, RPGII	Cobol, Fortran, C, PL/1, Pascal, DG/L, APL, RPGII	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66, APL
Principal Application Available	OA	OA	OA	Sci/Eng
Other Applications Available	Mfg, Sci/Eng	Mfg, Sci/Eng	Mfg, Sci/Eng	OA, third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 4MB mem, 16MB disk, 4 ser ports, prntr, 4I/O ports, OS lic. — $28,400	Model 8 CPU, 8MB mem, 2 592MB dsk, prntr, 16wkst AOS/VS lic. — $173,360	Model 1 CPU, 24MB mem, 5.33GB disk, 2 prntr, 64 term, cntrl, OS lic— $730,220	CPU, 8MB mem, disk cntrl 456MB disk, 75 ips tape, 600 lpm prntr, comm cntr 1 yr. warr., VAX VMS & DECnet lic., 16 term. — $163,785
Monthly Maintenance of Typical Configuration	— —	— —	— —	Contact vendor —
Date of First Delivery	1986	1986	1986	March 1987
Number Installed to Date	—	—	—	NA
COMMENTS				

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MANUFACTURER & MODEL	Digital Equipment Corporation (DEC) VAX 8350	Digital Equipment Corporation (DEC) VAX 8530	Digital Equipment Corporation (DEC) VAX 8550	Digital Equipment Corporation (DEC) VAX 8600
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	205MB-1.8GB	205MB-5.4GB	205MB-5.4GB	205MB-25.5GB
MEMORY RANGE	4MB-32MB	32MB-80MB	32MB-80MB	4MB-68MB
NO. WORKSTATIONS SUPPORTED	24-96	32-200	72-370	512
PRICE RANGE, $	From 88,000	From 292,000	From 411,000	From 350,000
TARGET MARKET(S)	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	200	135-1260	495	80
MIPS	2.2-2.3	4.2	6	4.4
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4GB
Cache Memory, bytes	8KB	64KB	16KB	16KB
Battery Backup	Optional	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	600	13	13	560
Storage Protection	ECC	ECC	ECC	Standard
Increment Size, bytes	4MB	4MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	VAXBI, Unibus	VAXBI, Unibus	VAXBI, Unibus	Unibus, Massbus
No. of I/O Channels	2	2	3	11
Aggregate Bandwidth, bytes/sec.	13.3MB/sec	13.3MB/sec	16MB/sec	1MB-2MB/sec
COMMUNICATIONS				
Max. Number of Lines			32	24
Synchronous	Standard	Standard	Standard	Standard
Asynchronous	Standard	Standard	Standard	Standard
Protocols Supported	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP
LAN Supported	IEEE 802.3, DECnet	IEEE 802.3, DECnet	IEEE 802.3, DECnet	IEEE 802.3, DECnet
RJE Terminals Supported	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 456MB Rem.: 205MB	Fixed: 456MB Rem.: 205MB	Fixed: 456MB Rem.: 205MB	Fixed: 121MB, 456MB Rem.: 205MB
Streaming Tape Drives	75/25 ips, 1600/6250 bpi	75/25 ips, 1600/6250 bpi	75/25 ips, 1600/6250 bpi	75/25 ips, 1600/6250 bpi
Cartridge Tape Drives	—	—	—	—
Reel-to-reel Tape Drives	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi
Line Printers	600 lpm	600 lpm	600 lpm	215-1200 lpm
Serial Printers	240 cps	240 cps	240 cps	50-240 cps
Letter Quality Printers	30 cps	30 cps	30 cps	25-55 cps
Non-Impact Printers	Laser, 8-12 ppm	Laser, 12 ppm	Laser, 12 ppm	Laser, 8-12 ppm
Other Peripherals Supported	Plotters, voice synthesis module	Plotters, voice synthesis module	Plotters, voice synthesis module	Plotters, voice synthesis module
SOFTWARE				
Proprietary Operating System Name	VAX/VMS	VAX/VMS	VAX/VMS	VAX/VMS
Operating System Type	Batch, multiuser	Batch, multiuser	Batch, multiuser	Batch, multiuser
Unix Derivative	Ultrix-32	Ultrix-32	Ultrix-32	Ultrix-32
Database Management System	VAX DBMS, VAX/Rdb/VMS	VAX DBMS, VAX/Rdb/VMS	VAX DBMS, VAX/Rdb/VMS	VAX/DBMS, VAX/Rdb/VMS
Assembler	Macro	Macro	Macro	Macro
Compilers	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66, APL	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66, APL	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1 ADA, Lisp, APL, Coral 66	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,
Principal Application Available	Sci/Eng	Sci/Eng	Gen. bus, Sci/Eng	Gen bus, Eng/sci.
Other Applications Available	OA, third party	OA, third party	OA, third party	OA, third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 12MB mem, disk cntr 456MB disk, 75 ips tape, comm cntr,1 yr. warr., VAX VMS & DECnet lic., term. — $159,000	CPU, 16MB mem, disk cntr 456MB disk (3), 75 ips tape, comm cntr, 1 yr. war., VAX VMS & DECnet lic., 40 term., 600lpm prntr — $483,050	CPU, 48MB mem, f.p., VAXBI channel, disk cntr term., 1 yr warr, All-in-1, VAX/VMS, DECnet lic. — $521,000	CPU, 4MB mem, disk/tape cntrlr, VAX/VMS lic. & warr., Ultrix-32 lic. & warr. — $350,000
Monthly Maintenance of Typical Configuration	Contact vendor —	Contact vendor —	Contact vendor —	$1,301 —
Date of First Delivery	March 1987	March 1987	August 1986	April 1985
Number Installed to Date	NA	NA	NA	NA
COMMENTS				

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MANUFACTURER & MODEL	Digital Equipment Corporation (DEC) VAX 8650	Digital Equipment Corporation (DEC) VAX 8700	Digital Equipment Corporation (DEC) VAX 8800	Digital Equipment Corporation (DEC) VAX 8974
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	205MB-25.5GB	205MB-7.2GB	205MB-7.2GB	2.5GB
MEMORY RANGE	16MB-68MB	32MB-128MB	32MB-128MB	128MB-512MB
NO. WORKSTATIONS SUPPORTED	512	72-320	72-320	288-1,280
PRICE RANGE, $	From 400,000	From 479,000	From 672,000	From 2,570,000
TARGET MARKET(S)	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng	Gen. bus., Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	Proprietary (4 CPU)
CPU Cycle Time, nanoseconds	80	45	45	NA
MIPS	6.3	6.0	9.5 - 12.7	26
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4GB
Cache Memory, bytes	16KB	64KB	64KB per CPU	64KB per CPU
Battery Backup	Standard	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	384	495	135-1206	495
Storage Protection	ECC	ECC	ECC	ECC
Increment Size, bytes	4MB	4MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Unibus, Massbus	Unibus, Massbus	VAXBI/Unibus	VAXBI, Unibus
No. of I/O Channels	12	6	6	24
Aggregate Bandwidth, bytes/sec.	1MB-2MB/sec	13.3MB/sec	30MB/sec	212.8MB/sec
COMMUNICATIONS				
Max. Number of Lines	24	24	24	—
Synchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard 19.2K bps	Standard, 19.2K bps
Asynchronous	Standard	Standard	Standard	Standard
Protocols Supported	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, DDCMP	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, DDCMP	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, DDCMP
LAN Supported	IEEE 802.3, DECnet	IEEE 802.3, DECnet	IEEE 802.3, DECnet	IEEE 802.3, DECnet
RJE Terminals Supported	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 121MB, 456MB Rem.: 205MB	Fixed: 456MB Rem.: 205MB	Fixed: 456MB Rem.: 205MB	Fixed: 456MB Rem.: 205MB
Streaming Tape Drives	75/25 ips, 1600/6250 bpi	25/75/100 ips	25/75/100 ips	S/S — 25/75/100 ips
Cartridge Tape Drives	—	—	—	—
Reel-to-reel Tape Drives	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi
Line Printers	600 lpm	600 lpm	600 lpm	600 lpm
Serial Printers	240 cps	240 cps	240 cps	240 cps
Letter Quality Printers	30 cps	30 cps	30 cps	30 cps
Non-Impact Printers	Laser, 8-12 ppm	Laser, 8-12 ppm	Laser, 8-12 ppm	Laser, 8-12 ppm
Other Peripherals Supported	Plotters, voice synthesis module	Plotters, voice synthesis module	Plotters, voice synthesis module	Plotters, voice synthesis module
SOFTWARE				
Proprietary Operating System Name	VAX/VMS	VAX/VMS	VAX/VMS	VAX/VMS
Operating System Type	Batch, multiuser	Batch, multiuser	Batch, multiuser	Batch, multiuser
Unix Derivative	Ultrix-32	Ultrix-32	Ultrix-32	Ultrix-32
Database Management System	VAX/DBMS, VAX/Rdb/VMS	VAX/DBMS, VAX/Rdb/VMS	VAX/DBMS, VAX/Rdb/VMS	VAX/DBMS, VAX/Rdb/VMS
Assembler	Macro	Macro	Macro	Macro
Compilers	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,
Principal Application Available	Gen bus, Eng/sci.	Gen bus, Eng/sci.	Gen bus, Eng/sci.	Gen bus, Eng/sci.
Other Applications Available	OA, third party	OA, third-party	OA, third party	OA, third-party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 16MB mem, disk/tape cntrlr, VAX/VMS lic. & warr., Ultrix-32 lic. & warr. — $400,000	CPU, 32MB mem, f.p., disk cntr, VAX/VMS lic. & warr., Ultrix-32 lic. & warr., VAXBI channel, Ethernet interface, warr anty, VAX/VMS & DECnet lic, battery bk up — $479,000	Dual CPU, 48MB mem, f.p. 456MB disk, VAX/VMS lic. & warr., Ultrix-32 lic. & warr., 2 VAXBI channel Ethernet interface, warr anty, VAX/VMS & DECnet lic, VAXcluster port, 2-600 lpm prnter, laser, 60 term — $936,705	4 CPUs, 128MB mem, f.p disk cntrl, VAX/VMS lic. & warr., h'ware warranty 4 VAXBI chnls, tape dr., Ethernet interface, warr anty, VAX/VMS & DECnet lic, VAXcluster cnctions 2.5GB disk, — $2,810,000
Monthly Maintenance of Typical Configuration	$1,301 —	— —	NA —	NA —
Date of First Delivery	Q1 '86	Q4 '86	Q2 '86	1987
Number Installed to Date	NA	NA	NA	NA
COMMENTS				

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MANUFACTURER & MODEL	Digital Equipment Corporation (DEC) VAX 8978	Elxsi, Ltd. System 6400	Encore Computer Multimax 120	Encore Computer Multimax 320
WORD LENGTH	32 bits	64bits	32 Bits	32 bits
DISK STORAGE CAPACITY	5GB	474MB-750GB	300MB/50.4GB	300MB/50.4GB
MEMORY RAI'GE	256MB-1GB	8MB-2GB	8MB-128MB	4MB-128MB
NO. WORKSTATIONS SUPPORTED	576-2,560	Unlmtd via Ntwk Protocol	—	30-300
PRICE RANGE, $	From 4,792,000	369,000-3,000,000	130,000-700,000	130,000-700,000
TARGET MARKET(S)	Gen. bus., Sci/Eng	Bus, Sci/Eng, CAD/CAM, RTsimulation, C³I	Gen Bus, Bank, Trans, MIS, Sci/Eng, CAD/CAM	Gen Bus, Bank, Trans, MIS, Sci/Eng, CAD/CAM
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary (8 CPUs)	Elxsi 6420 CPU	NS32032, NS32332	Dual NS32332
CPU Cycle Time, nanoseconds	NA	50	80	45
MIPS	53	12 per proc, 12 proc max	1.5-40	4-40
Hardware Floating Point	SP, DP	Full comp. w/IEEE stds	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4096MB
Cache Memory, bytes	64KB per CPU	64KB	32K-1280K	64KB
Battery Backup	Standard	Optional	None	None
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	495	—	—	—
Storage Protection	ECC	Standard, solidstate RAM	MOS ECC	MOS ECC
Increment Size, bytes	4MB	16MB	8, 16MB	8, 16MB
INPUT/OUTPUT CONTROL				
Type of Bus	VAXBI, Unibus	VMEbus, Subbus (prop.)	Nanobus	Nanobus
No. of I/O Channels	48	Up to 4	1-9	1-9
Aggregate Bandwidth, bytes/sec.	425.6MB/sec	64MB/sec	60 MB/sec	100MB/sec
COMMUNICATIONS				
Max. Number of Lines	—	1000 async	Unlimited via ethernet	Unlimited via Ethernet
Synchronous	Standard, 19.2K bps	Standard, 64K bps	Optional, 9600 bps	Optional, 9600 bps
Asynchronous	Standard	Standard, 19.2K bps	38.4K bps x 16/server	38.4K bps x 16/server
Protocols Supported	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, DDCMP	X.25, BSC, TCP/IP, TTY	X.25, TCP/IP	X.25, TCP/IP
LAN Supported	IEEE 802.3, DECnet	IEEE 802.3	IEEE 802.3	IEEE 802.3
RJE Terminals Supported	2780/3780	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	SNA, BSC	None	SNA	SNA
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 456MB Remov.: 205MB	Fixed: 474MB-690MB Remov: 300MB	Up to 63 devices, 170MB, 550MB or 800MB ea.	Fixed: 515MB
Streaming Tape Drives	S/S — 25/75/100 ips	—	75 ips, 125 ips/6250 bpi	75/25 ips, 1600/6250 bpi
Cartridge Tape Drives	—	—	—	—
Reel-to-reel Tape Drives	125 ips, 1600/6250 bpi	1600/6250 tri-density	—	—
Line Printers	600 lpm	300-1000 lpm	Ind. Standard	Ind. Standard
Serial Printers	240 cps	—	Ind. Standard	Ind. Standard
Letter Quality Printers	30 cps	Variety	Ind. Standard	Ind. Standard
Non-Impact Printers	Laser, 8-12 ppm	Variety	Ind. Standard	Ind. Standard
Other Peripherals Supported	Plotters, voice synthesis module	—	Ind. Standard	Ind. Standard
SOFTWARE				
Proprietary Operating System Name	VAX/VMS	EMS	UMAX	UMAX
Operating System Type	Batch, multiuser	Batch, RT, mtask, muser	Multitasking & multiuser	Multitasking & multiuser
Unix Derivative	Ultrix-32	Yes, Sys V, 4 BSD	Yes, Sys V, 4.2 BSD	Yes, Sys V, 4.2 BSD
Database Management System	VAX/DBMS, VAX/Rdb/VMS	Ingres	Informix, Oracle - rel.	Informix, Oracle - rel.
Assembler	Macro	Yes	—	—
Compilers	Basic, Pascal, Fortran, C, Cobol, RPGII, PL/1, ADA, Lisp, Coral 66,	Basic, Pascal, Fortran, Cobol, ADA, Lisp, C	Basic, Pascal,Fortran, C Cobol, ADA, Lisp	Basic, Pascal,Fortran, C Cobol, ADA, Lisp
Principal Application Available	Gen bus, Eng/sci.	Electrical CAD, Ingres, Informix	UNIX Standard	UNIX Standard
Other Applications Available	OA, third party	—	UNIX Standard	UNIX Standard
PRICING & AVAILABILITY				
Typical System Configuration and Price	8 CPUs, 256MB mem, f.p disk cntrl, VAX/VMS lic. & warr., h'ware warranty 8 VAXBI chnls, 2 tape dr Ethernet interface, warr anty, VAX/VMS & DECnet lic, VAXcluster cnctions 5GB disk, — $5,240,000	CPU; 8MB main memory; disk drive; tape drive; line printer; comm lines terminal— $450,000	$150,000-$250,000	Contact vendor
Monthly Maintenance of Typical Configuration	NA	$375	N/A	N/A
Date of First Delivery	—	—	—	—
Number Installed to Date	1987	1984	December 1985	December 1985
COMMENTS	NA	Over 100 Expandable to 12 CPUs	65	65

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MANUFACTURER & MODEL	Flexible Computer Corp. Flex/32 Series 600	Flexible Computer Corp. Flex/32 Series 1200	Flexible Computer Corp. Flex/32 Series 2000	Flexible Computer Corp. Flex/32 Series 3000
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	80MB-20GB	80MB-20GBB	80MB-20GB	80MB-20GBB
MEMORY RANGE	2MB-24MB	2MB-56MB	4MB-64MB	6MB-136MB
NO. WORKSTATIONS SUPPORTED	80	160	200	400
PRICE RANGE, $	68,000-150,000	68,000-250,000	150,000-450,000	200,000-900,000
TARGET MARKET(S)	RT, Eng/Sci, AL, Aero-space, simulation	RT, Eng/Sci, AI, Aero-space, simulation	RT, Eng/Sci, AI, Aero-space, simulation	RT, Eng/Sci, AI, Aero-space, simulation
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Flexible Corp, Ser. 600	Flexible Corp, Ser.1200	Flexible Corp., Ser.2000	Flexible Corp., Ser.3000
CPU Cycle Time, nanoseconds	75	50	50	50
MIPS	10 (2.5 per CPU)	20 (2.5 per CPU)	25 (2.5 per CPU)	50 (2.5 per CPU)
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	4GB	4GB	4GB	4GB
Cache Memory, bytes	N/A	N/A	N/A	N/A
Battery Backup	Optional	Optional	Optional	Optional
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	75	75	75	75
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M	1M, 2M, 4M, 8M
INPUT/OUTPUT CONTROL				
Type of Bus	—	—	—	—
No. of I/O Channels	4	8	10	20
Aggregate Bandwidth, bytes/sec.	—	—	—	—
COMMUNICATIONS				
Max. Number of Lines	80	160	200	300
Synchronous	Optional, 300K bps	Optional, 300K bps	Optional, 300K bps	Optional, 300K bps
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	SDLC, TCP/IP	SDLC, TCP/IP	SDLC, TCP/IP	SDLC, TCP/IP
LAN Supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	Optional	Optional	Opt.	Optional
IBM 3270 Emulation	Optional	Optional	Optional	Optional
PERIPHERAL EQUIPMENT				
Disks Supported	Win.: 80MB, 337MB, 474MB	Win.: 80MB, 337MB, 474MB	Win.: 80MB, 337MB, 474MB	Win,: 80MB, 337MB, 474MB
Streaming Tape Drives	Optional	Optional	Optional	Optional
Cartridge Tape Drives	67MB	67MB	67MB	67MB
Reel-to-reel Tape Drives	800-6250 bpi, 45-75 ips	800-6250 bpi, 45-75 ips	800-6250 bpi, 45-75 ips	800-6250 bpi, 45-75 ips
Line Printers	300, 600 lpm	300, 600 lpm	300, 600 lpm	300, 600 lpm
Serial Printers	600 lpm	600 lpm	600 lpm	600 lpm
Letter Quality Printers	N/A	N/A	N/A	N/A
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	Laser printers, voice synthesis, graphics dev.	Graphics displays, opt. disk storage	Graphics displays, opt. disk storage	Graphics displays, opt. disk storage
SOFTWARE				
Proprietary Operating System Name	UNIX Sys V: MMOS	UNIX Sys V: MMOS	UNIX Sys V: MMOS	UNIX Sys V: MMOS
Operating System Type	Multitasking; RT	Multitasking; RT.	Multitasking; RT	Multitasking; RT
Unix Derivative	—	—	Yes	Yes
Database Management System	Opt.	Optional	Opt.	Optional, Unify
Assembler	Yes	Yes	Yes	Yes
Compilers	Ada, C, Fortran 77, Concurrent Fortran, Pascal	Ada, C, Fortran 77, Fortran, Pascal	Ada, C, Fortran 77, Fortran, Pascal	Ada, C, Fortran 77, Fortran, Pascal
Principal Application Available	Concurrent software development tools	Concurrent software development tools	Concurrent software development tools	Concurrent software development tools
Other Applications Available	Expert systems, SPAR	Expert systems, SPAR	Expert systems, SPAR	Expert systems, SPAR
PRICING & AVAILABILITY				
Typical System Configuration and Price	2 CPUs: 2MB main mem; 80MB disk; 67MB cartr; 8 user connections— $75,000	4 CPUs: 4.5MB main mem; 180MB disk; dual flop. 8 user connections— $120,000	6 CPUs: 6.5MB main mem; 180MB disk, dual flop. 8 user connections— $170,000	10CPUs: 11MB main mem; 360MB disk; 50 ips tape; 8 user connections— $200,000
Monthly Maintenance of Typical Configuration	$750	$1,020	$1,445	$2,253
Date of First Delivery	—	—	—	—
Number Installed to Date	November 1985	November 1985	January 1985	January 1985
COMMENTS	3 Parallel proc. sys; can be rack-mounted in embedded applications or desk-high cabinetry	3 Parallel proc. sys; can be rack-mounted in embedded applications or desk-high cabinetry	30 CPUs; 5 systems Parallel proc. sys; all Flex/32s use multiple bus arch & shared/local memory scheme	7CPUs; 5 system Parallel proc. sys; all Flex/32 use multiple bus arch & shared/local mem scheme

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MANUFACTURER & MODEL	Flexible Computer Corp. Flex/32 Series 6000	Gould Inc. Gould Concept 32/67XX	Gould Inc. Gould Concept 32/97XX	Gould Inc. Gould PowerNode 60XX
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	80MB-20GBB	80MB-50GB	80MB-50GB	80MB-50GB
MEMORY RANGE	30MB-200MB	2MB-16MB	4MB-16MB	2MB-16MB
NO. WORKSTATIONS SUPPORTED	800	128	256	128
PRICE RANGE, $	900,000-1,800,000	40,000-200,000	200,000-500,000	40,000-200,000
TARGET MARKET(S)	RT, Eng/Sci, AI, Aerospace, simulation	Scient,Enrg,Aerospace & Def,Simula,Pro Cont	Scient,Enrg,Aerospace & Def,Simula,Pro Cont	Scient,Enrg,Aerospace & Def,Simula,Pro Cont
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Flexible Series 6000	Gould	Gould	Gould
CPU Cycle Time, nanoseconds	50	150	75	150
MIPS	100 (2.5 per CPU)	Megawhets	Megawhets	Megawhets
Hardware Floating Point	SP, DP	Single & double precs	Single & double precs	Single & double precs
Virtual Memory (addressable bytes)	4GB	16MB	16MB	16MB
Cache Memory, bytes	N/A	32KB	32KB-64KB	32KB
Battery Backup	Optional	Optional	Optional	Optional
Realtime Clock	Standard	Standard	—	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	75	300	300	300
Storage Protection	Standard	Optional	Optional	Optional
Increment Size, bytes	1M, 2M, 4M, 8M	1, 2, 4MB	1, 2, 4MB	1, 2, 4MB
INPUT/OUTPUT CONTROL				
Type of Bus	—	Proprietary & SelBUS	Proprietary & SelBUS	Proprietary & SelBUS
No. of I/O Channels	40	16	16	16
Aggregate Bandwidth, bytes/sec.	—	26.6MB/sec	26.6MB/sec	26.6MB/sec
COMMUNICATIONS				
Max. Number of Lines	600	256	256	256
Synchronous	Optional, 300K bps	Optional, 9,600-56,000	Optional, 9,600-56,000	—
Asynchronous	Standard, 19.2K bps	Optional, 50-38, 400	Optional, 50-38, 400	Optional, 50-38, 400
Protocols Supported	SDLC, TCP/IP	HDLC,X.25,MAP,DDN,Hyperchannel, Pronet-80	HDLC,X.25,MAP,DDN,BSC, Hyperchannel, Pronet-80	HDLC,X.25,MAP,DDN,Hyperchannel, Pronet-80
LAN Supported	Ethernet	IEEE 802.3	IEEE 802.3	IEEE 802.3
RJE Terminals Supported	Opt.	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	Optional	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Win.: 80MB, 337MB, 474MB	Fixed: 337MB to 858MB Removable: 80MB or 300MB	Fixed: 337MB to 858MB Removable: 80MB or 300MB	Fixed: 337MB to 858MB Removable: 80MB or 300MB
Streaming Tape Drives	Optional	100 ips, 1600/6250 bpi	100 ips, 1600/6250 bpi	100 ips, 1600/6250 bpi
Cartridge Tape Drives	67MB cartridge	N/A	N/A	N/A
Reel-to-reel Tape Drives	800-6250 bpi, 45-75 ips	800/1600/6250 bpi, 125 ips	800/1600/6250 bpi, 125 ips	800/1600/6250 bpi, 125 ips
Line Printers	300, 600 lpm	300 to 1000 lbm	300 to 1000 lbm	300 to 1000 lbm
Serial Printers	600 lpm	To 380 cps	To 380 cps	To 380 cps
Letter Quality Printers	N/A			—
Non-Impact Printers	—	Laser	Laser	Laser
Other Peripherals Supported	Graphics displays, disk storage			
SOFTWARE				
Proprietary Operating System Name	UNIX Sys V: MMOS	MPX-32	MPX-32	—
Operating System Type	Multitasking; RT.	Batch,real,multitas&user	Batch,real,multitas&user	—
Unix Derivative	Yes	No	No	Yes, UTX/32
Database Management System	Optional, Unify	RelBse/32,CodaBs/32	RelBse/32,CodaBs/32	Unify,Ingres,EMPRESS/32
Assembler	Yes	Macro	Macro	Macro
Compilers	Ada, C, Fortran 77, Fortran, Pascal	Pascal,C,Fortran,Cobol, ADA	Pascal,C,Fortran,Cobol, ADA	Basic,Pascal,C,Fortran, Cobol,ADA,Lisp
Principal Application Available	Concurrent software development tools	Third party/OEM	Third party/OEM	—
Other Applications Available	Expert systems, SPAR	Third party/OEM	Third party/OEM	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	30 CPUs; 35MB main mem—$875,00	Not applicable due to extremely flexible configuration capability	Contact vendor	Not applicable due to extremely flexible configuration capability
Monthly Maintenance of Typical Configuration	$7,438	N/A	Contact vendor	Contact vendor
	—	—	—	—
Date of First Delivery	January 1985	June 1983	March 1984	November 1984
Number Installed to Date	—	650	490	340
COMMENTS	Parallel proc. sys; all Flex/32s use multiple bus arch & shared/local memory scheme			

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MANUFACTURER & MODEL	Gould Inc. SelCONNECTION	Gould Inc. Gould PowerNode 90XX	Harris Corporation H-800	Harris Corporation H900
WORD LENGTH	32 bits	32 bits	48 bits	48 bits
DISK STORAGE CAPACITY	80MB-50GB	80MB-50GB	80MB-22.7GB	80MB-22.7GB
MEMORY RANGE	2MB-14MB	4MB-16MB	768KB-12MB	1.5MB-12MB
NO. WORKSTATIONS SUPPORTED	1280	256	128	192
PRICE RANGE, $	60,000	200,000-500,000	139,000-170,000	240,000-260,000
TARGET MARKET(S)	Scient,Enrg,Aerospace & Def,Simula,Pro Cont	Aerosp & Def,Simulation proc.cntrl,energy mgmt	Scientific,Engineering	Scientific, Engineering
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Gould	Gould	Harris Corp, H900	Harris Corp, H900
CPU Cycle Time, nanoseconds	150	75	180	75
MIPS	Megawhets	Megawhets	1.8	4.8
Hardware Floating Point	Single & double precs	—	SP, DP	Singl,trip,doubl,precs
Virtual Memory (addressable bytes)	16MB	16MB	48MB	192MB
Cache Memory, bytes	32KB	32KB-64KB	6KB	6KB
Battery Backup	Optional	Optional	None	Optional
Realtime Clock	Standard	Standard	Optional	Optional
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	300	335	335
Storage Protection	Optional	Optional	Standard	Standard
Increment Size, bytes	1, 2, 4, 8MB	1, 2, 4MB	1.5MB	1.5M
INPUT/OUTPUT CONTROL				
Type of Bus	—	Proprietary & SelBUS	Proprietary	Proprietary
No. of I/O Channels	16-128	16	31	18
Aggregate Bandwidth, bytes/sec.	266MB/sec	26.6MB/sec	19.0MB/sec	19.0MB/sec
COMMUNICATIONS				
Max. Number of Lines	256-2048	256	224	96
Synchronous	Optional, 9,600-56,000	—	19.2K bps; optional, 56K	19.2K bps; opt. 56K bps
Asynchronous	Optional, 50-38, 400	50-38, 400	19.2K bps; optional, 56K	19.2K bps; opt. 56K bps
Protocols Supported	HDLC,X.25,MAP,DDN,Hyper Pronet-80,BSC,SNA,TTY	HDLC,X.25,MAP,BSC,TCP/IP,SNA,TTY,DDN,Hyper	HDLC,X.25,BSC,TCP/IP	HDLC,X.25,BSC,TCP/IP
LAN Supported	IEEE 802.3	IEEE 802.3	Ethernet	Ethernet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780,HASP,U1004	2780/3780,HASP,U1004
IBM 3270 Emulation	SNA, BSC	SNA, BSC	Yes	BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 337MB to 858MB Removable: 80MB or 300MB	Fixed: 337MB to 858MB Removable: 80MB or 300MB	Fixed & rem.: 80MB to 675MB	Fixed: 80MB to 690MB Removable: 80MB to 300MB
Streaming Tape Drives	100ips, 1600/6250 bpi	100ips, 1600/6250 bpi	1600 bpi, 25 ips	1600 bpi, 25/100 ips
Cartridge Tape Drives	N/A	N/A	6400 bpi, 30 ips	6400 bpi, 30 or 70 ips
Reel-to-reel Tape Drives	800/1600/6250 bpi, 125 ips	800/1600/6250 bpi, 125 ips	800-6250bpi, 45-125ips	800-6250bpi,45-125ips
Line Printers	300 to 1000 lbm	300 to 1000 lbm	300,600,900,1200 lpm	300,600,900,1200 lpm
Serial Printers	To 380 cps	To 380 cps	200, 240 cps	200, 240 cps
Letter Quality Printers	—	—	55 cps, 80 cps	55 cps, 80 cps
Non-Impact Printers	Laser	Laser	Laser	Laser
Other Peripherals Supported	—	—	Card readers	Graphics term, plotters
SOFTWARE				
Proprietary Operating System Name	MPX-32	—	VOS	VOS,RT-VOS,UNIX
Operating System Type	Batch,real,multitas&user	Multitasking & user	Batch, RT, multitask&use	Batch,real,multitask&use
Unix Derivative	—	Yes, UTX/32	Yes, Vue (Vos Unix)	Yes, Vue (Vos Unix)
Database Management System	—	—	Oracle, Info, Total	Oracle, Info, Total
Assembler	—	Macro	Macro	Macro
Compilers	Pascal,C,Fortran,Cobol, ADA	Basic,Pascal,C,Fortran, Cobol,ADA,Lisp	Basic, Pascal, Fortran, Cobol, RPGII, Ada,C	Basic,Pascal,C,Fortran, Cobol,RPGII,ADA
Principal Application Available	Third party/OEM	—	Engineering administration	Engineering & Scientific
Other Applications Available	Third party/OEM	—	—	Numerous
PRICING & AVAILABILITY				
Typical System Configuration and Price	Not applicable due to extremely flexible configuration capability	Not applicable due to extremely flexible configuration capability	Contact vendor	Contact vendor
Monthly Maintenance of Typical Configuration	N/A	N/A	—	—
Date of First Delivery	—	—	—	—
Number Installed to Date	March 1987	December 1984	June 1979	Q3 1987
COMMENTS	1	140	—	—
	Latest addition to Concept/32 Product Line			

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MANUFACTURER & MODEL	Harris Corporation H-1000	Harris Corporation H-1100	Harris Corporation H-1200	Harris Corporation H1500
WORD LENGTH	48 bits	48-96 bits	48 bits	48-96 bits
DISK STORAGE CAPACITY	80MB-22.7GB	80MB-22.7 GB	80MB-25GB	80MB-22GB
MEMORY RANGE	1.5MB-12MB	1.5MB-12MB	1.5MB-12MB	6.0MB-24MB
NO. WORKSTATIONS SUPPORTED	192	224	224	320
PRICE RANGE, $	250,000-291,000	280,000-300,000	294,000-400,000	555,000-595,000
TARGET MARKET(S)	Scientific/Engineering	Scientific, Engineering	Scientific, Engineering	Scientific, Engineering
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Harris Corp, H900	Harris Corp, H1100	Harris Corp, H900	Harris Dual Processor
CPU Cycle Time, nanoseconds	75	75	75	75
MIPS	4.8	5	4.8	5MIPS ea, 10 MIPS total
Hardware Floating Point	SP, DP	Single,trip,doubl,quad	SP, DP, TP, QP	Single,trip,doubl,quad
Virtual Memory (addressable bytes)	48MB	192MB	192MB	384MB
Cache Memory, bytes	6KB	288KB	288KB	512KB
Battery Backup	None	Optional	Optional	Optional
Realtime Clock	Optional	Optional	Optional	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	335	150	150	150
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	1.5MB	1.5MB	1.5MB	1.5MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	31	18,9	31	50
Aggregate Bandwidth, bytes/sec.	19.0MB/sec	19.0MB/sec, 80MB/sec	19.0MB/sec	38MB/sec
COMMUNICATIONS				
Max. Number of Lines	224	96	224	320
Synchronous	19.2K bps std./56K opt.	19.2K bps; opt. 56K bps	19.2K bps; optional 56K	19.2K bps, opt. 56K bps
Asynchronous	19.2K bps std./56K opt.	19.2K bps; opt. 56K bps	19.2K bps; optional 56K	19.2K bps, opt. 56K bps
Protocols Supported	HDLC,X.25,BSC,TCP/IP	HDLC,X.25,BSC,TCP/IP	HDLC, X.25, BSC, TCP/IP, NTR	HDLC,X.25,BSC,TCP/IP
LAN Supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	2780/3780,HASP,U1004	2780/3780,HASP,U1004	2780/3780, HASP, U1004	2780/3780,HASP,U1004
IBM 3270 Emulation	Yes	BSC	Yes	BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed & rem.: 80MB to 675MB	Fixed: 80MB to 690MB remov.: 80MB to 300MB	Fixed & rem.: 80MB to 675MB	Fixed: 80MB to 690MB remov.: 80MB or 300MB
Streaming Tape Drives	1600 bpi, 25 ips	1600 bpi, 25/100 ips	1600 bpi, 25/100 ips	1600 bpi,25/100 ips
Cartridge Tape Drives	6400 bpi, 30 ips	6400 bpi, 30 to 70 ips	6400 bpi, 30 ips	6400 bpi, 30 to 70 ips
Reel-to-reel Tape Drives	800-6250bpi, 45-125ips	800-6250 bpi, 45-125 ips	800-6250 bpi, 25-125 ips	800-6250 bpi,45-125 ips
Line Printers	300,600,900,1200 lpm	300, 600, 900, 1200 lpm	300/600/1200 lpm	300,600,900,1200 lpm
Serial Printers	200, 240 cps	200, 240 cps	80/280 cps	200, 240 cps
Letter Quality Printers	55 cps, 80 cps	55 cps, 80 cps	55/80 cps	55 cps, 80 cps
Non-Impact Printers	Laser	Laser	—	Laser
Other Peripherals Supported	Card readers	Graphics term, plotters	Card readers	Graphics term, plotters
SOFTWARE				
Proprietary Operating System Name	VOS	VOS,RT-VOS,UNIX	VOS	VOS,RT-VOS,UNIX
Operating System Type	Batch, RT, multitask&use	Batch,real,multitask&use	Batch, RT, multitask&use	Batch,real,multitask&use
Unix Derivative	Yes, Vue (Vos Unix)	Yes, Vue (Vos Unix)	Yes, Vue (Vos Unix)	Yes, Vue (Vos Unix)
Database Management System	Oracle, Info, Total	Oracle, Info, Total	Oracle, Info, Total	Oracle, Info, Total
Assembler	Macro	Macro	Macro	Macro
Compilers	Basic, Pascal, Fortran, Cobol, RPGII, Ada,C	Basic,Pascal,C,Fortran, Cobol,RPGII,ADA	Basic, Pascal, Fortran, Cobol, RPGII, Ada,C	Basic,Pascal,C,Fortran, Cobol,RPGII,ADA
Principal Application Available	Engineering administration	Engineering & Scientific	Engineering, scientific	Engineering, Scientific Realtime
Other Applications Available	—	Numerous	—	Numerous
PRICING & AVAILABILITY				
Typical System Configuration and Price	Contact vendor	Contact vendor	CPU, 1.5MB mem, CNP, console, O.S.—$294,000	Contact vendor
Monthly Maintenance of Typical Configuration	—	—	$1,300	—
	—	—	—	—
Date of First Delivery	July 1984	Q3 1987	Q4 1985	Q3 1987
Number Installed to Date	—	—	—	—
COMMENTS				

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MANUFACTURER & MODEL	Harris Corporation H1600	Harrris Corporation HCX-5	Harrris Corporation HCX-7	Harrris Corporation HCX-9
WORD LENGTH	48-96 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	80MB-22GB	2.2GB	17.6GB	17.6GB
MEMORY RANGE	7.5MB-36MB	4MB-32MB	4MB-128MB	4MB-128MB
NO. WORKSTATIONS SUPPORTED	416	32	235	256
PRICE RANGE, $	795,000-855,000	160,000-365,000	250,000-800,000	240,000-800,000
TARGET MARKET(S)	Scientific, Engineering Simulation	OA, Sci/Eng., Network processing	OA, Sci/Eng., Network processing	Sci/Eng, Software dev. Network processing
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Harris Triple Processor	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	75 each processor	100	100	100
MIPS	15 expandable to 60	5	7.5	8
Hardware Floating Point	Single,trip,doubl,precs	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	576MB	4GB	4GB	4GB
Cache Memory, bytes	768KB	50KB	66KB	66KB
Battery Backup	Optional	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	150	400	400	400
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	1.5M	4MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	VME	Versabus	VME
No. of I/O Channels	69MB/sec	4	25	40
Aggregate Bandwidth, bytes/sec.	57MB/sec	40MB/sec	40MB/sec	40MB/sec/bus (2 VME)
COMMUNICATIONS				
Max. Number of Lines	416	32	235	256
Synchronous	19.2K bps; opt. 56K bps	9600 bps	9600 bps	9600 bps
Asynchronous	19.2K bps; opt. 56K bps	3800 bps	3800 bps	3800 bps
Protocols Supported	HDLC,X.25,BSC,TCP/IP	X.25, TCP/IP, NFS	X.25, TCP/IP, NFS	X.25, TCP/IP, NFS
LAN Supported	Ethernet	Ethernet, Blast, VCS	Ethernet, Blast, VCS	Ethernet, Blast, VCS
RJE Terminals Supported	2780/3780,HASP,U1004	2780/3780	2780/3780	2780/3780
IBM 3270 Emulation	BSC	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 80MB to 690MB, remov.: 80MB or 300MB	Fixed: 160/337/474/690MB Removable: 80MB, 300MB	Fixed: 160/337/474MB Removable: 80MB, 300MB	Fixed: 160/337/474/690MB Removable: 80MB, 300MB
Streaming Tape Drives	1600 bpi,25/100 ips	100 ips	100 ips	100 ips
Cartridge Tape Drives	6400 bpi,30 or 70 ips	—	—	—
Reel-to-reel Tape Drives	800-6250 bpi,45-125 ips	1600/6250 bps, 100 ips	1600/6250 bps, 100 ips	1600/6250 bps, 100 ips
Line Printers	300,600,900,1200 lpm	300-600 lpm	300-600 lpm	300-600 lpm
Serial Printers	200, 240 cps	80-240 cps	80-240 cps	80-240 cps
Letter Quality Printers	55 cps, 80 cps	55/80 cps	55/80 cps	55/80 cps
Non-Impact Printers	Laser	Laser	Laser	Laser
Other Peripherals Supported	Graphics term, plotters	Graphics term., plotters	Graphics term., plotters	Graphics term., plotters
SOFTWARE				
Proprietary Operating System Name	VOS,RT-VOS,UNIX	HCX/UX	HCX/UX	HCX/UX
Operating System Type	Batch,real,multitask&use	Multiprogramming	Multiprogramming	Multiprogramming
Unix Derivative	Yes, Vue (Vos Unix)	Yes	Yes	Yes
Database Management System	Oracle, Info, Total	Oracle, Unify	Oracle, Unify	Oracle, Unify
Assembler	Macro	AS	AS	AS
Compilers	Basic,Pascal,C,Fortran, Cobol,RPGII,ADA	C, Fortran, Pascal, Ada, Basic, Cobol	C, Fortran, Pascal, Ada, Basic, Cobol	C, Fortran, Pascal, Ada, Basic, Cobol
Principal Application Available	Engineering, Scientific Realtime	OA, Sci/Eng, Network processing	Sci/Eng, software development	Sci/Eng, software development, network proc.
Other Applications Available	Numerous	Harris/CAD	Harris/CAD	Harris/CAD
PRICING & AVAILABILITY				
Typical System Configuration and Price	Contact vendor	CPU, 4MB, 690MB disk, 1600 bpi tape, 8 ports, 8slot VME bkplane—$168,900	CPU, 8MB mem, 474MB disk tape unit, 27 ports, 27 slot Versabus bkplane cabinets—$309,000	CPU, 8MB mem, 690MB disk tape unit, 28 ports, 21 slot VME backplane, I/O cabinet—$307,300
Monthly Maintenance of Typical Configuration	—	$807	$1,200	$1,056
	—	—	—	—
Date of First Delivery	Q3 1987	July 1987	June 1985	May 1987
Number Installed to Date	—	—	—	—
COMMENTS				

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MANUFACTURER & MODEL	Hewlett-Packard Company HP 3000 Series 930	Hewlett-Packard Company HP 3000 Series 950	Honeywell Bull DPS 6/85	Honeywell Bull DPS 6/95
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	404MB-13.7GB	404MB-13.7GB	3.3GB max.	3.3GB max.
MEMORY RANGE	16MB-24MB	Up to 64MB	2MB-4MB	2MB-4MB
NO. WORKSTATIONS SUPPORTED	400	—	64	160
PRICE RANGE, $	From 225,000	From 300,000	From 106,900	From 105,000
TARGET MARKET(S)	Gen bus, dist processing	Gen bus, dist processing	General Business	General Business
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	DPS 6/85	DPS 6/85
CPU Cycle Time, nanoseconds	125	—	300	300
MIPS	4.5	6.7	—	—
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	256 trillion bytes	256 trillion bytes	—	—
Cache Memory, bytes	128KB	—	8KB	8KB
Battery Backup	Standard	Standard	Optional	Optional
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	—	300	300
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	8MB	—	2M	2M
INPUT/OUTPUT CONTROL				
Type of Bus	CTB	—	Megabus (Proprietary)	Megabus (Proprietary)
No. of I/O Channels	3	—	24	24
Aggregate Bandwidth, bytes/sec.	20MB/sec	—	16MB/sec.	16MB/sec.
COMMUNICATIONS				
Max. Number of Lines	48	—	64	160
Synchronous	—	—	Optional	Optional, 19.2K bps
Asynchronous	Standard	—	Standard	Standard, 9600 bps
Protocols Supported		HP Advancenet, X.25, SNA (Through HP 3000 FEP)	SDLC, HDLC, SNA, DSA, BSC, TTY	SDLC, HDLC, SNA, DSA, BSC, TTY
LAN Supported	IEEE 802	IEEE 802.3	Ethernet	Ethernet
RJE Terminals Supported	Through HP 3000 FEP	Through HP 3000 FEP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	Through HP 3000 FEP	Through HP 3000 FEP	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 404MB	—	Fixed: 132MB/413MB	Fixed: 132MB/413MB
	Rem.: 404MB	—	Removable: 67MB/256MB	Removable: 67MB/256MB
Streaming Tape Drives	75 ips	—	55 ips	55 ips
Cartridge Tape Drives	—	—	55 ips	55 ips
Reel-to-reel Tape Drives	75-100 ips, 800-6250 bpi	—	800/1600/6250 bpi	800/1600/6250 bpi
Line Printers	600/900 lpm	—	300-1200 lpm	300-1200 lpm
Serial Printers	200 cps	—	100/400 cps	100/400 cps
Letter Quality Printers	—	—	35/55 cps	35/55 cps
Non-Impact Printers	Laser, 12/45 ppm	—	Laser, 300-19.2K bps	Laser, 300-19.2K bps
Other Peripherals Supported	—	—	650KB diskette	650KB diskette
SOFTWARE				
Proprietary Operating System Name	MPE XL	MPE XL	GCOS Mod 400	GCOS Mod 400
Operating System Type	Multiprogramming	Multiprogramming	Realtime	Realtime
Unix Derivative	—	—	UCOS	UCOS
Database Management System	HP Allbase/XL	HP Allbase/XL	DM6, Oracle	DM6, Oracle
Assembler	None	None	Assembler	Assembler
Compilers	Cobol II, Fortran, SPL, Pascal, Basic, RPG	Cobol II, Fortran, SPL, Pascal, Basic, RPG	Cobol, Fortran, Basic, C Pascal, RPG II, Ada	Cobol, Fortran, Basic, C Pascal, RPG II, Ada
Principal Application Available	Mfg, OA, whlsl, retail, fin, legal, ins.	Mfg, OA, whlsl, retail, fin, legal, ins.	Office Automation	Office Automation
Other Applications Available	Third party	Third party	Third party	Third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 16MB mem, 2 I/O chnls, 404MB disk, tape, 12 term, 900 lpm prntr, plotter, 3 l.q. prntrs,— $335,346	Contact vendor	CPU, 2MB main mem., 413MB disk & cbnt, 650KB dskte, 4 WS ports— $106,900	CPU, 2MB main mem., 413MB disk & cbnt, prntr port, 4 WS ports, console—$129,900
Monthly Maintenance of Typical Configuration	$475	Contact vendor	$654	$767
Date of First Delivery	August 1987 (anncd date)	Q3 87	1985	1983
Number Installed to Date	—	None	NA	NA
COMMENTS	RISC-based	RISC-based		

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MANUFACTURER & MODEL	Honeywell Bull, Inc. DPS 6 Plus	Honeywell Bull, Inc. DPS 6/85-1	Honeywell Bull, Inc. DPS 6/95-1, 95-2	Honeywell Bull, Inc. DPS 6/98-1, 98-2
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	132MB-6.6GB	40MB-3.3GB	40MB-6.6GB	40MB-6.6GB
MEMORY RANGE	4MB-64MB	4MB-8MB	4MB-16MB	4MB-16MB
NO. WORKSTATIONS SUPPORTED	160	64	160	160
PRICE RANGE, $	57,000-350,000	From 62,000	From 86,000	98,000-138,000
TARGET MARKET(S)	Gen. Bus, Dept'l comp., trans. proc., sci.	General business	General business	General business
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Honeywell prop.	Honeywell proprietary	DPS 6/95-1, DPS 6/95-2	DPS 6/98-1, DPS 6/98-2
CPU Cycle Time, nanoseconds	200	300	300	300
MIPS	—	—	—	—
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	—	N/A	—	—
Cache Memory, bytes	16KB	8KB	16KB	8KB
Battery Backup	Optional	Optional	Optional	Optional
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	300	500	500
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4, 8, or 12MB	4MB	4, 8, or 16MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Megabus (Proprietary)	Megabus (proprietary)	Megabus	Megabus
No. of I/O Channels	76-184	24	—	24
Aggregate Bandwidth, bytes/sec.	13.3MB/sec	16MB/sec	13.3MB/sec	16MB/sec
COMMUNICATIONS				
Max. Number of Lines	160	64	160	160
Synchronous	Opt., 800 bps-100K bps	Optional	Standard	Optional
Asynchronous	Std., 50 bps-19.2K bps	Standard	Optional	Standard
Protocols Supported	SDLC, HDLC, BSC, SNA, TTY	SDLC, HDLC, BSC, SNA, TTY	SDLC, HDLC, BSC, SNA, TTY	SDLC, HDLC, BSC, SNA, TTY
LAN Supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 132, 295, 413MB Rem.: 67, 80, 256MB	Fixed: 132/413MB Rem.: 67/80/256MB	Fixed: 132, 295, 413MB Rem.: 67, 80, 256MB	Fixed: 132, 295, 413MB Rem.: 67, 80, 256MB
Streaming Tape Drives	55 ips	55 ips	—	—
Cartridge Tape Drives	¼", 64MB, 55 ips	55 ips	¼", 64MB, 55 ips	¼", 64MB, 55 ips
Reel-to-reel Tape Drives	1600 bpi, 25/75 ips	800/1600/6250 bpi	1600 bpi, 25/75 ips	1600 bpi, 25/75 ips
Line Printers	300-1200 lpm	300/600/900/1200 lpm	300-1200 lpm	300-1200 lpm
Serial Printers	100/400 cps	100/400 cps	100/400 cps	100/400 cps
Letter Quality Printers	50-80 cps	35/55 cps	35/55 cps	35/55 cps
Non-Impact Printers	Laser, 300 bps-19.2K bps	Laser, 300-19,200 lpm	Laser, 300 bps-19.2K bps	Laser, 300 bps-19.2K bps
Other Peripherals Supported	650KB diskette	650KB diskette, modems	650KB diskette, card readers	650KB diskette, card readers
SOFTWARE				
Proprietary Operating System Name	HVS 6 PLUS	GCOS 6 MOD 400	GCOS 6 MOD 400	GCOS 6 MOD 400
Operating System Type	Realtime	RT	Realtime	Realtime
Unix Derivative	UCOS	Yes, UCOSNo	UCOS	UCOS
Database Management System	DM6, Onebase, Oracle	DM6, Oracle	DM6, Oracle	DM6, Oracle
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Cobol, Fortran, Basic, C Pascal, Ada, RPG II	Cobol, Fortran, Basic, C Pascal, Ada, RPGII	Cobol, Fortran, Basic, C Pascal, Ada, RPG II	Cobol, Fortran, Basic, C Pascal, Ada, RPG II
Principal Application Available	Office Automation	Mfg, OA, dist, pharm, accounting, health care	OA, Acc., Mfg, Dstr., Pharm., Health Care	OA, Acc., Mfg, Dstr., Pharm., Health Care
Other Applications Available	DP, mfg, bldg mngmt (third party)	DP, mfg, bldg mngmt (third party)	DP, mfg, bldg mngmt (third party)	DP, mfg, bldg mngmt (third party)
PRICING & AVAILABILITY				
Typical System Configuration and Price	2 CPUs, 8MB mem, 264MB disk & cbnt, comm cntrlr 4 RS-422-A ports, HVS 6 Plus O.S.—$83,500	CPU, 4MB mem, dsk'te, dsk cntrl, 4 ports, 64MB tape, CRT, — $87,385	95-1 CPU, 4MB mem, 132MB disk & cbnt, comm cntrlr 4 WS ports, 64MB cart. tape, CRT—$116,295 Dual 95-2 CPU—$150,043	98-1 CPU, 2MB mem, 132MB disk & cbnt, comm cntrlr 4 WS ports, 64MB cart. tape, CRT—$128,295 Dual 98-2 CPU—$161,563
Monthly Maintenance of Typical Configuration	$4,800	$6,230 (annual)	$7,360/$8,780 (annual)	$7,710/$9,080 (annual)
Date of First Delivery	September 1986	April 1986	April 1986	April 1986
Number Installed to Date	N/A	N/A	NA	N/A
COMMENTS				

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MANUFACTURER & MODEL	International Business Machines Corporation 4381 Model Group 11	International Business Machines Corporation 4381 Model Group 12	International Business Machines Corporation 4381 Model Group 13	International Business Machines Corporation 4381 Model Group 14
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	1290GB	1290GB	2903GB	5160GB
MEMORY RANGE	4MB-16MB	8MB-32MB	8MB-32MB	16MB-32MB
NO. WORKSTATIONS SUPPORTED	1024	1935	1024	1024
PRICE RANGE, $	From 185,000	From 330,000	From 440,000	From 440,000
TARGET MARKET(S)	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	68	68	56	56
MIPS	0.44-0.60	1	1.21-1.35	1.65-2.45
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16MB	16MB	16MB	16MB
Cache Memory, bytes	4K per CPU	32K per CPU	64K per CPU	128K per CPU
Battery Backup	—	—	—	—
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	—	—	—
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	—	—	—	—
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	12	12	12	18
Aggregate Bandwidth, bytes/sec.	22	30	24	48
COMMUNICATIONS				
Max. Number of Lines	256	256	256	256
Synchronous	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA
LAN Supported	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing
RJE Terminals Supported	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP
IBM 3270 Emulation	—	—	—	—
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB
Streaming Tape Drives	S/S 79 ips	S/S 79 ips	S/S 79 ips	S/S 79 ips
Cartridge Tape Drives	75-200 ips	75-200 ips	75-200 ips	75-200 ips
Reel-to-reel Tape Drives	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi
Line Printers	1200-3600 lpm	1200-3600 lpm	1200-3600 lpm	1200-3600 lpm
Serial Printers	80-340 cps	80-340 cps	80-340 cps	80-340 cps
Letter Quality Printers	—	—	—	—
Non-Impact Printers	Laser, 12/20 ppm	Laser, 12/20 ppm	Laser, 12/20 ppm	Laser, 12/20 ppm
Other Peripherals Supported	Doc. readers/handlers	Doc. readers/handlers	Doc. readers/handlers	Doc. readers/handlers
SOFTWARE				
Proprietary Operating System Name	See Comments	See Comments	See Comments	See Comments
Operating System Type	—	—	—	—
Unix Derivative	IX/370	IX/370	IX/370	IX/370
Database Management System	DL/1, SQL/DS, IMS/VS,DB2	DL/1, SQL/DS, IMS/VS,DB2	DL/1, SQL/DS, IMS/VS,DB2	SQL/DS, IMS/VS,DB2
Assembler	—	—	—	—
Compilers	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL
Principal Application Available	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng
Other Applications Available	OA, third party	OA, third party	OA, third party	OA, third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 4MB mem, console, 635MB disk & cntrl, 2 tape units, 1200 lpm ptr comm cntrl, 32 terminals —$433,467	CPU, 8MB mem, console, 2.52GB disk & cntrl, 4 tape units, 2 1200 lpm prntr, 32 terminals, comm cntrl—$523,967	CPU, 16MB mem, console, 7.5GB disk & cntrl, 6 tape units, 2 2000 lpm prntr, 64 terminals, comm cntrl—$852,507	CPU, 25MB mem, console, 10GB disk & cntrl, 8 tape units, 2 2200 lpm prntr, 20 ppm laser prnt comm cntrl, 80 term— $1,484,385
Monthly Maintenance of Typical Configuration	$1,835.50	$1,485.50	$1,914.60	$4,557.60
Date of First Delivery	May 1986	April 86	April 86	April 86
Number Installed to Date	—	—	—	—
COMMENTS	Runs DOS/VSE, MVS/SP, VM/SP, MVS/XA, VM/XA, IX 370, OS/VS1, MUSIC/SP TPF, SRTOS	Runs DOS/VSE, MVS/370 VM/SP, MVS/XA, VM/XA, IX 370, OS/VS1, MUSIC/SP TPF, SRTOS	Runs DOS/VSE, MVS/370 VM/SP, MVS/XA, VM/XA, IX 370, OS/VS1, MUSIC/SP TPF, SRTOS	Runs MVS/370, VM/SP, MVS/XA, VM/XA, TPF, SRTOS

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MANUFACTURER & MODEL	International Business Machines Corporation 4381 Model Group 21	International Business Machines Corporation 4381 Model Group 22	International Business Machines Corporation 4381 Model Group 23	International Business Machines Corporation 4381 Model Group 24
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	1935GB	1935GB	3226GB	Up to 6400GB
MEMORY RANGE	8MB-16MB	16MB-32MB	16MB-64MB	16MB-64MB
NO. WORKSTATIONS SUPPORTED	2048	2048	2048	2048
PRICE RANGE, $	From 225,000	From 350,000	From 530,000	From 890,000
TARGET MARKET(S)	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,	Gen Bus, Bank, Sci/Eng, Trans proc, MIS,
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	68	68	52	52
MIPS	—	—	—	—
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16MB	16MB	16MB	16MB
Cache Memory, bytes	8K per CPU	32K per CPU	64K per CPU	64K per CPU
Battery Backup	—	—	—	—
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	—	—	—
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	—	—	—	—
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	12	12	12	18
Aggregate Bandwidth, bytes/sec.	24	24	32	64
COMMUNICATIONS				
Max. Number of Lines	256	256	256	256
Synchronous	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps	Std., 19.2K-230.4K bps
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA	SDLC, HDLC, X.25, MAP, BSC, LU6.2, SNA, DIA/DNA
LAN Supported	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing	IEEE 802.5, TokenRing
RJE Terminals Supported	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP
IBM 3270 Emulation	—	—	—	—
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB	Fixed: 317.5MB-5.04GB
Streaming Tape Drives	S/S 79 ips	S/S 79 ips	S/S 79 ips	S/S 79 ips
Cartridge Tape Drives	75-200 ips	75-200 ips	75-200 ips	75-200 ips
Reel-to-reel Tape Drives	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi	Up to 125 ips, 6250 bpi
Line Printers	1200-3600 lpm	1200-3600 lpm	1200-3600 lpm	1200-3600 lpm
Serial Printers	80-340 cps	80-340 cps	80-340 cps	80-340 cps
Letter Quality Printers	—	—	—	—
Non-Impact Printers	Laser, 12/20 ppm	Laser, 12/20 ppm	Laser, 12/20 ppm	Laser, 12/20 ppm
Other Peripherals Supported	Doc. readers/handlers	Doc. readers/handlers	Doc. readers/handlers	Doc. readers/handlers
SOFTWARE				
Proprietary Operating System Name	See Comments	See Comments	See Comments	See Comments
Operating System Type	—	—	—	—
Unix Derivative	IX/370	IX/370	IX/370	IX/370
Database Management System	SQL/DS, IMS/VS, DB2	SQL/DS, IMS/VS, DB2	SQL/DS, IMS/VS, DB2	SQL/DS, IMS/VS, DB2
Assembler	—	—	—	—
Compilers	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL	Basic, Pascal/VS, Cobol, RPGII, PL/1, APL
Principal Application Available	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng	Cmmrcl, Sci/Eng
Other Applications Available	OA, third party	OA, third party	OA, third party	OA, third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 16MB mem, console, 635MB disk & cntrl, 2 tape units, 2200 lpm prntr, comm cntrl, 32 term—$513,467	CPU, 16MB mem, console, 2 635MB disk & cntrl, 2 tape units, 2200 lpm prntr, comm cntrl, 32 term—$543,967	CPU, 48MB mem, console, 7.5GB disk & cntrl, 4 tape units, 1200 lpm prntr, comm cntrl, 48 term—$1,042,507	CPU, 64MB mem, col consl 10GB disk & cntrl, 8 tape units, 2 1200 lpm prntr, 20 ppm laser prnt comm cntrl, 80 term — $1,819,385
Monthly Maintenance of Typical Configuration	$1,847.50	$1,585.50	$1,914.60	$4,593.60
Date of First Delivery	—	—	—	—
Number Installed to Date	1987	1987	1987	1987
COMMENTS	—	—	—	—
	Runs MVS/SP, VM/SP, RMF, VM/XA, VSE/SP, VSE/AF, TPF2, OS/VSI, IX/370,	Runs MVS/SP, VM/SP, RMF, VM/XA, VSE/SP, VSE/AF, TPF2, OS/VSI, IX/370,	Runs MVS/SP, VM/SP, RMF, VM/XA, VSE/SP, VSE/AF, TPF2, OS/VSI, IX/370,	Runs MVS/SP, VM/SP, RMF, VME/SP, IX/370, VM/XA

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MANUFACTURER & MODEL	International Business Machines Corporation System/88 Model 4575-20B	International Business Machines Corporation System/88 Model 4575-60	International Business Machines Corporation System/88 Models 4575-50	International Business Machines Corporation System/88 Models 4575 81-84
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	4MB-12MB	4MB-64MB	Up to 6.7GB	Up to 6.7GB
MEMORY RANGE	142MB-7GB (duplexed)	142MB-7GB (duplexed)	8MB-64MB (duplexed)	8MB-64MB (duplexed)
NO. WORKSTATIONS SUPPORTED	128	256	256	256
PRICE RANGE, $	From 51,700	From 132,900	From 73,400	—
TARGET MARKET(S)	On-line transaction processing	On-line transaction processing	On-line transaction processing	On-line transaction processing
CENTRAL PROCESSOR				
CPU Manufacturer and Model	MC 68020 (duplexed)	MC 68020 (duplexed)	MC 68020 (4, duplexed)	MC 68020 (1-4, duplexed)
CPU Cycle Time, nanoseconds	—	—	—	—
MIPS	—	—	—	—
Hardware Floating Point	—	DP	—	DP
Virtual Memory (addressable bytes)	—	—	16MB	16MB
Cache Memory, bytes	—	48K	—	—
Battery Backup	Standard	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	125	125	—	—
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	2MB, 4MB	2MB, 4MB	2MB, 4MB	4/8/16MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	20	40	40	40
Aggregate Bandwidth, bytes/sec.	—	—	16MB/sec	16MB/sec
COMMUNICATIONS	3	3		
Max. Number of Lines	2	2	32	256
Synchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Asynchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Protocols Supported	SDLC, X.25, BSC, SNA, X.29	SDLC, X.25, BSC, SNA, X.29	SDLC, X.25, BSC, SNA, X.29	SDLC, X.25, BSC, SNA, X.29
LAN Supported	—	—	—	—
RJE Terminals Supported	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Rem.: 143MB-448MB	Rem.: 143MB-448MB	Rem.: 142MB-6.7GB	Rem.: 142MB-6.7GB
Streaming Tape Drives	S/S, 25-100 ips	S/S, 25-100 ips	25-100 ips, 1600/3200bpi	25-100 ips, 1600/3200bpi
Cartridge Tape Drives	—	—	—	—
Reel-to-reel Tape Drives	—	—	—	—
Line Printers	650 lpm	650 lpm	650 lpm	650 lpm
Serial Printers	40-160 cps	40-160 cps	40-160 cps	40-160 cps
Letter Quality Printers	—	—	—	—
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	VOS	VOS	VOS	VOS
Operating System Type	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser
Unix Derivative		—	—	—
Database Management System	Oracle	Oracle	Oracle	Oracle
Assembler	—	—	—	—
Compilers	Basic, Pascal, Fortran, Cobol, PL/1	Basic, Pascal, Fortran, Cobol, PL/1	Basic, Pascal, Fortran, Cobol, PL/1	Basic, Pascal, Fortran, Cobol, PL/1
Principal Application Available	On-line transaction proc	On-line transaction proc	On-line transaction proc	On-line transaction proc
Other Applications Available	—	—	—	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	2 CPUs, 4MB dup mem, 2 DASD cntrl, 2 148MB disk, tape, 2 comm cntrl, 3 line adapt., prntr/adapt 6 wkst—$232,850	2 CPUs, 8MB dup mem, 2 DASD cntrl, 4 148MB disk, tape, 2 comm cntrl, 8 line adapt., prntr/adapt 12 PCs—$574,110	42 CPUs, 16MB dup mem, 2 DASD cntrl, 2 448MB disk, tape, 2 comm cntrl, 4 line adapt., line prntr, tabletop prntr, 10 term — $554,605	2 CPUs, 16MB dup mem, 2 DASD cntrl, 2 448MB disk, tape, 2 comm cntrl, 4 line adapt., line prntr, tabletop prntr, 10 term —$423,405
Monthly Maintenance of Typical Configuration	$1,506	—	$1,693	$2,429
Date of First Delivery	February 1986	February 1986	February 1987	Q2 '87
Number Installed to Date	—	—	—	—
COMMENTS	Most components are duplexed.	Most components are duplexed.	Most components are duplexed.	Most components are duplexed.

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MANUFACTURER & MODEL	International Business Machines Corp. (IBM) 9370 Info. System 9373 Model 20	International Business Machines Corp. (IBM) 9370 Info. System 9375 Model 40	International Business Machines Corp. (IBM) 9370 Info. System 9375 Model 60	International Business Machines Corp. (IBM) 9370 Info. System 9375 Model 90
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	368MB-6.5GB	368MB-645GB	368MB-645GB	368MB-5160GB
MEMORY RANGE	4MB-16MB (duplexed)	8MB-16MB (duplexed)	8MB-16MB (Duplexed)	8MB-16MB (Duplexed)
NO. WORKSTATIONS SUPPORTED	64	192	192	384
PRICE RANGE, $	From 31,000 (Proc only)	From 65,000 (Proc only)	From 93,000 (Proc only)	From 190,000 (Proc only)
TARGET MARKET(S)	Gen bus, bank/fin, trans proc, MIS, Sci/Eng	Gen bus, bank/fin, trans proc, MIS, Sci/Eng	Gen bus, bank/fin, trans proc, MIS, Sci/Eng	Gen bus, bank/fin, trans proc, MIS, Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	—	—	—	—
MIPS	—	—	—	—
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16.7GB	16.7GB	16.7GB	16.7GB
Cache Memory, bytes	None	None	16KB	16KB
Battery Backup	—	—	—	—
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	—	—	—
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	—	—	—	—
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	1	4	4	6
Aggregate Bandwidth, bytes/sec.	5.5MB/sec	22MB/sec	22MB/sec	39MB/sec
COMMUNICATIONS				
Max. Number of Lines	Variable	Variable	Variable	Variable
Synchronous	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps	Standard, 19.2K bps
Asynchronous	Optional, 75 bps-64K bps	Optional, 75 bps-64K bps	Optional, 75 bps-64K bps	Optional, 75 bps-64K bps
Protocols Supported	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA	SDLC, HDLC, X.25, BSC, LU6.2, TCP/IP, SNA
LAN Supported	IEEE 802.3, 802.5	IEEE 802.3, 802.5	IEEE 802.3, 802.5	IEEE 802.3, 802.5
RJE Terminals Supported	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP	2780/3780, 3770, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 368MB-824MB	Fixed: 368MB-5040MB	Fixed: 368MB-5040MB	Fixed: 368MB-5040MB
Streaming Tape Drives	25-100 ips, 1600 bpi	25-100 ips, 1600 bpi	25-100 ips, 1600 bpi	25-100 ips, 1600 bpi
Cartridge Tape Drives	79 ips	79 ips	79 ips	79 ips
Reel-to-reel Tape Drives	50-125 ips, 1600/6250bpi	50-125 ips, 1600/6250bpi	50-125 ips, 1600/6250bpi	50-125 ips, 1600/6250bpi
Line Printers	410-4000 lpm	410-4000 lpm	410-4000 lpm	410-4000 lpm
Serial Printers	40-340 cps	40-340 cps	40-340 cps	40-340 cps
Letter Quality Printers	40/60 cps	40/60 cps	40/60 cps	40/60 cps
Non-Impact Printers	Laser/LED, 22/12 ppm	Laser/LED, 22/12 ppm	Laser/LED, 22/12 ppm	Laser/LED, 22/12 ppm
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	VM/SP, VSE/SP	VM/SP, VSE/SP	VM/SP, VSE/SP	VM/SP, VSE/SP
Operating System Type	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser
Unix Derivative	IX/370	IX/370	IX/370	IX/370
Database Management System	DB2, SQL/DS, IMS/VS-DB	DB2, SQL/DS, IMS/VS-DB	DB2, SQL/DS, IMS/VS-DB	DB2, SQL/DS, IMS/VS-DB
Assembler	—	—	—	—
Compilers	Basic, Pascal, Fortran, Cobol, PL/1, RPGII, Lisp APL2	Basic, Pascal, Fortran, Cobol, PL/1, RPGII, Lisp APL2	Basic, Pascal, Fortran, Cobol, PL/1, RPGII, Lisp APL2	Basic, Pascal, Fortran, Cobol, PL/1, RPGII, Lisp APL2
Principal Application Available	Gen bus, Sci/Eng, tech	Gen bus, Sci/Eng, tech	Gen bus, Sci/Eng, tech	Gen bus, Sci/Eng, tech
Other Applications Available	OA, third party	OA, third party	OA, third party	OA, third party
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 8MB mem, tape, 828MB disk, 2 tape cntrl wkst cntrl, 24 wkst's, 410 lpm prntr — $131,230	CPU, 16MB mem, tape, 3 828MB disk, 2 tape cnt wkst cntrl, 32 wkst, 16 PCs, 2000 lpm prntr — $368,290	CPU, 16MB mem, tape, 3 824MB disk, 2 tape ctr wkst cntrl, 32 wkst, 16 PCs, 2000 lpm prntr — $396,290	CPU, 16MB mem, tape, 5.04GB disk, 2 tape ctr 4 wkst cntrl, 96 display sta, 32 PCs, 3600 lpm prnt, 20 ppm laser — $963,820
Monthly Maintenance of Typical Configuration	$442	$908	$978	$2,818
Date of First Delivery	—	—	—	—
Number Installed to Date	Q3 '87	Q4 '87	Q3 '87	Q4 '87
COMMENTS	—	—	—	—

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MANUFACTURER & MODEL	International Parallel Machines, Inc. IP-1	MAI Basic Four MPx 7110 Series	MAI Basic Four MPx 8001 Series	MAI Basic Four MPx 9100 Series
WORD LENGTH	16/32/64 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	150 MB-6GB	169MB/2.27GB	300MB-2.4GB	300MB-3.6GB
MEMORY RANGE	8MB-4GB	2MB-4MB	2MB-4MB	4MB-12MB
NO. WORKSTATIONS SUPPORTED	8 or more	20	20	68
PRICE RANGE, $	50,000 to 2,000,000	From 36,000	From 62,000	From 116,000
TARGET MARKET(S)	Scientific & Engineering	General Business	General Business	General Business
CENTRAL PROCESSOR				
CPU Manufacturer and Model	IPM IP-1	Proprietary	Proprietary	Proprietary
CPU Cycle Time, nanoseconds	100	160	160	160
MIPS	10-200	—	—	—
Hardware Floating Point	DP	SP	SP	SP
Virtual Memory (addressable bytes)	4GB-128GB	—	—	—
Cache Memory, bytes	512KB-4MB	—	—	—
Battery Backup	Optional	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	300	480	480	480
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	8MB	1MB, 2MB, 4MB	1MB, 2MB, 4MB	1MB, 2MB, 4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary & VMEbus	Proprietary	Proprietary	Proprietary
No. of I/O Channels	10-200	8	8	12
Aggregate Bandwidth, bytes/sec.	800MB/sec.	8.3 MB/sec	8.3 MB/sec	8.3MB/sec
COMMUNICATIONS				
Max. Number of Lines	8 per board	20	20	68
Synchronous	300 bps-10 Mbps	Optional up to 9600 bps	Optional up to 9600 bps	Optional up to 9600 bps
Asynchronous	Standard	Standard up to 19,200 bps	Standard up to 19,200 bps	Standard up to 19,200 bps
Protocols Supported	TCP/IP, Ethernet	X.25, BSC	X.25, BSC	X.25, BSC
LAN Supported	IEEE 802.3	MAI MAGNET	MAI MAGNET	MAI MAGNET
RJE Terminals Supported	—	2780/3780, 2770/3770	2780/3780	2780/3780
IBM 3270 Emulation	None	BSC	BSC	BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 60MB-760MB per drive, up to 128 drives	169MB, 300MB formatted 285MB, formatted	Fixed: 300MB 285MB, formatted	Fixed: 300MB 285MB, formatted
Streaming Tape Drives	25ips, 50ips, 100ips	1600/6250 bpi @ 100 ips	1600/6250 bpi @ 100 ips	1600/6250 bpi @ 100 ips
Cartridge Tape Drives	None	8000/10000 bpi @ 90/72	8000/10000 bpi @90/72ips	8000/10000 bpi@90/72 ips
Reel-to-reel Tape Drives	800, 1600, 3200,6250 bpi	1600 & 6250 bpi@100 ips	1600 & 6250 bpi @ 100ips	1600 & 6250 bpi @100ips
Line Printers	160, 300, 1200 lpm	150, 300, 600 lpm	150, 300, 600 lpm	150 lpm, 300lpm, 600lpm
Serial Printers	120 cps	160 cps	160 cps	160 cps
Letter Quality Printers	45 cps	30 cps, 72 cps	30 cps, 72 cps	30 cps, 72 cps
Non-Impact Printers	Laser	—	—	—
Other Peripherals Supported	A/D, D/A, Point. devices graphics, plotters	—	—	—
SOFTWARE				
Proprietary Operating System Name	IPOS	BOSS/VS	BOSS/VS	BOSS/VS
Operating System Type	Realtime	Multiuser	Multiuser	Multiuser
Unix Derivative	Yes	No	No	No
Database Management System	IPDBMS (Ingres-like)	MAI Origin	MAI Origin	MAI Origin
Assembler	VASM	—	—	—
Compilers	C, Fortran	Basic, Cobol	Basic, Cobol	Basic, Cobol
Principal Application Available	Sci. simulation, signal/ image procesing, CAD	Mfg, Whls, Gov, Cnstr, Prop. Mgt, Ret, Health	Mfg, Whls, Gov, Cnstr Prop. Mgt, Ret, Health	Mfg, Whls, Gov, Cnstr, Prop. Mgt, Ret, Health
Other Applications Available	Mathematics	—	—	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	IP-1-9 w/9 parallel proc 150MB disk, 72MB memory 10 I/O ports— N/A	1 CPU; 2MB mem; 169MB disk; term; 80/200 lpmp prntr; Boss/VS O.S — $40,000 2CPU; 5MB mem, 169MB disk; 10 term; 300 lpm print; 120 tape; Boss VS O.S.—$80,000	1CPU; 2MB mem; 300MBdisk Term; 80/200 lpm prnt; 1600 bpi tape; Boss/VS O.S — $72,000 2 CPU; 2MB mem; 300MB disk; Term; 600 lpm prnt 1600/6250 bpi tape; Boss/VS O.S. — $148,000	1CPU; 4MB mem; 2 300MB disk; 40 term; 600 lpm print; 1600/6250 bpi tape; Boss/VS O.S. — $215,000 2 CPU, 4MB mem; 3 300MB disk; 70 term; 600 lpm print, 1600/6250 bpi tape — $320,000
Monthly Maintenance of Typical Configuration	$3,000 —	$352 - $590 —	352/590/1358 —	$1,456 - $2,171 —
Date of First Delivery	December 1985	March 1987	October 1987	October 1987
Number Installed to Date	6	—	—	—
COMMENTS				

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MANUFACTURER & MODEL	MAI Basic Four MPx 9500 Series	McDonnell Douglas Series 9200	McDonnell Douglas Series 18	MIPS Computer Systems M/500
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	300MB-4.8GB	130MB-4GB	130MB-4GB	337MB-2GB
MEMORY RANGE	4MB-24MB	1MB-8MB	500MB-5GB	4MB-20MB
NO. WORKSTATIONS SUPPORTED	84-255	208	400	Up to 32 serial ports
PRICE RANGE, $	205,000-250,000	100,000-400,00	400,000-1,000,000	43,624
TARGET MARKET(S)	General Business	Gen. Bus., Bank, Trans, MIS, State & Local Gov.	Gen. Bus., Bank, Trans, MIS, State & Local Gov.	Gen. Bus., Sci/Eng CAD/CAM/CAE
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Proprietary	Proprietary	Proprietary	MIPS R2000: 8MHz
CPU Cycle Time, nanoseconds	160	135	150	125
MIPS	—	N/A	N/A	5
Hardware Floating Point	SP	—	—	SP, DP
Virtual Memory (addressable bytes)	—	Entire Memory	Entire memory	4GB (2GB/process)
Cache Memory, bytes	64K	None	2MB per disk cntrlr	8KB
Battery Backup	Standard	Standard	Standard	None
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	480	540	300	375
Storage Protection	Standard	Semiconductor	Standard	Standard, ECC
Increment Size, bytes	1MB, 2MB, 4MB	2MB	2MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	VMEbus
No. of I/O Channels	16	4 disk cont & 8 disks	5 disk cont & 10 disks	2-3
Aggregate Bandwidth, bytes/sec.	8.3 MB/sec	40MB/sec	100MB/sec	40MB/sec
COMMUNICATIONS				
Max. Number of Lines	84	208	400	32
Synchronous	Optional up to 9600 bps	19,200, (64KB for X.25)	Optional, 19.2K bps	—
Asynchronous	Standard up to 19,200 bps	19,200, standard	Standard, 19.2K bps	Standard, 19.2 bps
Protocols Supported	X.25, BSC	SDLC, X.25, SNA, TTY	SDLC, X.25, SNA, TTY	CP/IP, TTY, Sun NFS
LAN Supported	MAI MAGNET		IEEE 802.3	IEEE 802.3
RJE Terminals Supported	2780/3780	2780/3780, HASP, 3770	2780/3780, HASP, 3770	—
IBM 3270 Emulation	BSC	SNA, BSC	SNA, BSC	—
PERIPHERAL EQUIPMENT				
Disks Supported	300 MB, formatted 285MB, formatted	Fixed: 1GB, 4GB	Fixed: 5GB	Fixed: 337MB
Streaming Tape Drives	1600/6250 bpi@ 100 ips	25/100 ips	50/100 ips	—
Cartridge Tape Drives	8000/10000 bpi@ 90/72ips	N/A	N/A	60MB (1/4")
Reel-to-reel Tape Drives	1600/6250 bpi@ 100ips	N/A	—	6250 bpi/1600bpi (1/2")
Line Printers	150, 300, 600 lpm	150/300/600/1200 lpm	150/300/600/1200 lpm	—
Serial Printers	160 cps	40-400 cps	40-400 cps	VME perpherals suppted
Letter Quality Printers	30 cps, 72 cps	33 cps	33 cps	—
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	—	CRT Term & Personal cptr	CRT term & PCs	—
SOFTWARE				
Proprietary Operating System Name	BOSS/VS	Reality Operating System	Reality Operating System	UMIPS
Operating System Type	Multiuser	RT, multitask, multiuser	RT, multitask, multiuser	—
Unix Derivative	No	No (Pick)	No (Pick)	Yes, Sys V.3, BSD 4.3
Database Management System	MAI Origin	Real DS, intgrtd w/o.s.	Real DS, intgrtd w/o.s.	—
Assembler	—	(internal use only)	Internal use only	MIPS
Compilers	Basic, Cobol	Basic, "All" (4G/L) "ENGLISH" DB retrieval	Basic, "All" (4G/L) "ENGLISH" DB retrieval	Pascal, Fortran, Cobol, PL/1, ADA, C
Principal Application Available	Mfg, Whls Gov, Cnstr. Prop. Mgt., Ret., Health	Numerous app. pkgs for Manu., Dist., & Gov.	Numerous app. pkgs for Manu., Dist., & Gov.	System development and simulation
Other Applications Available	—	—	—	Varies- available from OEMs
PRICING & AVAILABILITY				
Typical System Configuration and Price	1CPU; 4MB mem; 2 300MB disk; 20term; 600 lpm print.; 1600 bpi tape Boss/VS O.S. — $188,000 2CPU; 4MB mem; 2 300MB print.; 30 terms; 300 lpm prnt; 800/1600 bpi tape — $272,000 3CPU, 45trm — $360,000	9230 — $164,500 9250 — $192,650	18/955 — $395,000 18/965 — $575,000	OEM quantity 10— $43,624
Monthly Maintenance of Typical Configuration	$1,045/$1,541/$2,062 —	9230 — $908 9250 — $1,252	18/955 — $1,786 18/956 — $2,500	— $270
Date of First Delivery	March 1987	Q4 1984	May 1987	June 1986
Number Installed to Date	—	1,700	—	114
COMMENTS			Gen. avail.—October 1987	MIPS is an OEM supplier of RISC-based system building blocks, including components, boards, compilers & op. systems

All About Supermini Systems

MANUFACTURER & MODEL	MIPS Computer Systems M/800	NCR Corporation 9000 ITX Family	Prime Computer, Inc. 2350	Prime Computer, Inc. 2450
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	337MB-2GB	40MB-20GB	60MB-516MB	60MB-516MB
MEMORY RANGE	4MB-20MB	1MB-4MB	Up to 8MB	4MB-8MB
NO. WORKSTATIONS SUPPORTED	Up to 32 serial ports	216 max.	—	
PRICE RANGE, $	51,300	36,000-119,000	19,900 - 29,560	43,000-46,500
TARGET MARKET(S)	Gen. Bus., Sci/Eng CAD/CAM/CAE	General business	GenBus,Bank,Scientific, Engineering,CAD/CAM/CAE	Gen Bus, Bank, Sci/Eng. CAD/CAM/CAE
CENTRAL PROCESSOR				
CPU Manufacturer and Model	MIPS R2000: 12.5MHZ	Proprietary	Prime 2350	Prime 2450
CPU Cycle Time, nanoseconds	80	—	Not published	Not published
MIPS	8	0.37-1.1	.85	1.3
Hardware Floating Point	SP, DP	DP	SP, DP, QP	SP, DP, QP
Virtual Memory (addressable bytes)	4GB, (2GB/process)	128MB	512MB	512MB
Cache Memory, bytes	64KB	None	16K	16KB
Battery Backup	None	None	Optional	Optional
Realtime Clock	Standard	—	None	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	375	450	180	180
Storage Protection	Standard, ECC	Standard	Standard	Standard
Increment Size, bytes	4MB	1MB	2MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	VMEbus	PM bus, Multibusl	Proprietary	Proprietary
No. of I/O Channels	2-3	14	One	1
Aggregate Bandwidth, bytes/sec.	40MB/sec	2MB/sec	5MB/sec	5MB/sec
COMMUNICATIONS			2	2
Max. Number of Lines	32	216-432	24	40
Synchronous	—	Standard, 9600 bps	64K bytes/sec., Optional	64K bps, optional
Asynchronous	Standard, 19.2 bps	Standard, 19.2K bps	19.2k bytes/sec Optional	19.2K bps
Protocols Supported	CP/IP, TTY, Sun NFS	BSC, X.25, SNA	SDLC,HDLC,X.25,BSC,SNA, TCP/IP,TTY	SDLC, HDLC, X.25, BSC, sna, TCP/IP, TTY
LAN Supported	IEEE 802.3	SNA	IEEE 802.3,Prop Ringnet	IEEE 802.3, Prop Ringnet
RJE Terminals Supported	—	2780/3780	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	—	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 689MB	Fixed & remov.: 40/72/ 135/279/415MB	Fixed: 60,120,258MB to MX stated	60, 120, 258MB
Streaming Tape Drives	—	S/S, 25/100 ips	100 IPS, 10' Reel	100 ips, 10' reel
Cartridge Tape Drives	60MB, ¼"	15/90 ips	5.25' F.F./60MB	5.25", 60MB
Reel-to-reel Tape Drives	6250 bpi/1600 bpi ½"	1600/GCR, 100 ips	—	—
Line Printers	—	360-2000 lpm	300 or 600 lpm	300 or 600 lpm
Serial Printers	VME peripherals supported	80-325 cps, 370-720 lpm	—	—
Letter Quality Printers	—	33 cps	55CPS	55 cps
Non-Impact Printers	—	—	Laser	Laser
Other Peripherals Supported	—	—	Graphic workstation	Graphic workstation
SOFTWARE				
Proprietary Operating System Name	UMIPS	ITX	Primos	Primos
Operating System Type	—	Multitasking	Multiuser	Multiuser
Unix Derivative	Sys V.3, BSD 4.3	No	No	No
Database Management System	—	ITX DBMS	Prime,Oracle,Prime Info	Prime Oracle, Prime Info
Assembler	MIPS	Macro		— ,
Compilers	Pascal, Fortran, Cobol, PL/1, ADA, C	Cobol, Basic, Pascal	Basic,Pascal,C,Fortran, Cobol,RPGLL,PL/1,Lisp	Basic, Pascal, Fortran, CoboL; PGLL,PL/1,LISP
Principal Application Available	System development and simulation	Comm, retail, fin, ind, gov't, ed.	Wide variety of applic. across eng/scien/commer	Wide variety of applic. across eng/scien/commer
Other Applications Available	Varies- available from OEMs	Third party		—
PRICING & AVAILABILITY				
Typical System Configuration and Price	OEM quantity 10— $51,300	CPU, 3MB mem, tape, 2 270MB disk, 30 wksta, 720 lpm prntr, O.S. — $148,995	4DSMB mem,120MBdisk 60MB cartr tape,disk/ tape cntrl/16 async lines,console;Primos; diagnostic processor — $31,000	4MB mem,120MB disk 60MB tape,disk/ tape contrlr/16 async lines,console;Primos; diagnostic processor — $47,000
Monthly Maintenance of Typical Configuration	$270	—	—	—
	—	—	—	—
Date of First Delivery	June 1986	1986	January 1986	January 1986
Number Installed to Date	114	—	N/A	N/A
COMMENTS	MIPS is an OEM supplier of RISC-based system building blocks, including components, boards, compilers & op. systems.			

All About Supermini Systems

MANUFACTURER & MODEL	Prime Computer, Inc. 2455	Prime Computer, Inc. 2755	Prime Computer, Inc. 9755	Prime Computer, Inc. 9955 II
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	496MB-4.6GB	496MB-4.6GB	—	496MB-12.3MB
MEMORY RANGE	4MB-16MB	4MB-16MB	8MB-16MB	16MB-32MB
NO. WORKSTATIONS SUPPORTED	—	—	—	—
PRICE RANGE, $	62,800-100,000	90,000-200,000	237,000-261,000	350,000-428,000
TARGET MARKET(S)	GenBus,Bank,Scientific, Engineering,CAD/CAM/CAE	GenBus,Bank,Scientific, Engineering,CAD/CAM/CAE	Gen Bus, Bank, Sci/Eng CAD/CAM/CAE	Gen Bus, Banking, Sci/Eng, CAD/CAM/CAE
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Prime 2455	Prime 2755	Prime 9755	Prime 9955 II
CPU Cycle Time, nanoseconds	Not published	Not published	Not published	Not published
MIPS	1.3	1.6	3.4	5
Hardware Floating Point	SP, DP, QP	SP, DP, QP	SP, DP, TP	SP, DP, QP
Virtual Memory (addressable bytes)	512MB	512MB	512MB	512MB
Cache Memory, bytes	64K	64KB	16K	64KB
Battery Backup	Optional	Optional	Optional	Optional
Realtime Clock	Standard	Standard	None	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	81	81	84	46
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4MB	4MB	2MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Proprietary	Proprietary
No. of I/O Channels	One	1	1	1
Aggregate Bandwidth, bytes/sec.	5MB/sec	5MB/sec	9MB/sec	9.5MB/sec
COMMUNICATIONS	2	2	2	2
Max. Number of Lines	40	128	192	254
Synchronous	64K bytes/sec, optional	Optional, up to 64KB/sec	64KB/sec, optional	64K bps, optional
Asynchronous	19.2k bytes/sec optional	Optional, up to 19.2KB/sec	19.2KB/sec, optional	19.2K bps, optional
Protocols Supported	SDLC,HDLC,X.25,BSC,SNA, TCP/IP,TTY	SDLC,HDLC,X.25,BSC,SNA, TCP/IP,TTY	SDLC, HDLC, X.25, BSC, SNA, TCP/IP, TTY	SDLC, HDLC, X.25, BSC, SNA, TCP/IP, TTY
LAN Supported	IEEE 802.3,Prop Ringnet	IEEE 802.3,Prop Ringnet	IEEE 802.3, Prop Ringnet	IEEE 802.3, Ringnet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fix 60,120,258MB to MX stated	Fixed: 496MB or 770MB Rem: 330MB	Fixed: 496/770MB Rem.: 300MB	Fixed: 496MB-770MB Rem: 300MB
Streaming Tape Drives	100 IPS, 10' Reel	100 IPS, 10" Reel	100 ips, 10' reel	100 ips, 10' reel
Cartridge Tape Drives	5.25" F.F./60MB	F.F./60MB	5.25", 60MB	5.25", 60MB
Reel-to-reel Tape Drives		800-6450 bpi, 50 ips	50 ips, 800/1600/6250bps	50 ips, 800/1600/6250bpi
Line Printers	300,600 lpm	200-1000 lpm	200-1000 lpm	200-1000 lpm
Serial Printers		—	—	—
Letter Quality Printers	55CPS	55CPS	55 cps	55 cps
Non-Impact Printers	Laser	Laser	Laser	Laser
Other Peripherals Supported	Graphic workstation	Graphic Workstation	Graphic workstation	Graphic workstation
SOFTWARE				
Proprietary Operating System Name	Primos	Primos	Primos	Primos
Operating System Type	Multiuser	Multiuser	Multiuser	Multiuser
Unix Derivative	No	No	No	No
Database Management System	Prime,Oracle,Prime Info	Prime,Oracle,Prime Info	Prime Oracle, Prime Info	Prime Oracle, Prime Info
Assembler			—	—
Compilers	Basic,Pascal,C,Fortran, Cobol,RPGLL,PL/1,Lisp	Basic,Pascal,C,Fortran, Cobol,RPGLL,PL/1,Lisp	Basic, Pascal, Fortran, Cobol, RPGII, PL/1, LISP	Basic, Pascal, Fortran Cobol, RPGII, PL/1, LISP C
Principal Application Available	Wide variety of applic. across eng/scien/commer	Wide variety of applic. across eng/scien/commer	Wide variety of eng/sci/ commercial applicatons	Wide variety of eng/sci/ commercial applications
Other Applications Available		—	—	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	4MB mem, 258MB disk, 60MB tape ,disk/ tape contrlr/16 async lines sys cons,diagnost processor,Primos— $75,000	4MB mem, 120MB disk, streaming tape, console, office peripheral cabinet, Primos, diagnostic processor — $110,000	8MB mem, 2-496MB disk, GCR tape dr, disk/tape controller, periph. cab. console; Primos; diagnostic processor— $258,600	16MB mem, 496MB disk, GCR tape, disk/tape controller, system console; Primos; peripheral cabinet — $392,000
Monthly Maintenance of Typical Configuration	—	—	—	—
Date of First Delivery	July 1987	February 1987	April 1986	April 1986
Number Installed to Date	—	Not available	N/A	N/A
COMMENTS				

All About Supermini Systems

MANUFACTURER & MODEL	Prime Computer, Inc. 6350	Prime Computer, Inc. 6550	Pyramid Technology Corp Series 9000	Pyramid Technology Corp Series 9805
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	496MB-12.3MB	496MB-12.3MB	420MB-32GB	420MB-32GB
MEMORY RANGE	16MB-32MB	Up to 64MB	16MB-128MB	4MB-128MB
NO. WORKSTATIONS SUPPORTED	—	—	512	256
PRICE RANGE, $	549,000-665,000	800,000-925,000	209,000-600,000	129,000-500,000
TARGET MARKET(S)	Gen Bus, Banking, Sci/Eng, CAD/CAM/CAE	Gen Bus, Banking, Sci/Eng, CAD/CAM/CAE	Gen Bus, Bank, MIS, Mfg, Eng, Gov, Trans, Telecom	GenBus, Mfg, Trans, MIS, Eng, Gov, Bank, Telecom
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Prime 6350	Prime 6550	Proprietary RISC	Proprietary, RISC
CPU Cycle Time, nanoseconds	Not published	Not published	100	100
MIPS	11.7	20.6	7-28 (1-4 processors)	3.5
Hardware Floating Point	SP, DP, QP	SP, DP, QP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	512MB	512MB	4GB	4GB
Cache Memory, bytes	32KB	32KB/CPU	64KB	32KB
Battery Backup	Optional	Optional	None	None
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	34	34	700ns 1st wd,100ns subs	700ns lst wd, 100ns subs
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	8MB	8MB	4MB or 16MB	4MB or 16MB
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Proprietary	Multibus, Xtendbus (prop	Multibus, Xtendbus prop.
No. of I/O Channels	1	2	8	8
Aggregate Bandwidth, bytes/sec.	24MB/sec	48MB/sec	40MB/sec.	40MB/sec
COMMUNICATIONS	2	2		
Max. Number of Lines	254	254	512	256
Synchronous	64K bps, optional	56-64K bps, optional	Optional	Optional
Asynchronous	19.2K bps, optional	19.2K bps, optional	Standard	Standard
Protocols Supported	SDLC, HDLC, X.25, BSC, SNA, TCP/IP, TTY	SDLC, HDLC, X.25, BSC, SNA, TCP/IP, TTY	SDLC, HDLC, X.25, TCP/IP SNA, TTY, Hyperchannel	SDLC, HDLC, X.25, TCP/IP SNA, TTY, BSC, Hyperchnl
LAN Supported	IEEE 802.3, Ringnet	IEEE 802.3, Ringnet	IEEE 802.3	IEEE 802.3
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	HASP	HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA	SNA
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 496MB-770MB Rem: 300MB	Fixed: 496MB-770MB Rem: 300MB	Fixed: 470MB & 1GB Removable: 300MB	Fixed: 415MB, 470MB, 1GB Removable: 300MB
Streaming Tape Drives	100 ips, 10' reel	100 ips, 10' reel	1600 bpi, 100ips srt/stp	1600 bpi, 100 ips s/s
Cartridge Tape Drives	5.25", 60MB	5.25", 60MB	None	—
Reel-to-reel Tape Drives	50 ips, 800/1600/6250bpi	50 ips, 800/1600/6250bpi	1600/6250 bpi, 100 ips	1600/6250 bpi, 100 ips
Line Printers	200-1000 lpm	200-1000 lpm	600, 1000 lpm	600, 1000 lpm
Serial Printers	—	—	—	—
Letter Quality Printers	55 cps	55 cps	—	—
Non-Impact Printers	Laser	Laser	—	—
Other Peripherals Supported	Graphic workstation	Graphic workstation	—	—
SOFTWARE				
Proprietary Operating System Name	Primos	Primos	Dual port OSX	Dual port OSX
Operating System Type	Multiuser	Multiuser	Multitasking, multiuser	Multitasking & user
Unix Derivative	No	No	Dual port of UNIX Sys V	Dual port of Sys V
Database Management System	Prime Oracle, Prime Info	Prime Oracle, Prime Info	Oracle, Ingres, Unify	Oracle, Ingres, Unify,
Assembler	—	—	Standard	Standard
Compilers	Basic, Pascal, Fortran Cobol, RPGII, PL/1, LISP C	Basic, Pascal, Fortran Cobol, RPGII, PL/1, LISP C	Pascal, Fortran, Cobol, ADA, Lisp, C	Pascal, Fortran, Cobol, ADA, Lisp
Principal Application Available	Wide variety of eng/sci/ commercial applications	Wide variety of eng/sci/ commercial applications	Various	Various
Other Applications Available	—	—	3000 3rd pty pack avail through Pyramid's PRISM prog. under Pick & UNIX	3000 3rd pty appl avail through UNIX and Pick operating systems.
PRICING & AVAILABILITY				
Typical System Configuration and Price	64MB mem, 4-770MB disk, 2 GCR tape, disk/tape controller, pripheral cabinet, console, Primos diagnostic processor — $875,000	64MB mem, 4-770MB disk, 2-GCR tape dr, console, periph cabinet, diag. processor, Primos; — $875,000	16MB memory, 470MB disk, ½" 1600 bpi tape, disk contrl, tape contrl, Eth ernet w/TCP/IP, console, operating sys, C lang., 1yr warranty. 9810 to 9840— $209,950 to $514,000	CPU, 4MB mem, 16 RS232 ports, Ethernet, RP/IP, disk contrl, tape Contrl 470MB disk, ½" 100 ips 1600 6 bpi tape, operating sys, console, C compiler, I yr warranty — $139,050
Monthly Maintenance of Typical Configuration	—	—	—	$1,160
Date of First Delivery	May 87	November 1987	March 1987	July 1987
Number Installed to Date	N/A	N/A	50	Several Beta Sites
COMMENTS			1-4 Symmetric RISC processors object code compatible to entire Pyramid family, field upgradable.	Product announced in May Upgradable to or compatible w/ all Pyramid Systems.

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MANUFACTURER & MODEL	Ridge Computers Ridge 3200	Sequent Computer Systems S81	Stratus Computer, Inc. XA2000	Stratus Computer, Inc. FT250
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	300MB-916GB	264MB-17.3MB	143MB-21GB	143MB-21GB
MEMORY RANGE	4MB-128MB	8MB-240MB	4MB-16MB	4MB-8MB
NO. WORKSTATIONS SUPPORTED	64	—	256	128
PRICE RANGE, $	50,000 and up	164,00-800,00	250,000	250,000
TARGET MARKET(S)	Scientific, Engineering CAD/CAM/CAE	Gen bus, bank/fin, trans proc, MIS, Sci/Eng, CAD	OnLine transaction processing	OnLine transaction processing
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Ridge 3200 - Prop. RISC	Intel 80386	MC 68020	MC 68020
CPU Cycle Time, nanoseconds	83.3	62.5	62.5	125
MIPS	5	8-108 (2-30 CPUs)	2-8	.7
Hardware Floating Point	SP, DP	SP, DP	Standard	NA
Virtual Memory (addressable bytes)	4GB	256MB/proc	128M	16MB
Cache Memory, bytes	16KB	64KB/CPU	64K	None
Battery Backup	None	None	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	333	200	125	-
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4MB or 16MB	8MB	2M	2M
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary	Multibus, Sequent Sys	—	—
No. of I/O Channels	8	Up to 8	1	1
Aggregate Bandwidth, bytes/sec.	14.2MB/sec	1.2MB/sec	16MB/sec	16MB/sec
COMMUNICATIONS				
Max. Number of Lines	32, more w/ concentrator	250	256	128
Synchronous	—	Optional, 1M bps	Optional, 56K bps	Optional, 56K bps
Asynchronous	19.2/4.8 K baud	Standard	Standard, 9600 bps	Standard, 9600 bps
Protocols Supported	TCP/IP, TTY	X.25, TCP/IP, TTY	SDLC, SNA, BSC, X.25, LU6.2, IEEE 802.3	SDLC, SNA, BSC, X.25, LU6.2, IEEE 802.3
LAN Supported	IEEE 802.3	IEEE 802.3	MAP, Ethernet	MAP, Ethernet
RJE Terminals Supported	—	—	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	—	None	BSC	BSC
PERIPHERAL EQUIPMENT				
Disks Supported	150, 300, 445, 600MB	Fixed: 264/396/540MB	Fixed & removable: 448MB	Fixed & rem: 148MB-448MB
Streaming Tape Drives	—	45/60MB cart	1600/3200 bpi, 100 ips	S/S, 25 ips
Cartridge Tape Drives	1/4"; 60MB	—	—	—
Reel-to-reel Tape Drives	1/2"; 1600/3200 bpi	100 ips, 1600/6250 bpi	1600/6250 bpi, 100 ips	—
Line Printers	Dataproducts	—	300/600/900 lpm	300/600/900 lpm
Serial Printers	Most	—	None	None
Letter Quality Printers	Most	—	55 cps	55 cps
Non-Impact Printers	LaserWriter	Imagen & Xerox 2700	—	—
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	—	—	Multitasking	VOS
Operating System Type	Multitasking/multiuser	—	VOS	Multitasking
Unix Derivative	Yes, RX/V	Dynix	No	No
Database Management System	Informix-SQL (Rel. DBMS)	Unify, Oracle, Ingres	Oracle	Oracle
Assembler	Yes	Macro	Yes	Yes
Compilers	Pascal, Fortran, ADA, Lisp, Prolog, C	Basic, Pascal, Fortran, C	Cobol, Fortran, Basic, PL/1, C, Pascal	Cobol, Fortran, Basic, PL/1, C, Pascal
Principal Application Available	—	—	Mfg proc cntrl, ATM/POS ntwk,cash mgt brkge sys	Mfg proc cntrl, ATM/POS ntwk, cash management,
Other Applications Available	Ansys, Nastran,MARC/ MCAD Dracula VTI tools, Spice more	—	Mfg, distribution, reservation, message switching.	distribution, reservation, message switching.
PRICING & AVAILABILITY				
Typical System Configuration and Price	Ridge 3200, 16MB RAM, 16 R5232, 300MB Disc, RX/V w/networking, PC-Interface, ten/plus— $69,900	2 CPUs, 8MB mem, dual disk cntrl, 264MB disk, Ethernet, 16 lines, Dynix — $164,000	8MB dup proc mod;40 slt 16MB DMA bus;Bat backup 2 mem cntrl,2 C200 Comm cntrl,comm panel;tape unit & contrl,300Mb dis VOS operating sys— $261,000	4MB dup proc mod;20 slt, 16MB DMA bus; batt bkup, 2 mem cntrl,2 disk cntrl 2 143MB disk dr., 2 comm cntrl, VOS, TPF, FMS, & one language— $95,000
Monthly Maintenance of Typical Configuration	$700	—	$514	$913
Date of First Delivery	—	—	1987	1982
Number Installed to Date	—	Q3 '87	—	—
COMMENTS	—	None	—	—
			Up to 32 XA2000 computers can be locally connected into world-wide network with StrataNET	Up to 32 XA2000 computers can be locally connected into world-wide network with StrataNET

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MANUFACTURER & MODEL	Tandem Computers NonStop CLX	Tandem Computers NonStop EXT 10	Tandem Computers NonStop EXT 25	Tandem Computers NonStop II
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	290MB-9.8GB	256MB-64GB	256MB-64GB	256MB-64GB+
MEMORY RANGE	4MB-72MB	8MB-32MB	16MB-64MB	4MB-128MB
NO. WORKSTATIONS SUPPORTED	No set limits	No set limits	No set limits	No set limits
PRICE RANGE, $	From 57,000	From 74,900	From 250,000	—
TARGET MARKET(S)	On-line transaction processing	On-line transaction processing	On-line transaction processing	On-line transaction processing
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Tandem CLX (Up to 6)	Tandem EXT 10	Tandem EXT 25	Tandem NS II
CPU Cycle Time, nanoseconds	100	100	100	100
MIPS	—	—	—	1.6-12.8
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	1GB	1GB	1GB	2GB/proc.
Cache Memory, bytes	64KB	—	64KB/proc	—
Battery Backup	Standard	Standard	Standard	Standard
Realtime Clock	Standard	Standard	Standard	Standard
MAIN STORAGE				
Cycle/Access Time, nanoseconds	—	300	116	400
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4MB	4MB	8MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Dynabus	Dynabus	Dynabus	Dynabus
No. of I/O Channels	32-256	32-80	32-80	32-256
Aggregate Bandwidth, bytes/sec.	13MB/sec per proc.	13MB/sec per proc.	13MB/sec per proc.	13MB/sec per proc.
COMMUNICATIONS				
Max. Number of Lines	612	144	144	256
Synchronous	Standard, up to 64K bps	Standard, 56K bps	Standard, 56K bps	Standard, 56K bps
Asynchronous	Standard, up to 19.6K bps	Standard, 50 to 19.6K bps	Standard, 50 to 19.6K bps	Standard, 50 to 19.6K bps
Protocols Supported	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP
LAN Supported	IEEE 803.2, Hyperchannel	IEEE 803.2, Hyperchannel	IEEE 803.2, Hyperchannel	IEEE 803.2, Hyperchannel
RJE Terminals Supported	2780/3780, 3770	2780/3780, 3770	2780/3780, 3770	2780/3780, 3770
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 145MB-280MB Rem.: 240MB	Fixed: 64MB-2.1GB Rem.: 240MB	Fixed: 64MB-2.1GB Rem.: 240MB	Fixed: 64MB-2.1GB Rem.: 240MB
Streaming Tape Drives	100/25 ips, 1600 bpi	—	—	—
Cartridge Tape Drives	75/50 ips, 1200 bpi	75/50 ips, 1200 bpi	75/50 ips, 1200 bpi	75/50 ips, 1200 bpi
Reel-to-reel Tape Drives	45-200 ips, 800-6250 bpi	45-200 ips, 800-6250 bpi	45-200 ips, 800-6250 bpi	45-200 ips, 800-6250 bpi
Line Printers	300/600/1000/1200 lpm	300/600/1000/1200 lpm	300/600/1000/1200 lpm	300/600/1000/1200 lpm
Serial Printers	—	—	—	—
Letter Quality Printers	55 cps	55 cps	55 cps	55 cps
Non-Impact Printers	—	—	—	—
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	Guardian 90XF	Guardian 90XF	Guardian 90XF	Guardian 90XF
Operating System Type	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser	RT, multitask, multiuser
Unix Derivative	—	—	—	—
Database Management System	Encompass	Encompass	Encompass	Encompass
Assembler	—	—	—	—
Compilers	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic
Principal Application Available	On-line transaction processing	On-line transaction processing	On-line transaction processing	On-line transaction processing
Other Applications Available	—	—	—	—
PRICING & AVAILABILITY				
Typical System Configuration and Price	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Monthly Maintenance of Typical Configuration	—	—	—	—
Date of First Delivery	1987	3Q '86	3Q '86	1984
Number Installed to Date	—	—	—	—
COMMENTS				

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MANUFACTURER & MODEL	Tandem Computers NonStop TXP	Tandem Computers NonStop VLX	Unisys Corporation Series 7000	Wang Laboratories VS 6
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	256MB-64GB+	256MB-64GB+	149MB-14.6GB	67MB-2.6GB
MEMORY RANGE	Up to 256MB (16MB/CPU)	Up to 256MB (16MB/CPU)	4MB-32MB	1MB-4MB
NO. WORKSTATIONS SUPPORTED	No set limits	No set limits	100-240	16
PRICE RANGE, $	From 299,000	585,000-8,564,000	From 180,000	From 22,000
TARGET MARKET(S)	On-line transaction processing	On-line transaction processing	Gen Bus, banking, trans. proc, gov't, educ.	OA, mfg, Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Tandem TXP	Tandem VLX	Proprietary	Wang VS 65
CPU Cycle Time, nanoseconds	83.3	83.3	100	200
MIPS	4-32	12-48	7.7	—
Hardware Floating Point	SP, DP	SP, DP	Optional	Sp, DP
Virtual Memory (addressable bytes)	1GB	1GB	4GB	16MB
Cache Memory, bytes	64KB	64KB	44KB	16KB
Battery Backup	Standard	Standard	Standard	—
Realtime Clock	Standard	Standard	—	—
MAIN STORAGE				
Cycle/Access Time, nanoseconds	116	416	100	400
Storage Protection	Standard	Standard	—	Standard
Increment Size, bytes	2MB, 8MB	8MB, 16MB	4/16MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Dynabus	Dynabus	—	Prop.
No. of I/O Channels	32-256	32-256	—	6
Aggregate Bandwidth, bytes/sec.	13MB/sec per proc.	20-80MB/sec	11MB/sec	5MB/sec.
COMMUNICATIONS				
Max. Number of Lines	256	256/proc.	—	4
Synchronous	Standard, 80K bps	Standard, 80K bps	Optional, 307K bps	—
Asynchronous	Standard, 50 to 19.6K bps	Standard, 50 to 19.6K bps	Standard, 19.2K bps	Standard
Protocols Supported	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP	SDLC, HDLC, X.25, MAP, LU6.2, SNA, ADCCP	SDLC, HDLC, X.25, BSC, TCP/IP, SNA, TTY	WSN, SNA, BSC, X.25, TTY VT100
LAN Supported	IEEE 803.2, Hyperchannel	IEEE 803.2, Hyperchannel	Ethernet	WangNet
RJE Terminals Supported	2780/3780, 3770	2780/3780, 3770	2780/3780	2780/3780, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	Yes	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 64MB-2.1GB Rem.: 240MB	Fixed: 64MB-2.1GB Rem.: 240MB	Fixed: 149MB/280MB/ 458MB; Rem.: 300MB	Fixed: 67MB-314MB Rem.: 288MB
Streaming Tape Drives	—	—	100 ips, 1600-6250 bpi	90 ips, 8000 bpi
Cartridge Tape Drives	75/50 ips, 1200 bpi	75/50 ips, 1200 bpi	None	30 ips, 6400 bpi
Reel-to-reel Tape Drives	45-200 ips, 800-6250 bpi	45-200 ips, 800-6250 bpi	—	75 ips, 800/1600/6250bpi
Line Printers	300/600/1000/1200 lpm	300/600/1000/1200 lpm	270-1200 lpm	250-1,100 lpm
Serial Printers	—	—	160-400 cps	180 cps
Letter Quality Printers	55 cps	55 cps	55 cps	40/60, 60/92 cps
Non-Impact Printers	—	—	Laser- 8/10/15/20 ppm	Laser, 8/12/24 ppm
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	Guardian 90XF	Guardian 90XF	UNIX	VS-OS
Operating System Type	RT, multitask, multiuser	RT, multitask, multiuser	Batch, RT, Multitask/use	Multiuser
Unix Derivative	—	—	Yes	VS IN/ix
Database Management System	Encompass	Encompass	Oracle, Ingres, Unify	Pace, Total, Oracle
Assembler	—	—	—	Assembler
Compilers	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic	Basic, Pascal, C, Cobol, Fortran, Mumps, TAL, Extended Basic	Basic, Pascal, Cobol, C, Fortran, RPGII, Ada	Cobol, RPGII, PL/1, C, Basic
Principal Application Available	On-line transaction processing	On-line transaction processing	—	OA
Other Applications Available	—	—	—	App. dev., mfg, Sci/Eng
PRICING & AVAILABILITY				
Typical System Configuration and Price	Contact vendor	Contact vendor	CPU, 16MB mem, 515MB disk dr, 1 dsk & 1 tape cntrl, 16 wk st, UNIX lic., console — $257,287	CPU, 2MB mem, 67MB disk, prntr, 2 laser prnt, VS-OS lic, 20 wkst— $61,600
Monthly Maintenance of Typical Configuration	—	—	$2,368	—
	—	—	—	—
Date of First Delivery	November 1983	April 1986	—	April 1986
Number Installed to Date	—	—	N/A	—
COMMENTS				

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MANUFACTURER & MODEL	Wang Laboratories VS 65	Wang Laboratories VS 85	Wang Laboratories VS 100	Wang Laboratories VS 7100 Series
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
DISK STORAGE CAPACITY	76MB-2.6GB	75MB-5GB	75MB-10GB	75MB-15GB
MEMORY RANGE	2MB-4MB	2MB-8MB	4MB-16MB	4MB-16MB
NO. WORKSTATIONS SUPPORTED	40	80	128	128
PRICE RANGE, $	From 30,000	From 67,000	From 112,000	From 112,000
TARGET MARKET(S)	OA, mfg, Sci/Eng	OA, mfg, Sci/Eng	OA, mfg, Sci/Eng	OA, mfg, Sci/Eng
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Wang VS 65	Wang VS 85	Wang VS 100	Wang VS 7100
CPU Cycle Time, nanoseconds	200	200	200	120-900
MIPS	—	—	—	—
Hardware Floating Point	SP, DP	SP, DP	SP, DP	SP, DP
Virtual Memory (addressable bytes)	16MB	16MB	16MB	16MB
Cache Memory, bytes	16KB	32KB	32KB	32KB
Battery Backup	—	—	—	—
Realtime Clock	—	—	—	—
MAIN STORAGE				
Cycle/Access Time, nanoseconds	400	480	480	480
Storage Protection	Standard	Standard	Standard	Standard
Increment Size, bytes	4MB	4MB	4MB	4MB
INPUT/OUTPUT CONTROL				
Type of Bus	Prop.	Proprietary	Proprietary	Proprietary
No. of I/O Channels	32	32	16	10
Aggregate Bandwidth, bytes/sec.	5MB/sec.	8.3MB/sec.	16.6MB/sec.	33.3MB/sec.
COMMUNICATIONS				
Max. Number of Lines	16	6	9	16
Synchronous	—	—	—	—
Asynchronous	Standard	Standard	Standard	Standard
Protocols Supported	WSN, SNA, BSC, X.25, TTY VT100	WSN, SNA, BSC, X.25, TTY VT100	WSN, SNA, BSC, X.25, TTY VT100	WSN, SNA, BSC, X.25, TTY VT100
LAN Supported	WangNet	WangNet	WangNet	WangNet
RJE Terminals Supported	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP
IBM 3270 Emulation	SNA, BSC	SNA, BSC	SNA, BSC	SNA, BSC
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 76MB-314MB Rem.: 288MB	Fixed: 76MB-314MB Rem.: 288MB	Fixed: 76MB-314MB Rem.: 288MB	Fixed: 76MB-452MB Rem.: 288MB
Streaming Tape Drives	90 ips, 8000 bpi	90 ips, 8000 bpi	90 ips, 8000 bpi	90 ips, 8000 bpi
Cartridge Tape Drives	30 ips, 6400 bpi	30 ips, 6400 bpi	30 ips, 6400 bpi	30 ips, 6400 bpi
Reel-to-reel Tape Drives	75 ips, 800/1600/6250bpi	75 ips, 800/1600/6250bpi	75 ips, 800/1600/6250bpi	75 ips, 800/1600/6250bpi
Line Printers	250-1,100 lpm	250-1,100 lpm	250-1,100 lpm	250-1,100 lpm
Serial Printers	180 cps	180 cps	180 cps	180 cps
Letter Quality Printers	40/60, 60/92 cps	40/60, 60/92 cps	40/60, 60/92 cps	40/60, 60/92 cps
Non-Impact Printers	Laser, 8/12/24 ppm	Laser, 8/12/24 ppm	Laser, 8/12/24 ppm	Laser, 8/12/24 ppm
Other Peripherals Supported	—	—	—	—
SOFTWARE				
Proprietary Operating System Name	VS-OS	VS-OS	VS-OS	VS-OS
Operating System Type	Multiuser	Multiuser	Multiuser	Multiuser
Unix Derivative	VS IN/ix	VS IN/ix	VS IN/ix	VS IN/ix
Database Management System	Pace, Total, Oracle	Pace, Total, Oracle	Pace, Total, Oracle	Pace, Total, Oracle
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Cobol, RPGII, PL/1, C, Basic	Cobol, RPGII, PL/1, C, Basic	Cobol, RPGII, PL/1, C, Basic	Cobol, RPGII, PL/1, C, Basic
Principal Application Available	OA	OA	OA	OA
Other Applications Available	App. dev., mfg, Sci/Eng	App. dev., mfg, Sci/Eng	App. dev., mfg, Sci/Eng	App. dev., mfg, Sci/Eng
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 4MB mem, 314MB disk prntr, 2 laser prnt, 32 ser.ports, 20 wkst, VS-OS lic.—$160,000	CPU, 4MB mem, 147MB disk prntr, 2 laser prnt, 32 ser.ports, 20 wkst, VS-OS lic. — $246,300	CPU, 4MB mem, 147MB disk prntr, 2 laser prnt, 32 ser.ports, 20 wkst, VS-OS lic. — $278,600	CPU, 8MB mem, 1.4GB disk tape, prntr, laser prntr 64 ser.ports, 100 wkst, VS-OS lic. — $655,500
Monthly Maintenance of Typical Configuration	—	—	—	—
	—	—	—	—
Date of First Delivery	January 1985	1983	1983	1983
Number Installed to Date	—	—	—	—
COMMENTS				

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MANUFACTURER & MODEL	Wang Laboratories VS 7310			
WORD LENGTH	32 bits			
DISK STORAGE CAPACITY	75MB-25GB			
MEMORY RANGE	8MB-16MB			
NO. WORKSTATIONS SUPPORTED	192			
PRICE RANGE, $	From 184,000			
TARGET MARKET(S)	OA, mfg, Sci/Eng			
CENTRAL PROCESSOR				
CPU Manufacturer and Model	Wang VS 7300			
CPU Cycle Time, nanoseconds	120-900			
MIPS	—			
Hardware Floating Point	SP, DP			
Virtual Memory (addressable bytes)	16MB			
Cache Memory, bytes	32KB			
Battery Backup	—			
Realtime Clock	—			
MAIN STORAGE				
Cycle/Access Time, nanoseconds	480			
Storage Protection	Standard			
Increment Size, bytes	4MB			
INPUT/OUTPUT CONTROL				
Type of Bus	Proprietary			
No. of I/O Channels	15			
Aggregate Bandwidth, bytes/sec.	33.3MB/sec			
COMMUNICATIONS				
Max. Number of Lines	208			
Synchronous	—			
Asynchronous	Standard			
Protocols Supported	WSN, SNA, BSC, X.25, TTY VT100			
LAN Supported	WangNet			
RJE Terminals Supported	2780/3780, HASP			
IBM 3270 Emulation	SNA, BSC			
PERIPHERAL EQUIPMENT				
Disks Supported	Fixed: 76MB-452MB Rem.: 288MB			
Streaming Tape Drives	90 ips, 8000 bpi			
Cartridge Tape Drives	30 ips, 6400 bpi			
Reel-to-reel Tape Drives	75 ips, 800/1600/6250bpi			
Line Printers	250-1,100 lpm			
Serial Printers	180 cps			
Letter Quality Printers	40/60, 60/92 cps			
Non-Impact Printers	Laser, 8/12/24 ppm			
Other Peripherals Supported	—			
SOFTWARE				
Proprietary Operating System Name	VS-OS			
Operating System Type	Multiuser			
Unix Derivative	VS IN/ix			
Database Management System	Pace, Total, Oracle			
Assembler	Assembler			
Compilers	Cobol, RPGII, PL/1, C, Basic			
Principal Application Available	OA			
Other Applications Available	App. dev., mfg, Sci/Eng			
PRICING & AVAILABILITY				
Typical System Configuration and Price	CPU, 8MB mem, 1.4GB disk tape, prntr, laser prntr 64 ser.ports, 100 wkst, VS-OS lic. — $703,500			
Monthly Maintenance of Typical Configuration	—			
Date of First Delivery	1983			
Number Installed to Date	—			
COMMENTS				