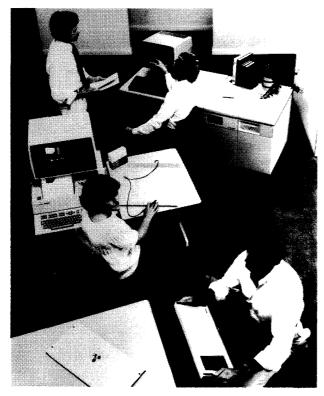
The lower end of the minicomputer market has recently begun to feel a squeeze as microcomputers have increased in sophistication and popularity; those who need small systems now find that micros can deliver much of the computing power heretofore provided by conventional 16-bit minis at a significant reduction in cost. However, no similar pinch is felt by the machines at the high end of the market—the superminis. In fact, the demand for those more sophisticated systems has grown of late, and more than a score of manufacturers are now striving to fill that demand.

The supermini segment of the market continues to burgeon because the systems are ideally suited for specific applications in crucial areas of industry. Superminis feature a greater word length (usually 32 bits) than other minicomputers, and that feature permits increased throughput and more precise computations—both requisites not only for computation-intensive applications in the scientific, engineering, and technical fields, but also for commercial applications that demand high throughput. Fields such as computer-aided engineering and design, seismic processing, and high-volume commercial transaction processing are areas of expanding endeavor, and superminis are the ideal machines to carry out the sophisticated processing tasks required for those enterprises.



Hewlett-Packard's HP 9000 family comprises three models of 32-bit workstations for engineering and scientific applications. The workstations can be used as standalone systems or in multiuser configurations.

Superminis continue to grow in popularity for scientific, technical, and commercial applications. Through detailed comparison charts, this report presents the salient characteristics of over 60 superminis from 22 vendors. The text of the report provides a guide to the chart entries, discusses the current state of the supermini market, and provides guidelines for selecting supermini systems.

Indications are that the demand for superminis will continue to expand for the next several years as the micros encroach on the lower end of the mini market and new developments in technology make the superminis both more compact and increasingly powerful. Based on a recent survey of more than 7000 small-system users, *Datamation* magazine projects that supermini systems will account for 46.2 percent of the sales in the minicomputer market between late 1983 and early 1985. Venture Development Corporation, an electronics industry consulting firm, sees supermini sales, which accounted for \$1.6 billion in 1982, expanding to \$4.8 billion by 1986.

This report is designed to bring you, in concise comparison-chart form, an up-to-date compilation of the hardware and software characteristics of the superminis that are currently being marketed in the United States. You will also find information on the current status of the supermini market, detailed explanations of the chart entries, and guidance in selecting a supermini whose characteristics match the requirements of your applications. Additional information on many of the systems listed in this report can be found in our sister publication, DATAPRO REPORTS ON MINICOMPUTERS.

WHAT IS A SUPERMINI?

A supermini, for the purposes of this report, can generally be characterized as a computer that is distinguished by:

- A word length of at least 32 bits
- A main storage capacity of 16 million bytes or less
- A purchase price of about \$100,000 and up for a basic configuration, including peripherals and controllers.

The majority of the current superminis use a 32-bit word length. A 32-bit word neatly holds four 8-bit bytes or two of the 16-bit words used in most of the smaller minicomputers. The 32-bit word length has been shown to yield an attractive balance between performance and cost in a broad range of applications. As a result, this word length has become so nearly universal among supermini designers that the terms "superminis" and "32-bit minicomputers" have become virtually synonymous.

For the sake of completeness, this report covers not only all known 32-bit superminis, but also the 48-bit computers produced by Harris Corporation—the one significant hold-out against the 32-bit tide. We have also included the IBM-compatible 32-bit computers produced by Formation; although these computers have been designed specifically to execute the IBM System/370 instruction repertoire, their architecture, performance, and price place them in the same class as the other current superminis.

This report also covers the systems in IBM's 4300 Series, regarded as mainframes in many quarters. These systems employ a 32-bit word length, along with other features of superminis (a maximum memory capacity of 16 megabytes, for example). Moreover, when IBM introduced the 4361 and 4381 in September 1983, the company explicitly referred to the 4300 systems as superminis.

Conversely, to focus attention on the true superminis and to avoid redundancy with other Datapro reports, we have deliberately excluded two categories of computers from this report: 1) the high-powered 16-bit minicomputers produced by companies such as Data General, DEC, Hewlett-Packard, and Modcomp; and 2) the 32-bit supermicros produced by Hewlett-Packard, Charles River Data Systems, Plexus Computer, and other manufacturers. These models have been excluded either because they do not feature full 32-bit architecture, despite their 32-bit word lengths, or because they fall below the commonly accepted price range for superminis (a minimum of about \$20,000 for the processor and base memory and a price of about \$100,000 and above for a basic configured system). We have, however, included the MicroVAX I, the newest and smallest member of DEC's VAX-11 family of 32-bit systems.

SUPERMINI ADVANTAGES

The principal advantages of the superminis are a direct result of their extended word lengths. A longer word length generally leads to:

- Increased addressability—If an entire 16-bit word is used to specify a memory address, the maximum number of storage locations that can be directly addressed is only 2¹⁶ or 65,536. A 32-bit address, by contrast, can specify up to 2³² or 4.29 billion distinct storage locations. Thus, the longer word length greatly increases a system's logical address space (that is, the total amount of storage that can be directly addressed), permitting effective use of both the large physical main storage capacities and the virtual memory facilities that characterize most of the superminis. Virtual memory, in turn, can greatly facilitate the development of programs for execution on multiprogrammed computers by enabling each programmer to act as if he or she had a very large single-level storage space totally at his or her disposal.
- Increased precision—A single 32-bit word provides enough precision to satisfy the demands of most scientific and commercial computations, and most of the super-

minis are also capable of processing double precision (64-bit) operands. Conversely, the common 16-bit minicomputer word length is too short to provide the required precision in many applications, necessitating the use of time-consuming multiple-word operations.

- Increased instruction sets—The longer word length typically makes more bits available for specifying the operation code of each instruction, as well as for specifying index registers, multiple accumulators, indirect addressing, and other parameters. Thus, the superminis can—and usually do—have larger and more powerful instruction repertoires than their 16-bit counterparts. As a result, a single supermini instruction can often do the work of several 16-bit instructions.
- Increased performance—A 32-bit supermini normally transfers twice as much information to or from main storage during each cycle as a 16-bit minicomputer, and this inherent performance advantage is further enhanced in many cases through storage interleaving, cache memories, and other power-boosting features. The three previously discussed advantages (increased addressability, greater precision, and more powerful instruction sets) also lead directly to increased performance in most applications.

All these supermini advantages can be achieved only through increased hardware complexity, which frequently leads to higher equipment costs. In the past, superminis have had substantially higher price tags than most 16-bit computers, and have proven to be cost-effective only in applications that clearly require one or more of the features cited above. Due to recent developments in on-board technology, however, many new superminis deliver 32-bit performance at a substantially lower price/performance ratio than was previously available. Thus, while superminis still tend to be more expensive than their 16-bit counterparts and can even be unnecessary luxuries if purchased for jobs that can be easily handled by 16-bit systems, those who feel that they need supermini power for their applications will find that they can obtain high performance for a substantially lower outlay than was previously required.

THE SUPERMINI MARKET

Competition in the supermini market began in 1975, when Gould and Perkin-Elmer launched their first 32-bit machines. Each succeeding year has seen increased activity, and 1983 was no exception: most established manufacturers introduced new systems, while new vendors also joined the fray.

The major news in the market was IBM's direct entry through the introduction of the 4361 and 4381 systems. Although IBM has been producing 32-bit machines for quite a while, it did not explicitly identify itself as a supermini vendor until September 1983 with the announcement of the long-awaited additions to the 4300 Series; those machines were touted by the company as

→ "powerful superminis" for engineering and scientific applications. The 4361 systems are intended to fill the gap between the 4331 and 4341 systems; the 4361 grouping comprises Model Groups 4 and 5. The 4381 machines are intended to provide a bridge between the 4341 machines and the mainframe 308X family; the 4381 grouping consists of Model Groups 1 and 2. IBM's direct entry into the supermini market will, as usual, force established vendors to compete against the giant's reputation and marketing organization.

Otherwise, the bulk of the year's activity was provided by established supermini vendors. Several brought out multiple models. Harris Corporation, Apollo Computer, and Hewlett-Packard led the pack with three new models each. Harris introduced the low-end H600, the mid-range H700, and the high-end H1000; these machines joined the H800 to round out the company's family of 48-bit computers. Apollo brought out three new 32-bit Domain "nodes": the DN300, DN460, and DN660. Hewlett-Packard began delivery of Models 520, 530, and 540 in its Series 9000 family of 32-bit engineering workstations.

Several vendors introduced two models into their existing lines. Digital Equipment Corporation (DEC) enhanced the popular VAX-11 family with the low-end MicroVAX I and the VAX-11/725, which uses a VAX-11/730 processor and can be employed in single- or multiuser environments. Data General Corporation brought out the Eclipse MV/8000 II, which replaced the MV/6000 as the mid-range system in the Eclipse MV/family; also announced was the Eclipse MV/8000 C, a compact repackaging of the MV/8000 II aimed primarily at the OEM market. Perkin-Elmer Corporation continued to enhance the Series 3200 with the entry-level Model 3205 and the Model 3250XP, which replaces the Model 3250 and is directly upgradable to the high-end Model 3200MPS multiprocessor system (announced in 1982 and delivered in 1983).

Among established vendors introducing single new models, Wang Laboratories introduced the VS85 as the low-end machine in its VS family. Honeywell Information Systems introduced the DPS 6/95, the new top-of-the-line machine in Honeywell's DPS 6 family of superminis. Prime Computer introduced the 9950, the new high-end machine in the company's 50 Series. NCR brought out the 9300. Tandem Computers added the NonStop TXP to its Non-Stop family of multiprocessor-based, fault-tolerant computers. (The NonStop TXP is available in various multiprocessor configurations; because each configuration is, for all intents and purposes, a different type of system, two NonStop TXP configurations are shown in the comparison charts in this report.)

New entrants into the supermini arena included both established and newly founded companies. One established vendor, MAI/Basic Four, introduced the 8000 Series, consisting of three models: 8010, 8020, and 8030. Modular Computer Systems (Modcomp), maker of the 16-bit Classic II systems, announced the Classic 32/85, the company's first 32-bit system. Pyramid Technologies, a new company,

announced the Pyramid 90x, a Unix-based system with RISC (Reduced Instruction Set Computer) architecture.

The number of vendors and available supermini systems will undoubtedly continue to grow in 1984, as new applications demand, and new technologies permit, the creation of systems that are increasingly powerful and cost-effective.

THE COMPARISON CHARTS

The key functional characteristics of over 60 commercially available superminis from 22 manufacturers are presented in the accompanying comparison charts. Most of the information in the charts was supplied or verified by the manufacturers during December 1983 and January 1984. The staff at Datapro Research greatly appreciates the vendors' cooperation in the preparation of these charts.

All of the comparison chart entries are explained in the following paragraphs, together with discussions of their significance to prospective buyers and some guidelines for selecting the most appropriate superminis for specific applications.

WORD LENGTH

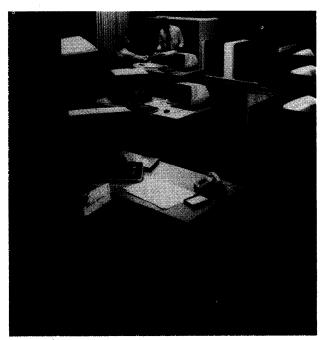
Probably the single most important distinguishing characteristic of a computer is its word length, that is, the number of bits (binary digits) that can be stored in or retrieved from main storage during a single cycle. In general, the longer the word, the greater the efficiency and accuracy of a computer's internal operations—and the higher its price tag. Nearly all of the superminis currently on the market have a 32bit word length. This size neatly accommodates four 8-bit bytes or two of the 16-bit words used in most of the smaller minicomputers, and yields an attractive balance between economy and performance in many applications. Indeed, the 32-bit word length is the most frequently used criterion for distinguishing between the superminis and their smaller relatives. The entries also indicate the presence of additional bits used for parity checking or error correction (for example, the entry "32 + 5" indicates that each word location in main storage consists of 32 data bits and 5 error correction bits).

MAIN MEMORY

The minimum and maximum amount of main storage available for each computer, expressed in thousands of bytes (KB) or millions of bytes (MB). (Remember, each 32-bit word is capable of holding four 8-bit bytes. Most vendors now express storage capacities in terms of bytes rather than words.)

DISK STORAGE CAPACITY

This indicates the minimum and maximum on-line storage capacities offered by the system. The indicated storage capacities are shown in millions of bytes (MB) and indicate the capacity of a single disk drive or the total capacity of two or more (typically, four to eight) drives that can be connected to the system.



The Eclipse MV/10000 is Data General's high-end supermini. Intended for industrial automation and scientific/engineering applications, the MV/10000 can support up to 192 users. It can accommodate up to 16 megabytes of main memory and 18.2 gigabytes of on-line disk storage.

> 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. When the computer is used in a business environment, for example, the workstation would normally be a CRT display terminal or teletypewriter, but in a manufacturing or distribution environment, the workstation could be a sensor or transmission unit that simply transmits signals back to the computer for processing.

PRICE RANGE

Ideally, these figures represent the upper and lower prices 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 indicates the industries toward which the system is geared. In many cases, the market is indicated in general terms capable of further refinement. For example, "Engineering/scientific" can indicate a variety of submarkets, including computer-aided engineering and design (CAE and CAD, respecively), seismic processing, and computation-intensive applications.

CENTRAL PROCESSOR

Although there are many variations in their internal architecture, the majority of currently available superminis are parallel, binary processors with a fixed word length of 32

The number of directly addressable bytes of main storage is one of the principal features that distinguishes the superminis from the smaller minicomputers. The short word lengths used in most minicomputers impose serious limitations upon the number of bits that can be assigned to hold the address part of each instruction. A typical 16-bit minicomputer instruction might consist of three parts: operation code, address mode field, and the address itself. If 6 bits are assigned to hold the operation code (permitting up to 64 distinct operations) and 2 bits are used to designate the addressing mode (permitting specification of indexing and/or indirect addressing), then only 8 bits are left to hold the address field. Since these 8 bits permit direct addressing of only 256 distinct memory locations, it is clear that other means will need to be employed to access most regions of the computer's main storage. The most common solutions to the problem are the use of multiword instructions, indexing, and/or indirect addressing.

The 32-bit word length used in most of today's superminis effectively removes this limitation. If just 16 of the 32 bits in each instruction word are used to hold the address field, up to 216 or 65,536 distinct memory locations can be addressed. If a full 32-bit word is used to hold the address field, up to 232 or 4.29 billion distinct locations (most of which would necessarily be in virtual memory rather than in real main storage) can be directly addressed.

Virtual memory is a facility that simplifies programming by providing a large addressable space on a high-speed disk storage unit that appears to the user as real main storage, and from which instructions and data are transferred into real main storage locations as required. Specialized hardware and/or software is required to perform the translations between virtual and real storage addresses, and to perform the necessary transfers of instructions and data between auxiliary storage and main storage. The number of addressable bytes of virtual memory is provided in this entry.

Hardware floating-point facilities are included in the standard instruction repertoires of most currently available superminis. A hardware floating point removes the burden of performing floating-point arithmetic from the CPU, and thus enhances system processing speed. In the absence of hardware floating point, floating point arithmetic would have to be performed through time- and space-consuming subroutines in the operating system.

The entries under this heading usually indicate that the system's hardware floating point is single-precision (SP), double-precision (DP), triple-precision (TP), quadrupleprecision (QP), or a combination of the foregoing. The precision of the floating point is an indication of the

number of bits on which it can operate simultaneously, generally expressed in arithmetic increments of 32; for example, a single-precision floating point can operate on 32 bits simultaneously, a double-precision on 64, and so forth.

Battery backup permits an orderly shutdown of the system in the event of an electrical failure or another sudden interruption. If battery backup is not or cannot be implemented, all data in main storage at the time of the interruption can be lost. This entry indicates whether battery backup is standard, optional, or inapplicable to a system.

A real-time clock or timer is another essential element in most "time-conscious" systems. A real-time 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 indicates whether the clock or timer is standard, optional, or inapplicable to the system.

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

MIPS indicates how many millions of instructions the computer can execute per second. A MIPS rating is a commonly accepted means of assessing a system's performance.

The 16-/32-bit compatibility entry indicates the extent of program compatibility between a supermini and the same vendor's 16-bit minicomputers (if any). "Direct" indicates that the vendor claims that the supermini's instruction set is a "compatible superset" of the instruction set used in the vendor's 16-bit computers, so that all programs written for the 16-bit computers can be executed without modification on the supermini. "Via mode bit" indicates that the supermini can be switched from its native operational mode into a "compatibility mode" in which it can execute some, if not all, of the programs written for the vendor's 16-bit computers.

MAIN STORAGE

Bytes fetched per cycle is the number of bytes accessed by main storage in a single read.

Memory access indicates the number of bits transferred per second from auxiliary storage to main memory.

Cycle/access time, nanoseconds indicates two benchmarks of the system's main storage. The cycle time is a minimum time interval that must elapse between the starts of two successive accesses to any one storage location. Though cycle time ranks with word length as one of the most significant individual indicators of a computer's performance potential, 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 input/output capabilities. *Access time* is the actual elapsed time between the CPU's request for data and the time when that data is received (read) in memory.

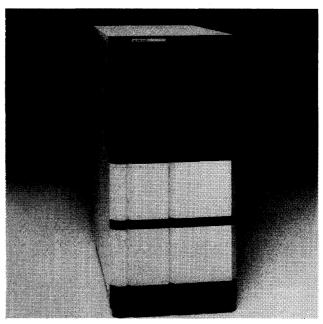
Storage protection is a feature that prevents unauthorized writing in or reading from certain areas of main storage. The protection can be accomplished through hardware, software, or a combination of both. Though unnecessary in simple dedicated systems, an effective storage protection scheme is an essential element in multiprogramming and time-sharing environments. Some of the superminis feature elaborate storage protection schemes that divide the total logical address space into hierarchical segments or "rings" with varying degrees of protection against unauthorized access. The entry indicates whether storage protection is standard, optional, or inapplicable to the system.

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

Cache memory 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 central processor or the input/output subsystem. The entry indicates the capacity of the cache memory unit, if applicable to the system.

INPUT/OUTPUT CONTROL

The number of I/O channels indicates the maximum combination of high-speed and low-speed channels that can be used to connect peripheral controllers to the CPU. Low-speed lines are used to connect such devices as terminals,



The Pyramid 90x is Pyramid Technology Corporation's first offering in the supermini market. The Pyramid 90x is a Unixbased supermini with RISC (Reduced Instruction Set Computer) architecture.

printers, and card equipment, while high-speed lines connect mass storage devices like disk and magnetic tape subsystems.

The data transfer rate, sometimes referred to as the "I/O 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 bits per second (K or M bps) or thousands or millions of bytes per second (KB/sec. or MB/sec.).

COMMUNICATIONS

Maximum number of lines indicates how many data communications lines can be handled by a particular system. The types of lines are specified in the next two entries.

Synchronous lines are those featuring synchronous data transmission. In this mode of transmission, bits or characters (composed of 5-8 bits) of data pass through the line 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 speed of each line in bits per second (bps) is noted.

Asynchronous lines feature asynchronous data transmission, in which characters are transmitted 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 inapplicable, and also notes the line speed in bps.

Protocols supported indicates which inter-system communications conventions, if any, are supported through the availability of appropriate hardware and software facilities.

Type of LAN supported indicates local area networks that can be used to link the system to other computer systems within a limited area, such as an office building. An example would be Xerox's Ethernet LAN.

RJE terminals emulated 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 Hasp terminals, for example, are available for many of the current superminis.

IBM 3270 emulation indicates whether the system can be equipped to emulate the functions of the widely used IBM 3270 display terminals.

PERIPHERAL EQUIPMENT

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

Disks supported indicates the types of disk media available for use on the system. Most responses indicate a mixture of

fixed and removable disk drives. Fixed disk drives include those employing Winchester technology and those using older fixed-media technologies. Removable drives are those that employ disk packs and cartridges. This entry also supplies the storage capacities of the disk devices that are compatible with the system.

Serial printers generally range in speeds from about 30 to 600 or more characters per second (cps), employ various matrix and daisy wheel technologies to print a character at a time, and are frequently able to print bidirectionally (that is, while the print head is moving in either direction across the page). These printers are usually used in smaller configurations, and provide excellent-quality hard-copy reports for far less money than the line-at-a-time printers usually used with larger systems. This entry indicates the speeds of the serial printers available for the system.

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

Line printers operate at speeds of 100 to 2000 or more lines per minute (lpm) and are used most frequently in large configurations. This entry gives the speeds of the line printers available for use on the system.

Reel-to-reel tape drives indicates the applicability, the transfer rate in thousands of bytes per second (KBS), and the speed in inches per second (ips) of tape drives that accommodate industry-standard ½-inch wide magnetic tape.

Streaming tape drives permit data to be transferred to a tape without the tape's stopping between data blocks; this high-speed transfer makes streaming tape drives valuable as backup media for fixed disks. This entry indicates the speed of the tape in inches per second (ips) and, where applicable, the presence of a start/stop mode that permits the streaming tape drive to emulate conventional tape subsystems.

Cassette/cartridge tape drives indicates the availability and recording densities in bits per inch (bpi) of I/O devices that accommodate low-cost magnetic tape cassettes or cartridges.

Other peripherals supported lists the additional peripheral devices that are available for each system. Typical entries include card readers and punches, plotters, laser printers, and graphics workstations.

SOFTWARE

Software—the programming packages and languages used to direct the computer's operations—is a crucial component of any computer system. When you select a system, it is imperative that you carefully investigate the available software. Areas of investigation should include: operating systems; programming languages; preprogrammed utility packages, such as sorts and file maintenance; and applica—

tion packages, such as payroll, graphics, CAD/CAM, and others. Prospective buyers should carefully note whether the software they will require is included in the cost of the system or offered at extra cost.

Vendors' claims and promises concerning the availability and capabilities of software should be carefully checked. This is particularly true of software that has been announced but not yet released. Sometimes the delivered product does not live up to its touted capabilities.

An assembler is a special-purpose program that uses the computer's power to facilitate the preparation of other programs. It enables the programmer to write his or her 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. A macro assembler is another software tool to make the programmer's job easier. Macro routines can be called by the programmer and copied right into the program. This saves the programmer from having to recode the routine each time it is used, and also eliminates the possibility of keying errors when that part of the program is entered. As usual, there is a price to pay; macros usually consume large quantities of memory space.

Compilers are software tools that 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. Compilers are now used in virtually all large- and medium-scale computer installations because of their demonstrated ability to slash programming costs—and they are becoming increasingly available for superminis. This widespread availability has resulted from the development of more powerful central processors; compilation is an intricate process that requires the storage space and processing power provided by supermini systems.

Entries in this section of the charts may include widely used high-level programming languages like Cobol (Common Business Oriented Language), RPG (Report Program Generator), Fortran (Formula Translator), Basic (Beginners All-purpose Symbolic Instruction Code), Algol (Algorithmic Language), APL, PL/1, and Pascal, or proprietary languages that are available from a vendor for use on a particular system.

A word of warning here: if you use a language that is unique to a vendor, you may be faced with a problem if you eventually decide to change vendors. Your investment in software may be lost, for the programs generally will not operate on any other system.

The operating system facilitates the operation of a computer by handling such functions as: scheduling, loading, and supervising the execution of programs; allocating storage and I/O devices; initiating and controlling I/O operations; analyzing interrupt signals and dealing with errors; han-

dling communications between the system and its human operator; and controlling multiprogramming or time-sharing operations.

This entry indicates the types of operating systems available for the computer. 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; "interactive," which means that the system allows data and parameters to be entered as the job is executing; "real-time," which means that the system responds to external demands on a priority basis; or "time-sharing," which means that the system allows multiple users to access the system and share all its resources at the same time. The operating systems for many of the current superminis are capable of supporting two, three, or all four of the above modes of operation simultaneously.

Operating system implemented in firmware tells whether the language processor and the operating system are contained in microcode. The entries stipulate "fully," "partially," or "no" to indicate the extent of firmware implementation. Implementation of an operating system or language in firmware is advantageous to the user, for it frees more memory space for the user's programs and data. Also, because the microcode is generally contained in read-only memory, it is usually inaccessible to the user; thus, any possibility of the user's tampering with the language processor or operating system is eliminated and chances for error are reduced. Another advantage of firmware implementation is the ability to create more sophisticated and complex system functions at the hardware level. Microcode routines can be substituted for the usual subroutines, thereby increasing system performance.

A database management system (DBMS) is a software facility designed to manage and maintain data in a nonredundant structure so that the data will be conveniently available for processing by multiple applications. The DBMS organizes data elements in some predefined structure and keeps track of the relationships among the data elements, thereby facilitating information retrieval and report generation. 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 of the principal database management systems available for the computer.

Principal industry application indicates the main types of software packages available for the computer's target market. Principal applications for the Engineering/scientific market would include CAD/CAE and power generation; principal applications for the commercial market would include transaction processing, distributed processing, office automation, and general business packages. In some cases, the vendors have supplied the names of specific application packages for their target industries.

Other packages are those software products that are not principal market applications for the system; they are secondary packages that are available for use in the target

market and collateral markets. For example, a vendor in the commercial market could list an office automation package as the principal industry application and business graphics—useful but not primary for the target market—as the other package.

PRICING & AVAILABILITY

Basic system configuration and price, intended to provide an accurate guide to the cost of the system, ideally shows 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, many 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 chart. When vendors supplied no information, we developed our own sample configurations. 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 supplied in the chart.

If you wish to buy two or more computers, it is worth noting that most of the manufacturers offer sizable discounts from their list prices on orders for multiple computers. Discounts of up to 40 percent are not unusual on large orders.

Monthly maintenance of basic configuration provides the amount to be paid per month on a maintenance contract with the vendor for service and repair for the basic configuration.

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

Number installed to date shows how many systems of each type had been delivered to customers as of December 1983/January 1984.

COMMENTS

This final entry on the comparison charts 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 22 vendors whose products are listed in the specification charts that follow.

Apollo Computer, Inc., 15 Elizabeth Drive, Chelmsford, MA 01824. Telephone (617) 256-6600.

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

Computer Designed Sytems, Inc., 10911 Olson Memorial Highway, Minneapolis, MN 55441. Telephone (612) 545-2855.

Convergent Technologies, 2500 Augustine Drive, Santa Clara, CA 95051. Telephone (408) 727–8830.

Data General Corporation, 4400 Computer Drive, Westboro, MA 01581. Telephone (617) 366-8911.

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

Formation, Inc., 823 East Gate Drive, Mt. Laurel, NJ 08054. Telephone (609) 234-5020.

Gould Inc., Computer Systems Division, 6901 West Sunrise Boulevard, P.O. Box 9148, Fort Lauderdale, FL 33310. Telephone (305) 587–2900.

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

Hewlett-Packard, Fort Collins Systems Division, 3404 East Harmony Road, Fort Collins, CO 80525. Telephone (303) 226–3800.

Honeywell Information Systems, Inc., 200 Smith Street, MS461, Waltham, MA 02154. Telephone (617) 895-6000.

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

Management Assistance Inc. (MAI), Basic Four Information Systems Division, 14101 Myford Road, Tustin, CA 92680. Telephone (714) 731-5100.

Microdata Corporation, 17481 Red Hill Avenue, P.O. Box 19501, Irvine, CA 92713. Telephone (714) 250-1000.

Modular Computer Systems, Inc. (Modcomp), P.O. Box 6099, 1650 West McNab Road, Fort Lauderdale, FL 33310. Telephone (305) 974–1380.

NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45479. Telephone (513) 445–5000.

Perkin-Elmer Corporation, Data Systems Group, 2 Crescent Place, Oceanport, NJ 07757. Telephone (201) 870-4500.

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

Pyramid Technology Corporation, 1295 Charleston Road, Mountain View, CA 94039. Telephone (415) 965–7200.

Stratus Computer, Inc., 6 Strathmore Road, Natick, MA 01760. Telephone (617) 653–1466.

Tandem Computers, Inc., 19191 Vallco Parkway, Cupertino, CA 95014. Telephone (408) 725–6000.

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

MANUFACTURER & MODEL	Apollo Computer, Inc. Domain Systems DN300	Apollo Computer, Inc. Domain Systems DN460	Apollo Computer, Inc. Domain Systems DN660	BTI Computer System BTI 8000
WORD LENGTH	32 bits	32 bits	32 bits	22 hisa
MAIN MEMORY	.5MB-1.5MB	1MB-4MB	1MB-4MB	32 bits
MAIN MEMORY DISK STORAGE CAPACITY	1.2MB-35.2MB		· · · · · · · · · · · · · · · · · · ·	1MB-16MB
NO. WORKSTATIONS SUPPORTED	1 1	Not supplied by vendor	Not supplied by vendor	64MB-8GB
	Not applicable	Not applicable	Not applicable	200
PRICE RANGE TARGET MARKET	\$12,900-\$23,400 Engineering/scientific	From \$39,500 Engineering/scientific	From \$59,000 Engineering/scientific	\$110,000-\$700,000 General business
	3,	J	,g	
CENTRAL PROCESSOR	16M	DECA	2564	FOOK
No. of directly addressable bytes Virtual memory	16MB	256M 256MB	256M	500K
Hardware floating point	SP, DP		256MB SP. DP	500KB
0 .	None	SP, DP		DP
Battery backup Real-time clock or timer	Standard	None Standard	None	Standard
CPU cycle time, nanoseconds			Standard	Standard
MIPS	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	250
16-/32-bit compatibility	Not applicable	1.2 Not applicable	1.2 Not applicable	Not supplied by vendor
MAIN STORAGE	Not applicable	Not applicable	Not applicable	Basic only
	2	4	4	Not supplied by your
Bytes fetched per cycle Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
	Not supplied by vendor			Not supplied by vendor 667
Cycle/access time, nanoseconds Storage protection	Standard	Not supplied by vendor Standard	Not supplied by vendor Standard	
· .	.5M			Standard
Increment size, bytes Cache memory, bytes	l None	1M 20K	1M	1M
NPUT/OUTPUT CONTROL	None	201	20K	None
No. of I/O channels	Not supplied by yourder	Net complied by your	Na	22
Data transfer rate	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	32
COMMUNICATIONS	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	67M bps
Max. number of lines	2	3		200
Synchronous	1	\ -	3	200
•	Not applicable Std.; 19.2K bps	Not applicable	Not applicable	No
Asynchronous		Std.; 19.2K bps 3270, HASP, Ethernet	Std.; 19.2K bps	Std.; 9600 bps
Protocols supported	3270, HASP, Ethernet		3270, HASP, Ethernet	2780/3780
Time of LAN summented	with TCP/IP, X.25	with TCP/IP, X.25	with TCP/IP, X.25	
Type of LAN supported RJE terminals emulated	Ring	Ring	Ring	Not applicable
IBM 3270 emulation	Not supplied by vendor Yes	Not supplied by vendor	Not supplied by vendor	Not applicable
PERIPHERAL EQUIPMENT	res	Yes	Yes	Not applicable
Disks supported	Winchester: 34MB, 70MB	Winchester: 58MB,	Winchester: 58MB,	Fixed & removable:
Diono Supportou	Trinchioster: 04MB, 70MB		167MB; Removable: 300MB	
Serial printers	400 cps	400 cps	400 cps	30/1200 cps
Letter-quality printers	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not applicable
Line printers	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	300-1200 lpm
Reel-to-reel tape drives	1600 bpi	Not supplied by vendor	Not supplied by vendor	800/1600 bpi
Streaming tape drives	25/100 ips	25/100 ips	25/100 ips	Not supplied by vendor
Cassette/cartridge tape drives	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	45 ips
Other peripherals supported	Multibus	Multibus	Multibus	Not applicable
outer peripriorate supported	TOTAL IDEE	Trialibas	I VIGITIDAS	Tot applicable
SOFTWARE		i		
Assembler	Not applicable	Not applicable	Not applicable	Relocatable assembler
Compilers	Fortran, Pascal, C	Fortran, Pascal, C	Fortran, Pascal, C	Cobol, Fortran, Pascal,
				Basic
0			<u> </u>	.
Operating system	Multi-tasking	Multi-tasking	Multi-tasking	Multi-tasking
Operating sys. implemented in firmware		Not supplied by vendor	Not supplied by vendor	Not applicable
Database management system	рзм	D3M	D3M	BTI/FMS
Principal industry application	Scientific, technical	Scientific, technical	Scientific, technical	General business
Other posteres	A (adamentia a af			la
Other packages	Aux (adaptation of	Aux (adaptation of	Aux (adaptation of	Not applicable
	Unix+ System III)	Unix+ System III)	Unix+ System III)	1
PRICING & AVAILABILITY				
	DNI200	D1400	2000	000
Basic system configuration and price	DN300 computational	DN460 computational	DN660 computational	CPU with 1MB memory;
	workstation with .5MB	workstation with 1MB	workstation with 2MB	64MB mass storage unit;
	main memory; VDT and	main memory, VDT and	main memory, color VDT	cartridge tape drive;
	keyboard; LAN interface;	keyboard, LAN interface,	and keyboard, 1MB	8 comm. lines: \$110,000
	and operating system	and operating system	display memory, LAN	1
	license: \$12,900	license: \$39,500	interface, and operating	
ı			system license: \$59,000	
Monthly maintenance of basic	\$120	\$397	\$546	\$827
configuration	1	1	1000	1 22,
Date of first delivery	January 1983	January 1984	January 1984	2nd quarter 1982
Number installed to date	See Comments	See Comments	See Comments	2nd quarter 1982
COMMENTS	Vendor estimates total	Vendor estimates total	Vendor estimates total	1
CHANACIALO	installation of all			A multi-processor
	I .	installation of all	installation of all	system with up to 8
'	systems at 3,000.	systems at 3,000.	systems at 3,000.	CPUs
İ	[1	
		l		

MANUFACTURER & MODEL	Computer Designed Systems, Inc. Adviser 1400/32	Computer Designed Systems, Inc. Adviser 1800/64	Convergent Technologies Megaframe	Data General Corporation Eclipse MV/4000
WORD LENGTH	32+8 bits	64+8 bits	32 bits	32 bits
MAIN MEMORY	256KB-16MB	256KB-16MB	1MB-28MB	1MB-8MB
DISK STORAGE CAPACITY	24GB	54GB	50MB-21.6GB	5GB
NO. WORKSTATIONS SUPPORTED	256	600+	8-128	64
PRICE RANGE FARGET MARKET	\$750,000-\$3,200,000 Interactive, commercial	\$920,000-\$5,600,000 Interactive, commercial	\$30,000-\$125,000 General business	\$30,000-\$150,000 Distributed d.p.; office automation
CENTRAL PROCESSOR				
No. of directly addressable bytes	8.000M	16,000M	4M	Not supplied by vendor
Virtual memory	Not supplied by vendor	Not supplied by vendor	4MB	4GB
Hardware floating point	Double precision	Double precision	Software only	SP. DP
Battery backup	Optional	Optional	None	Optional
Real-time clock or timer	Optional	Optional	Standard	Standard
	.2	1.1	100	400
CPU cycle time, nanoseconds				i e
MIPS	Not supplied by vendor	Not supplied by vendor	.5 to .8	.6
16-/32-bit compatibility	Optional	Optional	Not applicable	Direct
MAIN STORAGE	ł	ł	1	l .
Bytes fetched per cycle	[8	16	2	Not supplied by vendor
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Cycle/access time, nanoseconds	.2	1.1	150	Not supplied by vendor
Storage protection	Optional	Optional	Standard	Standard
Increment size, bytes	128K	128K	.5MB or 1MB	1MB or 2MB
Cache memory, bytes	4K	8K	None	None
NPUT/OUTPUT CONTROL		1		1
No. of I/O channels	612	Not supplied by vendor	12	9
	19.6MB/sec.	24.6MB/sec.	5M-10M bps	5MB/sec.
Data transfer rate	13.0NID/Sec.	ZT. UIVID/ SEC.	OIAL LOIAL DD2	JIVID/Sec.
COMMUNICATIONS	1.04	1000	1.00	
Max. number of lines	164	228	192	Not supplied by vendor
Synchronous	Optional	Optional	Std.; 19.2K bps	Opt.; 56K bps
Asynchronous	Optional	Optional	Std.; 19.2K bps	Opt.; 9600 bps
Protocols supported	All IBM	All IBM	BSC, SDLC, HDLC, SNA,	SDLC, HDLC, 2780/3780
	•		3270, 2780/3780, X.25	X.25
Type of LAN supported	SNA	SNA	SNA	Eth., SNA, IEEE, Xodiac
RJE terminals emulated	IBM	IBM	IBM 2780/3780, 3770	IBM 2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	3GB	6.2GB	Fixed & removable:	Fixed and removable:
bisks supported	1000	0.200	5MB-50MB	50MB-1GB
Serial printers	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	60-340 cps
Letter-quality printers	Not supplied by vendor	Not supplied by vendor	40/45/50 cps	20-55 cps
	Not supplied by vendor	Not supplied by vendor	Up to 1000 lpm	240-1200 lpm
Line printers				
Reel-to-reel tape drives	Not supplied by vendor	Not supplied by vendor	1600 bpi	800/1600 bpi; 75 ips
Streaming tape drives	Not supplied by vendor	Not supplied by vendor	Start/stop; to 100 ips	1600 bpi; 30 ips
Cassette/cartridge tape drives	Not supplied by vendor	Not supplied by vendor	Not applicable	6400 bpi
Other peripherals supported	Not supplied by vendor	Not supplied by vendor	Not applicable	Laser printer, diskette,
	1		1	paper tape rdr./punch
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Macro assembler
Compilers	Not supplied by vendor	Not supplied by vendor	Cobol, Fortran 77,	Cobol, Basic, RPG, ADA,
•	1		Basic, Pascal, C	PL/1, Fortran, Pascal,
				C, DG/L, APL
Operating system	Real-time	Real-time	Time-sharing	Real-time, time-sharing
Operating sys. implemented in firmware		Partially	No	Not supplied by vendor
Database management system	AVOS-Relational	AVOS-Relational	Third-party	DG/DBMS
Principal industry application	Mfg., distribution	Mfg., distribution	Not supplied by vendor	Distributed d.p.,
		g., a.canounon	Supplied by Velidor	office automation
Other packages	Not supplied by vendor	Not supplied by vendor	Office automation	CEO—office systems;
Other packages	The supplied by velidor	THUL Supplied by Velidor	Cince automation	MANAP—mfg.; Trend-
	ļ			
DICING 9 AVAILABILITY	1			view-graphics
PRICING & AVAILABILITY	COLL - WE DECKE	CDI I with DECKE	A	
Basic system configuration and price	CPU with 256KB memory	CPU with 256KB memory	Application processor,	CPU with .5MB memory,
	and 8K cache; power	and 8K cache; power	1.5MB memory; cluster	AOS/RT32 operating
	supply; console:	supply; console:	proc., 256KB memory;	system: \$25,000
	\$262,000	\$396,000	file processor, 256KB	[.
	1	1	memory; 100MB disk; 5MB	Ī
	I		backup disk; 16 PT	<u> </u>
	I		Terminals; o.s. license:	1
	1	1	\$40,150 (qty. of 100)	ļ.
			Not applicable	\$128
Monthly maintenance of basic	\$2,550	\$4,100		- ·
Monthly maintenance of basic configuration	\$2,550	\$4,100	Trot applicable	[
configuration				December 1992
configuration Date of first delivery	June 1980	March 1981	August 1983	December 1982
configuration Date of first delivery Number installed to date	June 1980 2	March 1981 2	August 1983 Several hundred	December 1982 Not supplied by vendor
configuration Date of first delivery Number installed to date	June 1980 2 Accelerator gate array	March 1981 2 Accelerator gate array	August 1983 Several hundred Can be expanded by	II.
configuration Date of first delivery Number installed to date	June 1980 2	March 1981 2	August 1983 Several hundred Can be expanded by adding more application,	
configuration Date of first delivery Number installed to date	June 1980 2 Accelerator gate array	March 1981 2 Accelerator gate array	August 1983 Several hundred Can be expanded by adding more application, cluster, and file	II.
configuration Date of first delivery Number installed to date	June 1980 2 Accelerator gate array	March 1981 2 Accelerator gate array	August 1983 Several hundred Can be expanded by adding more application,	II.
configuration Date of first delivery	June 1980 2 Accelerator gate array	March 1981 2 Accelerator gate array	August 1983 Several hundred Can be expanded by adding more application, cluster, and file	II.

MANUFACTURER & MODEL WORD LENGTH MAIN MEMORY DISK STORAGE CAPACITY NO. WORKSTATIONS SUPPORTED PRICE RANGE FARGET MARKET CENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous 32 bits 1MB-8MB 8.5GB 128 \$100,000-\$\$ 10 bistributed of office autom Office	32 bits 1MB o 5GB 128 300,000 \$58,00 0EM ation by vendor cos	or 4MB OO-\$85,000 upplied by vendor p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard oplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	Eclipse MV/10000 32 bits 1MB-16MB 18.2GB 192 \$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Corp. (DEC) MicroVAX I 32 bits 256KB-2.5MB 1.8MB-28.8GB 8 From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor 00 Ctandard Ctandar
MAIN MEMORY DISK STORAGE CAPACITY NO. WORKSTATIONS SUPPORTED PRICE RANGE FARGET MARKET CENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Line printers Line printers CASSETIAL PROCESSOR Distributed of office autom Not supplied	1MB of 5GB 128 \$58,00 OEM o	or 4MB OO-\$85,000 upplied by vendor p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard oplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	1MB-16MB 18.2GB 192 \$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	256KB-2.5MB 1.8MB-28.8GB 8 From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
MAIN MEMORY DISK STORAGE CAPACITY NO. WORKSTATIONS SUPPORTED PRICE RANGE FARGET MARKET CENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Line printers Line printers CASSETIAL PROCESSOR Distributed of office autom Not supplied	1MB of 5GB 128 \$58,00 OEM o	or 4MB OO-\$85,000 upplied by vendor p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard oplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	18.2GB 192 \$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	1.8MB-28.8GB 8 From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor 0ptional Opt.; to 9600 bps DNA, 2780/3780, SNA,
PRICE RANGE PRICE	128 \$58,00 1.p., ation by vendor cos cos cos cos cos cos cos c	upplied by vendor p hal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	192 \$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	8 From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
PRICE RANGE PRICE	128 \$58,00 1.p., ation by vendor cos cos cos cos cos cos cos c	upplied by vendor p hal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	192 \$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	8 From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
RICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Opera	300,000 \$58,00 OEM I.p., attion by vendor Not su 4GB SP, DF Option Standa Not su 1.2 Direct by vendor Not su 220 Standa Not ap 16K 8	upplied by vendor p hal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	\$150,000-\$500,000 Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	From \$9,995 Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Quitonal Opt.; to 9600 bps DNA, 2780/3780, SNA,
ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Line printers COSFTWARE Assembler Compilers Operating system	J.p., ation by vendor by vendor Not su 4GB SP, DF Option Standa Not su 1.2 Direct by vendor by vendor by vendor by vendor by vendor 16 8 18MB, 18MB, 18MB, 2780/3780, 184 185 2780/3780,	upplied by vendor p hal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	Distributed d.p., office automation Not supplied by vendor 4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Eng./sci., commercial, distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
CENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RIJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Cassette/cartridge tape drives Other peripherals supported COPPLIAN Supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating syste m	ation by vendor by vendor Not su 4GB SP, DF Option Standa Not su 1.2 Direct by vendor by vendor by vendor by vendor Not ap 16K 8 18MB, by vendor cs 0, 2780/3780, HASP 2780/	p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	office automation Not supplied by vendor 4GB SP, DP Optional Standard 1440 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	distributed d.p., OEM 8M 4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
No. of directly addressable bytes Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 1.2 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Cycle/access time, nanoseconds Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated BM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Op	4GB SP, DP Option Standa Not su 1.2 Direct by vendor by vendor Not su 220 Standa Not ap 16K 8 18MB, by vendor os 0pt.; § 4GB Opt.; § 4GB SP, DP Opt.; § 4GB Opt.; § 4GB SP, DP Opt.; § 4GB SP, DP Opt.; § 4GB SP Opt.; §	p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Virtual memory Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating system Operating syste m Ope	4GB SP, DP Option Standa Not su 1.2 Direct by vendor by vendor Not su 220 Standa Not ap 16K 8 18MB, by vendor os 0pt.; § 4GB Opt.; § 4GB SP, DP Opt.; § 4GB Opt.; § 4GB SP, DP Opt.; § 4GB SP, DP Opt.; § 4GB SP Opt.; §	p nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard opticable //sec. 56K bps 9600 bps II, X.25, SDLC,	4GB SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	4GB Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Hardware floating point Battery backup Real-time clock or timer CPU cycle time, nanoseconds AMIPS 1.2 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported BIBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Cassette/cartridge tape drives Operating system Operatin	SP, DP Option Standa Not su 1.2 Direct Not su 220 Standa Not ap 16K 8 18MB/ by vendor ps 0, 2780/3780, HASP 2780/	nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard upplicable //sec. 56K bps 9600 bps II, X.25, SDLC,	SP, DP Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Software None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 1.2 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported BIM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Cassette/cartridge tape drives Compilers Coperating system Operating sys	Option Standar Not su 1.2 Direct I by vendor Not su Not su 220 Standar Not ap 16K 8 18MB/ I by vendor 16 Opt.; § 6 Opt.; § 8 Physology (2780/3780, 2780/3780, 2780/	nal ard upplied by vendor upplied by vendor upplied by vendor upplied by vendor ard upplicable //sec. 56K bps 9600 bps II, X.25, SDLC,	Optional Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	None Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Real-time clock or timer CPU cycle time, nanoseconds MIPS 1.2 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds 120 Standard 1.2 121 12 Direct Mot supplied 120 Standard 1MB or 2MB 16K Not supplied 16K 16K Not supplied 16K 16K Not supplied 16K	Standa Not su 1.2 Direct by vendor Not su 220 Standa Not ap 16K 8 18MB/ by vendor 16 Opt.; 5 Opt.;	ard upplied by vendor upplied by vendor upplied by vendor ard upplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	Standard 140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Standard 250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
CPU cycle time, nanoseconds MIPS 16-/32-bit compatibility MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes Cache memory, bytes No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating system Operating system Operating syste m Not supplied Not supplied Standard 1MB or 2ME 16K Not supplied Opt.; 56K bl Opt.; 56	Not su 1.2 Direct by vendor by vendor Not su 220 Standa Not ap 16K 8 18MB, by vendor os 0pt.; § 4, 2780/3780, 1.2	upplied by vendor upplied by vendor upplied by vendor ard oplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	140 2.5 Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	250 Not supplied by vendor 32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
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16-/32-bit compatibility AAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Protocols supported BM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Laser printers Cassette/cartridge tape drives Operating system Not supplied 18M 0 2ME 16K Not supplied 0pt.; 56K bl 0pt.; 56K bl 0pt.; 56K bl 0pt.; 9600 l 18M 2780/3 18MB 2780/3 Yes Protocols supported Fixed & rem 50MB-1GB 60-340 cps 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time Not supplied Not supplied 16K	Direct	upplied by vendor upplied by vendor ard opticable /sec. 56K bps 9600 bps II, X.25, SDLC,	Direct Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	32-bit only 4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
MAIN STORAGE Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating system Operating system Operating system Not supplied 1MB or 2ME 1MB or 2ME 1MB or 2ME 16K Not supplied 10K Not supplied 10BM 2780/3 18MB/sec. 11BM 2780/0 18MB/sec. 11BM 2780/0 18MB/sec. 11BM 2780/0 18MB/sec. 11SMB/sec. 11SM	by vendor Not su Not su Not su Not su 220 Standa Not ap 16K 8 18MB/ Substitution 16 Opt.; § Opt.	upplied by vendor upplied by vendor ard opticable /sec. 56K bps 9600 bps II, X.25, SDLC,	Not supplied by vendor Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	4 Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Bytes fetched per cycle Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes Cache memory, bytes No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated BM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Not supplied 1MB or 2MB 16K 1MB or 2MB 16K 16K Not supplied 10K 16K 16K Not supplied 10K 16K 16K Not supplied 10K 16K 16K 16K 16K 16K 16K 16K 16K 16K 16	by vendor	upplied by vendor and poplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	Not supplied by vendor Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Not supplied by vendor 500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
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Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Lossette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating syste m Operating syste m IBM 220 Standard IMB or 2ME Standard IMB or 2ME IMB or and IMB	220 Standa Not ap 16K 8 18MB, by vendor os Opt.; 5 Opt.; 6 Opt.; 7 Opt.; 8 Opt.; 9 Opt.; 9 Opt	ard oplicable /sec. 56K bps 9600 bps II, X.25, SDLC,	Not supplied by vendor Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	500 Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Streaming tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating system IBM or 2ME IMB or 2M	Standa Not ap 16K 8 18MB/ 1by vendor os Opt.; 5 ops Opt.; 5 typs HASP 2780/3780,	/sec. 56K bps 9600 bps II, X.25, SDLC,	Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Storage protection Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of i/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Streaming tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating system IBM or 2ME IMB or 2M	Standa Not ap 16K 8 18MB/ 1by vendor os Opt.; 5 ops Opt.; 5 typs HASP 2780/3780,	/sec. 56K bps 9600 bps II, X.25, SDLC,	Standard 1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Standard 256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Increment size, bytes Cache memory, bytes NPUT/OUTPUT CONTROL No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Reel-to-reel tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating system Operating syst. implemented in firmware Not supplied 18 M 32 Opt.; 56K by Opt.	8 Not ap 16K 8 18MB/ 18by vendor 16 opt.; 5 opt.; 5 0pt.; 5 HASP 2780/3780,	/sec. 56K bps 9600 bps II, X.25, SDLC,	1MB or 2MB 16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	256KB, 512KB 8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Cache memory, bytes NPUT/OUTPUT CONTROL No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Letter-quality printers Line printers Reel-to-reel tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating syst. implemented in firmware Not supplied 13 18MB/sec. 18MB/	16K 8 18MB, 1by vendor 16 Opt.; 9 Opt.; 9 7, 2780/3780, 16K	/sec. 56K bps 9600 bps II, X.25, SDLC,	16K 23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	8K Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
NPUT/OUTPUT CONTROL No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated RJE Terminals & Fixed & reminals	8 18MB, by vendor 16 os Opt.; 5 ops Opt.; 9 7, 2780/3780, HASP 2780/	56K bps 9600 bps II, X.25, SDLC,	23 28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Not supplied by vendor 2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Roeel-to-reel tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Coperating system Operating system Operating system Operating system Inter supported ISM 13 18MB/sec. Not supplied SDLC, HDLC X.25 Eth., SNA, II IBM 2780/3 Yes Fixed & rem 50MB-1GB 60-340 cps 240-1200 lp 1600 bp; 30 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time, varied in firmware Not supplied	18MB/ 16 Opt.; 5 Opt.; 5 Opt.; 5 Physical Control of the control o	56K bps 9600 bps II, X.25, SDLC,	28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Data transfer rate COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported RJE terminals emulated IBM 3270 emulation ERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Streaming tape drives Streaming tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating syst. implemented in firmware Not supplied Not supplied Opt.; 56K bl Opt.; 9600 l Not supplied Opt.; 56K bl Opt.; 56K bl Opt.; 9600 l Not supplied Opt.; 56K bl Opt.; 56K bl Opt.; 9600 l Not supplied Opt.; 56K bl Opt.; 56K bl Opt.; 9600 l Not supplied Opt.; 56K bl Opt.; 9600 l Opt.; 56K bl Opt.; 56K bl Opt.; 9600 l Opt.; 56K bl Opt.; 56K bl Opt.; 9600 l O	18MB/ 16 Opt.; 5 Opt.; 5 Opt.; 5 Physical Control of the control o	56K bps 9600 bps II, X.25, SDLC,	28MB/sec. Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	2.5MB/sec. Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported CType of LAN supported RJE terminals emulated BM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Other peripherals supported COFTWARE Assembler Compilers Coperating system Operating system Operating syst. implemented in firmware Opt.; 56K by Opt.; 56K by Opt.; 56K by Opt.; 56K by SDLC, HDLC X.25 Eth., SNA, II BM 2780/3 Yes Fixed & rem 50MB-1GB 60-340 cps 20-55 cps 240-1200 lp 800/1600 bp 1600 bpi; 36 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time, via publication.	by vendor 16 Opt.; 5 Opt.; 5 Opt.; 8 Opt.; 9 Opt.; 8 Opt.; 9 O	56K bps 9600 bps II, X.25, SDLC,	Not supplied by vendor Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
COMMUNICATIONS Max. number of lines Synchronous Asynchronous Protocols supported CType of LAN supported RJE terminals emulated BM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Other peripherals supported COFTWARE Assembler Compilers Coperating system Operating system Operating syst. implemented in firmware Opt.; 56K by Opt.; 56K by Opt.; 56K by Opt.; 56K by SDLC, HDLC X.25 Eth., SNA, II BM 2780/3 Yes Fixed & rem 50MB-1GB 60-340 cps 20-55 cps 240-1200 lp 800/1600 bp 1600 bpi; 36 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time, via publication.	by vendor 16 Opt.; 5 Opt.; 5 Opt.; 8 Opt.; 9 Opt.; 8 Opt.; 9 O	56K bps 9600 bps II, X.25, SDLC,	Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Not supplied by vendor Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Max. number of lines Synchronous Asynchronous Protocols supported Type of LAN supported RJE terminals emulated RBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Line printers Lossette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating syst. implemented in firmware Opt.; 56K by Opt.; 56K by DAIL.; 56K by DAIL.; 58L, III. DISK SUPPORTED Tixed & rem. 50MB-1GB 60-340 cps 240-1200 lp 800/1600 b 800/1600 b 1600 bpi; 36 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time, bit Not supplied	os Opt.; 5 Opt.; 5 Opt.; 5 HASP 2780/3780,	9600 bps II, X.25, SDLC,	Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Synchronous Asynchronous Protocols supported SDLC, HDLC X, 25 Type of LAN supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Line printers Line printers Line printers Line printers Located tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating system Operating syst. implemented in firmware Opt.; 56K bl Dopt.; 9600 l Risk trem. SOMB-1GB 60-340 cps 240-1200 lp 240-1200 lp 1600 bpi; 30 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AP Real-time, time,	os Opt.; 5 Opt.; 5 Opt.; 5 HASP 2780/3780,	9600 bps II, X.25, SDLC,	Opt.; 56K bps Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Optional Opt.; to 9600 bps DNA, 2780/3780, SNA,
Asynchronous Protocols supported Protocols supported SDLC, HDLC X.25 Type of LAN supported RJE terminals emulated IBM 2780/3 Yes RERIPHERAL EQUIPMENT Disks supported Fixed & rem 50MB-1GB 60-340 cps Letter-quality printers Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware Opt., 9600 in X.25 Eth., SNA, II IBM 2780/3 Yes Fixed & rem 50MB-1GB 60-340 cps 240-1200 ip 380/1600 bp 1600 bp; 36400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, tin Not supplied	ops , 2780/3780, Opt.; 9 HASP 2780/	9600 bps II, X.25, SDLC,	Opt.; 9600 bps SDLC, HDLC, 2780/3780, X.25	Opt.; to 9600 bps DNA, 2780/3780, SNA,
Protocols supported Type of LAN supported RJE terminals emulated IBM 2780/3 IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware Eth., SNA, II BM 2780/3 Yes Fixed & rem. 50MB-1GB 60-340 cps 240-1200 lp 800/1600 bp 1600 bpi; 30 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AP Real-time, time, Not supplied	, 2780/3780, HASP 2780/	II, X.25, SDLC,	SDLC, HDLC, 2780/3780, X.25	DNA, 2780/3780, SNA,
Type of LAN supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printer Line printer Line printer Laser printer	2780/		X.25	
Type of LAN supported RJE terminals emulated IBM 3270 emulation PERIPHERAL EQUIPMENT Disks supported Serial printers Line printers Reel-to-reel tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware IBM 2780/3 Fixed & rem. 50MB-1GB 60-340 cps 240-1200 lp 800/1600 b 800/1600 b 1600 bpi; 30 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, time, time, and the supplied	1	/3780		X 25 CDC Heises TTV
RJE terminals emulated IBM 2780/3 Yes IBM 3270 emulation Yes PERIPHERAL EQUIPMENT Disks supported Fixed & rem 50MB-1GB 60-340 cps Letter-quality printers 20-55 cps Line printers 240-1200 lp 800/1600 b Streaming tape drives 1600 bpi; 30 Cassette/cartridge tape drives Other peripherals supported Laser printer paper tape r Compilers Coppliance Copplianc	EE, Xodiac Eth S			prises, obo, univati, 111
RJE terminals emulated IBM 2780/3 Yes IBM 3270 emulation Yes PERIPHERAL EQUIPMENT Disks supported Fixed & rem 50MB-1GB 60-340 cps Letter-quality printers 20-55 cps Line printers 240-1200 lp 800/1600 b Streaming tape drives 1600 bpi; 30 Cassette/cartridge tape drives Other peripherals supported Laser printer paper tape r Compilers Coppliance Copplianc		SNA, IEEE, Xodiac	Eth., SNA, IEEE, Xodiac	Ethernet
IBM 3270 emulation ERIPHERAL EQUIPMENT Disks supported Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Cassette/cartridge tape drives Other peripherals supported Assembler Compilers Operating system Operating system Operating sys. implemented in firmware Fixed & rem. 50MB-1GB 60-340 cps 240-1200 lp 800/1600 bp 1600 bpi; 30 6400 bpi Laser printer paper tape r Cobol, Basic PL/1, Fortra C, DG/L, AP Real-time, tin Not supplied		780/3780	IBM 2780/3780	IBM 2780/3780
PERIPHERAL EQUIPMENT Disks supported Serial printers Serial printers Fixed & rem 50MB-1GB 60-340 cps 20-55 cps 240-1200 lp 800/1600 bpi 800/1600 bp	Yes	100,0100	Yes	Yes
Disks supported Serial printers Letter-quality printers Line printers Line printers Reel-to-reel tape drives Cassette/cartridge tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware SOMB-1GB & rem. 50400 bpi 6400	1.69		res	1 63
Serial printers Letter-quality printers Line printers Reel-to-reel tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system SOMB-1GB 60-340 cps 240-1200 lp 800/1600 bp; 30 6400 bpi Laser printer paper tape r Macro asser Cobol, Basic PL/1, Fortra C, DG/L, AF Real-time, tin Not supplied		7014D 40D	F: -40	145 1 40140 00 0
Serial printers Letter-quality printers Line printers SOFTWARE Assembler Compilers Line printers Laser printer Las		73MB-1GB;	Fixed & removable:	Winchester: 10MB, 28.8
Letter-quality printers Line printers Reel-to-reel tape drives Streaming tape drives Other peripherals supported Coprillers Compilers Copoliters Copoliter		able: 96MB-277MB	50MB-1GB	
Line printers Reel-to-reel tape drives Streaming tape drives Cassette/cartridge tape drives Other peripherals supported Assembler Compilers Operating system Operating sys. implemented in firmware 240-1200 lg 800/1600 bi 800/1	150/3	340 cps	60-340 cps	50-240 cps
Line printers Reel-to-reel tape drives Streaming tape drives Cassette/cartridge tape drives Other peripherals supported Assembler Compilers Operating system Operating sys. implemented in firmware 240-1200 lg 800/1600 bi 800/1	55 cps	s	20-55 cps	30/32 cps
Reel-to-reel tape drives Streaming tape drives Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware Streaming tape drives 6400 bpi 6400 bp	ım 230-1	200 ipm	240-1200 lpm	Not applicable
Streaming tape drives Cassette/cartridge tape drives Other peripherals supported SOFTWARE Assembler Compilers Operating system Operating system Operating sys. implemented in firmware 1600 bpi; 36 6400 bpi 6400 bpi; 36 6400 b		1600 bpi; 75 ips	800/1600 bpi; 75 ips	Not applicable
Cassette/cartridge tape drives Other peripherals supported COFTWARE Assembler Compilers Compilers Copol, Assic PL/1, Fortra C, DG/L, AF Operating system Operating sys. implemented in firmware Not supplied		bpi; 30 ips	1600 bpi; 30 ips	Not applicable
Other peripherals supported COFTWARE Assembler Compilers Compilers Copol, Basic PL/1, Fortra C, DG/L, AF Operating system Operating sys. implemented in firmware Not supplied				
COFTWARE Assembler Compilers Cobol, Basic PL/1, Fortra C, DG/L, AP Operating system Operating sys. implemented in firmware Not supplied	6400 1		6400 bpi	Not applicable
SOFTWARE Assembler Compilers Copol, Basic PL/1, Fortra C, DG/L, AP Operating system Operating sys. implemented in firmware Not supplied		printer, diskette,	Laser printer, diskette,	Diskettes; alpha, hard
Assembler Compilers Cobol, Basic PL/1, Fortra C, DG/L, AF Operating system Operating sys. implemented in firmware Not supplied	dr./punch paper	tape rdr./punch	paper tape rdr./punch	copy, graphics terms.
Compilers Cobol, Basic PL/1, Fortra C, DG/L, AP Operating system Operating sys. implemented in firmware Not supplied	l l		j	
PL/1, Fortra C, DG/L, AP Operating system Operating sys. implemented in firmware Not supplied	nbler Macro	assembler	Macro assembler	Assembler
PL/1, Fortra C, DG/L, AP Operating system Operating sys. implemented in firmware Not supplied	, RPG, ADA, Cobol,	, Basic, RPG, ADA,	Cobol, Basic, RPG, ADA,	APL, Basic, C, Cobol,
Operating system C, DG/L, AP Real-time, time Operating sys. implemented in firmware Not supplied		Fortran, Pascal,	PL/1, Fortran, Pascal,	Coral 66, Dibol, DSM,
Operating system Operating sys. implemented in firmware Not supplied		/L, APL	C, DG/L, APL	Fortran, Pascal, PL/1
Operating sys. implemented in firmware Not supplied			Real-time, time-sharing	
		ime, time-sharing	1	Batch, rltm., tmshr.
Database management system IDG/DRMS		upplied by vendor	Not supplied by vendor	Partially
	DG/DB		DG/DBMS	Not applicable
Principal industry application Distributed of		tific/technical	Distributed d.p.,	Application development,
office autom	ation		office automation	engineering, technical
Other packages CEO—office	systems: CEO—	-office systems;	CEO-office systems;	General business
MANAP—n		viewgraphics;	MANAP-mfg.; Trendview—	
view—grap		AP-manufacturing	graphics	1
	IVIANA	a manufacturing	la abilica	1
PRICING & AVAILABILITY		5.1 4 5 AP	lanu a	
Basic system configuration and price CPU with 1M		vith 1MB memory;	CPU with 2MB memory;	Floor-standing CPU with
AOS/RT32	operating AOS/F	RT32 operating	AOS/RT32 operating	512KB memory; 819.2KE
system: \$81	,000 system	n: \$55,500	system: \$154,000	diskette; 10MB disk;
, , , , , , , , , , , , , , , , , , , ,			1	32 cps letter-quality
	i			printer; 2 workstations:
1	•		1	
			1	\$20,100
			1	1
			l	1
Monthly maintenance of basic \$425			\$693	Not supplied by vendor
configuration	\$375		1	
Date of first delivery July 1983	\$375	1984	May 1983	March 1984
			Not supplied by vendor	Not applicable
	March	innlied by vender	Two supplied by veridor	
COMMENTS	March	upplied by vendor		Available in tabletop,
1	March	upplied by vendor	I	floor-standing, or
	March	upplied by vendor		
1	March	upplied by vendor		rack-mount version.
1	March	upplied by vendor		
	March	upplied by vendor		

MANUFACTURER & MODEL	Digital Equipment Corp. (DEC) VAX-11/725	Digital Equipment Corp. (DEC) VAX-11/730	Digital Equipment Corp. (DEC) VAX-11/750	Digital Equipment Corp. (DEC) VAX-11/780
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	1MB-3MB	1MB-5MB	2MB-8MB	2MB-32MB
DISK STORAGE CAPACITY	52MB-104MB	20MB-2GB	121MB-19GB	12 1MB-30GB
NO. WORKSTATIONS SUPPORTED	8	24	128	384
PRICE RANGE	From \$24,950	From \$21,500	From \$47,000	From \$145,000
TARGET MARKET	Eng./sci., commercial,	Eng./sci., commercial,		
IANGET MANKET	OEM, distr. d.p.	, , ,	Eng./sci., commercial,	Eng./sci., commmercial,
CENTRAL PROCESSOR	OEW, distr. d.p.	distr. d.p.	distr. d.p.	distr. d.p.
	4014	4014	h	l
No. of directly addressable bytes	16M	16M	Not supplied by vendor	36M
Virtual memory	4GB	4GB	4GB	4GB
Hardware floating point	SP, DP	SP, DP	SP, DP	SP, DP
Battery backup	Optional	Optional	Optional	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	270	270	320	200
MIPS	.36	.36	1.72	1.06
16-/32-bit compatibility	Via mode bit	Via mode bit	Via mode bit	Via mode bit
MAIN STORAGE			1	
Bytes fetched per cycle	4	4	la ·	8
Memory access	Not supplied by vendor			
Cycle/access time, nanoseconds	810	810	400	290
			Standard	Standard
Storage protection	Standard	Standard		,
Increment size, bytes	1MB	1MB	1MB	2MB
Cache memory, bytes	None	None	4K	8K
NPUT/OUTPUT CONTROL		1	i	1
No. of I/O channels	Not supplied by vendor	Not supplied by vendor	1-5	1-8
Data transfer rate	1.5MB/sec.	1.5MB/sec.	1.5-5MB/sec.	1.5-13.3MB/sec.
COMMUNICATIONS		•		,
Max. number of lines	Not supplied by vendor			
Synchronous	Std.; 19.2K bps	Std.; 19.2K bps	Std.; 19.2K bps	Std.; 19.2K bps
Asynchronous	Std.; to 19.2K bps			
Protocols supported	SDLC, HDLC, DDCMP, X.25,	SDLC, HDLC, DDCMP, X.25,	SDLC, HDLC, DDCMP, X.25,	SDLC, HDLC, DDCMP, X.
1 totocois supported	ADCCP, SNA, DNA, Bisync	ADCCP, SNA, DNA, Bisync	ADCCP, SNA, DNA, Bisync	
Time of LAN assumented	Ethernet			ADCCP, SNA, DNA, Bisy
Type of LAN supported		Ethernet	Ethernet	Ethernet
RJE terminals emulated	IBM 2780/3780	IBM 2780/3780	IBM 2780/3780	IBM 2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 121MB-456MB;	Fixed: 121MB-456MB;	Fixed: 121MB-516MB;	Fixed: 121MB-516MB;
	Removable: 10.4MB-205MB	Removable: 10.4MB-205MB	Removable: 10.4MB-205MB	Removable: 10.4MB-205
Serial printers	50 cps-240 cps	50 cps-240 cps	50 cps-240 cps	50 cps-240 cps
Letter-quality printers	30/32 cps	30/32 cps	30/32 cps	30/32 cps
Line printers	170 lpm-1250 lpm	170 lpm-1250 lpm	170 lpm-1250 lpm	170 lpm-1250 lpm
Reel-to-reel tape drives	Not supplied by vendor	Not supplied by vendor	800-6250 bpi; 45-125 ips	800-6250 bpi; 45-125 ip
Streaming tape drives	Start/stop; 25/100 ips	Start/stop; 25/100 ips	Start/stop; 25/100 ips	Start/stop; 25/100 ips
Cassette/cartridge tape drives	Not applicable	Not applicable	Not applicable	Not applicable
	Laser printer	Laser printer	Laser printer	
Other peripherals supported	Laser printer	Laser printer	Laser printer	Laser printer
OSTIMA DE	·		1	
SOFTWARE			1	
Assembler	Macro assembler	Macro assembler	Macro assembler	Macro assembler
Compilers	APL, Basic, C, Cobol,			
	Coral 66, Dibol, DSM,			
	Fortran, Pascal, PL/1	Fortran, Pascal, PL/1	Fortran, Pascal, PL/1	Fortran, Pascal, PL/1
Operating system	Batch, rltm., tmshr.	Batch, rltm., tmshr.	Batch, rltm., tmshr.	Batch, rltm., tmshr.
Operating sys. implemented in firmware)	No	No	No
Database management system	VAX-11 DBMS	VAX-11 DBMS	VAX-11 DBMS	VAX-11 DBMS
Principal industry application	Graphics, office	Graphics, office	Graphics, office	Graphics, office
- de an inclusion & additional and	automation	automation	automation	automation
Other packages	Third-party	Third-party	Third-party	Third-party
Other packages	I ma party	· ····· · · · · · · · · · · · · · · ·	······ purty	· ····· \ Party
	-			
DDICINIC 9. AVAILADUITY		{	}	
PRICING & AVAILABILITY	CDLL 484D 0 :	CDU 254D 40414D	CDLL OLAD	CDLL OLAD
Basic system configuration and price	CPU, 1MB memory; 2 tape	CPU, 2MB memory; 121MB	CPU, 2MB memory; 1MB	CPU, 2MB mem.; 2MB m
	drives; 52MB disk sub-	fixed disk; 1600 bpi	mem. expansion; 121MB	expansion; 516MB fixed
	system; 32 cps letter-	tape drive; two 300 lpm	fixed disk; 256MB remov.	disk; two 256MB rem.
	quality printer; 2 work-	printers; hardcopy	disk; 2 mag. tape drs.,	disks; 4 mag. tape drs.;
	stations; operating	terminal; 10 work-	1600 bpi; two 600 lpm	1250/910 lpm prt.; 12
	system license: \$32,030	stations; operating sys-	printers; hardcopy	ppm laser prt., hardcopy
		tem license: \$90,390	term.; 20 workstations;	term.; 40 workst.; op.
			op. sys. lic.: \$202,795	sys. lic.: \$462,285
Monthly maintenance of basic	Not supplied by vendor			
	Not supplied by velicion	The supplied by Velluoi	The Supplied by Velluci	to supplied by velidor
configuration	Navombor 1002	Mov. 1992	November 1000	lanuary 1070
Date of first delivery	November 1983	May 1982	November 1980	January 1978
Number installed to date	Not applicable	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
COMMENTS		l	[Supports 4MB shared
		1	1	memory subsystem.
				1
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MANUFACTURER & MODEL	Digital Equipment Corp. (DEC) VAX-11/782	Formation, Inc. F4000 Information System	Formation, Inc. F4000-AP Information System	Gould, Inc. Computer Systems Div. Concept 32/27
MANUFACTURER & MODEL	VAX-11/702	System	System	Concept 32/21
VORD LENGTH	32 bits	32 bits	32 bits	32 bits
IAIN MEMORY	2MB-8MB	256KB-8MB	256KB-8MB	1MB-16MB
ISK STORAGE CAPACITY	121MB-30GB	70MB-5GB	70MB-5GB	80MB-5.4GB
O. WORKSTATIONS SUPPORTED	384	46	Not supplied by vendor	124
RICE RANGE	From \$320,000	\$75,000-\$300,0000	\$100,000-\$300,000	\$100,00-\$200,000
ARGET MARKET	Eng./sci., commercial,	OEM and software devel-	OEM and software devel-	Scientific
	distr. d.p.	opment	opment	Scientific
ENTRAL PROCESSOR	l.,			
No. of directly addressable bytes	Not supplied by vendor	16M	16M	1.5M
Virtual memory	4GB	16MB	16MB	Not applicable
Hardware floating point	SP, DP	Double precision	Double precision	Double precision
Battery backup	Optional	None	None	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	200	200	200	150
MIPS	Not supplied by vendor	.225	.4	.76
				1
16-/32-bit compatibility	Via mode bit	32-bit only	32-bit only	Not applicable
IAIN STORAGE	<u></u>	1.	1.	1
Bytes fetched per cycle	8	4	4	4
Memory access	Not supplied by vendor	40,000,000	40,000,000	Not supplied by vendor
Cycle/access time, nanoseconds	290	800/200	800/200	600
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	Not supplied by vendor	256KB or 1MB	256KB or 1MB	256KB-1MB
Cache memory, bytes	8K	None	None	None
• • •	OK.	IAOHG	INOILE	INOUE
NPUT/OUTPUT CONTROL		1.	1.	l
No. of I/O channels	Not supplied by vendor	4	4	32
Data transfer rate	1.5-13.3MB/sec.	5MB/sec.	5MB/sec.	3.2MB/sec.
OMMUNICATIONS			1	1
Max. number of lines	Not supplied by vendor	100	100	124
Synchronous	Std.; 19.2K bps	Opt.; 19,200 bps	Opt.; 19,200 bps	Opt.; up to 56K bps
•	, ,			
Asynchronous	Std.; to 19.2K bps	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; up to 19.2K bps
Protocols supported	SDLC, HDLC, DDCMP, X.25, ADCCP, SNA, DNA, Bisync	SDLC, BSC, ASCII	SDLC, BSC, ASCII	SDLC, HDLC, X.25
Type of LAN supported	Ethernet	SNA	SNA	Ethernet, Selnet
RJE terminals emulated	IBM 2780/3780	Hasp	Hasp	IBM 2780/3780
IBM 3270 emulation	Yes	Yes	Yes	No
ERIPHERAL EQUIPMENT	1.00	1.03	163	1.00
	Fired, 10114D E1614D.	5:d. 100MD 105MD	Fired 40004D 4054D	F
Disks supported	Fixed: 121MB-516MB;	Fixed: 100MB, 135MB,	Fixed: 100MB, 135MB,	Fixed & removable: 80M
	Removable: 10.4MB-205MB	635MB	635MB	675MB
Serial printers	50 cps-240 cps	180 cps	180 cps	340 cps
Letter-quality printers	30/32 cps	None	None	Not supplied by vendor
Line printers	170 lpm-1250 lpm	300/600/1000 lpm	300/600/1000 lpm	300/600/1000 lpm
Reel-to-reel tape drives	800-6250 bpi; 45-125 ips	72KB, 200KB	72KB, 200KB	45/75/125 ips
Streaming tape drives	Start/stop; 25/100 ips	None	None	Not supplied by vendor
Cassette/cartridge tape drives	Not applicable	None	None	1 '' '
			1	Not supplied by vendor
Other peripherals supported	Laser printer	Card reader, byte	Card reader, byte	Card equipment, paper
		multiplexor	multiplexor	tape, real-time periphs.
SOFTWARE			1	1
Assembler	Macro assembler	Assembler	Assembler	Macro assembler
Compilers	APL, Basic, C, Cobol,	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,	Fortran 77 ⁺ , Cobol,
entra a	Coral 66, Dibol, DSM,	RPG II, PL1	PL1	Basic, Pascal, C, Ada
		9 11, 1 2 1	1 1	Dusic, i ascai, C, Ada
On anating and	Fortran, Pascal, PL/1	lance and t		Inches and the
Operating system	Batch, rltm., tmshr.	Batch, real-time	Multi-tasking	Real-time, time-sharing
Operating sys. implemented in firmware		Partially	Partially	No
Database management system	VAX-11 DBMS	TMS; any 370-compatible	TMS; any 370-compatible	Seed, Relgraf
Principal industry application	Graphics, office	Program development,	Program development,	Computation-intensive
	automation	on-line applications	on-line applications	applications
Other packages	Third-party	IBM 370-compatible	IBM 370-compatible	Graphics
padnagos			1	C. aprillos
	1	packages	packages	ŀ
DIOMO O ALVAN ADVICES	1	i	1	1
PRICING & AVAILABILITY		1	1	
Basic system configuration and price	2 CPUs, 4MB memory; four	CPU with 1MB memory;	CPU and auxiliary pro-	CPU with 1MB memory;
	516MB disk drives; four	135MB disk; 72KB tape;	cessor, 2MB memory;	floppy disk; 80MB disk;
	1600/6250 PE/GCR tape	300 lpm printer; con-	135MB disk; 72KB tape;	45 ips tape; 300 lpm
	drives; 12 ppm laser	sole; service processor;	300 lpm printer; con-	band printer; CRT; MPX
	ptr.; two 600 lpm ptr.;	8 workstations: \$100,300	sole; service processor;	32 operating system;
	60 workst.; op. sys.	l	8 workstations:	Fortran 77 ⁺ : \$111,750
	lic.: \$802,755	1	\$123,800	1
		l	1	I
Monthly maintenance of basic	Not supplied by vendor	\$852	\$852	\$939
configuration				
Date of first delivery	April 1092	2rd guarra - 1001	1002	May 1000
	April 1982	3rd quarter 1981	1982	May 1980
Number installed to date	Not supplied by vendor	50	50	644
COMMENTS	Based on 8MB shared	Optional fault-tolerant	Optional fault-tolerant	Single-slot CPU
	memory subsystem.	configuration. Software	configuration. Software	ŀ
		compatible with IBM 370.	compatible with IBM 370.	
	1		Tanada tital ibiti 5/0.	I
	i			I
	1		1	1
	l	(1	1
	1	i e	1	1

MANUFACTURER & MODEL	Gould, Inc. Computer Systems Div. Concept 32/6705	Gould, Inc. Computer Systems Div. Concept 32/6780	Gould, Inc. Computer Systems Div. Concept 32/8705	Gould, Inc. Computer Systems Div. Concept 32/8780
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	1MB-16MB	1MB-16MB	1MB-16MB	1MB-16MB
DISK STORAGE CAPACITY	80MB-5.4GB	80MB-5.4GB	80MB-5.4GB	80MB-5.4GB
NO. WORKSTATIONS SUPPORTED	124	124	124	124
	\$150,00-\$400,000	\$200,00-\$500,000	\$300,00-\$700,000	\$425,000-\$1,000,000
FARGET MARKET	Scientific	Scientific	Scientific	Scientific
CENTRAL PROCESSOR				
No. of directly addressable bytes	16M	16M	2M	2M
Virtual memory	Not applicable	Not applicable	Not applicable	Not applicable
Hardware floating point	Double precision	Double precision	Double precision	Double precision
Battery backup	Optional	Optional	Optional	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	150	150	75	75
MIPS	1.7	3.06	4.66	8.3
16-/32-bit compatibility	Not applicable	Not applicable	Not applicable	Not applicable
MAIN STORAGE	,		1	
Bytes fetched per cycle	4	4	4	14
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Cycle/access time, nanoseconds	600	600	300	300
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	256KB-1MB	256KB-1MB	256KB-1MB	256KB-1MB
Cache memory, bytes	32K	64K	32K-64K	64K-128K
NPUT/OUTPUT CONTROL	l	[- '''		
No. of I/O channels	32	32	32	32
Data transfer rate	3.2MB/sec.	3.2MB/sec.	3.2MB/sec.	3.2MB/sec.
COMMUNICATIONS	3.2NID/Sec.	3.2ND/Sec.	3.2ND/Sec.	S.ZIVID/Sec.
Max. number of lines	124	124	124	124
	Opt.; up to 56K bps	Opt.; up to 56K bps	Opt.; up to 56K bps	Opt.; up to 56K bps
Synchronous	, , , , , , , , , , , , , , , , , , , ,	Opt., up to 19.2K bps	Opt.; up to 19.2K bps	Opt., up to 19.2K bps
Asynchronous	Opt.; up to 19.2K bps			
Protocols supported	SDLC, HDLC, X.25	SDLC, HDLC, X.25	SDLC, HDLC, X.25	SDLC, HDLC, X.25
Type of LAN supported	Ethernet, Selnet	Ethernet, Selnet	Ethernet, Selnet	Ethernet, Selnet
RJE terminals emulated	IBM 2780/3780	IBM 2780/3780	IBM 2780/3780	IBM 2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT			1	
Disks supported	Fixed & removable: 80MB-	Fixed & removable: 80MB-	Fixed & removable: 80MB-	Fixed & removable: 80Mf
	675MB	675MB	675MB	675MB
Serial printers	340 cps	340 cps	340 cps	340 cps
Letter-quality printers	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Line printers	300/600/1000 lpm	300/600/1000 lpm	300/600/1000 lpm	300/600/1000 lpm
Reel-to-reel tape drives	45/75/125 ips	45/75/125 ips	45/75/125 ips	45/75/125 ips
Streaming tape drives	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Cassette/cartridge tape drives	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Other peripherals supported	Card equipment, paper	Card equipment, paper	Card equipment, paper	Card equipment, paper
Canal Properties aspectation	tape, real-time periphs.	tape, real-time periphs.	tape, real-time periphs.	tape, real-time periphs.
SOFTWARE		, , ,	1	
	Macro assembler	Macro assembler	Macro assembler	Macro assembler
Compilers	Fortran 77 ⁺ , Cobol,	Fortran 77 ⁺ , Cobol,	Fortran 77 ⁺ , Cobol,	Fortran 77 ⁺ , Cobol,
	Basic, Pascal, C, Ada	Basic, Pascal, C, Ada	Basic, Pascal, C, Ada	Basic, Pascal, C, Ada
		,, , , , , , , , , , , , , ,		
Operating system	Real-time, time-sharing	Real-time, time-sharing	Real-time, time-sharing	Real-time, time-sharing
Operating system Operating sys. implemented in firmware		No	No	No
Database management system	Seed, Relgraf	Seed, Relgraf	Seed, Relgraf	Seed, Reigraf
Principal industry application	Computation-intensive	Computation-intensive	Computation-intensive	Computation-intensive
	applications	applications	applications	applications
Other packages	Graphics	Graphics	Graphics	Graphics
The process of the pr				
			1	
PRICING & AVAILABILITY			0001 11 0000	0014/1014
Basic system configuration and price	CPU with 1MB memory and	CPU/Internal Processing	CPU with 2MB memory and	CPU/IPU with 2MB mem
	32KB cache; floppy disk;	Unit (IPU) with 1MB mem-	32KB cache; dual floppy	and 64KB cache; dual
	80MB disk; 45 ips tape;	ory and 64KB cache;	disk; 80MB disk; 45 ips	floppy disk; 80MB disk;
	300 lpm band printer;	floppy disk; 80MB disk;	tape; 300 lpm band	45 ips tape; 300 lpm
	CRT; MPX-32 operating	45 ips tape; 300 lpm	printer; CRT; MPX-32 op-	band printer; CRT;
	system; Fortran 77+:	band printer; CRT; MPX-	erating system; Fortran-	MPX-32 operating syste
	\$161,750	32 operating system;	77*: \$272,000	Fortran 77+: \$412,000
Manathly maintenance of tests	¢1 460	Fortran 77 ⁺ : \$206,750	\$1 997	\$2.053
Monthly maintenance of basic configuration	\$1,468	\$1,864 	\$1,997	\$2,953
Date of first delivery	June 1982	June 1982	May 1981	June 1982
Number installed to date	24	7	261	30
COMMENTS	Cache memory has sep-	Three-board CPU	Features ECL 10K logic	Features CPU/IPU com
	arate banks for data		and cache memory up to	bination with up to 128K
	and instructions.		64K bytes.	bytes of cache memory.
		1		[
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MANUFACTURER & MODEL	Harris Corporation Computer Systems Div. H600	Harris Corporation Computer Systems Div. H700	Harris Corporation Computer Systems Div. H800	Harris Corporation Computer Systems Div. H1000
WORD LENGTH	48 bits	48 bits	48 bits	48 bits
MAIN MEMORY	768KB-4.5MB	384KB-12MB	768KB-12MB	1.5MB-12MB
DISK STORAGE CAPACITY	80MB-2.4GB	80MB-28GB	80MB-28GB	80MB-26GB
NO. WORKSTATIONS SUPPORTED	32	128	128	192
PRICE RANGE	From \$38,000	\$49,000-\$62,000	\$139,000-170,000	\$250,000
TARGET MARKET	OEM	Engineering/scientific	Engineering/scientific	Engineering/scientific
CENTRAL PROCESSOR				
No. of directly addressable bytes	12M	12M	12M	12M
Virtual memory	48MB	48MB	48MB	48MB
Hardware floating point	SP, DP	SP, DP	SP, DP	SP, DP, TP, QP
Battery backup	Optional	Optional	Optional	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	300	300	180	75
MIPS	1.7	.8	1.5	4
16-/32-bit compatibility	48-bit only	48-bit only	48-bit only	48-bit only
	46-bit only	40-bit only	46-bit only	46-bit offiy
MAIN STORAGE				
Bytes fetched per cycle	6	6	6	6
Memory access	100M bps	100M bps	100M bps	100M bps
Cycle/access time, nanoseconds	335/250	335/250	335/250	335/250
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	384KB, 768KB, 1.5MB	384KB, 768KB, 1.5MB	768KB, 1.5MB	1.5MB
Cache memory, bytes	6K (optional)	6K (optional)	6K	6K
INPUT/OUTPUT CONTROL]	1		
No. of I/O channels	5	24	31	31
Data transfer rate	19 MB/sec.	19 MB/sec.	19 MB/sec.	19 MB/sec.
COMMUNICATIONS	IO WID/ Sec.	IVID/36C.	IO WID/Sec.	I VID/Sec.
	100	224	204	224
Max. number of lines	32	224	224	224
Synchronous	Std.; 56,000 bps	Std.; 56,000 bps	Std.; 56,000 bps	Std.; 56,000 bps
Asynchronous	Std.; 20,000 bps	Std.; 20,000 bps	Std.; 20,000 bps	Std.; 20,000 bps
Protocols supported	CDC 200 UT, 2780/3780,	Same as 600, plus GRTS	CDC, 2780/3780, Hasp,	CDC 200 UT, 2780/3780,
	Hasp, Univac 1004, X.25		Univac, X.25	Univac, Hasp, X.25
Type of LAN supported	Ethernet, SNA, RJE	Ethernet, SNA, RJE	Ethernet, SNA, RJE	Ethernet, SNA, RJE
RJE terminals emulated	2780/3780, Hsp, CDC, Un.	Same as 600, plus GRTS	2780/3780, Hsp, CDC, Un.	2780/3780, Hsp, CDC, Un
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT	103	1.63	1,03	1.63
Disks supported	Fixed & removable: 10MB-			
Disks supported	675MB	675MB	675MB	675MB
Control and assess	1			
Serial printers	165 cps	165 cps	165 cps	165 cps
Letter-quality printers	35/55 cps	35/55 cps	35/55 cps	35/55 cps
Line printers	300-1200 lpm	300-1200 lpm	300-1200 lpm	300-1200 lpm
Reel-to-reel tape drives	6250/1600 bpi	6250/1600 bpi	6250/1600 bpi	6250/1600 bpi
Streaming tape drives	PE, 100 ips	PE, 100 ips	PE, 100 ips	PE, 100 ips
Cassette/cartridge tape drives	Not applicable	Not applicable	Not applicable	Not applicable
Other peripherals supported	Card equip., interactive	Card equip., interactive	Card equip., interactive	Card equip., interactive
	terms., print./plotters	terms., print./plotters	terms., print./plotters	terms., print./plotters
SOFTWARE		, p, p.e	,,	
Assembler	Harris Macro assembler	Harris Macro assembler	Harris Macro assembler	Harris Macro assembler
Compilers	Fortran 66, Fortran 77,			
Compilers				
	Cobol, RPG II, Pascal,			
	C	C	<u>c</u>	<u>c</u>
Operating system	Batch, real-time	Batch, real-time	Batch, real-time	Batch, real-time
Operating sys. implemented in firmware		No	No	No
Database management system	Total, T-ask, AZ-7	Same as 600, Info, Orac.	Total, Oracle, Info	Total, Oracle, Info
Principal industry application	Engineering/scientific	Engineering/scientific	Engineering/scientific	Engineering/scientific
	[· · · · · · · · · · · · · · · · · · ·	1		1
Other packages	CAD/CAM, software devel-	CAD/CAM, software devel-	CAD/CAM, software devel-	CAD/CAM, software devel-
	opment	opment	opment	opment
	I *	l ⁻	I .	I *
PRICING & AVAILABILITY			1	1
Basic system configuration and price	CPU; 1.5 MB memory	CPU; 1.5MB memory	CPU; 1.5MB memory sub-	CPU; 1.5MB memory sub-
200.0 970torn configuration and price	subsystem; 12MB of vir-	subsystem; 48MB of vir-	system; 6KB cache; 48MB	system; 6KB cache; line
				1 *
	tual memory; Communica-	tual memory; CNP with	virt. memory; floating	frequency clock and in
	tions Network Processor	2 ports; power distribu-	point proc.; mainte-	terval timer; Opcom/
	(CNP) with 2 ports;	tion unit; Opcom termi-	nance aid proc.; Opcom/	maintenance aid proces-
	115V, 60Hz or 230V, 50Hz	nal; operating system:	maint. aid term.; power	sor terminal; CNP with
	power; operating system:	\$62,000	distrib. unit; 2-port	operator's console; op.
	\$44,900	1	CNP; op. sys.: \$145,000	sys.: \$250,000
Monthly maintenance of basic	Contact vendor for op-			
configuration	tions.	tions.	tions.	tions.
Date of first delivery	Third quarter 1983	Second quarter 1983	First quarter 1980	First quarter 1984
Number installed to date				1 .
	Not supplied by vendor			
COMMENTS	Complete OEM computer	Modular growth capabili-		Based on high-speed ECL
	with power supply and	ty.	1	circuitry.
	fans; ready to plug in.	1	1	1
			1	1
		1	1	1
		1	1	1

128	ends on configuration and son configuration sends on configuration sends on configuration sends on configuration sends on configuration supplied by vendor	Systems, Inc. DPS 6/95	Collins Sys. Div. HP9000 lels 530 and 540	Ó	Fort Collins Sys. Di HP9000 Model 520	MANUFACTURER & MODEL
100 100	ends on configuration and son configuration sends on configuration sends on configuration sends on configuration sends on configuration supplied by vendor					
270KB-3.5G8 770KB-3.5G8	ends on configuration (S64,000) neering/scientific, mercial (Section 1) supplied by vendor B (Section 1) supplied by vendor dard (Section 1) supplied by vendor supplied by vendor (Section 1) supplied by vendor (Section 1)					
120 120	ends on configuration (S64,000) neering/scientific, mercial (Section 1) supplied by vendor B (Section 1) supplied by vendor dard (Section 1) supplied by vendor supplied by vendor (Section 1) supplied by vendor (Section 1)					
## Spring of Standard	a \$64,000 neering/scientific, mercial supplied by vendor B DP supplied by vendor dard 1600 supplied by vendor	67MB-4GB I	3-3.5GB		270KB-3.5GB	DISK STORAGE CAPACITY
TARGET MARKET Engineering/scientific ItiMM Not aupplied 16M Not aupplied 16M Not aupplied 16M Not aupplied 18MB Not aupplied 15MB Standard Stan	neering/scientific, mercial supplied by vendor B DP supplied by vendor dard 1600 supplied by vendor supplied by vendor supplied by vendor	28 I	typ.)		16 (6 typ.)	NO. WORKSTATIONS SUPPORTED
Engineering /scientific Standard /scient	neering/scientific, mercial supplied by vendor B DP supplied by vendor dard 1600 supplied by vendor supplied by vendor supplied by vendor	rom \$105,000	00-\$250,000	00	\$35,000-\$250,000	PRICE RANGE
ENTRAL PROCESSOR No. of directly addresable bytes Virtual memory Hardware floating point SP, DP SP, DP SP, DP SS, DP Not supplied No	supplied by vendor B DP supplied by vendor dard 1600 supplied by vendor	General business				TARGET MARKET
No. of directly addressable bytes Virtual memory Hardware floating point SP, DP Standard Standard Standard Not supplied by vendor Not supplied by vendor Not supplied by vendor Not supplied DP Not supplied by vendor Not supplied DP SED Standard Standa	B DP Supplied by vendor dard 1600 supplied by vendor	[CENTRAL PROCESSOR
Virtual memory	B DP Supplied by vendor dard 1600 supplied by vendor	6M			512M	
Hardware floating point Baltetry backup Real-time clock or timer CPU cycle time, annoseconds MIPS 10, per CPU board Not applicable AND Standard Not supplied by vendor Not applicable Not supplied by vendor Not applicable Not supplied by vendor Not applicable Not supplied by vendor None None Standard	DP supplied by vendor dard 1600 supplied by vendor supplied by vendor supplied by vendor supplied by vendor					
Battery backup Real-time clock or timer CPU cycle time, nanoseconds MIPS 16 / 32-bit compatibility Not applicable ANN STORAGE Bytes fetched per cycle Menory access Cycle/paccess men annoseconds Standard Standar	supplied by vendor dard 1600 supplied by vendor supplied by vendor supplied by vendor supplied by vendor					
Real-time clock or timer CCU cycle time, annoseconds MIPS 1 per CPU board Not applicable None None None None None None None Non	dard 1600 supplied by vendor supplied by vendor supplied by vendor supplied by vendor		•			
CPU cycle time, nanoseconds MIRS 1 per CPU board Not applicable 16-/32-bit compatibility AANI STORAGE Bytes fetched per cycle 4 More applicable ANNI STORAGE Bytes fetched per cycle 4 Storage protections Cycle/ access time, nanoseconds Storage protections 2502; 110 pipelined Storage protections Cycle Access time, nanoseconds Standard S	1600 supplied by vendor supplied by vendor supplied by vendor supplied by vendor	· · · · · · · · · · · · · · · · · · ·				·
In per CPU board in 15-932-bit compatibility Not applicable Not ap	supplied by vendor supplied by vendor supplied by vendor supplied by vendor		ard			
16-/32-bit compatibility Alan STORAGE Bytes fetched per cycle Bytes fetched pe	supplied by vendor supplied by vendor supplied by vendor					
AMN STORACE Bytes fetched per cycle 4 Memory access Cycle/access time, nanoseconds Storage protection Increment size, bytes Cache memory, bytes None 5 Standard Sta	supplied by vendor					
Bytes fetched per cycle Memorry access Memory access More and Memory access More access Most supplied by vendor Not supplied N	supplied by vendor	Direct	oplicable		Not applicable	
Memory access (Cycle/access time, nanoseconds (Standard	supplied by vendor	i				MAIN STORAGE
Memory access (Cycle/access time, nanoseconds (Standard	supplied by vendor	ا ا			4	Bytes fetched per cycle
Cycle/access time, nanoseconds Storage protection Increment size, bytes Storage protection Storage protectio	supplied by vendor	·	bps			
Strandard Standard Standard Standard Standard MIRP Mone None None None None None None None N				ed		
Increment size, bytes Cache memory, bytes None None None None None None None None						
Cache memory, bytes PVET/OUTPUT CONTROL No. of I/O channels Date transfer rate SMMS-sec. SMS-sec. SMMS-sec. SGMS-smMS-sec. SGMC-spot ps 4 std.; 29 pt. 96 pt. 91 pt. 92 pt						
RPUT/OUTPUT CONTROL No. of I/O channels Date transfer rate DATE rate rate rate rate rate rate rate rate			•	i		
No. of I/O channels Data transfer rate COMMUNICATIONS Max. number of lines COMMUNICATIONS Max. number of lines Synchronous Opt: 56K bps Opt: 19.2K bps Rayrohronous Opt: 56K bps Opt: 19.2K bps Opt: 19.2K bps IBM 2780/3780, UUCP IBM 2780/3780 IBM	'	ik I			None	
Data transfer rate OMMUNICATIONS Max. number of lines Max. number installed Matchallary Mot supplied by vendor Not supplied Movember 1983 Movember of lines Mot supplied by vendor Not supplied by vendor			* 4			•
144 Async Opt; 56k bps Opt; 56		1			1 '	
144 Async Opt: 56k bps Opt: 56	supplied by vendor	9.2KB/sec.	sec.		5MB/sec.	Data transfer rate
Max. number of lines Synchronous Opt; 58K bps Opt; 19.2k bps Opt;		· [1	
Synchronous Asynchronous Opt; 56k bps Opt; 19.2k bps IBM 2780/3780, UUCP IBM 2780/3780, UUCP IBM 2780/3780, UUCP IBM 2780/3780 IBM 280/48 IPM 280/40 IBM 2780/3780 IBM 280/48 IPM 280	supplied by vendor	28	sync		144 Async	
Asynchronous Protocols supported IBM 2780/3780, UUCP IBM 2780/3780 IBM						
Protocols supported Type of LAN supported RLE terminals emulated IBM 2780/3780 UUCP Ethernet 1.0 IBM 2780/3780 IBM 2780/3780 No Ethernet 1.0 IBM 2780/3780 IBM 2780/3780 IBM 2780/3780 IBM 2780/3780 No Ethernet 1.0 IBM 2780/3780 IBM 2780/3780 IBM 2780/3780 No Ethernet 1.0 IBM 2780/3780 IBM 2780/3780 No IBM 2780/3780 No No Ethernet 1.0 IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 No No No IBM 2780/3780 No No No IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 No No No IBM 2780/3780 No No No IBM 2780/3780 No IBM 2780/3780 No No No IBM 2780/3780 No No No IBM 2780/3780 No No No IBM 2780/3780 No IBM 2780/3780 No No IBM 2780/3780 No No No IBM 2780/3780 No No IBM 2780/3780 No No IBM 2780/3780 Not supplie Not su						•
RIÉ terminals emulated BIBM 2780/3780 No	SDLC, 3270			UUCP		
RIÉ terminals emulated BBM 32780 moltation RBM 32780 moltation RBIM 32780/3780 No RBIM 3280/3780 No RBIM 3280/3780 No RBIM 32780/3780 No RBIC 3708-4040MB RB 180 cps 1600 bpi, 45 ips Not applicable Not applicable Not applicable Not supplie RBIC No RBIA 3280/01/20 lpm SBO/150/150 ps Not supplie		(a.a.)	10		Ethernet 1.0	Tune of LAN comported
IBM 3270 emulation ERIPHERAL EQUIPMENT Disks supported Serial printers Solos printers Sol						
ERIPHERAL EQUIPMENT Disks supported Serial printers 180 cps 180 cps 25/40 cps 25/40 cps 400/480 lpm 400/480 lpm 400/480 lpm 1600 bpi, 45 ips None Role-to-reel tape drives Streaming tape drives None Cassette/cartridge tape drives Corperating system Operating sys	supplied by vendor		780/3780			
Disks supported 270KB-404MB 270KB-404MB 180 cps 180 cps 25/40 cps 3600/900/1200 lpm 300/600/900/1200 lpm 300/600/900/1200 lpm 300/600/900/1200 lpm 300/600/6250 bpi 300/1600/6250 bpi 300/600/600/600 bpi 400/600/600 bpi 400/600 ppi 400/600 ppi 400/60		res			No	
Serial printers Letter-quality printers Line printers Look disketter; card Look Lassembler Cobol, Fortran, An No Look Lassembler Look diskette; card Look Lassembler Look Lass						
Serial printers Letter-quality	l & removable:	ixed: 67MB, 256MB;	& removable:	le:	Fixed & removable:	Disks supported
Letter-quality printers Line printers Lond isk with carting Manufacturing, distribution, printer Line printers Line printers Line printers Lond isk with car	//B-1.26GB	lemovable: 80MB	3-404MB		270KB-404MB	
Letter-quality printers Line printers Lond isk with carting Manufacturing, distribution, printer Line printers Line printers Line printers Lond isk with car	os-450 cos	00/400 cps	ps		180 cps	Serial printers
Line printers A00/480 lpm 1600 bpi, 45 ips None Roel-to-reel tape drives Streaming tape drives Other peripherals supported Other peripheral supported Other						
Reel-to-reel tape drives Streaming tape drives Cassette/Cardridge tape drives Other peripherals supported Operating system Operating system Other packages O						
Streaming tape drives Cassette/cartridge tape drives Other peripherals supported Operating system Operating system Operating sys. implemented in firmware Principal industry application Other packages Other packages Other packages ME, software engineering Other packages ME, software engineering Other packages MILITY Basic system configuration and price Integrated workstation with color graphics display, single CPU; 480 lpm thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 Monnel None 60 ips 60 ips 7erm., Graphics displays, plotters, tablet Opathers, tablet Ont supported C, Fortran 77, Pascal Operating system Not supported C, Fortran 77, Pascal Operating system Other packages Multiprogramming Partially Image, Sir, Mistress EE design ME, software engineering Other packages ME, software engineering ME, software engineering Integrated workstation with color graphics display, plotters, tablet Other packages Other packages ME, software engineering Integrated workstation with color graphics display, plotters, tablet Other packages Other packages ME, software engineering Integrated workstation with color graphics display, plotters, tablet Other packages Other packages Multiprogramming Partially Image, Sir, Mistress EE design ME, software engineering ME, software engineering Single CPU w/2.5MB memory; 65MB disk w/cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics term.; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 Stage of the packages Mot supplied by vendor Not supplied by vendor						
Cassette/cartridge tape drives Other peripherals supported Other packages Pricipal industry application Other packages Integrated workstation with color graphics display, plotters, tablet Not supported C, Fortran 77, Pascal Partially Image, Sir, Mistress EE design Mittiprogramming Partially Image, Sir, Mistress EE design ME, software engineering Pricipal industry application Other packages Pricipal industry application Not supplied Assembler Cobol, Fortran, Basic, Partially Image, Sir, Mistress EE design Mittiprogramming Partially Image, Sir, Mistress EE design ME, software engineering ME, software engineering Not supplied Not supplied Not supplied Not supplied Not supplied Not supplied by vendor			upi, 45 ips			
Other peripherals supported Description of the peripherals supported plays, plotters, tablet Description of the package of the plays, plotters, tablet Not supported C. Fortran 77, Pascal Pascal Pascal, RPG Multiprogramming Partially Par	1600 bpi/12.5-200				1	
plays, plotters, tablet Assembler Compilers Assembler Compilers Assembler Compilers Assembler Compilers Not supported Basic, C, Fortran 77, Pascal Operating system Operating system Operating sys. implemented in firmware Database management system Principal industry application Other packages Assembler Cobol, Fortran, Basic, Pascal, RPG II Multiprogramming Partially Image, Sir, Mistress EE design ME, software engineering ME, software engineering ME, software engineering Assembler Cobol, Fortran, Basic, Pascal, RPG II Real-time No DM6 Manufacturing, distribution, pharmacy Office automation, accounting Not supplier Not sup	supplied by vendor					
Assembler Compilers Not supported Basic, C, Fortran 77, Pascal Operating system Operation Operating system Operation Operating system Operation Operating system Operation Operating system Operating system Operation Operation Operating system Operation Operating system Operation Operation Operating system Operation Operation Operating system Operation Operation Operation Operating system Operation Operation Operation Operating system Operation Ope	equipment	50KB diskette; card (, Graphics dis-	dis-	Term., Graphics dis-	Other peripherals supported
Assembler Compilers Not supported Basic, C, Fortran 77, Pascal Operating system Operation Operating system Operation Operating system Operating system Operation Operating system Operation Operating system Operation Operating system Operation Operation Operation Operating system Operation Operat		eaders; doc. handlers	plotters, tablet	blet	plays, plotters, tablet	
Compilers Basic, C, Fortran 77, Pascal Cobol, Fortran, Basic, Pascal, RPG II						OFTWARE
Compilers Basic, C, Fortran 77, Pascal Cobol, Fortran, Basic, Pascal RPG II	supplied by vendor	Assembler	upported		Not supported	Assembler
Operating system Operating system Operating sys. implemented in firmware Database management system Principal industry application Other packages Other pack	an, Cobol, PL/1,			77		
Operating system Operating sys. implemented in firmware Database management system Principal industry application Other packages Multiprogramming Partially Image, Sir, Mistress EE design ME, software engineering CPU with: 2MB memory; and bisk; printer port; console; Multiple Device Controller; Commercial Instruction Processor; Scientific Instruction Processor; 4 workstation ports: \$105,000 \$193 Monthly maintenance of basic configuration Date of first delivery No DMG Manufacturing, distribution, pharmacy Office automation, accounting CPU with: 2MB memory; cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics term.; HP-UX operating sys.; C, Fortran, and Pascal langs.: \$97,151 \$339 Selection Not supplied by vendor November 1983 Not supplied by vendor Not supplied by vendor			an rr, I doudl	,		Compilers
Operating sys. implemented in firmware Database management system Principal industry application Other packages ME, software engineering Single CPU w/2.5MB memory; 65MB disk w/ cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics scientific Instruction processor; 4 workstation ports: \$105,000 \$130,516	••	usoai, iii u			i uscai	
Operating sys. implemented in firmware Database management system Principal industry application Other packages ME, software engineering Single CPU w/2.5MB memory; 65MB disk w/ cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics terminal; 3 graphics scientific Instruction Processor; 4 workstation ports: \$105,000 \$130,516		laal tima		_	N.A. Jaimun are :	On anating a set ===
Database management system Principal industry application Other packages ME, software engineering Single CPU w/2.5MB memory; 65MB disk w/ cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics terminal; 3 graphi	•			3		
Principal industry application Other packages ME, software engineering ME automation, accounting CPU with: 2MB memory; disk; two 1 console; Multiple Device Controller; Commercial Instruction Processor; Scientific Instruction Processor; Scientific Instruction Processor; 4 workstation ports: \$130,516 Monthly maintenance of basic configuration Monthly maintenance of basic streaming terminal; 3 graphics terminal; 3 graph	supplied by vendor					
Other packages ME, software engineering CPU with: 2MB memory; disk; two 1 console; Multiple Device console; Multiple Device console; Multiple Device terminal; 3 graphics	supplied by vendor			ess		
Other packages ME, software engineering Office automation, accounting CPU with: 2MB memory; BOMB disk; printer port; cart. tape; 400 lpm limpact printer; 1 alpha terminal; 3 graphics termi, HP-UX operating sys.; C, Fortran, and langs.: \$49,400 Monthly maintenance of basic configuration Date of first delivery Not supplied	supplied by vendor	/lanufacturing, distribu-	sign		EE design	Principal industry application
RICING & AVAILABILITY Basic system configuration and price with color graphics display, single CPU, 480 lpm thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and langs.: \$49,400 pascal langs.: \$97,151 pascal langs.: \$97,151 pascal langs.: \$1st quarter 1983 pascal langs. Some part of first delivery March 1983 Number installed to date Integrated workstation with color graphics display. Single CPU w/2.5MB memory; 65MB disk w/ 80MB disk; printer port; cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics terminal; 3 graphics terminal; 3 graphics sys.; C, Fortran, and Pascal langs.: \$97,151 ports: \$105,000 por		ion, pharmacy				
RICING & AVAILABILITY Basic system configuration and price with color graphics display, single CPU, 480 lpm thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and langs.: \$49,400 pascal langs.: \$97,151 pascal langs.: \$97,151 pascal langs.: \$1st quarter 1983 pascal langs. Some part of first delivery March 1983 Number installed to date Integrated workstation with color graphics display. Single CPU w/2.5MB memory; 65MB disk w/ 80MB disk; printer port; cart. tape; 400 lpm impact printer; 1 alpha terminal; 3 graphics terminal; 3 graphics terminal; 3 graphics sys.; C, Fortran, and Pascal langs.: \$97,151 ports: \$105,000 por	supplied by vendor	Office automation,	oftware engineering	ineering	ME, software engineering	Other packages
Basic system configuration and price with color graphics display, single CPU; 480 play, single CPU; 480 play thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 pascal langs.: \$97,151 ports: \$105,000 \$918.50 pascal langs.: \$105,000 \$105,000 ports: \$105,000 ports: \$105,000 \$105,000 ports: \$105,000 port		ccounting				
Basic system configuration and price with color graphics display, single CPU; 480 play, single CPU; 480 play thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 pascal langs.: \$97,151 ports: \$105,000 \$918.50 pascal langs.: \$105,000 \$105,000 ports: \$105,000 ports: \$105,000 \$105,000 ports: \$105,000 port		I				
with color graphics display, single CPU; 480 lpm thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 langs.: \$40,400 langs.		I				RICING & AVAILABILITY
with color graphics display, single CPU; 480 lpm thermal printer; 16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 langs.: \$40,400 langs.	1MB memory; 258	CPU with: 2MB memory;	CPU w/2.5MB	tation	Integrated workstation	Basic system configuration and price
play, single CPU; 480 pm thermal printer; 1 alpha terminal; 3 graphics Scientific Instruction Scientific Instruction Processor; 4 workstation ports: \$105,000 \$918.50 Monthly maintenance of basic configuration Date of first delivery 1st quarter 1983 Not supplied by vendor Not supplied Not	two 100 ips					•
Ipm thermal printer;	ming tape drives;				, ,	
16MB disk with cartridge tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400						
tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$49,400 Monthly maintenance of basic configuration Date of first delivery Number installed to date tape; HP-UX op. sys.; C, Fortran, and Pascal langs.: \$97,151 Pascal langs.: \$97,151 Pascal langs.: \$97,151 Pascal langs.: \$97,151 Pascal langs.: \$105,000 \$918.50 S918.50 March 1983 Not supplied by vendor Not supplied by vendor Not supplied by vendor						
Fortran, and Pascal langs.: \$93,; C, Fortran, and Processor; 4 workstation ports: \$105,000 Monthly maintenance of basic configuration Date of first delivery Number installed to date Fortran, and Pascal langs.: \$97,151 ports: \$105,000 \$918.50 \$918.50 November 1983 November 1983 November 1983 Not supplied by vendor Not supplied by vendor Not supplied by vendor						
langs.: \$49,400 Pascal langs.: \$97,151 ports: \$105,000 \$918.50 configuration Date of first delivery 1st quarter 1983 1st quarter 1983 Not supplied by vendor Not supplied Not supplied by vendor Not supplied Not supp),516					
Monthly maintenance of basic configuration Date of first delivery Number installed to date \$193 \$339 \$4642 \$918.50 \$918.50 November 1983 March 1982 Not supplied by vendor Not supplied by vendor Not supplied by vendor						
Monthly maintenance of basic configuration Date of first delivery Number installed to date 193 \$193 \$339 \$642 \$918.50 \$918.50 November 1983 March 1982 Not supplied by vendor Not supplied by vendor Not supplied by vendor		orts: \$105,000	langs.: \$97,151		langs.: \$49,400	
configuration Date of first delivery 1st quarter 1983 1st quarter 1983 November 1983 November 1983 1st quarter 1983 November 1983 1st quarter 1983 November 1983 Not supplied by vendor	3.50		•			Monthly maintenance of basic
Date of first delivery 1st quarter 1983 1st quarter 1983 November 1983 November 1983 Not supplied by vendor Not su	· - -	·-·				
Number installed to date Not supplied by vendor Not supplied by Not supplied by vendor Not supplied by Not supplied by Not supplied by Not supplied by Not suppl	h 1002	lovember 1002	larter 1002		101 000000 1000	
	supplied by vendor	iot supplied by vendor				
COMMENTS Also available with Can support 3 CPU		1	upport 3 CPU	th	Also available with	COMMENTS
real-time, multi boards.		1				
programming, single-			+	ale-		
user Basic language						
				ide .		
system. Can support 3 CPU boards.						

MANUFACTURER & MODEL	IBM 4331	IBM 4361	IBM 4341	IBM 4381
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	1MB-4MB	2MB-12MB	1MB-16MB	4MB-16MB
DISK STORAGE CAPACITY	Depends on configuration	Depends on configuration	Depends on configuration	Depends on configuration
O. WORKSTATIONS SUPPORTED	Depends on configuration	Depends on configuration	Depends on configuration	Depends on configuration
PRICE RANGE	From \$82,420	From \$150,000	From \$81,000	From \$370,000
ARGET MARKET	Engineering/scientific,	Engineering/scientific,	Engineering/scientific,	Engineering/scientific
	commercial	commercial	commercial	,g,
ENTRAL PROCESSOR No. of directly addressable bytes	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Virtual memory	16MB	16MB	16MB	16MB
Hardware floating point	SP, DP	SP, DP	SP, DP	SP, DP
Battery backup	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
	Standard	Standard	Standard	Standard
Real-time clock or timer	200-1600	100	115-300	68
CPU cycle time, nanoseconds				
MIPS	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
16-/32-bit compatibility	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
IAIN STORAGE			*	
Bytes fetched per cycle	4	4	8	Not supplied by vendor
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Cycle/access time, nanoseconds	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	1MB	2MB, 4MB	1MB-4MB	4MB
Cache memory, bytes	4K	8K-16K	2K-16K	8K-32K
IPUT/OUTPUT CONTROL				}
No. of I/O channels	2	4-5	6	12
Data transfer rate	36KB-1.86MB/sec.	186K bps-500KB/sec.	16KB-3MB/sec.	2MB-3MB/sec.
OMMUNICATIONS			, , 	,
Max. number of lines	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Synchronous	Std.; to 56K bps	Std.; to 56K bps	Opt.; to 56K bps	Opt.; to 56K bps
Asynchronous	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Protocols supported	BSC, SDLC, X.25, 3270	BSC, SDLC, X.25, 3270	BSC, SDLC, X.25, 3270	BSC, SDLC, X.25, 3270
Towns of LANI comments of	Nick consider the consider	Nick accombined by company	New compliant by complete	Nan amaria di basa anda a
Type of LAN supported	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
RJE terminals emulated	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
IBM 3270 emulation	Yes	Yes	Yes	Yes
ERIPHERAL EQUIPMENT		<u> </u>		<u></u>
Disks supported	Fixed & removable:	Fixed & removable:	Fixed & removable:	Fixed & removable:
	129MB-1.26GB	129MB-1.26GB	129MB-1.26GB	129MB-1.26GB
Serial printers	80 cps-450 cps	80 cps-450 cps	80 cps-450 cps	80 cps-450 cps
Letter-quality printers	Not applicable	Not applicable	Not applicable	Not applicable
Line printers	230 lpm - 20,040 lpm	230 lpm - 20,040 lpm	230 lpm - 20,040 lpm	230 lpm - 20,040 lpm
Reel-to-reel tape drives	556-6250 bpi, 75-200 ips	556-6250 bpi, 75-200 ips	556-6250 bpi, 75-200 ips	556-6250 bpi, 75-200 i
Streaming tape drives	200-1600 bpi/12.5-200ips	200-1600 bpi/12.5-200ips	200-1600 bpi/12.5-200ips	200-1600 bpi/12.5-200
Cassette/cartridge tape drives	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Other peripherals supported	Card equipment	Card equipment	Card equipment	Card equipment
SOFTWARE				
Assembler	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Compilers	Fortran, Cobol, PL/1,	Fortran, Cobol, PL/1,	Fortran, Cobol, PL/1,	Fortran, Cobol, PL/1,
	RPG II	RPG II	RPG II	RPG II
O	Time about -	Time sharing	Time about -	Time sheets
Operating system	Time-sharing	Time-sharing	Time-sharing	Time-sharing
Operating sys. implemented in firmware		Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Database management system	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Principal industry application	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Other packages	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Other packages	Troc supplied by Veridor	Not supplied by Velidor	Thot supplied by veridor	Thot supplied by Veridor
RICING & AVAILABILITY	lan			
Basic system configuration and price	CPU, 2MB memory; 258MB	CPU, 4MB memory; 258MB	CPU, 12MB memory; 2	CPU, 16MB memory; 2
	disk; two 100 ips	disk; four 100 ips	operator consoles; 120	color consoles; 120 cps
	streaming tape drives;	streaming tape drives;	cps printer; 2.5GB	color printer; 2.5GB
	two 650 lpm printers;	card read punch; two	disk; eight 75 ips tape	disk; eight 75 ips tape
	card read punch;	650 lpm printers;	units; card read punch;	units; card read punch;
	2 operator consoles:	2 operator consoles:	two 1200 lpm printers:	three 1200 lpm
	\$216,210	\$362,910	\$892,100	printers: \$1,082,560
Monthly maintenance of basic	\$1,805	\$3,235	\$4,837.50	\$4,929
configuration	ψ 1,000	φυ,ευυ	ψ∓,037.3∪	ψ+,323
Date of first delivery	1980-1982	1984	1979-1983	1984
Number installed to date	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
COMMENTS	Comprises Model	Comprises Model	Comprises Model	Comprises Model
OMMAICIALO	Groups 11 and 2.	Groups 4 and 5.	Groups 9, 10, 1, 11,	Groups 1 and 2.
	Groups II and Z.	Groups 4 and 5.		Groups rand 2.
		1	2, and 12.	(
	}	1		
	l	t .	I	1
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VORD LENGTH MAIN MEMORY DISK STORAGE CAPACITY IO. WORKSTATIONS SUPPORTED RICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	32 bits 1MB-8MB 144MB-2.28GB 96 \$100,000-\$500,000 General business	32 bits 512KB-4MB 128MB-1GB 127 From \$136,000 General business	32 bits 2MB-64MB 13MB-4.8GB Over 256 \$150,000-\$350,000	32 bits 1MB-4MB 81MB-5GB
MAIN MEMORY NISK STORAGE CAPACITY IO. WORKSTATIONS SUPPORTED RICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	1MB-8MB 144MB-2.28GB 96 \$100,000-\$500,000	512KB-4MB 128MB-1GB 127 From \$136,000	2MB-64MB 13MB-4.8GB Over 256	1MB-4MB 81MB-5GB
DISK STORAGE CAPACITY IO. WORKSTATIONS SUPPORTED PRICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	144MB-2.28GB 96 \$100,000-\$500,000	128MB-1GB 127 From \$136,000	13MB-4.8GB Over 256	81MB-5GB
IO. WORKSTATIONS SUPPORTED RICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	96 \$100,000-\$500,000	127 From \$136,000	Over 256	
RICE RANGE ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	\$100,000-\$500,000	From \$136,000	1	42
ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point		1	\$150,000,\$350,000	
ARGET MARKET ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point		1		\$50,000-\$400,000
ENTRAL PROCESSOR No. of directly addressable bytes Virtual memory Hardware floating point	General business	(General Dusiness	Real-time, sci., factory	General business
No. of directly addressable bytes Virtual memory Hardware floating point			autom., process contr.	General business
Virtual memory Hardware floating point				
Hardware floating point	16M	16M	64M	4M
	2.28GB	2GB	1GB	128MB
	Single precision	Not applicable	SP, DP	Double precision
Battery backup	Standard	Standard	Optional	Optional
	1	1	•	
Real-time clock or timer	Standard	Standard	Standard	Not supplied by vendor
CPU cycle time, nanoseconds	160	150	100	150
MIPS	1.2	Not supplied by vendor	Not supplied by vendor	.33
16-/32-bit compatibility	32-bit only	No	Direct	Direct
IAIN STORAGE	02 011 0111,	, ,	1	2
	1.	1.		14
Bytes fetched per cycle	4	4	4	4
Memory access	600M bps	53M bps	Not supplied by vendor	Not supplied by vendor
Cycle/access time, nanoseconds	160	300	400	450
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	.5MB	1MB	2M	1MB
Cache memory, bytes	None	None	64K	None
	1.40116	1101/6	1071	140116
NPUT/OUTPUT CONTROL	1-	1.0		1-0
No. of I/O channels	2	16	64	50
Data transfer rate	100MB/sec.	Not supplied by vendor	8MB/sec.	2MB/sec.
OMMUNICATIONS	1	1	1 '	
Max. number of lines	96 Asynchronous	48	Over 256	42
Synchronous	Standard	Standard	Opt; 250K bps	Std.; 9600 bps
Asynchronous	Standard	Standard	Opt; 19.2K bps	Std.; 19,200 bps
Protocols supported	IBM 2770/3770,	IBM 2780/3780, 2770,	IBM 2780/3780, X.25	IBM 2780/3780, SNA,
	2780/3780	3741, Hasp	1	ISO Async, DLC, X.25
Type of LAN supported	B4Net, SNA	None	None	None
RJE terminals emulated	2770/3770/2780/3780	2780/3780, 2770, 3741	IBM 2780/3780	IBM 2780/3780
IBM 3270 emulation	Yes	No	No	Yes
ERIPHERAL EQUIPMENT				
Disks supported	Fixed: 144MB;	Winchester: 128MB-1GB	Fixed: 10MB, 67MB; Re	Fixed & removable: 27M
	Removable: 75MB, 285MB		movable: 13.5MB-253MB	135MB
Serial printers	160 cps	33/180 cps	Not supplied by vendor	120/275 cps
	45 cps	33 cps		33 cps
Letter-quality printers			Not applicable	
Line printers	150-1000 lpm	150/300/600/1200 lpm	300/600/1000 lpm	360/720/1130/1440 lpi
Reel-to-reel tape drives	175 ips	800/1600 bpi	800/1600 bpi; 75 ips	800/1600 bpi
Streaming tape drives	100 ips	100/50 ips-1600/3200 bpi	100 ips/25 ips: 1600 bpi	Start/stop; 45/200 ips
Cassette/cartridge tape drives	100 ips	Not applicable	Not supplied by vendor	15 ips
	High-speed data,	Not applicable	1MB diskette	Card readers, floppy
Other peripherals supported		Not applicable	IIVID diskette	
	RS-232-C I/O	1	į.	disks
OFTWARE	1	1		
Assembler	None	Macro assembler	Macro assembler	Macro assembler
Compilers	Business Basic, Cobol	Basic	Cobol 74, Fortran 66,	Cobol, Basic, Pascal
•	1	1	Fortran 77, Pascal,	1
	1	1	Coral 66	1
Omenation access	Baal simaisi a 11	Maria: amala:		B. B. Maria and Color
Operating system	Real-time, multi-tasking	Multi-tasking	Real-time	Multi-tasking
Operating sys. implemented in firmwa		Partially	Partially	Partially
Database management system	Origin	Reality DBMS	Infinity	ITX/DBS
Principal industry application	General purpose	Manufacturing/dist.,	Factory autom., metal	General commercial and
*	interactive business	general accounting	lurgy, power generation	industrial
Other packages		Office automation		1
Other packages	Office automation,	Onice automation	Transaction processing	Third-party
	job cost, pharmacy,	1	(TSX)	1
	manufacturing	1	I	
RICING & AVAILABILITY	1	1	1	1
Basic system configuration and price	CPU with 1.5MB memory;	CPU with 512KB memory;	CPU with 2MB memory;	CPU with 1MB memory;
January and price	288MB disk; 15 EVDT	128.7MB disk; 100/50	67MB disk; tape unit;	81MB mass storage; 36
		1		
	terminals; 300 lpm	ips-1600/3200 bpi	operating system:	Ipm band printer; 7 CRT
	printer; mag. tape	streaming tape drive;	\$226,500	workstations; operating
		8 serial ports; operat-	1	system; Cobol: \$60,780
	streamer: \$108,450		1	1
		ing system: \$136,150	1	}
		ing system: \$136,150	1	1
		ing system: \$136,150	1	4
	streamer: \$108,450		#2.0F0	0001
Monthly maintenance of basic		ing system: \$136,150 Not applicable	\$2,050	\$391
Monthly maintenance of basic configuration	streamer: \$108,450		\$2,050	\$391
configuration	streamer: \$108,450		\$2,050 May 1984	\$391 June 1983
configuration Date of first delivery	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984	June 1983
configuration Date of first delivery Number installed to date	streamer: \$108,450 \$723	Not applicable	May 1984 Not applicable	June 1983 Not supplied by vendor
configuration Date of first delivery	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984 Not applicable Compatible with 16-bit	June 1983 Not supplied by vendor Processor employs VLSI
configuration Date of first delivery Number installed to date	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984 Not applicable	June 1983 Not supplied by vendor Processor employs VLSI (Very Large Scale Inte
configuration Date of first delivery Number installed to date	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984 Not applicable Compatible with 16-bit	June 1983 Not supplied by vendor Processor employs VLSI
configuration Date of first delivery Number installed to date	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984 Not applicable Compatible with 16-bit	June 1983 Not supplied by vendor Processor employs VLSI (Very Large Scale Inte
configuration Date of first delivery Number installed to date	\$108,450 \$723 October 1983	Not applicable November 1981	May 1984 Not applicable Compatible with 16-bit	June 1983 Not supplied by vendor Processor employs VLSI (Very Large Scale Inte

MANUFACTURER & MODEL	Perkin-Elmer Corporation Data Systems Group 3205	Perkin-Elmer Corporation Data Systems Group 3210	Perkin-Elmer Corporation Data Systems Group 3230	Perkin-Elmer Corporation Data Systems Group 3250XP
MORD I ENGT	32 bits	32 bits	32 bits	32 bits
WORD LENGTH MAIN MEMORY	512KB-4MB	512KB-4MB	32 bits 1MB-16MB	2MB-16MB
DISK STORAGE CAPACITY	50MB-1.2GB	32MB-72GB	67MB-144GB	67MB-576GB
NO. WORKSTATIONS SUPPORTED	16	32	64	256
PRICE RANGE	\$9,950-\$40,000	\$42,000-\$51,000	\$74,150-\$81,000	\$150,000-\$218,000
ARGET MARKET	General commercial,	General commercial,	General commercial,	General commercial,
	scientific	scientific	scientific	scientific
CENTRAL PROCESSOR	40.4	454	1014	1014
No. of directly addressable bytes	4M	4M	16M	16M
Virtual memory	16MB	16MB	16MB	16MB
Hardware floating point	SP, DP	SP, DP	SP, DP	SP, DP
Battery backup	Optional	Standard	Standard	Standard
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	Not supplied by vendor			
MIPS	.5	00.43	2	3
16-/32-bit compatibility	32-bit only	32-bit only	32-bit only	32-bit only
MAIN STORAGE			10	146
Bytes fetched per cycle	4	4	16	16
Memory access	Not supplied by vendor			
Cycle/access time, nanoseconds	400	500 Stondard	500 Standard	500 Standard
Storage protection	Standard	Standard		Standard
Increment size, bytes	.5MB, 1MB	.5MB, 1MB, 2MB	1MB, 2MB	2MB
Cache memory, bytes	None	None	1K	8K
NPUT/OUTPUT CONTROL	32	1022	1022	1022
No. of I/O channels	32	1023 8MB/sec.	1023	1023
Data transfer rate	1.5MB/sec.	owib/sec.	8MB/sec.	40MB/sec.
COMMUNICATIONS	16	32	128	256
Max. number of lines		0 = =	128	256
Synchronous	Std.; 19.2K bps	Opt.; 2M bps	Opt.; 2M bps	Opt.; 2M bps
Asynchronous	Std.; 19.2K bps ADCCP, SDLC, HDLC, Hasp,	Std.; 19.2K bps ADCCP, SDLC, HDLC, Hasp,	Std.; 19.2K bps	Std.; 19.2K bps
Protocols supported			ADCCP, SDLC, HDLC, Hasp,	ADCCP, SDLC, HDLC, Ha
Type of LAN sympasted	IBM 2780/3780, 3270	IBM 2780/3780, 3270	IBM 2780/3780, 3270	IBM 2780/3780, 3270
Type of LAN supported RJE terminals emulated	Ethernet IBM 2780/3780, Hasp	Ethernet IBM 2780/3780, Hasp	Ethernet IBM 2780/3780, Hasp	Ethernet IBM 2780/3780, Hasp
IBM 3270 emulation	Yes	Yes	Yes	Yes
	res	res	res	res
PERIPHERAL EQUIPMENT	Fixed & removable: 32MB-	Fined 8 sementals 22MB	Fixed 9 semestales 2244D	Fined 8 2284
Disks supported	600MB	Fixed & removable: 32MB- 600MB	Fixed & removable: 32MB- 600MB	Fixed & removable: 32ME 600MB
Carial printers	1	180 cps	180 cps	180 cps
Serial printers Letter-quality printers	180 cps 55 cps	150 cps 55 cps	150 cps 55 cps	55 cps
	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm
Line printers Reel-to-reel tape drives	800/1600/1200 ipiii 800/1600/6250 bpi	800/1600/6250 bpi	800/1600/6250 bpi	800/1600/6250 bpi
Streaming tape drives	Not applicable	Not applicable	Not applicable	Not applicable
Cassette/cartridge tape drives	Not applicable	Not applicable	Not applicable	Not applicable
Other peripherals supported	Card reader	Card reader	Card reader	Card reader
Other peripherals supported	Card reader	Card reader	Card reader	Card reader
SOFTWARE		·		İ
Assembler	CAL, CAL Macro	CAL, CAL Macro	CAL, CAL Macro	CAL, CAL Macro
Compilers	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,
	Pascal, RPG II, C			
	rascai, nrd ii, C	rascai, NFG II, C	rascar, NFG II, C	rascal, NFG II, C
Operating system	Real-time, multi-tasking	Real-time, multi-tasking	Real-time, multi-tasking	Real-time, multi-tasking
Operating system Operating sys. implemented in firmware		No	No	No
Database management system	Reliance	Reliance	Reliance, DMS/32	Reliance, DMS/32
Principal industry application	General commercial,	General commercial,	General commercial,	General commercial,
Thicipal industry application	scientific	scientific	scientific	scientific
Other packages	Third-party	Third-party	Third-party	Third-party
Other packages	Time party	i i i i i i i i i i i i i i i i i i i	i i iii a party	, , , , , , , , , , , , , , , , , , ,
		ļ	ļ	1
PRICING & AVAILABILITY		l	İ	
Basic system configuration and price	CPU with 512KB memory;	CPU with 512KB memory;	CPU with 1MB memory;	CPU with 2MB memory;
basic system comiguration and price	loader: communications	loader; communications	loader; communications	writable control store;
	controller; floating	controller: 32MB CDD	controller; battery	loader; communications
	point; 50MB disk	disk; console: \$42,000	backup; console:	controller; battery
	(25MB fixed/25MB remov	0.0K, 001.0010.	\$74,150	backup; console:
	able); console:		1	\$150,000
	\$24,950			
		l		
Monthly maintenance of basic	\$285	\$455	\$456	\$924
configuration		1		1
Date of first delivery	December 1983	September 1981	March 1981	July 1983
Number installed to date	Not applicable	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
COMMENTS	Can be used in fault-			
CONTRACT O	tolerant dual processor	tolerant dual processor	tolerant dual processor	tolerant dual processor
	configuration.	configuration.	configuration.	configuration.
	John Suration.	Somiguration.	Comiguration.	ooninguration.
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	1		1	1

MANUFACTURER & MODEL	Perkin-Elmer Corporation Data Systems Group 3200MPS	Prime Computer, Inc. 2250	Prime Computer, Inc. 250-II	Prime Computer, Inc. 450-II
			00.11	00.11
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	2MB-16MB	512KB-4MB	512KB-4MB	1MB-4MB
DISK STORAGE CAPACITY	67MB-576GB	68MB-632MB	64MB-5GB	160MB-5GB
NO. WORKSTATIONS SUPPORTED	256	32	32	64
PRICE RANGE	\$185,000-\$342,000	From \$39,900	From \$70,500	From \$107,500
TARGET MARKET	General commercial, scientific	Eng./sci., off. autom.,	Eng./sci., off. autom., distr. d.p.	Eng./sci., off. autom., distr. d.p.
CENTRAL PROCESSOR		1		
No. of directly addressable bytes	16M	64K	64K	64K
Virtual memory	16MB ·	32MB	32MB	32MB
Hardware floating point	SP, DP	SP, DP	SP, DP	SP, DP
Battery backup	Standard	Optional	Optional	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds MIPS	Not supplied by vendor 5-21	Not supplied by vendor Not supplied by vendor	Not supplied by vendor Not supplied by vendor	Not supplied by vendor Not supplied by vendor
16-/32-bit compatibility	32-bit only	Direct	Direct	Direct
MAIN STORAGE	·		1	ĺ
	16	14	14	14
Bytes fetched per cycle		['	Not complied by your day	Not ownshed by
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Cycle/access time, nanoseconds	500	230	Not supplied by vendor	Not supplied by vendor
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	2MB	256KB, 512KB, 1MB	256KB, 512KB, 1MB	256KB, 512KB, 1MB
Cache memory, bytes	8K	2K	2K	8K
	101	413	- L	Jun .
NPUT/OUTPUT CONTROL	i .			
No. of I/O channels	1023	32	32	32
Data transfer rate	40MB/sec.	2.5MB/sec.	2.5MB/sec.	Not supplied by vendor
COMMUNICATIONS		·		1
Max. number of lines	256	9	40	Not supplied by vendor
Synchronous	Opt.; 2M bps	Std.; to 56K bps	Std.; to 56K bps	Std.; to 56K bps
•				
Asynchronous	Std.; 19.2K bps	Std., to 19.2K bps	Std., to 19.2K bps	Std., to 19.2K bps
Protocols supported	ADCCP, SDLC, HDLC, Hasp,	Hasp, 2780/3780, HDLC,	Hasp, 2780/3780, HDLC,	Hasp, 2780/3780, HDLC
	IBM 2780/3780, 3270	X.25, SNA	X.25, SNA	X.25, SNA
Type of LAN supported	Ethernet	Primenet	Primenet	Primenet
RJE terminals emulated	IBM 2780/3780, Hasp	IBM 2780/3780 CDC200 UT	IBM 2780/3780, CDC200 UT	IBM 2780/3780, CDC200
IBM 3270 emulation	Yes	Yes	Yes	Yes
	163	163	1 63	163
PERIPHERAL EQUIPMENT		E:	l	l
Disks supported	Fixed & removable: 32MB-	Fixed: 62MB, 144MB	Fixed & removable:	Fixed & removable:
	600MB		61.6MB-630MB	61.6MB-630MB
Serial printers	180 cps	200 cps	200 cps	200 cps
Letter-quality printers	55 cps	55 cps	55 cps	55 cps
Line printers	300/600/1200 lpm	200-1000 lpm	200-1000 lpm	200-1000 lpm
•	800/1600/6250 bpi		25K-469K bpi, 45-75 ips	
Reel-to-reel tape drives		Not applicable		25K-469K bpi, 45-75 ips
Streaming tape drives	Not applicable	25/50/100 ips	Not applicable	Not applicable
Cassette/cartridge tape drives	Not applicable	6400 bpi, 30 ips	6400 bpi, 30 ips	6400 bpi, 30 ips
Other peripherals supported	Card reader	Graphics workstations	Graphics workstations	Graphics workstations
,,		· .	1	i '
SOFTWARE		i		ļ
	CAL CAL MASSES	Magra aggarables	Maoro accombler	Maoro accembles
Assembler	CAL, CAL Macro	Macro assembler	Macro assembler	Macro assembler
Compilers	Cobol, Fortran, Basic,	Basic, C, Cobol 74,	Basic, C, Cobol 74,	Basic, C, Cobol 74,
	Pascal, RPG II, C	Fortran, Fortran 77,	Fortran, Fortran 77,	Fortran, Fortran 77,
	1	PL/1, RPG II, Pascal	PL/1, RPG II, Pascal	PL/1, RPG II, Pascal
Operating system	Real-time, multi-tasking	Batch, real-time	Batch, real-time	Batch, real-time
Operating system Operating sys. implemented in firmware		Partially	Partially	Partially
Database management system	Reliance, DMS/32	DBMS	DBMS	DBMS
Principal industry application	General commercial,	CAD/CAM, office	CAD/CAM, office	CAD/CAM, office
	scientific	automation	automation	automation
Other packages	Third-party	Third-party	Third-party	Third-party
		[
PRICING & AVAILABILITY	1		1	1
THOMAS & AVAILABLETT	CPU with 2MB memory;	CPU with 512KB memory;	CPU with 512KB memory;	CPU with 1MB memory;
			64MB cartridge disk;	two 80MB disk subsys-
Basic system configuration and price	1	I DRIVIR TIXED DISK. I DIVIN	, o o our uroude uron,	tems; 450 lpm printer;
	Auxiliary Processing	68MB fixed disk; 15MB		
	Auxiliary Processing Unit (APU); floating	cartridge tape subsys-	200 lpm printer;	
	Auxiliary Processing Unit (APU); floating point processor; writ-	cartridge tape subsys- tem; 55 cps letter-qual-	200 lpm printer; 4 workstations:	
	Auxiliary Processing Unit (APU); floating point processor; writ- able control store;	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta-	200 lpm printer;	
	Auxiliary Processing Unit (APU); floating point processor; writ-	cartridge tape subsys- tem; 55 cps letter-qual-	200 lpm printer; 4 workstations:	
	Auxiliary Processing Unit (APU); floating point processor; writ- able control store;	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta-	200 lpm printer; 4 workstations:	
	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console:	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta-	200 lpm printer; 4 workstations:	8 workstations: \$133,76
Basic system configuration and price	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245	200 Ipm printer; 4 workstations: \$83,380	8 workstations: \$133,76
Basic system configuration and price Monthly maintenance of basic	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console:	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta-	200 lpm printer; 4 workstations:	
Basic system configuration and price Monthly maintenance of basic configuration	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta- tions: \$44,245	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor	8 workstations: \$133,76 Not supplied by vendor
Basic system configuration and price Monthly maintenance of basic configuration Date of first delivery	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422 December 1982	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245 Not supplied by vendor September 1982	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor 2nd quarter 1981	8 workstations: \$133,76 Not supplied by vendor March 1982
Basic system configuration and price Monthly maintenance of basic configuration	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422	cartridge tape subsys- tem; 55 cps letter-qual- ity printer; 2 worksta- tions: \$44,245	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor	8 workstations: \$133,76 Not supplied by vendor
Basic system configuration and price Monthly maintenance of basic configuration Date of first delivery Number installed to date	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422 December 1982 Not supplied by vendor	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245 Not supplied by vendor September 1982	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor 2nd quarter 1981	8 workstations: \$133,76 Not supplied by vendor March 1982
Basic system configuration and price Monthly maintenance of basic configuration Date of first delivery Number installed to date	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422 December 1982 Not supplied by vendor Can be used in fault-	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245 Not supplied by vendor September 1982	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor 2nd quarter 1981	8 workstations: \$133,76 Not supplied by vendor March 1982
Basic system configuration and price Monthly maintenance of basic configuration Date of first delivery	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422 December 1982 Not supplied by vendor Can be used in fault- tolerant dual processor	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245 Not supplied by vendor September 1982	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor 2nd quarter 1981	8 workstations: \$133,76 Not supplied by vendor March 1982
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Basic system configuration and price Monthly maintenance of basic configuration Date of first delivery Number installed to date	Auxiliary Processing Unit (APU); floating point processor; writ- able control store; loader; communications controller; console: \$185,000 \$1,422 December 1982 Not supplied by vendor Can be used in fault- tolerant dual processor	cartridge tape subsystem; 55 cps letter-quality printer; 2 workstations: \$44,245 Not supplied by vendor September 1982	200 Ipm printer; 4 workstations: \$83,380 Not supplied by vendor 2nd quarter 1981	8 workstations: \$133,76 Not supplied by vendor March 1982

MANUFACTURER & MODEL	Prime Computer, Inc. 550-II	Prime Computer, Inc. 750	Prime Computer, Inc. 850	Prime Computer, Inc 9950
WORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	1MB-4MB	1MB-8MB	2MB-8MB	4MB-16MB
DISK STORAGE CAPACITY	160MB-5GB	160MB-5GB	160MB-5GB	300MB-5GB
NO. WORKSTATIONS SUPPORTED	64	96	128	128
PRICE RANGE	From \$107,500	From \$197,000	From \$274,500	From \$393,500
ARGET MARKET	Eng./sci., off. autom.,	Eng./sci., off. autom.,	Eng./sci., off. autom.,	Eng./sci., off. autom.,
CENTRAL PROCESSOR	distr. d.p.	distr. d.p.	distr. d.p.	distr. d.p.
No. of directly addressable bytes	64K	64K	64K	64K
Virtual memory	32MB	32MB	32MB	32MB
Hardware floating point	SP. DP	SP, DP	SP. DP	QP
Battery backup	Optional	Optional	Optional	Optional
Real-time clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
MIPS	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
16-/32-bit compatibility	Direct	Direct	Direct	Direct
MAIN STORAGE	511000	Direct Control	Direct	Direct
Bytes fetched per cycle	4	8	8	8
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	84
Cycle/access time, nanoseconds	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	256KB, 512KB, 1MB	256KB, 512KB, 1MB	256KB, 512KB, 1MB	256KB, 512KB, 1MB, 2M
Cache memory, bytes	8K	16K	32K	16K
NPUT/OUTPUT CONTROL				1.50
No. of I/O channels	32	32	32	32
Data transfer rate	2.5MB/sec.	8MB/sec.	8MB/sec.	7MB/sec.
COMMUNICATIONS		J		,
Max. number of lines	72	104	136	Not supplied by vendor
Synchronous	Std.; to 56K bps	Std.; to 56K bps	Std.; to 56K bps	Std.; to 56K bps
Asynchronous	Std., to 19.2K bps	Std., to 19.2K bps	Std., to 19.2K bps	Std., to 19.2K bps
Protocols supported	Hasp, 2780/3780, HDLC,	Hasp, 2780/3780, HDLC,	Hasp, 2780/3780, HDLC,	Hasp, 2780/3780, HDLC,
Trotocois supported	X.25, SNA	X.25, SNA	X.25, SNA	X.25, SNA
Type of LAN supported	Primenet	Primenet	Primenet	Primenet
RJE terminals emulated			IBM 2780/3780, CDC200 UT	IBM 2780/3780, CDC200
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT	103	163	163	163
Disks supported	Fixed & removable:	Fixed & removable:	Fixed & removable:	Fixed & removable:
bisks supported	61.6MB-630MB	61.6MB-630MB	61.6MB-630MB	61.6MB-630MB
Serial printers	200 cps	200 cps	200 cps	200 cps
Letter-quality printers	55 cps	55 cps	55 cps	55 cps
Line printers	200-1000 lpm	200-1000 lpm	200-1000 lpm	200-1000 lpm
Reel-to-reel tape drives	25K-469K bpi, 45-75 ips	25K-469K bpi, 45-75 ips	25K-469K bpi, 45-75 ips	25K-469K bpi, 45-75 ips
Streaming tape drives	Not applicable	Not applicable	Not applicable	Not applicable
Cassette/cartridge tape drives	6400 bpi, 30 ips	6400 bpi, 30 ips	6400 bpi, 30 ips	6400 bpi, 30 ips
Other peripherals supported	Graphics workstations	Graphics workstations	Graphics workstations	
Other peripherals supported	diaphics workstations	Graphics Workstations	Graphics workstations	Graphics workstations
SOFTWARE				ĺ
Assembler	Macro assembler	Macro assembler	Macro assembler	Macro assembler
Compilers	Basic, C, Cobol 74,	Basic, C, Cobol 74,	Basic, C, Cobol 74,	Basic, C. Cobol 74.
Compilers	Fortran, Fortran 77,	Fortran, Fortran 77,		Fortran, Fortran 77,
	PL/1, RPG II, Pascal	PL/1, RPG II, Pascal	Fortran, Fortran 77,	
Operating system	Batch, real-time		PL/1, RPG II, Pascal	PL/1, RPG II, Pascal
Operating system Operating sys. implemented in firmware		Batch, real-time Partially	Batch, real-time Partially	Batch, real-time Partially
Database management system	DBMS	DBMS	DBMS	DBMS
Principal industry application	CAD/CAM, office	CAD/CAM, office	CAD/CAM, office	l
Tilicipal illustry application	automation	automation	automation	CAD/CAM, office
Other packages	Third-party			automation
Other packages	Till u-party	Third-party	Third-party	Third-party
PRICING & AVAILABILITY	,			
	CPU with 1MB memory;	CPU with 1 MB memory:	CPI I with 2MP mamanu	CBU 4 MB 300
basic system configuration and price	two 80MB disk subsys-	160MB fixed disk;	CPU with 2MB memory; two 160MB fixed disk	CPU, 4 MB memory; 300
		800/1600 bpi, 75 ips		disk subsystem; 630MB
	tems; two 800 bpi/45 ips		drives; four 800/1600	disk system; four
	tape drives; 450 lpm	tape drive; 750 lpm	bpi, 75 ips tape drives;	800/1600 bpi, 75 ips
	printer; 12 work- stations: \$176,140	printer; 55 cps letter-	1000 lpm printer; 55 cps	tape drives; 1000 lpm
	Stations: \$170,140	quality printer;	letter-quality printer;	printer; two 55 cps let-
	į –	12 workstations: \$242,890	24 workstations: \$420,530	ter-qual. printers; 32
Monthly maintanance of basis	Not supplied by yender			workstations: \$570,040
Monthly maintenance of basic	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
configuration	2nd quarter 1001	1979	2nd averter 1001	A
Date of first delivery Number installed to date	2nd quarter 1981 Not supplied by vendor		2nd quarter 1981	August 1983
COMMENTS	THOL Supplied by Veridor	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor
OINIMENTS				
	<u>'</u>			
				i

MANUFACTURER & MODEL	Pyramid Technology Corporation Pyramid 90x	Stratus Computer, Inc. Stratus/32	Tandem Computers, Inc. NonStop TXP-2 Processor System	Tandem Computers Inc. NonStop TXP-16 Processor System
VORD LENGTH	32 bits	32 bits	32 bits	32 bits
MAIN MEMORY	1MB-16MB	2MB-8MB per module	4MB-16MB	32MB-128MB
DISK STORAGE CAPACITY	450MB-over 3.6GB	60MB-7.2GB per module	Over 8GB	Over 64GB
IO. WORKSTATIONS SUPPORTED	128	128 per module	No set limit	No set limit
	\$100,000-\$300,000	From \$140,000	From \$246,775	From \$1,700,000
	System bldrs., universi-		High-volume on-line	
ARGET MARKET	ties, prog. dev., autom.	Transaction processing	transaction processing	High-volume on-line transaction processing
ENTRAL PROCESSOR	lios, prog. dovi, datoiii.		Lancachon processing	transaction processing
No. of directly addressable bytes	16M	8M	32M	256M
Virtual memory	4.3GB	16MB (× 255 users)	2GB	16GB
Hardware floating point	Opt.; SP, DP	None	SP. DP	SP. DP
Battery backup	None	Standard	Standard	Standard
Real-time clock or timer	Standard	Standard	Standard	Standard
	125	125	83.3	83.3
CPU cycle time, nanoseconds		. — .	4	32
MIPS	Not applicable	.9	f '	
16-/32-bit compatibility	32-bit only	32-bit only	Direct	Direct
MAIN STORAGE				1
Bytes fetched per cycle	4	2	8 (per processor)	8 (per processor)
Memory access	128M bps	128M bps	128M bps	128M bps
Cycle/access time, nanoseconds	Not supplied by vendor	125/375	116	116
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	1MB	2MB	2MB	2MB
Cache memory, bytes	4KB instr.; 32KB data	None	128K	1GB
NPUT/OUTPUT CONTROL		1	I	I
No. of I/O channels	Not supplied by vendor	14	2	16
Data transfer rate	32MB/sec.	16MB/sec.	5MB/sec.	5MB/sec.
COMMUNICATIONS	Szivib/ sec.	TOIVID/Sec.	SIVID/ SEC.	31115/366.
Max. number of lines	128	64/module; 2048/system	252	1792
	Not applicable		1 1	ł
Synchronous		Std.; to 56K bps	Opt.; 56K bps	Opt.; 56K bps
Asynchronous	Std.; 9600 bps	Std.; to 19.2K bps	Opt.; 19.2K bps	Opt.; 19.2K bps
Protocols supported	RS-232, TCP/IP, BSD 4.2,	Async, BSC, Sync, X.25,	ADCCP, HDLC, SDLC,	ADCCP, HDLC, SDLC,
· · ·	RFC, ARPA	SDLC, HDLC, X.29, 3270	2780/3780, 3270, SNA	2780/3780, 3270, SNA
Type of LAN supported	Ethernet, UUCP	Stratalink	Hyperchannel, Fox	Hyperchannel, Fox
RJE terminals emulated	None	IBM 2780/3780, Hasp	IBM 2780/3780	IBM 2780/3780
IBM 3270 emulation	No	Yes	Yes	Yes
ERIPHERAL EQUIPMENT		1		ł
Disks supported	Winchester: 75MB, 150MB,	Winchester: 30MB-448MB;	Winchester: 128MB-540MB;	Winchester: 128MB-540
••	450MB	Removable: 287MB	Removable: 240MB	Removable: 240MB
Serial printers	Not supplied by vendor	Not supplied by vendor	340 cps	340 cps
Letter-quality printers	55 cps	55 cps	55 cps	55 cps
Line printers	1500 lpm	300/600/900 lpm	600/900/1300 lpm	600/900/1300 lpm
Reel-to-reel tape drives	Not applicable	Not supplied by vendor	6250 bpi	6250 bpi
Streaming tape drives	100 ips	100 ips/25ips; 1600 bpi	None	None
	Not applicable	Not supplied by vendor	None	None
Cassette/cartridge tape drives	Not applicable	Not supplied by vendor	Fax, OCR, mag. stripe	Fax, OCR, mag. stripe
Other peripherals supported	Not applicable	Not supplied by veridor	card & bar code rdrs.	card & bar code rdrs.
SOFTWARE	ĺ		Card & bar code ruis.	Card & Dai Code Tors.
Assembler	Not applicable	Assembler	None	None
			1	1
Compilers	C, Pascal, Fortran	Cobol, Basic, Fortran,	Basic, TAL, Cobol, For-	Basic, TAL, Cobol, For-
		PL/1, Pascal, C	tran	tran
Operating quater-	Time sharing	Time-sharing hats!	Multi-processing	 Multi-processing
Operating system	Time-sharing	Time-sharing, batch	Multi-processing	Partially
Operating sys. implemented in firmware		No	Partially	,
Database management system	Third-party	Oracle Brokerage, banking,	Encompass	Encompass
Principal industry application	Technical, scientific,		Factory & office autom.,	Factory & office autom., commer. (banking, etc.)
Other packages	programming	mfg., dist., comp. serv.	commer. (banking, etc.)	
	Third-party	Third-party	Information deliv /pre-	Information deliv./pre-
İ	1		sentation, transaction	sentation, transaction
ND101110 0 41/411 4 D :: :	1	l	monitoring, off. autom.	monitoring, off. autom.
PRICING & AVAILABILITY		la	ODLI in- ABAD	ODIList. OCC.CD
Basic system configuration and price	CPU with 2MB memory;	Duplexed module, 2MB	CPU with 4MB memory;	CPU with 32MB memory
	system support proces-	memory; two 30MB disks;	cabinet; power supply;	cabinet; power supply;
	sor; intelligent termi-	VDT, 55 cps letter-qual-	Operations and Service	Operations and Service
	nal processor; 9-track	ity printer: \$136,700	Processor (OSP); 45 ips	Processor (OSP); 45 ips
			tape drive & controller;	tape drive & controller;
	mag. tape; 450MB disk	1		Guardian operating
			Guardian operating	
•	mag. tape; 450MB disk		Guardian operating system: \$246,775	system: \$1,703,275
	mag. tape; 450MB disk dr.; console VDT; power			
Monthly maintenance of basic	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op.	\$460		
Monthly maintenance of basic configuration	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000	\$460	system: \$246,775	system: \$1,703,275
configuration	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700		system: \$246,775 Contact vendor	system: \$1,703,275 Contact vendor
configuration Date of first delivery	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700 October 1983	February 1982	system: \$246,775 Contact vendor November 1983	system: \$1,703,275 Contact vendor November 1983
configuration Date of first delivery Number installed to date	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700	February 1982 130	system: \$246,775 Contact vendor November 1983 Not applicable	system: \$1,703,275 Contact vendor November 1983 Not applicable
configuration Date of first delivery	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700 October 1983	February 1982 130 Single module includes	system: \$246,775 Contact vendor November 1983 Not applicable Can be interconnected	system: \$1,703,275 Contact vendor November 1983 Not applicable Same interconnectability
configuration Date of first delivery Number installed to date	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700 October 1983	February 1982 130 Single module includes duplexed components and	system: \$246,775 Contact vendor November 1983 Not applicable Can be interconnected with other systems into	system: \$1,703,275 Contact vendor November 1983 Not applicable Same interconnectability as TXP-2. Can be expan
configuration Date of first delivery Number installed to date	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700 October 1983	February 1982 130 Single module includes duplexed components and is fault-tolerant. A	system: \$246,775 Contact vendor November 1983 Not applicable Can be interconnected with other systems into a worldwide network of	system: \$1,703,275 Contact vendor November 1983 Not applicable Same interconnectability as TXP-2. Can be expaned to single system of
configuration Date of first delivery Number installed to date	mag. tape; 450MB disk dr.; console VDT; power supply; C language; op. sys. lic.: \$115,000 \$700 October 1983	February 1982 130 Single module includes duplexed components and	system: \$246,775 Contact vendor November 1983 Not applicable Can be interconnected with other systems into	system: \$1,703,275 Contact vendor November 1983 Not applicable Same interconnectability as TXP-2. Can be expan

MANUFACTURER & MODEL	Wang Laboratories, Inc. VS 85	Wang Laboratories, Inc. VS 90	Wang Laboratories, Inc. VS 100	
VORD LENGTH	32 bits	32 bits	32 bits	
MAIN MEMORY	1MB-4MB	1MB-4MB	1MB-8MB	
DISK STORAGE CAPACITY	90MB-5.1GB	90MB-5.1GB	90MB-10.2GB	
NO. WORKSTATIONS SUPPORTED	48	48	128	
PRICE RANGE	From \$63,000	From \$73,000	From \$83,000	
ARGET MARKET	Commercial, distrib-	Commercial, distrib-	Commercial, distrib-	
ANGEL MANKET	uted d.p.	uted d.p.	uted d.p.	
ENTRAL PROCESSOR	died d.p.	died d.p.	ated a.p.	
No. of directly addressable bytes	4M	4M	8м	
Virtual memory	96MB	96MB	256MB	
Hardware floating point	SP, DP	SP, DP	SP, DP	
Battery backup	None	None	None	
Real-time clock or timer	Standard	Standard	Standard	
CPU cycle time, nanoseconds	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	
MIPS	Not supplied by vendor	Not supplied by vendor		'
16-/32-bit compatibility	Direct	Direct	Not supplied by vendor Direct	
AAIN STORAGE	Direct	Direct	Direct	
	Not supplied by yeards.	Not complied by your	Net consider by the	
Bytes fetched per cycle	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	
Memory access	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	
Cycle/access time, nanoseconds	480	480	480	
Storage protection	Standard	Standard	Standard	
Increment size, bytes	1MB	1MB	1MB	
Cache memory, bytes	32K (optional)	None	32K	
NPUT/OUTPUT CONTROL	1.0	1.0	l	
No. of I/O channels	48	48	178	
Data transfer rate	16.6MB/sec.	16.6MB/sec.	16.6MB/sec.	
COMMUNICATIONS	l			
Max. number of lines	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	
Synchronous	Optional	Optional	Optional	
Asynchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	
Protocols supported	BSC, SNA, SDLC,	BSC, SNA, SDLC,	BSC, SNA, SDLC,	
	Async, TTY, Hasp	Async, TTY, Hasp	Async, TTY, Hasp	
Type of LAN supported	Wangnet	Wangnet	Wangnet	
RJE terminals emulated	IBM 2780/3780, 3777	IBM 2780/3780, 3777	IBM 2780/3780, 3777	
IBM 3270 emulation	Yes	Yes	Yes	
PERIPHERAL EQUIPMENT				
Disks supported	Fixed & removable:	Fixed & removable:	Fixed & removable:	
	70MB-620MB	70MB-620MB	70MB-620MB	
Serial printers	40-222 cps	40-222 cps	40-222 cps	
Letter-quality printers	20-35 cps	20-35 cps	20-35 cps	
Line printers	250/600/1100 lpm	250/600/1100 lpm	250/600/1100 lpm	
Reel-to-reel tape drives	800-6250 bpi, 75 ips	800-6250 bpi, 75 ips	800-6250 bpi, 75 ips	
Streaming tape drives	Not applicable	Not applicable	Not applicable	
Cassette/cartridge tape drives	6400 bpi, 30 ips	6400 bpi, 30 ips	6400 bpi, 30 ips	
Other peripherals supported	Graphics stations,	Graphics stations,	Graphics stations,	
	laser printers	laser printers	laser printers	
SOFTWARE		F		
Assembler	Assembler	Assembler	Assembler	
Compilers	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,	Cobol, Fortran, Basic,	
J	RPG II, PL/1	RPG II, PL/1	RPG II, PL/1	
Operating system	Real-time, time-sharing	Real-time, time-sharing	Real-time, time-sharing	
Operating system Operating sys. implemented in firmware		Partially	Partially	
Database management system	Total, VS-DBMS	Total, VS-DBMS	Total, VS-DBMS	
Principal industry application	Office automation,	Office automation,	Office automation,	
	word processing	word processing	word processing	
Other packages	General business, busi-	General business, busi-	General business, busi-	
Carlos puonagos	ness graphics	ness graphics	ness graphics	
	noss grapinos	ness graphics	ness graphics	
PRICING & AVAILABILITY	1]	
Basic system configuration and price	CPU with 1MB memory;	CPLI with 1MP maman	CPLI with 1MP	
pasic system configuration and price		CPU with 1MB memory;	CPU with 1MB memory;	
	90MB disk; 35 cps	two 75MB disk drives;	two 288MB disk drives;	
	letter-quality printer;	180 cps serial printer;	600 lpm band printer;	
	2 workstations: \$91,000	3 workstations: \$113,500	35 cps letter-quality	
			printer; 8 workstations:	
		1	\$168,500	
	1	1	[
Bélonable moine	1000	0704	0.70	
Monthly maintenance of basic	\$693	\$794	\$1,672	
configuration		1	<u>l_</u>	
Date of first delivery	4th quarter 1983	April 1982	December 1980	
Number installed to date	Not supplied by vendor	Not supplied by vendor	Not supplied by vendor	
COMMENTS	Without cache, supports			
	only 32 workstations]	
	I	i	I	
	and maximum of 2.5GB			
	disk storage.			