All About Minicomputers

It is safe (for the time being anyway) to proclaim that the minicomputer still lives despite all the predictions to the contrary. According to many industry watchers, the feeling for the past few years was that the minicomputer, caught in the squeeze between the microcomputer and the super-minicomputer, would be extinct by now. Instead, it still maintains a firm toehold in the computer industry, and in some areas, is not just hanging on, but proliferating. It seems to be carving out some new niches for itself, and taking on new roles. However, minicomputer vendors must keep stepping to a fast beat to keep the minicomputer in the running and prevent it from succumbing to the pressures from both ends.

In order to stay competitive, minicomputer vendors have reduced minicomputer prices, increased capabilities, and introduced new low-end models to keep the edge over microcomputers. These tactics will stimulate the growth of minicomputer sales, although not to the extent of premicrocomputer days. Industry surveys show that the growth rate for minicomputers has decreased, but is still holding at a healthy level. For example, IBM sold more of its 16-bit Series 1 systems last year than ever before. It is predicted that 1985 will be a $13 billion year for minicomputers. Shipment growth for small business systems is predicted at 21 percent, office systems at 34 percent, and workstation systems at 110 percent.

This is not to say that the microcomputer, with its increased power and performance, and the declining prices of the supermini are not threats to the existence of the minicomputer. They certainly are, and will continue to be. But for the moment, all three levels of systems are still needed.

Because of the similarities in the various capabilities of the three levels of systems, the lines of definition are blurred to say the least. For the purpose of this report, the systems are distinguishable mainly by their word length. The minicomputers listed in this report are characterized as follows:

Although microcomputers and superminicomputers continue to put the squeeze on, the minicomputer still is doing well. This year's report shows that mini vendors have introduced both low- and high-end models to existing families to allow a greater growth path, and are carving out new roles in the industry. This report provides detailed comparison charts that present the salient characteristics of 155 minicomputers from 52 vendors. The text of the report discusses the current state of the minicomputer market, and provides both a guide to the chart entries and guidelines for selecting minicomputer systems.

- A word length of 8, 16, 24, or 32 bits

- A data bus that transfers less than 32 bits to memory from existing storage

- A main memory capacity of less than 10 million bytes

- A typical configuration price of about $30,000 to $60,000

Traditionally, minicomputers were considered 8-, 16-, or 24-bit systems. But we are now seeing 16/32-bit microprocessor systems with 32-bit addressing and 16-bit data-bus architecture providing power comparable to, and sometimes surpassing, that of the 16-bit systems. Therefore, we feel that such systems should also be included in this report.

As the system features continue to overlap, it will undoubtedly become more difficult for a user to decide which type of computer to purchase. The bottom line is that users must analyze and buy a system according to their specific needs rather than rely on any specific type of system. It is also important for a user to consider what his or her future ▷

The Nixdorf 8850 basic configuration consists of a central processor, an 8MB disk, 9/1600 bpi autoload tape, a 150-cps printer, a terminal, and communications capabilities.

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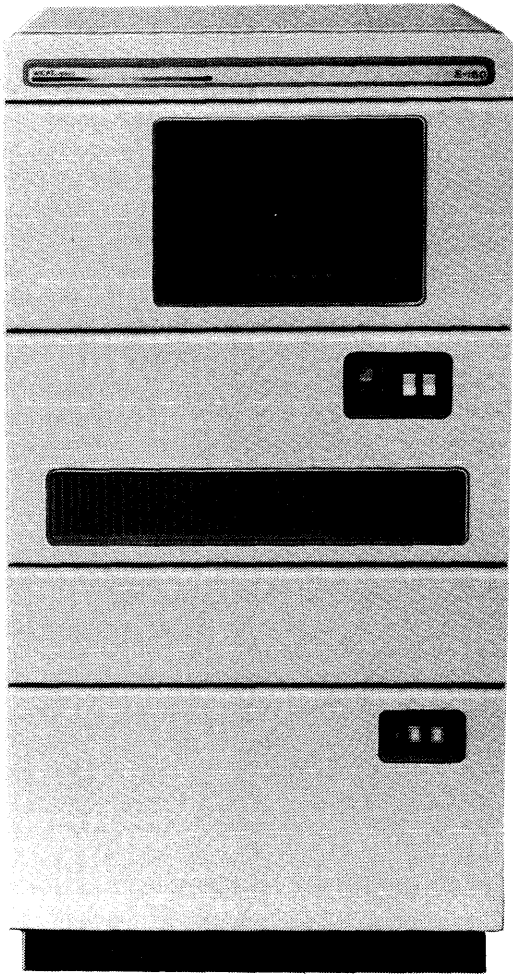
The Wicat S160 basic configuration offers a central processing unit with 512KB memory, an 8MB disk, a 9-track tape drive, the operating system, a language, and communication ports

▷ requirements will be, and whether the system will expand to meet these requirements. Also, in case further expansion might be required, the system should be compatible with a larger system for upgradability to avoid hardware and/or software reconfiguration costs. In addition to expandability, other features to be considered in choosing a system would include:

• Reliability

• Processing speeds

• Memory

• Disk storage capacities

• Terminal support

• Effective communications/networking capabilities

• Access control and security

• Vendor reputation

• Peripheral compatibility

• Availability and variety of *proven* software

• Support

• Price

It is interesting to note that, in surveying various users, many chose one system over another simply because of "vendor reputation." This reliance on reputation may cause many users to choose a mini vendor over a "newcomer" micro vendor. Reliability was also high on the list of reasons for choosing one system over another. Amazing as it may seem, price seemed to be the least-considered factor.

MINICOMPUTER ADVANTAGES

Minicomputers still have some advantages over the microcomputers, although as the micros become more powerful and provide more capabilities, the space between them is becoming increasingly narrower. Many applications can execute at the same speed on a micro as on a mini, but we have to keep in mind, as mentioned above, that it is important to measure all of a system's capabilities.

Main memory technologies are improving across the board. Many of the vendors listed in the comparison columns have increased their maximum memory to 8 megabytes, and several of the systems offer more—some as high as 16 megabytes. This reflects the increase in memory chip capacity and the continuing drop in memory chip prices.

The ability to expand is still one of the greatest advantages of a minicomputer. Minis can handle a large number of terminals, large-capacity disk drives and multiple printers. When a user needs more disk space for example, he/she can usually just connect an additional drive. Often this is not possible with a micro. Micros cannot yet support the number or variety of devices that are available for minicomputers. Also, most minicomputer vendors are committed to providing product lines that allow users to easily upgrade to a more powerful system as their business needs increase. Should a user outgrow the present system, most vendors have a larger system the user can move up to. In many cases, the original peripherals and software are portable to the larger system, protecting much of the user's investment. Micro vendors are not yet supplying a product line that offers the user this type of an upgrade path. However, many mini vendors, in order to hold their share of the market, are now also offering micros that can either be used as standalone systems, or be connected to a mini. It is definitely important to consider this issue of upgradability if a business is expected to grow substantially in the years ahead. ▷

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The advantage of greater disk capacities is related to the issue of growth. Micros typically support Winchester or fixed disk in the range of five to thirty megabytes. And the number of disks that can be attached to micros is often very limited. On the other hand, minicomputers can support hard disks to provide for capacities of over one gigabyte. In fact, 22 systems listed in the comparison colums at the end of this report show a maximum disk capacity of over one gigabyte. Again, this support for greater disk storage serves to protect the user's investment in hardware, since a user can usually attach another drive to the present configuration when more disk storage is needed.

Minicomputers also provide for greater communications capabilities. Local Area Networks (LANs), which provide the capability to interconnect multiple devices within a company, expand the capabilities of a minicomputer beyond that of a single system. Many are calling the LAN concept the backbone to the office of the future, where individual offices in every company are interconnected for high-speed communication. Through the use of a LAN, users can share valuable company resources, such as data bases, large-capacity storage devices, and high-speed printers, that would be too expensive to justify for each system alone.

The many other advantages of local area networks provide numerous benefits to the user. Many systems are adopting the use of Xerox' Ethernet and it is viewed as the defacto standard by many. Other vendors offer their own proprietary LANs such as Datapoint's ArcNet and Digital Equipment's DECnet. Just glancing at the entry for protocols supported in the comparison charts shows that most minis can talk with IBM mainframes or support IBM's System Network Architecture (SNA). Microcomputer communication capabilities are growing and changing rapidly, but minicomputers, as departmental hosts and file servers, will play a big part in the future as the connection between the micros and organizational mainframes or superminis.

The Inforex Gen-V offers data collection and office automation in both centralized and distributed environments. As a multiuser, multitasking system, it supports up to 28 terminals which can be used for data entry, word processing, spreadsheet, and database management.

Another important issue is that of data security. Most minicomputer systems provide storage protection, whereas in many cases, microcomputer data is stored on diskettes and much more vulnerable to loss or tampering. Of the systems listed in the comparison columns, at least 90 offer storage protection. In addition, minicomputer information is centralized, preventing duplication of data. Since data is shared in minicomputer memory and storage, changes need only be made once, and only one copy of data is maintained. The correction can be made quickly and easily, ensuring the integrity of the data. With micros, the data is often duplicated on multiple diskettes to allow different individuals the use of the same information. Making these changes on all copies to maintain the integrity of the whole system can become very cumbersome and inaccurate, and can waste time.

The software issue is a particularly important one. Probably the greatest strength of the minicomputer is the software availability and compatibility in both systems and applications software for computer system families. More and more mini vendors are realizing the importance of protecting their current users' investments by building this compatibility into their software. Minicomputer vendors that are beginning to also offer micros will eventually be offering software compatibility right up the line. Micro vendors, realizing the need for software compatibility among systems, are looking to standardized operating systems such as Unix. However, although applications software is being developed for these systems at a fast pace, it has yet to be proven in dependability in many cases, and does not yet equal the availability of minicomputer software.

The wealth of application software written for minicomputers is astounding. Minicomputer vendors that don't supply software are heavily involved in programs that encourage third-party software vendors to write application software for the mini vendors' systems. Through specific software programs, mini vendors have carved out market segments for their systems that will be hard to compete against. Microcomputer vendors are still trying to do all things for all users. Until these vendors determine their particular market segments and strengths, the minicomputer will continue to dominate in vertical markets.

The existing software base of the minicomputer is also helping the mini to hold its ground against the supermini-computer. Users have a substantial interest in trying to protect their software investment because of the expense in converting existing applications to the longer word length. To determine whether a 32-bit system would benefit an application, the raw performance of the application must be considered. If the application is performance driven rather than memory driven, then a 16-bit system may give the application more performance for the same price. This is true because more of the circuitry of a 16-bit system can be dedicated to processing speed and parallelism rather than to managing the longer word length and larger instruction set. If the cost of two systems is close, and if the 32-bit

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instruction set does not benefit the application, then the 16-bit system will generally give more performance for a specific application.

Minicomputer vendors have the advantage of years of experience in providing multiuser systems to solve the needs of specific applications. Also, mini vendors provide more than just "minis." They are more like full-service companies providing software, communications capabilities, peripherals, and even microcomputers that attach to and utilize the capabilities of the minicomputer. In addition, minicomputer vendors with happy, satisfied customer bases will likely hold onto these customers as long as needed enhancements and support are provided. Users want vendors that can "tie it all together" for them.

Despite these advantages, the threat posed by microcomputers is real. The market will continue to change in the months ahead and minicomputer vendors will have to revise their strategies to fight the tide of micros trying to infiltrate their ranks. However, micro vendors are not to be underestimated. They are well aware of any shortcomings and those areas are definitely being addressed with solutions close at hand.

THE MINICOMPUTER MARKET

The minicomputer market is buzzing in spite of, and because of, the microcomputer threat. We are beginning to see the mini assuming other roles in the industry. Previously, engineering/scientific systems offered just technical applications. Now we are seeing them moving into other application areas. We are seeing minis offering higher level office automation, and moving into specialized areas and vertical markets such as computer aided design and engineering (CAD/CAE), manufacturing, process control, distribution, data collection, and transaction processing. The mini is also carving out a niche in the area of communications. It can serve as a node in a nationwide network, as a file server and gateway to mainframes, and as a controller and departmental host supporting a network of micros. For example, the IBM System/36 is promoted as a departmental computer. Linking each micro to a mainframe would cause spiraling communication costs, whereas the use of minicomputers as departmental processors to control the data flow between micros and mainframes is much more cost-effective, and also increases security. This linking creates the need for software compatibility between micros and minis, which software firms are already beginning to achieve. For example, Hewlett-Packard has introduced networking software for its HP 3000 that allows its office automation systems to include micros, and Burroughs is providing software for the B 90 to allow connection of micros and minis.

One way minicomputer vendors are combating the squeeze from the microcomputers is to introduce low-end minis that are price competitive with the microcomputer, but provide more capabilities. This enables a small, cost-conscious business to purchase the power and capabilities it presently needs, with the option to expand up to the

family's high-end system as their business grows without reconfiguration of either hardware or software. To mention a few, this past year, Hewlett-Packard introduced the Series 37, the low-end to the HP 3000; Digital Equipment introduced its Micro PDP-11/73, a low-end system for the PDP family; and Wang introduced its VS 15. These low-end systems all provide software and hardware compatibility, the same online interactive abilities, and the same networking and data communications capabilities as their high-end counterparts. The low-end *base* systems all range around the $15,000 figure, which provides competition for the micros. More and more of the minicomputer vendors are also offering micros that can be networked with their minicomputers.

In order to stay competitive with the micros in the space area, mini vendors are reducing the size of their systems. Many minis are now offered in several packaging options, which range from desktop workstation configurations that take up no more room than a micro, to floor consoles that sit neatly beside a desk or slide compactly under a desk, but all providing the same capabilities. In addition, minis are being produced as ruggedized industrial products that can be placed in any environment without special wiring or air conditioning.

Marketing and distribution strengths many times decide the survival rate of vendors. Trends show that minicomputer vendors are seeing the advantages of using Value-Added Resellers (VARS). DEC is one vendor that has realized this and taken advantage of it for years. Vendors that previously shunned this area of the marketplace are now realizing that VARs have the application software, industry knowledge, and marketing skills to sucessfully market their products to end users.

The coming year will show vendors continuing to unlease new systems, some with entirely new technologies. For instance, Hewlett-Packard plans to introduce a new generation of minis with a system design totally different from those of its other systems; it is known as RISC, which stands for reduced instruction set computers. Other vendors are also taking a close look at the RISC design, including IBM, DEC, and AT&T. However, users may be a little leery of switching to a new technology at first because of software and hardware compatibility, and the possible conversion cost.

At any rate, it will be most interesting to watch the minicomputer's future unfold, and to see how many of the minicomputer predictions made by industry watchers turn out to be accurate.

THE COMPARISON CHARTS

The key functional characteristics of 155 commercially available minicomputers from 52 vendors are presented in the accompanying comparison charts. Most of the information in the charts was supplied or verified by the vendors during February 1985. Every attempt was made to include all the major suppliers of minicomputers in this report. The ▷

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absence of any company's product from these comparison charts means either that the company was unknown to us or that it failed to respond to our repeated requests for information. The staff at Datapro Research Corporation greatly appreciates the cooperation of the vendors that did respond 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 minicomputer for specific applications.

Note: a dash (—) in a column indicates either that the vendor did not supply the requested information, or that we were unable to complete the entry with the information that was supplied.

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.

Most of the minicomputers currently on the market have a 16-bit word length; this size neatly accommodates two 8-bit bytes (characters) and has been shown to yield an attractive balance between economy and performance for many applications. Other systems use an 8-bit word length. These 8-bit systems are suitable for many functions where low cost is more important than high precision or sophisticated instruction repertoires.

Many minicomputers are now featuring 32-bit word lengths with 16-bit data transfer. These systems generally are based on the Motorola MC68000 microprocessor, The National Semiconductor NS16032, or similar merchant microprocessors. These systems have a 16-bit data bus with 32-bit internal architecture.

Systems providing I/O architectures of more than 16 bits (generally 32 bits) are featured in "All About Superminis" in DATAPRO 70.

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).

DISK STORAGE CAPACITY

This indicates the minimum and maximum online storage capacities offered by the system. The indicated storage capacities are shown in millions of bytes (MB) and indicate the range of disk storage capacities available for the systems or simply the maximum disk storage capacity of the system.

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 display terminal, 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 (for example, "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, "Business/Commercial" is refinable into general accounting, transaction processing, and inventory control.

CENTRAL PROCESSOR

CPU manufacturer and model identifies the manufacturer and model of the minicomputer or microprocessor used as the system's central processing unit (CPU). An entry of "proprietary" indicates that the vendor supplies its own CPU and that the model is generally identical to the model designated at the top of the chart.

Hardware floating-point facilities are included in the standard instruction repertoires of many currently available minicomputers. 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, double-precision, or a combination of both. 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 interrup-

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tion can be lost. This entry indicates whether battery backup is standard, optional, or inapplicable to a system.

A *realtime clock or timer* is another essential element in most "time-conscious" systems. A realtime clock enables the program to determine the time of day, while an interval timer usually indicates the amount of time that has elapsed since the occurrence of some significant event. In many cases, the timer can trigger an interrupt signal when a predetermined interval of time has elapsed. The entry 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.

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. 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, in bytes, 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, 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 (M or K bps) or thousands or millions of bytes per second (KB/second or MB/second).

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 to 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 intersystem 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' 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 minicomputers.

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

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▷ **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 daisywheel 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 to 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 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 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. In some cases, the capacity of the cassette/cartridge in millions of bytes (MB) is given.

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 application 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 that makes 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. This widespread availability has resulted from the development of more powerful central processors and for storage facilities.

Entries in this section of the charts may include widely used high-level programming languages like Cobol, RPG, Fortran, C, Basic, Algol, 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. ▷

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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; handling 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; "realtime," 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 minicomputers 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, of-

fice 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 AND 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 given above.

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 1984/ January 1985.

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.

All About Minicomputers

Alpha Microsystems, 17332 Von Karman, P.O. Box 18347, Irvine, CA 92714. Telephone (714) 957-8500.

Applied Systems Corporation, 26401 Harper Ave., St. Clair Shores, MI 48081. Telephone (313) 779-8700.

August Systems, 18277 S.W. Boones Ferry Rd., Tigard, OR 97224. Telephone (503) 684-3550.

Auragen Systems Corp., Two Executive Dr., Fort Lee, NJ 07024. Telephone (201) 461-3400.

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

BTI Computer Systems, Inc., 870 W. Maude Ave., Sunnyvale, CA 94076. Telephone (408) 733-1122.

Burroughs Corporation, Burroughs Place, Detroit, MI 48232. Telephone (313) 972-7000.

Cado Systems Corporation, 2055 W. 190th St., Torrance, CA 90510. Telephone (213) 323-8170.

Centurion Computer Corporation, 1111 S. Sherman, Richardson, TX 75081. Telephone (214) 644-3628.

Chislin Industries, Inc. Comp. Prod. Div., 31352 Via Colinas #101, Westlake Village, CA 91362. Telephone (818) 991-2254.

Chromatics, Inc., 2558 Mountain Industrial Blvd., Tucker, GA 30084. Telephone (404) 493-7000.

Computer Automation Inc., 1800 Jay Ell Dr., Richardson, TX 75081. Telephone (214) 783-0993.

Computer Consoles, Inc., 97 Humboldt St., Rochester, NY 14609. Telephone (716) 482-5000.

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

Computer Extension Systems, Inc., 17511 El Camino Real, Suite 131, Houston, TX 77058. Telephone (713) 488-8830.

Datapoint Corporation, 9725 Datapoint Dr., MSV41, San Antonio, TX 78284. Telephone (512) 699-7000.

Digital Equipment Corporation, 146 Main St., Maynard, MA 01754-2571. Telephone (800) DIGITAL ext. 990, or (617) 897-5111 (corporate headquarters).

Display Data Corp., Executive Plaza IV, Hunt Valley, MD 21031. Telephone (301) 667-9211.

Four-Phase Systems, Inc., 10700 N. DeAnza Blvd., Cupertino, CA 95014. Telephone (408) 255-0900.

General Automation, 1045 S. East St., P.O. Box 4883, Anaheim, CA 92803. Telephone (714) 778-4800.

General Robotics Corporation, 55-57 N. Main St., Hartford, WI 53027. Telephone (414) 673-6800.

Hewlett-Packard Co., 19055 Pruneridge Ave., Cupertino, CA 95014. Telephone (408) 973-7646.

Honeywell Information Systems, Inc., 200 Smith St., Mail Station 506, Waltham, MA 02154. Telephone (617) 895-6000 ext. 6025.

Inforex, Inc., 186 Middlesex Turnpike, Burlington, MA 01803. Telephone (617) 272-6470.

Integrated Digital Products Corp., 4208 E. LaPalma Ave., Anaheim, CA 92807. Telephone (714) 993-5300.

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

MAI/Basic Four Corporation, 14101 Myford Rd., M. Drop 245, Tustin, CA 92680. Telephone (714) 731-5100.

McDonnell Douglas Computer Systems Co., 17481 Redhill Ave., P.O. Box 19501, Irvine, CA 92714. Telephone (714) 250-1000.

MDS/Qantel Business Computers, 4142 Point Eden Way, Hayward, CA 94545. Telephone (415) 886-9596.

Modular Computer Systems, Inc. (MODCOMP), 1650 W. McNab Rd., MS 85, Ft. Lauderdale, FL 33310. Telephone (305) 974-1380.

NCR Corporation, 1700 S. Patterson Blvd., Dayton, OH 45479. Telephone (513) 445-5000.

NEC Information Systems, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. Telephone (617) 264-8000.

New England Digital Corp., P.O. Box 546, White River Junction, VT 05001. Telephone (802) 295-5800.

Nixdorf Computer Inc., 300 Third Ave., Waltham, MA 02154. Telephone (617) 890-3600.

Norsk Data North America, Inc., 55 William St., Wellesley, MA 02181. Telephone (617) 237-7945.

Northern Telecom Systems Corp., P.O. Box 1222, MS H221, Minneapolis, MN 55440. Telephone (612) 932-8000.

Parallel Computers, Inc., 3004 Mission St., Santa Cruz, CA 95060. Telephone (408) 429-1338.

Perq Systems, P.O. Box 2600, 2600 Liberty Ave., Pittsburg, PA 15224. Telephone (412) 621-6250.

Point 4 Computer Corporation, 2569 McCabe Way, Irvine, CA 92714. Telephone (714) 863-1111.

PolyComputers, 2259 Via Burton Way, Anaheim, CA 92806. Telephone (714) 870-7660.

PolyMorphic Systems, 5330 Debbie Rd., Santa Barbara, CA 93111. Telephone (805) 967-0468.

PolyRianda, Inc. (Div. of PolyComputers), 2259 Via Burton, Anaheim, CA 92806. Telephone (714) 870-7660.

Rexon Business Machines Corp., 5800 Uplander Way, Culver City, CA 90230. Telephone (213) 641-7110.

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▷ **Sentinel Computer Corporation,** 9902 Carver Rd., Cincinnati, OH 45242. Telephone (513) 984-6622.

Sequent Computer Systems, 14360 N.W. Science Park Dr., Portland, OR 97229. Telephone (503) 626-5700.

Sperry Corporation, P.O. Box 500, Blue Bell, PA 19424. Telephone (215) 542-4011.

Terak Corp., 14151 N. 76th St., Scottsdale, AZ 85260. Telephone (602) 998-4800.

Texas Instruments, Inc., P.O. Box 2909, MS 2222, 12501 Research Blvd., Austin, TX 78769. Telephone (512) 250-7302.

Tolerant Systems, 81 E. Daggett Dr., San Jose, CA 95134. Telephone (408) 946-5667.

The Ultimate Corp., 77 Brant Ave., Clark, NJ 07066. Telephone (201) 388-8800.

Wang Laboratories, Inc., 1 Industrial Ave., MS 13L6, Lowell, MA 01851. Telephone (617) 459-5000.

Wicat Systems, Inc., P.O. Box 539, 1875 S. State St., Orem, UT 84057. Telephone (801) 224-6400 □

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MANUFACTURER AND MODEL	Alpha Microsystems 1042E	Alpha Microsystems AM-1072	Alpha Microsystems AM-1082	Alpha Microsystems 1092
WORD LENGTH	16/32 bits	16/32 bits	16/32 bits	16/32 bits
MAIN MEMORY	512KB-3MB	512KB-4MB	512KB-4MB	512KB-4MB
DISK STORAGE CAPACITY	60MB-240MB	70MB-280MB	140MB-280MB	400MB-1600MB
NO. WORKSTATIONS SUPPORTED	26	Over 40	Over 40	Over 40
PRICE RANGE	$21,700-$25,400	$30,500-$34,166	$48,000-$60,600	$56,000-$68,600
TARGET MARKET	Small business	Small business	Small business	Small business
CENTRAL PROCESSOR				
CPU manufacturer and model	Motorola 68000	Motorola 68000	Motorola 68000	Motorola 68000
Hardware floating point	Yes	Yes	Yes	Third party
Battery backup	Std.	Std.	Std.	Std.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	500	500	500	500
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	150ns	150ns	150ns	150ns
Cycle/access time, nanoseconds	500	500	500	500
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	128K; 512K	128K, 512K	128K; 512K	128K; 512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	8	8	8
Data transfer rate	333KB/sec.	333KB/sec.	333KB/sec.	333KB/sec.
COMMUNICATIONS				
Max. number of lines	26	Over 40	Over 40	over 40
Synchronous	9.6K bps	9.6K bps	9.6K bps	9.6K bps
Asynchronous	19.2K bps	19.2K bps	19.2K bps	19.2K bps
Protocols supported	2780/3780	2780/3780	2780/3780	2780/3780
Type of LAN supported	None	None	None	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 60MB	Winchester: 70MB	Winchester: 140MB	Winchester: 400MB
Serial printers	Any RS-232	Any RS-232	Any RS-232	Any RS-232
Letter quality printers	40 cps	40cps	40cps	40cps
Line printers	300-600 lpm	300-600 lpm	300-600 lpm	300-600 lpm
Reel-to-reel tape drives	No	No	100 ips, 1600/3200 bpi	100 ips, 1600/3200 bpi
Streaming tape drives	30 ips; 8000 bpi	30 ips, 8000 bpi	30 ips	30 ips, 8000 bpi
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	VCR: 100MB	VCR: 100MB	VCR: 100MB	VCR: 100MB
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Alpha Basic, Alpha Pascal, IEEE Fortran, Cobol	Alpha Basic, Alpha Pascal, IEEE Fortran, Cobol	Alpha Basic, Alpha Pascal, IEEE Fortran, Cobol	Alpha Basic, Alpha Pascal, IEEE Fortran, Cobol
Operating system	AMOS/L	AMOS/L	AMOS/L	AMOS/L
Operating sys. implemented in firmware	No	No	No	No
Database management system	Third party	Third party	Third party	Third party
Principal industry application	Accounting, word processing	Accounting, word processing	Accounting, word processing	Accounting, word processing
Other packages	Wide variety of industry applications sold through dealers	Wide variety of industry applications sold through dealers	Wide variety of industry applications sold through dealers	Wide variety of industry applications sold through dealers
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, 60MB Winchester, VCR interface, 2 ports, 9-slot chassis—$21,700	CPU, 512KB memory, 70MB high-speed Winchester, VCR interface, 2 ports, 19-slot chassis—$30,500	CPU, 512KB memory, 140MB high-speed Winchester VCR interface, 2 ports, 19-slot chassis—$48,000	CPU, 512KB memory, 400MB high-speed Winchester, VCR interface, 2 ports, 19-slot chassis—$56,000
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Date of first delivery	1983	1983	1983	1983
Number installed to date	—	—	—	—
COMMENTS	Prices quoted are suggested retail	Prices quoted are suggested retail	Prices quoted are suggested retail	Prices quoted are suggested retail

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MANUFACTURER AND MODEL	Alpha Microsystems AM-1172	Alpha Microsystems AM-1192	Applied Systems Corp. ASC/68	August Systems Inc. Series 330 Tri-Gard System
WORD LENGTH	16/32 bits	16/32 bits	16/32 bits	16 bits
MAIN MEMORY	1MB-4MB	1MB-4MB	256K-2MB	256KB-1MB
DISK STORAGE CAPACITY	70MB-280MB	400MB-1600MB	30MB-500MB	Not Required (*)
NO. WORKSTATIONS SUPPORTED	16	16	16/32	Not Applicable
PRICE RANGE	$35,000-$67,000	$50,000-$150,000	$30,000-$75,000	$50,000 to $200,000
TARGET MARKET	Small business	Small business	Business/Communications/ Technical/CAD, Graphics	Industrial control & Safety shutdown
CENTRAL PROCESSOR				
CPU manufacturer and model	Motorola 68010	Motorola 68010	Motorola 68000 or 80286	Intel SBC 86/30
Hardware floating point	No	No	Double; Opt.	Double
Battery backup	Std.	Std.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	500	500	100	500
MAIN STORAGE				
Bytes fetched per cycle	2	2	2/4	2
Memory access	150ns	150ns	9MB	32 bits/microsec.
Cycle/access time, nanoseconds	500	500	100	200
Storage protection	Std.	Std.	Opt.	Opt., ECC
Increment size, bytes	128K, 512K	128K; 512K	128K	128K/256K/512K
Cache memory, bytes	None	None	2/4K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	8	8-256	Up to 7000 Digital I/O
Data transfer rate	333KB/sec.	333KB/sec.	1MB/sec	50K bytes/sec.
COMMUNICATIONS				
Max. number of lines	16	16	16/32	40
Synchronous	No	No	Opt.; 56K bps	Opt.
Asynchronous	19.2K bps	19.2K bps	Std.;19.2K bps	Opt.; 38.4K bps
Protocols supported	UUCP, CU	UUCP, CU	TTY, 3780, SNA, SDLC, 3270, MAP, Ethernet	SDLC, HDLC
Type of LAN supported	None	None	Ethernet	None
RJE terminals emulated	None	None	2780/3780	None
IBM 3270 emulation	No	No	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 70MB	Winchester: 400MB	Fixed: 10MB-140MB Remov.: 50MB-500MB	Fixed: 10MB, 20MB, 40MB
Serial printers	Any RS-232	Any RS-232	30-300 cps	150 cps
Letter quality printers	40cps	40cps	30-150 cps	None
Line printers	300-600 lpm	300-600 lpm	300-900 lpm	300 lpm
Reel-to-reel tape drives	100 ips, 1600/3200 bpi	100 ips, 1600/3200 bpi	800/1600 bpi	None
Streaming tape drives	30 ips, 8000 bpi	30 ips, 8000 bpi	Opt.	None
Cassette/cartridge tape drives	None	None	10MB-180MB	None
Other perpherals supported	VCR: 100MB	VCR: 100MB	Floppy disk:1MB, laser printer, OCR, Scanner	Diskette: 300KB
SOFTWARE				
Assembler	Assembler	Assembler	Macro	ASM86
Compilers	Cobol, SMC Basic, C	Cobol, SMC Basic, C	C, Cobol, Basic, Pascal, Fortran, APL	Fortran 77, PLM 86
Operating system	Unix System V	Unix System V	Multitasking, UNIX, MPM	Realtime, Process Ctrl.
Operating sys. implemented in firmware	No	No	Varies	Partially or fully
Database management system	Unify	Unify	UNIF/INGRS	None
Principal industry application	Business, scientific, education	Business, scientific, education	Network computing, business, CAD/CAM	Process, critical HVAC control, safety shutdown
Other packages	Wide variety of industry applications sold through dealers	Wide variety of industry applications sold through dealers	Office automation, accounting, industrial, engineering/graphics	Modbus protocol, Data Base Builder, Ladder Logic Builder
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory, 70MB Winchester, 20MB streaming tape, 2 serial ports—$33,530	CPU, 1MB memory, 400MB Winchester, 20MB streaming tape, 2 serial ports—$49,157	CPU, 1MB Memory, 80M disk drive, 1MB floppy drive, printer/ terminals/keyboard, color CRT, communication I/O—$35,000	Triple CPUs, I/O nest, 16 DI, 1600 B&W program station, Tri-Gard soft-ware—$50,000
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	Contact vendor-opt.	Opt.
Date of first delivery	1984	1985	1983	November 1984
Number installed to date	—	—	—	25 Series 300G
COMMENTS	Prices quoted are suggested retail	Prices quoted are suggested retail	Multiprocessing, UNIX-based computer system with Color/Graphics and online networking options. Systems for standalone, multiuser or RJE workstations.	On-Line workstation not typically implemented. (*) Disk not required for on-line control operation (all-RAM, portions EPROM)

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MANUFACTURER AND MODEL	August Systems Inc. Series 330 TRI-DAC System	Auragen Systems Corporation 4000	Barrister Information Systems Corporation Model 150	Barrister Information Systems Corporation Model 160
WORD LENGTH	16 bits	16/32 bit	16 bits	16 bits
MAIN MEMORY	256KB-1MB	1MB-8MB	1MB-2MB	1MB-2MB
DISK STORAGE CAPACITY	Not Required (*)	160MB-2.4GB	13MB-320MB	148MB-2240MB
NO. WORKSTATIONS SUPPORTED	4 or more Colorgraphic	256	24	24
PRICE RANGE	$125,000-$600,000	$75,000-$1 million	$25,000-$75,000	$45,000-$175,000
TARGET MARKET	Industrial control & Critical Data Acquisition	Commercial Transaction Processing	Legal Industry	Legal Industry
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8086	Motorola 68010	Barrister 150	Barrister 160
Hardware floating point	Double	None	None	None
Battery backup	Opt.	Std.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	500	220	400	400
MAIN STORAGE				
Bytes fetched per cycle	2	4	2	2
Memory access	32 bits/microsec.	—	16	16
Cycle/access time, nanoseconds	200	—	400	400
Storage protection	Opt., ECC	Std.	Std.	Std.
Increment size, bytes	256K/512K	1 MB	1024K	1024K
Cache memory, bytes	None	64KB	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	4K Digital, 12K Analog	256	24	24
Data transfer rate	50K bytes/sec.	4MB/sec.	2.5M bytes/sec.	2.5MB/sec.
COMMUNICATIONS				
Max. number of lines	40	256	8	8
Synchronous	Opt.	Opt.	Opt.; 4K bps	Opt.; 4K bps
Asynchronous	Opt. 38.4K bps/channel	Std.; 19.2K bps	Opt.: 4K bps	Opt.: 4K bps
Protocols supported	SDLC, HDLC	HDLC, SNA, X.25, 3270, UUCP	Bisync, programmable	Bisync, programmable
Type of LAN supported	None	Ethernet, SNA	Barrister/Net	Barrister/Net
RJE terminals emulated	None	2780/3780	None	None
IBM 3270 emulation	No	Yes	Programmable	Programmable
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 10MB, 20MB, 40MB	Fixed: 160-880MB	Fixed/removable: 13MB-320MB	Removable: 148MB-2240MB
Serial printers	150 cps	30 cps	25-200 cps	25-200 cps
Letter quality printers	None	120 cps	25-40 cps, 12 ppm	25-40 cps, 12 ppm
Line printers	300 lpm	900 lpm	430-730lpm	430-730lpm
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	None	25 ips; 1600 bpi	None	None
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	Diskette: 330KB	None	Laser printer, optical character readers	Laser printer, optical character readers
SOFTWARE				
Assembler	ASM86	None	Assembler, Trial	Assembler, Trial
Compilers	Fortran 77, PLM 86	Cobol, Fortran, PL1, C, Pascal	C-Compiler	C-Compiler
Operating system	Realtime, Process Ctrl.	Unix	Barrister MBOS	Barrister MBOS
Operating sys. implemented in firmware	Partially or fully	Partially	Fully	Fully
Database management system	None	Oracle	BIMS	BIMS
Principal industry application	Process safety shutdown, crit. HVAC w/colorgraph.	Commercial transaction processing	Legal applications	Legal applications
Other packages	Modbus protocol, Ladder, database, & graphics builder	—	Word processing, legal, accounting, financial modeling, info. mgmt.	Word processing, legal, accounting, financial modeling, info. mgmt.
PRICING & AVAILABILITY				
Basic system configuration and price	Triple Cpus, I/O nest, 16 DI, 16 DO, B&W program station, color control console, Tri-Dac software—$125,000	3-68010, 1-2901, 2MB memory, 160MB disk, 1 cipher tape, 8 async lines, C, Unix, screen manager—75,000	CPU, 1024KB Memory, 13MB disk, workstation, modem, message printer, MBOS operating system, word processing—$33,000	CPU, 1024KB Memory, 2-74MB disk, workstation modem, message printer, MBOS operating system, word processing—$67,000
Mo. maintenance of basic configuration	Opt.	$750	$200-$670	$310-$1,240
Date of first delivery	October 1984	December 1983	August 1983	August 1983
Number installed to date	15 Series 300D	700	150	140
COMMENTS	Multiple units in star network configuration with multiple color graphic workstations (*) Disk not required for on-line control.	Auragen is a fault tolerant system.		

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MANUFACTURER AND MODEL	Barrister Information Systems Corporation Model 140	Barrister Information Systems Corporation Model 145	BTI Computer Systems BTI 6000	Burroughs Corp. B 90 Series
WORD LENGTH	16 bits	16 bits	16 bits	8 bits
MAIN MEMORY	1MB-2MB	2048KB	128K-1MB	128KB-1.5MB
DISK STORAGE CAPACITY	148MB-2240MB	148MB-2240MB	up to 400MB	18MB-231MB
NO. WORKSTATIONS SUPPORTED	32	32	32	2-12
PRICE RANGE	—	—	From $40,950	From $14,000
TARGET MARKET	Legal Industry	Legal Industry	Business	Business/Commercial
CENTRAL PROCESSOR				
CPU manufacturer and model	Data General Eclipse	Data Gen. Super Eclipse	Proprietary	Proprietary
Hardware floating point	None	None	No	No
Battery backup	Std.	Std.	Std.	No
Real-time clock or timer	Std.	Std.	Std.	Opt.
CPU cycle time, nanoseconds	400	150	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	—	—
Memory access	16	16	—	—
Cycle/access time, nanoseconds	400	225	—	250
Storage protection	Std.	Std.	None	Std.
Increment size, bytes	1024K	2048K	Not applicable	128K/256K/512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	32	5	6-11
Data transfer rate	2.5MB/sec.	2.2MB/sec.	—	—
COMMUNICATIONS				
Max. number of lines	8	8	32	2-5
Synchronous	Opt.; 4K bps	Opt.; 4K bps	No	Opt.; 19.2K bps
Asynchronous	Opt.: 4K bps	Opt.: 4K bps	9.6K bps	Opt.; 38.4K bps
Protocols supported	Bisync, programmable	Bisync, programmable	2780/3780	2780/3780, BDLC, SNA, X.25, 3270, RJE
Type of LAN supported	Barrister/Net	Barrister/Net	None	None
RJE terminals emulated	None	None	2780/3780	2780/3780
IBM 3270 emulation	Programmable	Programmable	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed/Removable: 13MB-320MB	Removable: 148MB-2240MB	Fixed: 2MB-54MB Pack: 80MB-252MB	Cartridge: 4.6MB, 9.2MB Fixed: 18MB-37MB
Serial printers	25-200 cps	25-200 cps	20-120cps	180-230 cps
Letter quality printers	25-40 cps, 12 ppm	25-40 cps, 12 ppm	None	None
Line printers	430-730lpm	430-730lpm	300 lpm	85-600 lpm
Reel-to-reel tape drives	None	None	45 ips	None
Streaming tape drives	None	None	None	25/100 ips
Cassette/cartridge tape drives	None	None	10MB	10 ips cassette
Other perpherals supported	Laser printer, optical character readers	Laser printer, optical character readers		Super mini disk: 6MB Winchester: 9.6, 14.4MB
SOFTWARE				
Assembler	Assembler, Trial	Assembler, Trial	No	—
Compilers	C-Compiler	C-Compiler	Basic	Cobol, RPG, MPL II, NDL
Operating system	Barrister MBOS	Barrister MBOS	Multitasking	Realtime, multitasking
Operating sys. implemented in firmware	Fully	Fully	Partially	Fully
Database management system	BIMS	BIMS		None
Principal industry application	Legal applications	Legal applications	Accounting	General business
Other packages	Word processing, legal, accounting, financial modeling, info. mgmt.	Word processing, legal, accounting, financial modeling, info. mgmt.		Mfg., hospital, educ., word management, Reporter, Domain
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1024KB Memory, 2-74MB disk, workstation modem, message printer, MBOS operating system, word processing—$106,000	CPU, 2048KB Memory, 2-74MB disk, workstation modem, message printer, MBOS operating system, word processing—$142,000	CPU, tape cartridge, 27MB disk—$40,950	B 96 with 512KB memory, 40MB fixed disk, tape streamer, and controls—$24,300
Mo. maintenance of basic configuration	$200-$1,200	$200-$1,500	$270 plus peripherals	—
Date of first delivery	—	—	1978	December 1979
Number installed to date			3500	—
COMMENTS				B 90 Series consists of 5 models: B 91, B 92, B 93, B 95 and B 96.

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MANUFACTURER AND MODEL	Burroughs Corp. B 900 Series	Burroughs Corp. B 1900 Series	Cado System Corp. TIGER ATS 32	Cado System Corp. TIGER ATS 64
WORD LENGTH	8 bits	16 bits	16 bits	16 bits
MAIN MEMORY	608KB-3.3MB	131KB-2MB	256KB-1.1MB	256KB-1.1MB
DISK STORAGE CAPACITY	37MB-1.7GB	65MB-8GB	15MB-144MB	30MB-568MB
NO. WORKSTATIONS SUPPORTED	4-36	4-60	32	64
PRICE RANGE	From $23,000	From $62,000	$24,000-$150,000	$31,400-$300,000
TARGET MARKET	Business/Commercial	Business/Commercial	Business/Professions	Business, Professions
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Intel 8086, 8089	Intel 8086, 8089
Hardware floating point	No	No	None	None
Battery backup	No	No	None	None
Real-time clock or timer	Std.	Opt.	Std.	Std.
CPU cycle time, nanoseconds	—	167/250	500	500
MAIN STORAGE				
Bytes fetched per cycle	—	—	2	2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	210	300-500	625	625
Storage protection	Std.	Std.	None	None
Increment size, bytes	128K	131K/262K/524K/1M	128K	128K
Cache memory, bytes	None	8K-16K	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	15	32	64
Data transfer rate	—	—	5M bits/sec.	7.7M bits/sec.
COMMUNICATIONS				
Max. number of lines	4-18	8-32	4	8
Synchronous	Opt.; 19.2K bps	Opt.; 19.2K bps	Std.; 19.2K bps	Std.; 19.2K bps
Asynchronous	Opt.; 38.4K bps	Opt.; 50K bps	Std.; 19.2K bps	Std.; 19.2K bps
Protocols supported	2780/3780, SNA, BDLC, SNA, X.25, 3270, BNA	2780/3780, X.25, BDLC, BNA, SNA, 3270	IBM 3741, 2770, 2780, 3780, BSC, TTY	IBM 3741, 2770, 2780, 3780, BSC, TTY
Type of LAN supported	None	None	None	None
RJE terminals emulated	2780/3780	2780/3780	IBM 3741,2770,2780,3780	IBM 3741,2770,2780,3780
IBM 3270 emulation	Yes	Yes	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 18MB-77MB Pack: 65MB, 130MB	Pack: 65MB, 130MB Fixed: 402MB-1608MB	Micro-Winchester: 15MB, 36MB	Winchester: 30MB, 60MB or 143MB
Serial printers	180-230 cps	None	100-400 cps	100-400 cps
Letter quality printers	None	None	20/35/55 cps	20/35/55 cps
Line printers	160-1250 lpm	270-2000 lpm	300/600 lpm	300-600 lpm
Reel-to-reel tape drives	None	50 ips; 1600 bpi	None	None
Streaming tape drives	25/100 ips	25/100 ips	90ips; 45MB	90 ips; 45MB
Cassette/cartridge tape drives	10 ips cassette	10 ips cassette	None	None
Other perpherals supported	Cartridge: 4.6-9.2MB, Mini disk, card readers	Card equipment	Diskette: 1.2MB; OCR reader	Diskette: 1.2MB, OCR reader
SOFTWARE				
Assembler	—	—	None	None
Compilers	Cobol, RPG, NDL, MPL II	Cobol, Fortran, Basic, RPG, NDL, Pascal	CADOL III (Basic)	CADOL III (Basic)
Operating system	Realtime, multitasking	Realtime, multitasking	Realtime, multitasking	Realtime; multitasking
Operating sys. implemented in firmware	Fully	Fully	Resides in ROM	Resides in ROM
Database management system	None	DMS II	Just Ask III	Just Ask III
Principal industry application	General business	Business	Business	Business
Other packages	Mfg., hospital, educ., word Mgmt, Reporter, Domain	Mfg., banking, educ., distribution	Word/data processing; message proc. accounting forecasting/modeling	Word/data processing; message proc. accounting forecasting/modeling
PRICING & AVAILABILITY				
Basic system configuration and price	B930 with 4 processors, two 256KB & two 64KB memory modules, data comm. I/O extender, tape streamer, 80MB fixed disk—35,400	B1990-SP with 512KB memory, 4 comm. interfaces, Maintenace Access Processor and ET1100 workstation—$59,300	256KB memory, 1 trans. processor, 1 intranet processor, 1 control biprocessor, 15MB disk, 7 keyboard/CRTs, 1 dual mode printer—$37,360	256KB memory, 1 trans. processor, 1 Intranet processor, 1 control biprocessor, 30MB disk 7 keyboard/CRTs, 1 dual-mode printer—$44,760
Mo. maintenance of basic configuration	—	—	1.2% of purchase price	1.2% of purchase price
Date of first delivery	August 1980	1980	October 1983	3/83
Number installed to date	—	—	—	500
COMMENTS	The B 900 Series consists of 2 models: B920, B930.	6 models: B 1905, B 1915 B 1955, B 1985, B 1990-SP, B 1990-DP.	Utilizes multiple, interactive processors in a tri-level architecture. Capacity can be added in 8-port increments by modular addition of microprocessor and memory cards in expansion slots.	Utilizes multiple, interactive processors in a tri-level architecture. Capacity can be added in 8-port increments by modular addition of microprocessor and memory cards in expansion slots.

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MANUFACTURER AND MODEL	Centurion Computer Corp. 6400/6500	Centurion Computer Corp. 7000	Centurion Computer Corp. 9000	Chrislin Industries Inc. CI-Micro-11
WORD LENGTH	8, 16 bits	8, 16 bits	16 bits	16 bits
MAIN MEMORY	128KB-512KB	512KB-16MB	512KB-16MB	256KB-4MB
DISK STORAGE CAPACITY	64MB-288MB	35MB-2GB	70MB-210MB	Up to 140MB
NO. WORKSTATIONS SUPPORTED	20/8	4-30	16	10
PRICE RANGE	$28,308-$32,475	—	—	$35,000-$40,000
TARGET MARKET		Business	Business	Technical, business
CENTRAL PROCESSOR				
CPU manufacturer and model	Centurion CPU6	Centurion CPU7	Z8003	DEC LSI 11/73
Hardware floating point	No	No	No	Double
Battery backup	None	None	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Opt.
CPU cycle time, nanoseconds	200	200	—	None
MAIN STORAGE				
Bytes fetched per cycle	1	1	2	4
Memory access	8	8	—	1.2MB
Cycle/access time, nanoseconds	800	500/220	500/250	400/240
Storage protection	Std.	None	None	Std.
Increment size, bytes	128K	512K	512K	256K
Cache memory, bytes	None	None	None	8K
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	32	16	4
Data transfer rate	19.2KB/sec.	38.4KB/sec.	38.4KB/sec.	512KB/sec.
COMMUNICATIONS				
Max. number of lines	1	8	1	32
Synchronous	No	No	No	Opt.
Asynchronous	Std.; 9.6K bps	Std.; 9.6K bps	Std.; 19.2K bps	Std.
Protocols supported	3780	IBM 2780/3780	IBM 2780/3780	Any DEC supported
Type of LAN supported	none	Centurion	Ethernetn	DECnet
RJE terminals emulated	3780	3780	3780	VT100
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	64MB-96MB	Fixed: 35MB-515MB, Cartridge: 80MB	Fixed: 70MB-210MB,	Fixed: 10-140MB
Serial printers	120 cps-150 cps	120 cps-150 cps	120 cps-150 cps	50-100 cps
Letter quality printers	45 cps	45 cps	45 cps	—
Line printers	None	300 lpm-600 lpm	300 lpm-600 lpm	—
Reel-to-reel tape drives	1600 bpi	None	None	—
Streaming tape drives	55 ips	55 ips/40MB	50 ips/67MB	—
Cassette/cartridge tape drives	40MB	40MB	67MB	—
Other perpherals supported		Diskette 320K-1MB	None	
SOFTWARE				
Assembler	Assembler	Centurion Assembler,	Z8003 Assembler, SMC	Macro
Compilers	Basic, CPL	Basic, CPL, Cobol	Basic, Cobol	Fortran, Basic, Pascal, Cobol
Operating system	Realtime, Batch	Realtime, Batch	Realtime, Batch	Multitasking
Operating sys. implemented in firmware	Partially	Partially	Partially	Fully
Database management system	None	None	—	Various
Principal industry application	Financial	Financial		Manufacturing
Other packages	Service industry, accounting	Service industry, accounting, reporting & control		Accounting
PRICING & AVAILABILITY				
Basic system configuration and price	6400: CPU, 96MB disk, video, 150 cps printer—$32,475 6500: CPU, 64MB disk, video, 150 cps printer—$28,475	—	—	CPU, 4MB memory, terminal, 140MB Winchester, 2MB floppy and RSX11-M software—$36,995
Mo. maintenance of basic configuration	$440/$400			Contact vendor
Date of first delivery	October 1979			Jan. 83
Number installed to date	130/40			—
COMMENTS	6400—cabinet model 6500—desk model	Bit-slice Mini implemented in IEE-796 (multibus)		

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MANUFACTURER AND MODEL	Chromatics, Inc. CX1400	Chromatics, Inc. CX1500	Computer Automation, Inc. SyFA 150	Computer Automation, Inc. SyFA 170
WORD LENGTH	16/32 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-9MB	512KB-8MB	128KB	128KB-256KB
DISK STORAGE CAPACITY	10MB-81MB	320KB	36-108MB	36-108MB
NO. WORKSTATIONS SUPPORTED	1	—	8	16
PRICE RANGE	$20,000-$40,000	$47,995 up	$17,250-$49,800	$21,250-#73,500
TARGET MARKET	Color Graphics	Manufacturing/engineering	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Motorola 68000	Custom	LSI-2/60	LSI-2/60
Hardware floating point	No	32-bit IEEE 10Mflop.	No	None
Battery backup	Opt.	—	None	None
Real-time clock or timer	Opt.	—	Std.	Std.
CPU cycle time, nanoseconds	—	—	150	150/100
MAIN STORAGE				
Bytes fetched per cycle	—	—	1 or 2	1 or 2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	—	—	750	550
Storage protection	Std.	—	Std.	Std.
Increment size, bytes	128K/512K	512K	None	128KB
Cache memory, bytes	None	—	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	Up to 16	5 serial, 1 DMA, 1 par.	15	24
Data transfer rate	500K words/sec.	DMA at 2MB/sec.	—	—
COMMUNICATIONS				
Max. number of lines	18	—	8	16
Synchronous	No	None	Opt.	Opt.; 9.6K bps
Asynchronous	Std., 19.2K bps	Std., 19.2K bps	9.6K bps	Opt.; 9.6K bps
Protocols supported	RS-232, RS-449 std., DR11W opt.	DR11W, RS-232, Centronics	BSC	BSC, SNA, X.25
Type of LAN supported	None	None	None	SyFAnet
RJE terminals emulated	None	None	2780/3780, HASP	2780/3780, HASP
IBM 3270 emulation	No	No	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	2 Fixed—10, 40, or 80MB	Floppy 230 KB	36MB Winchester	36MB Winchester
Serial printers	Interface supported	Interface supported	200 cps	200 cps
Letter quality printers	Interface supported	Interface supported	30 cps	30 cps
Line printers	Interface supported	Interface supported	300-1000 lpm	300-1000 lpm
Reel-to-reel tape drives	800/1600 bpi	Interface supported	None	None
Streaming tape drives	No	No	None	—
Cassette/cartridge tape drives	No	No	10MB	10MB
Other perpherals supported	500KB diskette, RBG out	RS170, RS343 slow scan for cameras, hardcopy		
SOFTWARE				
Assembler	—	—	None	None
Compilers	—	—	SyBOL	SyBOL
Operating system	Graph. Prim. TermEm	User-defin. GKS engine	Realtime/batch/multitask	Realtime/batch/multitask
Operating sys. implemented in firmware	Fully	On floppy for boot	Ram memory resident	Partially
Database management system	None	None	—	—
Principal industry application	CAD/CAM/CAE, VLSI, Business Graphics	CAD/CAM/CAE, VLSI, mapping, animation,	Mfg., transaction proc., distribution, insurance	Mfg., transaction proc., distribution, insurance
Other packages				
PRICING & AVAILABILITY				
Basic system configuration and price	Contact vendor	Contact vendor	CPU, operating system, utilities, 128KB memory, controller, 8-port multiplexer, disk/tape controller, cabinet, terminal, disk/tape subsystem—$17,250	CPU, operating system, utilities, 128KB memory, controller, 8-port multiplexer, disk/tape controller, cabinet, terminal, disk/tape subsystem—$21,250
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	$190	$190
Date of first delivery	September 1984	June 1984	1984	1984
Number installed to date	Not supplied	Not supplied	—	—
COMMENTS			Upgrades to a 170 Transaction Processor	Upgrades to a 170 Resource Processor on SyFAnet

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MANUFACTURER AND MODEL	Computer Automation Inc. SyFA 300	Computer Automation, Inc. SyFA 1000	Computer Consoles Inc. Power 5-20	Computer Consoles Inc. Power 5-30
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-304KB	128KB-384KB	2MB-4MB	2MB-4MB
DISK STORAGE CAPACITY	32-96MB	1.2 billion	70MB-210MB	70MB-210MB
NO. WORKSTATIONS SUPPORTED	16	24	16	30
PRICE RANGE	$31,000-$87,000	$36,400-$202,000	$35,000-$150,000	$50,000-$200,000
TARGET MARKET	Business	Business	Integrated Office Automation	Integrated Office Automation
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	qotorola 68000	qotorola 68012
Hardware floating point	No	No	Single	Single
Battery backup	None	None	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Opt.	Opt.
CPU cycle time, nanoseconds	150/100	150/100	125	80
MAIN STORAGE				
Bytes fetched per cycle	1 or 2	1 or 2	4	4
Memory access	—	—	—	—
Cycle/access time, nanoseconds	550	550	150	150
Storage protection	Std.	Std.	None	None
Increment size, bytes	128K	128K	1MB	1MB
Cache memory, bytes	None	None	4K	16K
INPUT/OUTPUT CONTROL				
No. of I/O channels	21	44	3	3
Data transfer rate	—	—	—	—
COMMUNICATIONS				
Max. number of lines	9	34	20	40
Synchronous	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.: 56K bps	Opt.: 56K bps
Asynchronous	9.6K bps	Opt.; 9.6K bps	Std.: 9.6K bps	Std.: 9.6K bps
Protocols supported	BSC, SNA, X.25	2780/3780, HASP, SNA, X.25, BSC	2780/3780, SDLC	2780/3780, SDLC
Type of LAN supported	SyFAnet	SyFAnet	Ethernet, SNA	Ethernet, SNA
RJE terminals emulated	2780/3780/HASP	2780/3780, HASP	None	None
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 32-96MB	Fixed: 32-300MB	70 MB	70 MB
Serial printers	200 cps	200 cps	—	—
Letter quality printers	30 cps	30 cps	35-55 cps	35-55 cps
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	300-1000 lpm
Reel-to-reel tape drives	None	None	125 ips; 9600 bpi	125 ips; 9600 bpi
Streaming tape drives	None	None	—	—
Cassette/cartridge tape drives	None	None	90 ips; 3200 bpi, 20MB	90 ips; 3200 bpi, 20MB
Other perpherals supported			None	None
SOFTWARE				
Assembler	None	No	Assembler	Assembler
Compilers	SyBol	SyBOL	C, Basic, Fortran, Cobol	C, Basic, Fortran, Cobol
Operating system	Realtime/batch/multitask	Realtime/batch/multitask	Realtime, multitasking	Realtime, multitasking
Operating sys. implemented in firmware	RAM memory resident	Partially	No	No
Database management system	—	—	Ingres, Unify	Ingres, Unify
Principal industry application	Bisomess. transaction processing	Manufacturing, insurance distribution, trans-action processing	Office, financial	Office, financial
Other packages			Legal	Legal
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, operating system, utilities, 128KB memory, controller, async multiplexer, disk controller, cabinet, 32MB cartridge drive, terminal—$31,200	CPU, operating system, utilities, 128KB memory, controller, asyn multi-plexer, disk controller, cabinet, terminal, 32MB cartridge drive—$36,400	CPU, 2.5MB memory, 70MB disk, 45MB tape, 8 ports, office auto-mation software —$39,400	CPU, 2.5MB memory, 70MB disk, 45MB tape, 8 ports, office auto-mation software —$58,950
Mo. maintenance of basic configuration	$285	$350	$304	$454
Date of first delivery	May 1980	July 1975	January 1983	December 1984
Number installed to date	—	—	500+	10
COMMENTS	High-level host inter-face, Telenet, Uninet, Tymnet certified. Up-grades to a 1000 Trans-action Processor or a 300 Resource Processor on SyFAnet	High-level host inter-face, Telenet, Uninet, Tymnet certified. Up-grades to a 1000 Resource Processor on SyFanet.		

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MANUFACTURER AND MODEL	Computer Designed Systems Adviser 100	Computer Designed Systems Adviser 600	Computer Designed Systems Adviser 900	Computer Extension Systems, Inc. OMNIPAC
WORD LENGTH	16 bits	16 bits	16 bits	12 bits
MAIN MEMORY	64KB-512KB	64KB-1MB	512KB-6MB	8KB-1MB
DISK STORAGE CAPACITY	23MB-288MB	23MB-800MB	800MB-4.2GB	10MB-240MB
NO. WORKSTATIONS SUPPORTED	8	24	64	16
PRICE RANGE	$20,000-$100,000	$50,000-$250,000	$100,000-$500,000	$15,000-$28,000
TARGET MARKET	Business/Manufacturing/ Distribution	Business, Manufacturing, Distribution	Business, Manufacturing, Distribution	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	single	Double	Double	None
Battery backup	Opt.	Opt.	Opt.	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	200	100	100	980
MAIN STORAGE				
Bytes fetched per cycle	4	6	6	2
Memory access	64 bits/sec.	64	64	15
Cycle/access time, nanoseconds	100	100	100	980
Storage protection	Opt.	Opt.	Opt.	None
Increment size, bytes	32K	64K	64K	8K
Cache memory, bytes	None	2K	4K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	16	32	32
Data transfer rate	256K bytes/sec.	512KB/sec.	512K bytes/sec.	1M word/sec.
COMMUNICATIONS				
Max. number of lines	12	24	64	32
Synchronous	Opt.	Opt.	Opt.	Opt.
Asynchronous	Std.	Std.	Std.	Opt.
Protocols supported	All IBM	All IBM	All IBM	—
Type of LAN supported	None			DECnet
RJE terminals emulated	None	2780/3780	3780	—
IBM 3270 emulation	No	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Pack: 32-96MB	Pack: 32-96MB Fixed: 80-300MB	Fixed: 80-600MB	Winchester: 120MB
Serial printers	20-350 cps	20-350 cps	20-350cps	120 cps
Letter quality printers	20-250 cps	20-250 cps	20-250cps	40 cps
Line printers	300/600/1200 lpm	300/600/1200 lpm	300/600/1200 lpm	300 lpm
Reel-to-reel tape drives	800/1600 bpi	800/1600 bpi	800/1600 bpi	None
Streaming tape drives	Opt.	None	None	None
Cassette/cartridge tape drives	Opt.	None	None	None
Other perpherals supported				Floppy disk
SOFTWARE				
Assembler	No	Yes	Yes	PAL
Compilers	Abol	Abol, Cobol, Basic, Fortran, Pascal, RPG	Abol, Cobol, Basic, Fortran, Pascal, RPG	Dibol, Pascal, Basic, WPS8, Fortran IV
Operating system	Realtime,multitask,batch	Realtime,multitask,batch	Realtime,multitask,batch	Multiprocessing
Operating sys. implemented in firmware	Partially	Partially	Partially	No
Database management system	Advisor +	Advisor +	Advisor +	None
Principal industry application	Manufacturing, distribution	Manufacturing, fixed assets, distribution	Manufacturing, distribution	Office automation
Other packages	Medical, construction, fixed assets	Medical, construction,	Medical, construction, fixed assets	
PRICING & AVAILABILITY				
Basic system configuration and price	64K memory, 1 CRT, 23MB disk, 300 lpm printer— $30,000	CPU, 128K memory, 2 CRTs 80MB disk, 300 lpm printer—$80,000	CPU, 128KB memory, 2CRTs 80MB disk, 300 lpm printer—$150,000	CPU, 40MB disk, 128K word memory—$15,000
Mo. maintenance of basic configuration	$300.00	$750.00	$1,025.00	Contact vendor
Date of first delivery	1975	1977	1977	1980
Number installed to date	—	—	—	200
COMMENTS				Supports all DEC compatible peripherals.

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MANUFACTURER AND MODEL	Datapoint Corp. 8400	Datapoint Corp. 8600	Datapoint Corp. 8800	Digital Equipment Corp. PDP-11/73
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-1MB	128KB-1MB	256KB-1024KB	256KB-4MB
DISK STORAGE CAPACITY	130MB	180MB	202-1012MB	62MB
NO. WORKSTATIONS SUPPORTED	8	24	24	14
PRICE RANGE	$7,500-$15,000	$7,500-$15,000	$60,000	$15,140-$19,040
TARGET MARKET	Business/Office Automation	Business/Office Automation	Business/Office Automation	Business/technical
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 80286	Proprietary	Proprietary	Proprietary
Hardware floating point	—	—	None	Std.
Battery backup	—	—	None	None
Real-time clock or timer	—	—	Std.	Std.
CPU cycle time, nanoseconds	—	—	—	276
MAIN STORAGE				
Bytes fetched per cycle	—	—	4	2
Memory access	—	—	—	2
Cycle/access time, nanoseconds	—	—	—	Less than a microsecond
Storage protection	—	—	—	—
Increment size, bytes	—	—	128K	256KB/512KB
Cache memory, bytes	—	—	None	8K
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	—	8	13 with single box conf.
Data transfer rate	—	—	1.2M bytes/sec.	Up to 3MB/sec.
COMMUNICATIONS				
Max. number of lines	—	2	3	4 or 8
Synchronous	—	—	Opt. 40.8K bps	Opt. 3.8K bps
Asynchronous	—	—		50 to 3.8K bps
Protocols supported	2780/3780, 3270, Datapoll, DSSLAVE, Multilink	2780/3780, 3270, Datapoll, DSSLAVE, Multilink	2780/3780 HASP Datapoll, 3278	DDCMP, DNA, 2780/3780, 3270, HASP, SNA, X.25
Type of LAN supported	Datapoint ARC Network	Datapoint ARC Network	ARC*	DECnet, Ethernet
RJE terminals emulated	—	2780/3780, Hasp	2780/3780	2780/3780
IBM 3270 emulation	No	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 40MB Cartridge: 10MB-20MB	Fixed: 10-60MB Removable: 10-20MB	Fixed: 135-270MB Removable: 67MB	Winchester: 11MB-31MB, Cartridge 400KB
Serial printers	120-300 cps	120-300 cps	35-160 cps	30-240 cps
Letter quality printers	35-80 cps	35-80 cps	35 cps	30 cps
Line printers	300-600 lpm	300-1000 lpm	300-600 lpm	300-1200 lpm
Reel-to-reel tape drives	None	25 ips	25 ips	None
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	10MB-20MB	10MB-20MB	20MB	60MB
Other perpherals supported	—	Diskettes DS-DD 8MB	Laser printer, color bus. graphics	
SOFTWARE				
Assembler	—	—	SNAP3 Macro	Assembler and Macro
Compilers	Databus	Basic, RPB, Cobol, Databus	Basic PLS, Fortran, Databus, Datashare, Cobol, RPG Plus, Chain	Cobol, Fortran, Basic, Coral, Dibol, Pascal
Operating system	Multitasking	Multitasking	Multitasking	Batch, realtime
Operating sys. implemented in firmware	—	—	—	No
Database management system	None	None	None	None
Principal industry application	Office automation	Office automation	Office automation	
Other packages	Full line of application packages	Full line of application packages		Graphics, Datatrieve, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512K memory, 10MB cartridge disk, 40MB fixed disk, Arc network interface —$20,000	CPU, 256K memory, 10MB cartridge disk, 40MB fixed disk, Arc network interface —$20,000	CPU, 256K memory, 202MB disk, console, 8 port serial interface, 2 peripheral processors —$60,000	CPU, 512KB memory, 8-line multiplexer, 31MB Winchester disk, dual diskette—$15,400
Mo. maintenance of basic configuration	$207	$225	$530	$120
Date of first delivery	August 1983	September 1981	1981	July 1984
Number installed to date	—	—	500	—
COMMENTS	supported with local area network	supported with local area network	*36,780 workstations supported with local area network	

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MANUFACTURER AND MODEL	Digital Equipment Corp. PDP-11/23	Digital Equipment Corp. PDP-11/23-Plus	Digital Equipment Corp. PDP-11/24	Digital Equipment Corp. PDP-11/44
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-4MB	256KB-4MB	1MB-4MB	1MB-4MB
DISK STORAGE CAPACITY	—	Not supplied	—	—
NO. WORKSTATIONS SUPPORTED	127	127	127	127
PRICE RANGE	—	From $10,000	From $26,000	From $44,000
TARGET MARKET	Commercial/technical	Business/technical	Business/technical	Business/technical
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Opt.	Opt.	Std.	Opt.
Battery backup	No	No	Opt.	Opt.
Real-time clock or timer	Opt.	Std.	Std.	Std.
CPU cycle time, nanoseconds	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	—	59/26	—	96/48
Storage protection	None	Std.	Std.	Std.
Increment size, bytes	128K	256KB, 512KB	1M	1M
Cache memory, bytes	None	None	None	8K
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	14	9	14
Data transfer rate	—	—	—	1M/second
COMMUNICATIONS				
Max. number of lines	—	2	—	—
Synchronous	Opt.; 1M bps	Opt.; 1M bps	Opt.; 1M bps	Opt.; 1M bps
Asynchronous	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 9.6K bps
Protocols supported	DDCMP, DNA	DDCMP, DNA, X.25	DDCMP, DNA	DDCMP, DNA
Type of LAN supported	DECnet	DECnet, Ethernet	DECnet, Ethernet	DECnet, Ethernet
RJE terminals emulated	None	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 11MB-31MB, Cartridge 5.2MB-41.6MB	Winchester: 10MB-31MB, Cartridge: 5.2MB-41MB	Winchester: 121KB-456KB Pack: 205MB, floppy	Winchester: 121MB-456MB Pack: 205MB
Serial printers	180 cps	30-240 cps	30-240 cps	30-240 cps
Letter quality printers	—	30 cps	—	—
Line printers	300-600 lpm	300-1200 lpm	300-1200 lpm	300-1200 lpm
Reel-to-reel tape drives	None	None	45 ips; 800/1600 bpi	45/125 ips; 800/1600 bpi
Streaming tape drives	None	None	25/100 ips; 40MB	25/100 ips; 40MB
Cassette/cartridge tape drives	562 cps cassette	562 cps cassette	30 ips; 800 bpi	30 ips; 800 bpi
Other perpherals supported			Card readers	
SOFTWARE				
Assembler	Assembler and Macro	Assembler and macro	Assembler and macro	Assembler and macro
Compilers	Basic, Fortran, Cobol, Corol	Cobol, Fortran, Basic, Coral, Pascal, Dibol	Cobol, Fortran, Basic, Corol, Dibol	Cobol, Basic, Fortran, Corol, Dibol, Pascal
Operating system	Batch, real-time	Batch, realtime	Realtime, multitasking	Batch, realtime
Operating sys. implemented in firmware	No	No	No	No
Database management system	None	None	None	None
Principal industry application				
Other packages	Graphics, Datatrieve, word processing	Graphics, Datatrieve, word processing	Graphics, Datatrieve, word processing	Graphics, Datatrieve word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, dual diskette—$7,300	PDP-11/23-Plus with 256KB memory, one dual diskette subsystem —$13,000	CPU with 1MB memory, four system units for expansion, I/O connector panel, cabinet and power controller—$12,500	CPU with 1MB memory, 3 system units for expansion, cabinet and power controller —$29,300
Mo. maintenance of basic configuration	$62	$132	$105	$175
Date of first delivery	July, 1979	1981	1981	June 1980
Number installed to date	Not supplied	—	Not supplied	Not supplied
COMMENTS		Utilizes DEC's RSX-11M, RSX-11M-Plus, RSX-11S, RSTS-E, CTS-500, RT11, and DSM11 operating systems.	Utilizes DEC's RT-11, RSX-11M, RSTS/E, CTS-300 DSM-11, and Unix-based operating systems	Optional CIS processor & 1MB memory increment available; enhanced main-table features & intelligent console subsystem.

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MANUFACTURER AND MODEL	Display Data Corp. in * sight	Four-Phase Systems, Inc. Model 260	Four-Phase Systems, Inc. Model 290	General Automation, Inc. ZEBRA 3000
WORD LENGTH	8 bits	16/32 bits	16/32 bits	16/32 bits
MAIN MEMORY	64KB-128KB	512KB-1MB	512KB-2MB	1MB-1.5MB
DISK STORAGE CAPACITY	13-192MB	369MB	369MB	64MB-256MB
NO. WORKSTATIONS SUPPORTED	16	8	12	16
PRICE RANGE	—	$9,000-$16,000	$12,000-$18,000	$28,900-$75,000
TARGET MARKET	Business	Distributed Office Processing	Distributed Office Processing	Small Business
CENTRAL PROCESSOR				
CPU manufacturer and model	DDC Series 8300	Motorola 68010	Motorola 68010	Motorola 68000
Hardware floating point	None	None	None	No
Battery backup	None	None	None	Std.
Real-time clock or timer	Std.	Std.	Std.	None
CPU cycle time, nanoseconds	200	8MHz	10MHz	—
MAIN STORAGE				
Bytes fetched per cycle	1	2	2	2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	1000	875	450	—
Storage protection	None	Std.	Std.	Std.
Increment size, bytes	64K	512K	512K	512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	4	128	128	—
Data transfer rate	1M words/sec.	1.6M bytes/sec.	1.6M bytes/sec.	—
COMMUNICATIONS				
Max. number of lines	8	2	2	18
Synchronous	Opt.; 4.8K bps	Std.; 9.6K bps	Std.; 9.6K bps	Opt. 9.6K bps
Asynchronous	Std.; 9.6K bps	Std.; 19.2K bps	Std.; 19.2K bps	Std., 19.2K bps
Protocols supported	X3.28, 2780/3780, TTY	SNA, BSC, Axync, 3270, 3280, 2780 TTY	SNA, BSC, Axync, 3270, 3280, 2780 TTY	2780/3780
Type of LAN supported	Omninet	Ethernet (Codex)	Ethernet (Codex)	Arcnet
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 32-64MB (up to 3 per system)	Winchester: 5MB, 15MB, 52MB	Winchester: 5/15/52MB	Fixed: 64MB
Serial printers	80-320 cps	100-200 cps	100-200 cps	200 cps
Letter quality printers	55 cps	35-55 cps	35-55 cps	—
Line printers	300 lpm	300/600 lpm	300/600 lpm	150-600 lpm
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	None	5MB minute	5MB minute	25 ips; 1600 bpi
Cassette/cartridge tape drives	20MB-64MB; 30-90 ips	None	None	90 ips; 20MB
Other perpherals supported				
SOFTWARE				
Assembler	Macro	68010	68010	—
Compilers	None	Cobol, Basic, Pascal, C	Cobol, Basic, Pascal, C	C, Basic, Cobol
Operating system	Realtime/multitasking	Unix Sys. V	Unix Sys. V	Xenix multitasking
Operating sys. implemented in firmware	—	—	—	Partially
Database management system	in * Sight Dev. Sys.	Unify	Unify	Informix
Principal industry application	—	Horizontal	Horizontal	General Business
Other packages		Word processing, spreadsheets, SQL, Query-by-Forms	Word processing, spreadsheets, SQL, Query-by-Forms	Office Automation, Word processing
PRICING & AVAILABILITY				
Basic system configuration and price	—	CPU, 512MB memory, 5MB removable Winchester disk, 15MB fixed Winchester disk, 6 serial ports—$9,665	CPU, 512MB memory, 5MB removable Winchester disk, 52MB fixed Winchester disk, 6 serial ports—$16,500	CPU, 1MB memory, 64MB disk, cartridge tape drive, 10 I/O ports, operating System, word processing UPS—$28,900
Mo. maintenance of basic configuration	—	$127	$194	Contact vendor
Date of first delivery	—	1983	1984	April, 1983
Number installed to date	—	1000+	100+	—
COMMENTS				

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MANUFACTURER AND MODEL	General Automation, Inc. ZEBRA 3500	General Automation, Inc. ZEBRA 5500	General Robotics Micro-main Frame	General Robotics Cobra 16
WORD LENGTH	16/32 bits	16/32 bits	16 bits	16 bits
MAIN MEMORY	256KB-1MB	1MB-1.5MB	64KB-4MB	512KB-2MB
DISK STORAGE CAPACITY	64MB-256MB	142MB-568MB	10MB-300MB	80MB-500MB
NO. WORKSTATIONS SUPPORTED	24	48	32	32
PRICE RANGE	$32,450-$60,000	$55,300-$100,000	$13,000-$20,000	$15,000K and up
TARGET MARKET	Small Business	Small Business	Technical/Business	Technical/Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Motorola 68000	Motorola 68000	LSI-11/23-11/73	DEC J11
Hardware floating point	No	No	Double	—
Battery backup	Std.	Std.	Opt.	—
Real-time clock or timer	None	None	Std.	—
CPU cycle time, nanoseconds	—	—	Std.	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	4	—
Memory access	—	—	64	—
Cycle/access time, nanoseconds	—	—	—	—
Storage protection	Std.	Std.	–	–
Increment size, bytes	768K	512K	64K	256KB
Cache memory, bytes	None	None	None	—
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	—	—	—
Data transfer rate	—	—	—	—
COMMUNICATIONS				
Max. number of lines	26	50	32	32
Synchronous	Opt. 9.6K bps	Opt. 9.6K bps	No	No
Asynchronous	Std., 19.2K bps	Std., 19.2K bps	Opt.; 19.2K bps	Std.; 19.2K bps
Protocols supported	2780/3780	2780/3780		—
Type of LAN supported	Arcnet	Arcnet	Ethernet, DECnet	Ethernet
RJE terminals emulated	None	None	2780/3780, Hasp	—
IBM 3270 emulation	No	No	No	—
PERIPHERAL EQUIPMENT				
Disks supported	Fixed 64MB	Fixed: 142MB	10MB-300MB Diskettes: 600KB-1MB	80MB-500MB
Serial printers	200 cps	200 cps	30-180 cps	30-180 cps
Letter quality printers	—	—	45 cps	45 cps
Line printers	150-600 lpm	150-600 lpm	300-1500 lpm	300-1500 lpm
Reel-to-reel tape drives	None	None	800/1600 bpi	800/1600 bpi
Streaming tape drives	25 ips; 1600 bpi	25 ips; 1600 bpi	1600 bpi	1600 bpi
Cassette/cartridge tape drives	90 ips; 20MB	90 ips; 20MB	20MB	20MB-100MB
Other perpherals supported				
SOFTWARE				
Assembler	—	—	Macro	Macro
Compilers	Pick Basic	Pick Basic	All DEC-compatible	All DEC-compatible
Operating system	Pick, multitasking	Pick multitasking	Realtime, batch	Realtime, Batch
Operating sys. implemented in firmware	Partially	Partially	Fully	—
Database management system	Access	Access	None	—
Principal industry application	General business	General business	Manufacturing, wholesale	—
Other packages	Word processing, graphics, spreadsheet	Word processing, graphics, spreadsheet	Office systems	—
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 64MB disk, cartridge tape drive, 10 I/O ports, operating System, UPS, Accu-Plot, Jet, and Compusheet—$32,450	CPU, 1MB memory, 142MB disk, streaming tape drive, 10 I/O ports, Operating System, UPS, Accu-Plot, Compu-Sheet, Jet—$55,300	CPU, 512KB memory, 20MB disk, ¼" streaming tape, 4 I/O ports— $13,000	—
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	—	—
Date of first delivery	April, 1983	April, 1983	January 1982	June 1984
Number installed to date	—	—	—	—
COMMENTS				Single board mainframe

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MANUFACTURER AND MODEL	General Robotics Python 32B	Hewlett-Packard HP9000 Model 220	Hewlett-Packard HP9000 Model 236	Hewlett-Packard Co. HP 1000 E/F Series
WORD LENGTH	16/32 bits	16/32 bits	16/32 bits	16 bits
MAIN MEMORY	1MB-4MB	512KB-16MB	512KB-16MB	256KB-2MB
DISK STORAGE CAPACITY	80-1GB	270KB-1.6GB	270KB-1.6GB	10MB-3.2GB
NO. WORKSTATIONS SUPPORTED	64	16	16	*
PRICE RANGE	$30,000 and up	$24,000-$100,000	$31,000-$100,000	$23,750-$32,750
TARGET MARKET	Technical/Business	Engineering, scientific	Engineering, scientific	Scientific/Technical
CENTRAL PROCESSOR				
CPU manufacturer and model	NS 32032	Motorola 68000	Motorola 68000	Proprietary
Hardware floating point	Std.	Opt.; double	Opt.; double	None/opt.
Battery backup	—	None	None	Opt.
Real-time clock or timer	Std.	Std.	Std.	None
CPU cycle time, nanoseconds	—	360	360	—
MAIN STORAGE				
Bytes fetched per cycle	—	2	2	2
Memory access	—	1.6M bits/sec.	1.6M bits/sec.	—
Cycle/access time, nanoseconds	—	625	625	665/420
Storage protection	–	None	None	Std.
Increment size, bytes	256KB	256KB	256KB	128K
Cache memory, bytes	—	16KB, set size 2	16KB, set size 2	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	4-32	4-32	9-14
Data transfer rate	—	2M bytes/sec.	2M bytes/sec.	900KB/sec.
COMMUNICATIONS				
Max. number of lines	64	21	21	—
Synchronous	None	None	None	Opt., 9.6K bps
Asynchronous	Std.; 19.2K bps	Opt.; 19.2K bps	Opt.; 19.2K bps	Opt., 19.2K bps
Protocols supported	—	UUCP	UUCP	2780/3780, X.25, HDLC
Type of LAN supported	Ethernet	None	None	None
RJE terminals emulated	—	—	—	2780/3780
IBM 3270 emulation	—	—	—	Yes
PERIPHERAL EQUIPMENT				
Disks supported	80MB-1GB	Fixed and removable: 270KB-404MB	Fixed and removable: 270KB-404MB	Fixed, 16MB-404MB Removable, 50MB-404MB
Serial printers	30-180 cps	180 cps	180 cps	30-108 cps
Letter quality printers	45 cps	None	None	40 cps
Line printers	300-1500 lpm	400/480 lpm	400/480 lpm	250-1000 lpm
Reel-to-reel tape drives	800/1600 bpi	45 ips; 1600 bpi	45 ips; 1600 bpi	800/1600 bpi
Streaming tape drives	1600 bpi	None	None	None
Cassette/cartridge tape drives	20MB-100MB	60 ips	60 ips	None
Other perpherals supported		Terminals, graphics dis. plotters, tablets	Terminals, graphics dis. plotters, tablets	Diskettes, plotters, graphics tablet
SOFTWARE				
Assembler	Macro	M 68000	M 68000	Macro/1000
Compilers	C, Pascal	C, Fortran-77, Pascal	C, Fortran-77, Pascal	Basic, Fortran, Pascal
Operating system	Genixime, batch	HP-UX multi -user,-prog.	HP-UX multi -user,-prog.	Realtime
Operating sys. implemented in firmware	—	No	No	—
Database management system	None	None	None	Image/1000
Principal industry application	—	Mechanical and engineering design	Mechanical and engineering design	Manufacturing, engineering, measurement
Other packages	—	Software engineering	Software engineering	Manufacturing, process control, graphics
PRICING & AVAILABILITY				
Basic system configuration and price	Contact vendor	Modular computer with keyboard & graphics display, 2MB memory, 65 MB disk/tape, 180 cps printer, 3 terminals, HP-UX operating system, ASMB, C, Fortran, Pascal languages—$49,156	Integrated workstation computer with graphics display, 1MB memory, 16 MB disk/tape, 160 cps printer, HP-UX operating system, Asmb, C, Fortran Pascal languages —$31,200	E-Series CPU, 256KB memory, operating system, 10 I/O ports— $23,750
Mo. maintenance of basic configuration	—	$198	$130	$155
Date of first delivery	March 1985	December 1983	December 1983	December 1981
Number installed to date	—	Not available	Not available	Not supplied
COMMENTS		Also available with single-user standalone Basic and Pascal language systems.	Also available with single-user standalone Basic and Pascal language systems.	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.

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MANUFACTURER AND MODEL	Hewlett-Packard Co. HP 1000 Micro 26	Hewlett-Packard Co. HP 1000 Micro 27	Hewlett-Packard Co. HP 1000 Micro 29	Hewlett-Packard Co. HP 1000 Model 26
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-8MB	512KB-8MB	768KB-6MB	512KB-8MB
DISK STORAGE CAPACITY	10MB-10GB	10MB-10GB	10MB-10GB	16MB-50GB
NO. WORKSTATIONS SUPPORTED	*	*	*	*
PRICE RANGE	$16,240-$32,000	From $14,000	From $24,600	From $16,000
TARGET MARKET	Scientific/Technical	Scientific/Technical	Scientific/Technical	Scientific/Technical
CENTRAL PROCESSOR				
CPU manufacturer and model	HP A600	HP A700	HP A900	HP A600+
Hardware floating point	None	Double	Double	No
Battery backup	Opt.	Opt.	Opt.	Opt.
Real-time clock or timer	None	—	—	—
CPU cycle time, nanoseconds	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	4	2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	454	500	181	454
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	128K	128K, 256K, 512K, 1M	768K/1.5MB/3MB	128K/256K/512K/1M
Cache memory, bytes	None	None	4K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	14	12	11	18
Data transfer rate	900KB/sec.	4.27MB/sec.	900K bytes/sec.	4.27MB/sec.
COMMUNICATIONS				
Max. number of lines	—	—	—	—
Synchronous	Opt., 57.2K bps	Opt., 57.6K bps	Opt., 57.2K bps	Opt., 57.2K bps
Asynchronous	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps
Protocols supported	2780/3780, X.25, HDLC	2780/3780, X.25, HDLC	2780/3780, X.25, HDLC	2780/3780, X.25, HDLC
Type of LAN supported	None	None	None	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed, 16MB-404MB Removable, 50MB-404MB	Fixed, 16MB-404MB Removable, 50MB-404MB	Fixed: 16MB-404MB Removable: 50MB-404MB	Fixed, 16MB-404MB Removable, 50MB-404MB
Serial printers	30-108 cps	30-108 cps	30-108 cps	30-108 cps
Letter quality printers	40 cps	40 cps	40 cps	40 cps
Line printers	250-1000 lpm	250-1000 lpm	250-1000 lpm	250-1000 lpm
Reel-to-reel tape drives	800/1600 bpi	800/1600 bpi	800/1600 bpi	800/1600 bpi
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet
SOFTWARE				
Assembler	MACRO/1000	MACRO/1000	MACRO/1000	MACRO/1000
Compilers	Basic, Fortran, Pascal	Basic, Fortran, Pascal	Basic, Fortran, Pascal	Basic, Fortran, Pascal
Operating system	Realtime	Realtime	Realtime	Realtime
Operating sys. implemented in firmware	—			
Database management system	Image/1000	Image/1000	Image/1000	Image/1000
Principal industry application	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement
Other packages	Mfg., process control, graphics	Mfg., process control, graphics	Mfg., process control, graphics	Mfg., process control, graphics
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, operating system, 10 I/O ports; $10,000	CPU, RTE-A operating system, 512KB memory, 512KB memory, 8 available I/O channels—$13,100	CPU, RTE-A operating system, 768KB ECC memory, 7 available I/O channels—$24,600	CPU, RTE-A operating system, 512KB memory, 16 available I/O channels—$16,240
Mo. maintenance of basic configuration	$61	$57	$85	$67
Date of first delivery	August 1983	August 1983	August 1983	March 1982
Number installed to date	Not supplied	Not supplied	Not supplied	Not supplied
COMMENTS	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.

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MANUFACTURER AND MODEL	Hewlett-Packard Co. HP 1000 Model 27	Hewlett-Packard Co. HP 1000 Model 29	Hewlett-Packard HP 3000 Series 37	Hewlett-Packard HP 3000 Series 42
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-8MB	768KB-24MB	512KB-2MB	1MB-3MB
DISK STORAGE CAPACITY	16.5MB-50GB	16.5MB-50GB	2.1GB	28MB-3.2GB
NO. WORKSTATIONS SUPPORTED	*	*	28	92
PRICE RANGE	From $24,000	From $34,000	From $19,950	From $42,400
TARGET MARKET	Scientific/Technical	Scientific/Technical	Business/Commercial	Business/Commercial
CENTRAL PROCESSOR				
CPU manufacturer and model	HP A700	HP A900	Proprietary	Proprietary
Hardware floating point	Double	Double	Single extended prec.	Double
Battery backup	Opt.	Opt.	Std.	Std.
Real-time clock or timer	—	—	Std.	Std.
CPU cycle time, nanoseconds	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	4	2	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	500	181	170	430
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	128K/256K/512K/1M	768K/1.5M/3M	512K	512K/1M
Cache memory, bytes	None	4K	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	16	15	3	2
Data transfer rate	4.27MB/sec.	4.27MB/sec.	1MB/sec.	1M byte/sec.
COMMUNICATIONS				
Max. number of lines	—	—	3	3 sync
Synchronous	Opt., 57.2K bps	Opt., 57.2K bps	Std.; 19.2K bps	Std.; 19.2K bps
Asynchronous	Opt., 19.2K bps	Opt., 19.2K bps	Opt.; 9.6K bps	Opt.; 9.6K bps
Protocols supported	2780/3780, X.25, HDLC	2780/3780, X.25, HDLC	HDLC/SDLC, X.25, async, bysync, sync	HDLC/SDLC, X.25, RS-232-C, RS-422
Type of LAN supported	None	None	LAN IEEE 802.3	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 16MB-404MB Removable: 50MB-404MB	Fixed: 16MB-404MB Removable: 50MB-404MB	2.1GB	Winchester: 28-132MB Disk pack: 50-404MB
Serial printers	30-108 cps	30-108 cps	40-200 cps	40-200 cps
Letter quality printers	40 cps	40 cps	25-40 cps	25-40 cps
Line printers	250-1000 lpm	250-1000 lpm	300-1000 lpm	300-1000 lpm
Reel-to-reel tape drives	800/1600 bpi	800/1600 bpi	45 ips-75 ips	45 ips-75 ips
Streaming tape drives	None	None	1600/6250 bpi	1600/6250 bpi
Cassette/cartridge tape drives	None	None	10,000 bpi; 67MB	10,000 bpi; 67MB
Other perpherals supported	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet	Diskettes; laser printers, plotters	Diskettes; laser printers, plotters
SOFTWARE				
Assembler	Macro/1000	Macro/1000	Not supplied	—
Compilers	Basic, Fortran, Pascal	Basic, Fortran, Pascal	Basic, Cobol, Pascal, Fortran, RPG, SPL	Basic, Cobol, Pascal, Fortran, RPG, SPL
Operating system	Realtime	Real-Time	Realtime, multiprogr.	Realtime, batch
Operating sys. implemented in firmware	—	Not supplied	—	—
Database management system	Image/1000	Image/1000	Image/3000	Image/3000
Principal industry application	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement	Manufacturing	Manufacturing
Other packages	Mfg., process control, graphics	Mfg., process control, graphics	Distribution, office automation, financial, sales	Distribution, mat's & prod. mgmt., graphics
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, RTE-A operating system, 512KB memory, hardware floating point processor, 13 available I/O channels— $24,000	CPU, RTE-A operating system, 768KB ECC memory, hardware floating point processor, 13 available I/O channels—$34,000	CPU, 512KB memory, 55MB disk, 67MB cartridge tape, console and racking cabinet—$19,950	CPU, 1MB memory, 2 general I/O channels, disk caching, operating system—$42,400
Mo. maintenance of basic configuration	$72	$90	$119	$259
Date of first delivery	March 1982	December 1982	October 1984	December 1983
Number installed to date	Not supplied	Not supplied	—	Not supplied
COMMENTS	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.	*Maximum dependent on the specific combination of communications interfaces and/or peripheral devices attached.		

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MANUFACTURER AND MODEL	Hewlett-Packard HP 3000 Series 48	Hewlett-Packard HP 3000 Series 68	Honeywell DPS 6/22	Honeywell DPS 6/40
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	1MB-4MB	3MB-8MB	512KB-1.8MB	512KB-2MB
DISK STORAGE CAPACITY	28MB-4.2GB	50MB-9.7GB	28MB-80MB	1GB
NO. WORKSTATIONS SUPPORTED	152	400	5	28
PRICE RANGE	From $79,500	From $186,000	From $12,995	From $27,000
TARGET MARKET	Business/Commercial	Business/Commercial		
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Double	Double	Single/double	Single/double
Battery backup	Std.	Std.	None	Opt.
Real-time clock or timer	Std.	Std.	No	Std.
CPU cycle time, nanoseconds	—	—	270	250
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	2
Memory access	—		—	425
Cycle/access time, nanoseconds	430	134	1080	500
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	1M	1M	256K/512K	256K
Cache memory, bytes	None	8K	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	5	15	10	3
Data transfer rate	1M byte/sec.	56M byteB/sec.	—	—
COMMUNICATIONS				
Max. number of lines	7 sync	24 sync	—	28
Synchronous	Std.; 19.2K bps	Std.; 19.2K bps	Opt.	Opt.
Asynchronous	Opt.; 9.6K bps	Opt.; 9.6K bps	Std.	Std.
Protocols supported	HDLC/SDLC, X.25, RS-232-C, RS-422	HDLC/SDLC, X.25, RS-232-C, RS-422	BSC, SDLC, HDLC, HASP 2780/3870, SNA, TTY, DSA	BSC, SDLC, HDLC, HASP
Type of LAN supported	None	None	None	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780, HASP	2780/3780, HASP
IBM 3270 emulation	No	No	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 28-132MB Disk pack: 50-404MB	Winchester: 28-132MB Disk pack: 50-404MB	Fixed: 20MB-28MB Removable: 20MB	Fixed: 67MB-256MB Cartridge: 40MB-80MB
Serial printers	40-200 cps	40-200 cps	100-400 cps	80-400 cps
Letter quality printers	25-40 cps	25-40 cps	35-55 cps	35 cps, 55 cps
Line printers	300-1000 lpm	300-1000 lpm	None	300-1200 lpm
Reel-to-reel tape drives	45 ips-75 ips	45 ips-75 ips	None	75/125 ips;1600/6250 bpi
Streaming tape drives	1600/6250 bpi	1600/6250 bpi	55 ips; 8000 bpi	None
Cassette/cartridge tape drives	10,000 bpi; 67MB	10,000 bpi; 67MB	Cartridge: 20MB-40MB	None
Other perpherals supported	Diskettes; laser printers, plotters	Diskettes; laser printers, plotters		Diskette: 650KB
SOFTWARE				
Assembler	—	—	Advanced Assembler	Macro
Compilers	Basic, Cobol, Pascal, Fortran, RPG, SPL	Basic, Cobol, Pascal, Fortran, RPG, SPL	Cobol, Basic, RPG2, Fortran, Pascal, C	Cobol, Basic, RPG, Fortran, Pascal
Operating system	Realtime, batch	Realtime, batch	GCOS, multitasking	Realtime
Operating sys. implemented in firmware	—	—	—	None
Database management system	Image/3000	Image/3000	DM6	DM6
Principal industry application	Manufacturing	Manufacturing	Office, data entry, manufacturing	Manufacturing, distribution, pharmacy
Other packages	Distribution, Mat's & Prod. Mgmt., Graphics	Distribution, mat's & prod. mgmt., graphics	Accounting, program development	Office automation, accounting
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 2MB memory, 2 general I/O channels, disk caching, operating system—$79,500	CPU, 3MB memory, 2 general I/O channels, 1 intermodule bus, disk caching, operating system—$186,100	CPU, 512K memory, 5 workstation ports, 650KB diskette, 1 expansion slot, 28MB fixed disk —$12,995	512KB memory, 40MB disk 650KB diskette, communications controller, 4 RS-422 ports, 2 megabus slots, console—$27,000
Mo. maintenance of basic configuration	$297	$765	Contact dealer	$162
Date of first delivery	December 1983	December 1983	December 1984	April 1983
Number installed to date	Not supplied	—	Not supplied	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Honeywell DPS 6/45	Honeywell DPS 6/75	Inforex, Inc. Gen IV	Integrated Digital Products Corp. Whetstone XS-100
WORD LENGTH	16 bits	16 bits	16/32 bits	16 bits
MAIN MEMORY	512KB-2MB	1MB-2MB	512KB-8MB	128KB-32MB
DISK STORAGE CAPACITY	1GB	1GM	10MB-1GB	NA
NO. WORKSTATIONS SUPPORTED	32	96	28	128
PRICE RANGE	From $45,500	$60,000 + up	$35,000-$100,000	—
TARGET MARKET			Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	proprietary	Motorola 68000	Descrete
Hardware floating point	Single/double	Double	None	None
Battery backup	Opt.	Opt.	Std.	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	250	220	70	100
MAIN STORAGE				
Bytes fetched per cycle	2	2	4	2
Memory access	425	425	20M Hz bits/sec.	160M bits/sec.
Cycle/access time, nanoseconds	500	500	390	100/70
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	256K	256K	512KB	128K
Cache memory, bytes	None	8K	4KB	—
INPUT/OUTPUT CONTROL				
No. of I/O channels	3	8	Up to 28 Ser.; 3 Par.	62
Data transfer rate	—	—	540KB/sec.	2.5MB/sec.
COMMUNICATIONS				
Max. number of lines	32	96	28	128
Synchronous	Opt.	Opt.; 19.2K bps	Opt.; 9.6K bps	Opt.; 50K
Asynchronous	Std.	Opt.; 19.2K bps	Opt.; 19.2K bps	Std.; 19.2K bps
Protocols supported	BSC, SDLC, HDLC, HASP	BSC, PUE, HDLC, SDLC	2780/3780, SNA, SDLC	—
Type of LAN supported	None	None	SNA	None
RJE terminals emulated	2780/3780, HASP	IBM 2780/3780	2780/3870	None
IBM 3270 emulation	Yes	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 67MB-256MB Cartridge: 40MB-80MB	Fixed: 67MB, 258MB Removable: 40MB, 80MB	Fixed: 10MB-1GB	Fixed: 80MB-474MB Cartridge: 80MB-160MB
Serial printers	80-400 cps	80-400 cps	35-160 cps	—
Letter quality printers	35 cps, 55 cps	35, 55 cps	55 cps	—
Line printers	300-1200 lpm	300-1200 lpm	300-1000 lpm	—
Reel-to-reel tape drives	75/125 ips,1600/6250 bpi	75/125 ips;1600/6250 bpi	45 ips	—
Streaming tape drives	None	None	25-100 ips; 1600 bpi	—
Cassette/cartridge tape drives	None	None	45MB; 90 ips	—
Other perpherals supported	Diskette: 650KB	Diskette: 650KB	Diskette: 1MB	—
SOFTWARE				
Assembler	Macro	Macro	None	Asgol
Compilers	Cobol, Basic, RPG, Fortran, Pascal	Cobol, Basic, RPG, Fortran, Pascal	Basic, RMCobol, Fortran	Basic, Cobol, Fortran, Pascal
Operating system	Realtime	Realtime	Multitasking	Multitasking
Operating sys. implemented in firmware	None	None	Partially	—
Database management system	DM6	DM6	Informix	—
Principal industry application	Manufacturing, distribution, pharmacy	Manufacturing, Distribution, Pharmacy	Data collection	Office automation
Other packages	Office automation, accounting	Office Automation, Accounting	Word processing, electronic spreadsheet	
PRICING & AVAILABILITY				
Basic system configuration and price	512KB memory, 80MB cart. disk, 650KB diskette communications controller, 4 workstation ports, printer port, console—$45,500	CPU, 1MB memory; 80MB disk, printer port; 4 workstation ports; 650KB diskette, console—$60,000	CPU, 1MB memory, 10MB disk, 4 workstations, 1 serial matrix printer, 1 diskette unit—$35,100	CPU, 2MB memory—$35,000
Mo. maintenance of basic configuration	$258	$458	$350	—
Date of first delivery	November 1983	November 1983	January 1984	July 1983
Number installed to date	Not supplied	Not supplied	200	450
COMMENTS				

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MANUFACTURER AND MODEL	IBM Series 1 Model 4954	IBM Series 1 Model 4956	IBM System/34	IBM System 36 Models Axx
WORD LENGTH	16 bits	16 bit	8 bits	8 bit
MAIN MEMORY	64K-256K	256K-2M	32KB to 256KB	128KB-256KB
DISK STORAGE CAPACITY	256MB per I/O attachment	256MB per I/O attachment	8.6MB to 257MB	30MB-800MB
NO. WORKSTATIONS SUPPORTED	8 per I/O attachment	8 per I/O attachment	16 local, 64 remote	100
PRICE RANGE	From $8,500	From $8,500	$14,770-$76,625	$21,000-$32,200
TARGET MARKET	Business	Business	Business	General Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Double	Double	Opt.	No
Battery backup	Opt.	Opt.	No	—
Real-time clock or timer	Opt.	Opt.	Std.	—
CPU cycle time, nanoseconds	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	—	1	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	1.4 ms	550	600	—
Storage protection	None	Std.	None	Std.
Increment size, bytes	64K	256K	32K, 128K	128K, 256K
Cache memory, bytes	None	64K	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	3-13	3-13	1	4
Data transfer rate	2.4M byte/sec.	2.4M byte/sec.	—	2.5M byte/sec.
COMMUNICATIONS				
Max. number of lines		—	4	4
Synchronous	Opt.; 56K bps	Opt.; 56K bps	Opt.; 9.6K bps	Std.; 56K bps
Asynchronous	Opt.; 19.2K bps	Opt.; 19.2K bps	Opt.	Opt.
Protocols supported	BSC, X.25, HDLC/SDLC, SNA	BSC, X.25, HDLC/SDLC, SNA	SDLC, BSC, SNA	X.25, SNA, BSC, SDLC
Type of LAN supported	None	None	SSP-ICF	None
RJE terminals emulated	2780/3780	2780/3780	HASP	
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 9.3-200MB	Fixed: 9.3-200MB	Fixed: 8.6MB-257MB Diskette: 246KB-1.2MB	Fixed: 30MB-400MB
Serial printers	40-160 cps	40-160 cps	140 cps	40-120 cps
Letter quality printers	None	None	40-60 cps	None
Line printers	140-560 lpm	140-560 lpm	44-650 lpm	95-650 lpm
Reel-to-reel tape drives	45/75 ips; 800/1600 bpi	45/75 ips; 800/1600 bpi	None	None
Streaming tape drives	50/100 ips; 80M	50/100 ips; 80M	None	12.5/100 ips; 1600 bpi
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	Diskette	Diskette		Diskette
SOFTWARE				
Assembler	Macro	Macro	Assembler	Assembler
Compilers	Cobol, Fortran IV, PL/1	Cobol, Fortran IV, PL/1	Basic, Fortran IV, Cobol, RPG II	Basic, Cobol, Fortran IV, RPG II
Operating system	Multitasking	Multitasking	Realtime, batch	Multitasking
Operating sys. implemented in firmware	No	No	Partially	—
Database management system	None	None	System/34 BRADS	None
Principal industry application			Accounting, retail	Manufacturing, Distribution
Other packages			Office automation	Office automation
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 3 I/O feature slots, diskette drive—$11,800	CPU, 256KB memory, 3 I/O slots, diskette drive—$16,855	CPU, 32KB memory, 246KB diskette, 8.6MB disk, 300 lpm printer—$24,395	Model A11, 128KB memory, diskette drive, 30MB disk—$21,000
Mo. maintenance of basic configuration	$65	$57	$199	$96
Date of first delivery	1982	1983	December 1977	1983
Number installed to date	Not supplied	—	—	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	IBM System 36 Models Bxx	IBM System 38 Model 4	IBM System 38 Model 6	IBM System 38 Model 8
WORD LENGTH	8 bit	32 bits	32 bits	32 bits
MAIN MEMORY	256KB-1MB	1M-2MB	2MB-4MB	2MB-8MB
DISK STORAGE CAPACITY	200MB-800MB	64MB-3306MB	64.5MB-3306MB	64.5MB-6225MB
NO. WORKSTATIONS SUPPORTED	100	128	128	128
PRICE RANGE	$41,000-$100,000	$61,000-$127,000	$82,840-$147,990	$60,000-$252,000
TARGET MARKET	General Business	Business/Commercial	Business/Commercial	Business/Commercial
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	No	—	—	—
Battery backup	—	—	—	—
Real-time clock or timer	—	—	—	—
CPU cycle time, nanoseconds	—	200	133	133
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	—	1100	400	400
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	256K	128K	1M	1M
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	4	1	1	1
Data transfer rate	2.5M byte/sec.	2.5M byte/sec.	2.5M byte/sec.	2.5M byte/sec.
COMMUNICATIONS				
Max. number of lines	4	8	8	8
Synchronous	Std.; 56K bps	Std.; 9.6K bps	Std.; 9.6K bps	Std.; 9.6K bps
Asynchronous	Opt.	Opt.; 1.2K bps	Opt.; 1.2K bps	Opt.; 1.2K bps
Protocols supported	X.25, SNA, BSC, SDLC	SDLC, SNA, BSC	SDLC, SNA, BSC	SDLC, SNA, BSC
Type of LAN supported	None	None	None	None
RJE terminals emulated		3770	3770	3770
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 30MB-400MB	Fixed: 64MB, 285MB	Fixed: 64MB, 285MB	Fixed: 64MB, 285MB
Serial printers	40-120 cps	40-120 cps	40-120 cps	40-120 cps
Letter quality printers	None	None	None	None
Line printers	95-650 lpm	200-1200 lpm	200-1200 lpm	200-1200 lpm
Reel-to-reel tape drives	None	12-50 ips, 800/1600 bpi	12-50 ips, 800/1600 bpi	12-50 ips, 800/1600 bpi
Streaming tape drives	12.5/100 ips; 1600 bpi	None	None	None
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	Diskette	Card equipment, diskette	Card equipment, diskette	Card equipment, diskette
SOFTWARE				
Assembler	Assembler	—	Not supplied	—
Compilers	Basic, Cobol, Fortran IV, RPG II	RPG, Cobol, Basic	RPG, Cobol, Basic	RPG, Cobol, Basic
Operating system	Multitasking	Multitasking, batch	Multitasking, batch	Multitasking, batch
Operating sys. implemented in firmware	—	—	—	—
Database management system	None	None	None	None
Principal industry application	Manufacturing, Distribution	General Business	General Business	General Business
Other packages	Office automation	Manufacturing, Distribution, Office/38	Manufacturing, Distribution, Office/38	Manufacturing, Distribution, Office/38
PRICING & AVAILABILITY				
Basic system configuration and price	Model B15, 256KB memory, diskette drive, 600MB disk—$79,000	CPU, 1M memory, 64.5MB disk, system console, diskette & one workstation controller—$49,140	CPU, 2MB memory, 129MB disk, system console, diskette & one workstation controller—$96,070	CPU, 2MB memory, 129MB disk, diskette, system console, & one workstation controller—$131,070
Mo. maintenance of basic configuration	$242	$474	$716	$656
Date of first delivery	July 1983	August 1980	—March 1984	July 1983
Number installed to date	Not supplied	Not supplied		
COMMENTS	The B15 & B25 include 600MB disk; the B16 & B26 include 800MB disk.		—	—

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MANUFACTURER AND MODEL	IBM 8100 Information System	MAI/Basic Four 1600	MAI/Basic Four 2000	McDonnell Douglas Computer Systems Co. M6320
WORD LENGTH	8 bits	8 bits	16/32 bits	16 bits
MAIN MEMORY	256KB-6MB	128KB-512KB	768K-1.5MB	512KB-1024KB
DISK STORAGE CAPACITY	29MB-1GB	22MB-120MB	22MB-240MB	40MB-120MB
NO. WORKSTATIONS SUPPORTED	80	16	14	24
PRICE RANGE	$19,000-$89,000	$16,420-$65,000	$14,420-$55,000	From $26,000
TARGET MARKET	Disributed Processing	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Motorola 68010	MDC Bit sliced
Hardware floating point	Double	No	No	None
Battery backup	—	Std.	Opt.	Std.
Real-time clock or timer	—	Std.	Std.	Std.
CPU cycle time, nanoseconds	—	200	128	80
MAIN STORAGE				
Bytes fetched per cycle	—	8	2	2
Memory access	—	8 bits/sec.	32M bits/sec.	50M bits/sec.
Cycle/access time, nanoseconds	800/1600	600	500	320
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	128K, 256K	32K	256K	256KB, 512KB
Cache memory, bytes	None	Opt.: 32K	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	—	5	32
Data transfer rate	—	20K bytes/sec.	4M bytes/sec.	780KB/sec.
COMMUNICATIONS				
Max. number of lines	6-11	16	14	48
Synchronous	Std.; 38.4K bps	Opt.; 9.6K bps	Opt.; to 4800 bps	No
Asynchronous	Opt.	Std.; 9.6K bps	Std.	Std.; 19.2K bps
Protocols supported	SDLC, BSC, SNA	2780/3780, 2770/3770, 3270, X.25	2780/3780, 2770/3770,	2780/3780,2770, 3741
Type of LAN supported	None	B4NET	B4NET, Omninet	None
RJE terminals emulated		2770/2780, 3770/3780	2770/2780, 3770/3780	2780/3780
IBM 3270 emulation	Yes	Yes	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 131MB Removable: 29, 65, 129MB	Fixed: 22MB/43MB/120MB	Fixed: 22MB/43MB, 120MB Floppy: .6MB	Fixed: 40MB
Serial printers	40-450 cps	120-160 cps	120-160 cps	120-400 cps
Letter quality printers	none	40 cps	40 cps	33 cps
Line printers	120-600 lpm	150/200/300 lpm	150-300 lpm	150-1200 lpm
Reel-to-reel tape drives	None	175 ips	None	None
Streaming tape drives	12.5/100 ips, 1600 bpi	100 ips	90 ips	100/50ips; 1600/3200 bpi
Cassette/cartridge tape drives	None	30 ips	None	90 ips
Other perpherals supported	Card readers, diskette			
SOFTWARE				
Assembler	Assembler	None	None	Macro
Compilers	Cobol, Fortran, APL, PL/1	Business Basic	Business Basic, Cobol, C	Basic, English, Natural, All
Operating system	—	Multitasking	Multitasking	Multitasking
Operating sys. implemented in firmware	—	Fully	Fully	Partially
Database management system	DTMS	Origin	Origin, Informix	Reality Database Mgmt.
Principal industry application	Distributed Processing	Various business	Various business	Gen. busines, manufacturing, dist., gov.
Other packages		Electronic mail, Word processing	Word processing, electronic mail, graphics	MRE office automation
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 64MB disk, 8 I/O hardware levels— $20,600	CPU, 128K memory, 22MB fixed disk, cartridge tape, 120 cps printer, terminal, Boss operating system —$16,420	CPU w/768K memory, 22MB fixed disk, 1 floppy disk, 120 cps printer, 1 terminal, Boss/IX operating system —$14,420	CPU, cabinet, 256KB memory, 40MB fixed disk, ¼" streaming tape drive, 1RS232+7RS422 ports —$26,000
Mo. maintenance of basic configuration	$170	$129	$113	Contact vendor
Date of first delivery	August 1979	July 1984	February 1985	January 1985
Number installed to date	—	Not supplied	Not supplied	—
COMMENTS			Systems 110, 210 available beginning at $16,250	

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MANUFACTURER AND MODEL	McDonnell Douglas Computer Systems Co. M6525	MDS Qantel Business Computers Systems 10 & 40	MDS Qantel Business Computers System 64	Modular Computer Systems Classic II/15
WORD LENGTH	16 bits	8 bits	8 bits	16 bits
MAIN MEMORY	512KB-1024KB	128K-1MB	1MB-4MB	512KB-2MB
DISK STORAGE CAPACITY	40MB-640MB	20-900MB	75-2.5GB	13MB-1.2GB
NO. WORKSTATIONS SUPPORTED	48	4-64	100	3216
PRICE RANGE	From $39,000	$13,950-$75,000	From $81,000	$16,000-$45,000
TARGET MARKET	Business	Business	Business	Scientific/technical/ factory/process contr.
CENTRAL PROCESSOR				
CPU manufacturer and model	MDC Bit sliced	2901 bit slice	2901 bit slice	Proprietary
Hardware floating point	None	None	No	Single/double
Battery backup	Std.	None	None	Opt.
Real-time clock or timer	Std.	Opt.	Opt.	Std.
CPU cycle time, nanoseconds	80	100/91	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	1	8	2
Memory access	50M bits/sec.	—	—	—
Cycle/access time, nanoseconds	320	1000/585	400	500
Storage protection	Std.	Std.	Std.	None
Increment size, bytes	512KB	32K/128K	512K	256K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	15	15	16
Data transfer rate	780KB/sec.	38.4K bytes/sec.	38.4K bytes/sec.	833K bytes/sec.
COMMUNICATIONS				
Max. number of lines	48	30	30	4
Synchronous	No	Opt. 38.4K bps	Opt. 38.4K bps	Opt. 9.6K bps
Asynchronous	Std.; 19.2K bps	Opt. 38.K bps	Opt. 38.K bps	Opt. 9.6K bps
Protocols supported	2780/3780,2770, 3741	2780, 3780, 3740, HASP, RJE	2780, 3780, 3740, HASP, RJE	X.25, 2780/3780
Type of LAN supported	None	Best Net	BEST NET	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 40MB, 260MB	Fixed: 23-430MB	Fixed: 75-430MB	Fixed: 132-267MB, Cart: 13.5MB, Winch: 20.2MB
Serial printers	120-400 cps	120 cps	120-300 lpm	64-440 lpm
Letter quality printers	33 cps	35 cps	35 cps	None
Line printers	150-1200 lpm	600-1000 lpm	600-1000 lpm	300-1000 lpm
Reel-to-reel tape drives	None	45 ips	45 ips	75ips; 800/1600 bpi
Streaming tape drives	100/50ips; 1600/3200 bpi	100 ips, 1600 bpi	100 ips; 1600 bpi	100/25 ips; 1600 bpi
Cassette/cartridge tape drives	90 ips	18MB cartridge	—	None
Other perpherals supported		1.3MB Diskette		Data capture terminal
SOFTWARE				
Assembler	Macro	None	None	Assembler, Macro
Compilers	Basic, English, Natural, All	QIC Basic, Cobol	QIC Basic, Cobol	Cobol, Fortran, Pascal, Coral 66
Operating system	Multitasking	Multitasking	Multitasking	Real-time
Operating sys. implemented in firmware	Partially	Partially	Partially	Partially
Database management system	Reality Database Mgmt.	None	None	Infinity
Principal industry application	Gen. busisnes, manu- facturing, dist., gov.	Manuf., retail, distri- bution, hotel, sports	Manuf., Retail, distri- bution, hotel, sports	Factory automation
Other packages	MRE office automation	Spread sheet, word processing	Spread sheet, word processing	None
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, cabinet, 512KB memory, 40MB fixed disk, ½" streaming tape drive, 1RS232+7RS422 ports —$39,000	System 10: CPU, 96K memory, 20MB disk, diskette, terminal, 150 cps printer, 2 workstations, controller operating system—13,950	CPU, 512K memory, 2 work station control- lers—$81,400	CPU, 512KB memory, 67MB disk, 300 lpm printer—$32,200
Mo. maintenance of basic configuration	Contact vendor	$251	$295	$316
Date of first delivery	December 1984	1981	August, 1983	January 1984
Number installed to date	—	3000	70	250
COMMENTS				

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MANUFACTURER AND MODEL	Modular Computer Systems Classic II/25	Modular Computer Systems Classic II/45	Modular Computer Systems Classic II/75	NCR Corporation Tower 1632
WORD LENGTH	16 bits	16 bits	16 bits	16/32 bits
MAIN MEMORY	512KB-1MB	512KB-2MB	1MB-4MB	512KB-2MB
DISK STORAGE CAPACITY	13MB-1.2GB	13MB-1.2GB	13MB-1.2GB	30MB-230MB
NO. WORKSTATIONS SUPPORTED	64	128	256+	16
PRICE RANGE	$24,000-$70,000	$42,000-$80,000	$49,000-$110,000	$16,000-$60,000
TARGET MARKET	Scientific/technical/ factory/process contr.	Scientific/technical/ factory/process contr.	Scientific/technical/ factory/process contr.	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Motorola M68000
Hardware floating point	Single/double	Single/double	Single/double	Double
Battery backup	Opt.	Opt.	Opt.	Std.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	—	—	—	Not supplied
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	Not supplied
Memory access	—	—	—	Not supplied
Cycle/access time, nanoseconds	250	145	145	Not supplied
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	256K	256K	256K	512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	16	64	64	7
Data transfer rate	1M byte/sec.	4M bytes/sec.	8M bytes/sec.	5MB/sec.
COMMUNICATIONS				
Max. number of lines	32	256	256	16
Synchronous	Std.	Std.	Opt.; 25K bps	Opt.
Asynchronous	Std.	Std.	Opt.; 19.2K bps	Std.
Protocols supported	X.25, 2780/3780	X.25, 2780/3780	X.25, 2780/3780	2780/3780, SDLC, SNA, Asynch, X.25
Type of LAN supported	None	None	None	Ethernet
RJE terminals emulated	2780/3780	2780/3780	2780/3780	3770, 2780/3780
IBM 3270 emulation	No	No	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 132-264MB, Cart. 13.5, Winchester 20.2MB	Fixed: 132-264MB, Cart: 13.5MB, Winch. 20.2MB	Fixed: 132-264MB, Cart: 13.5MB, Winch: 20.2MB	Fixed: 30MB or 84MB
Serial printers	64-440 lpm	64-440 lpm	64-440 lpm	35-125 cps
Letter quality printers	None	None	None	33 cps
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	360-720 lpm
Reel-to-reel tape drives	75ips; 800/1600 bpi	75ips; 800/1600 bpi	75ips; 800/1600 bpi	None
Streaming tape drives	100/25 ips; 1600 bpi	100/25 ips; 1600 bpi	100/25 ips; 1600 bpi	30 ips, 800 bpi
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	Data capture terminal	Data capture terminal	Data capture terminal	650KB diskettes
SOFTWARE				
Assembler	Assembler, Macro	Assembler, Macro	Assembler, Macro	68000
Compilers	Cobol, Fortran, Pascal, Coral 66	Cobol, Fortran, Pascal, Coral 66	Cobol, Fortran, Pascal, Coral 66	RM/COBOL, BASIC, FORTRAN, PASCAL, C
Operating system	Real-time	Realtime	Realtime	Multitasking
Operating sys. implemented in firmware	Partially	Partially	Partially	No
Database management system	Infinity	Infinity	Infinity	Ingres Relational DBMS
Principal industry application	Factory automation	Factory automation	Factory automation	Com'l., Med., Educ., Gov't., Fin., Retail
Other packages	None	None	None	Color Graphics, Elec. Spreadsheets, Word Processing, Office Auto.
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory, 67MB disk, 300 lpm printer —$48,445	CPU, 1MB memory, 67MB disk, 300 lpm line printer, CRT—$66,595	CPU, 1MB memory, 67MB disk, 300 lpm printer, CRT—$115,000	CPU, 512KB memory, 30MB disk, 1MB diskette, 8 I/O ports, 1 CRT, 125 lpm printer, Operating System, COBOL—$23,600
Mo. maintenance of basic configuration	$489	$690	$969	$92.00 (w/o peripherals)
Date of first delivery	May 1982	May 1982	May 1982	December, 1982
Number installed to date	500+	300+	300+	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	NEC Information Systems Astra 3000 Series	New England Digital Corporation Able Series	Nixdorf Computer Corporation 8850/35	Nixdorf Computer Corporation 8850/45
WORD LENGTH	16/32 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB to 8MB	64KB-1MB	128KB	128KB
DISK STORAGE CAPACITY	63MB-1000MB	40MB	Up to 66MB	Up to 132MB
NO. WORKSTATIONS SUPPORTED	32	1	9	16
PRICE RANGE	$10,000 up	$10,000-$60,000	—	—
TARGET MARKET	Commercial	Scientific/realtime	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	NEC proprietary	—	—	—
Hardware floating point	—	None	—	—
Battery backup	—	None	Std.	Std.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	200	250	1100	700
MAIN STORAGE				
Bytes fetched per cycle	4	2	2	2
Memory access	—	22.4M bits/sec.	—	—
Cycle/access time, nanoseconds	600	600	400	400
Storage protection	—	None	—	—
Increment size, bytes	512KB, 1MB	—	Not applicable	Not applicable
Cache memory, bytes	—	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	256	64	64
Data transfer rate	—	22.4M bit/sec.	—	—
COMMUNICATIONS				
Max. number of lines	16	56	2	2
Synchronous	Std.	56	Up to 19.2K bps	Up to 19.2K bps
Asynchronous	Std.	56	—	—
Protocols supported	IBM 3740, 3780, 3270, X.25	X.25	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780, 3270/3271, 3777-3, 3274, 3276
Type of LAN supported	Itos-net	None	—	—
RJE terminals emulated	IBM 3780	None	Hasp, SDLC, 2780/3780	Hasp, SDLC, 2780/3780
IBM 3270 emulation	Yes	No	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 63MB, 125MB	Winchester: 40MB floppy: 200KB	Fixed: 8MB, 32MB, 66MB	Fixed: 8MB, 32MB, 66MB, 132MB
Serial printers	100-200 cps	Yes	150 cps	150 cps
Letter quality printers	35-50 cps	Yes	40 cps	40 cps
Line printers	300-600 lpm	Yes	300/600/900 lpm	300/600/900 lpm
Reel-to-reel tape drives	45 ips	None	45 ips 9/800, 9/1600	45 ips 9/800, 9/1600
Streaming tape drives	—	None	—	—
Cassette/cartridge tape drives	90 ips, 20MB-40MB	Yes	—	—
Other perpherals supported	Diskettes: 1MB, workstations, monochrome			
SOFTWARE				
Assembler	Macro	No	Editor	Editor
Compilers	Basic, Cobol, C-Compiler	XPL (PL/1 subset)	—	—
Operating system	Multitasking	Realtime	Virtual multiuser batch	Virtual multiuser batch
Operating sys. implemented in firmware	Partially	No		
Database management system	None	None	Integrated in oper. sys.	Integrated in oper. sys.
Principal industry application	Phone call acct., dist. data proc., medical mg.	Scientific, laboratory control	Banking, service bureau, insurance	Banking, service bureau, insurance
Other packages	Office automation, acct control systems, dist. control systems	Signal proc., graphics	Accounts receivable, payroll, order entry, government	Accounts receivable, payroll, order entry, government
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB disk drive, 512KB memory, operating system, workstation $10,000	CPU only—$10,000 CPU plus peripherals —$40,000 Complete scientific system—$60,000	CPU, 9/1600 bpi auto load tape, 8MB disk, 150 cps printer, communications, one terminal—$36,850	CPU, 9/1600 bpi auto load tape, 32MB disk, 300 lpm printer, communications, eight terminals—$74,470
Mo. maintenance of basic configuration	$100	0	$393	$644
Date of first delivery	November 1984	1976	—	—
Number installed to date		400	—	—
COMMENTS			This system was formerly the 600 Series.	This system was formerly the 600 Series.

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MANUFACTURER AND MODEL	Nixdorf Computer Corporation 8850/55	Nixdorf Computer Corporation 8850/65	Nixdorf Computer Corporation Model 15	Nixdorf Computer Corporation Model 35
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB	128KB	256KB-512KB	256KB-1024KB
DISK STORAGE CAPACITY	Up to 528MB	Up to 528MB	16MB-65MB	26MB-52MB
NO. WORKSTATIONS SUPPORTED	32	32	8	12
PRICE RANGE	—	—	$20,000-35,000	$30,000-45,000
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	—	—	Nixdorf	Nixdorf
Hardware floating point	—	—	—	—
Battery backup	Std.	Std.	Std.	Std.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	450	375	300	150
MAIN STORAGE				
Bytes fetched per cycle	2	2	—	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	400	400	500	400/350
Storage protection	—	—	Std.	—
Increment size, bytes	Not applicable	Not applicable	256KB	256KB
Cache memory, bytes	None	2KB	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	64	64	8	12
Data transfer rate	—	—	9.6K bps	—
COMMUNICATIONS				
Max. number of lines	2	2	2	2
Synchronous	Up to 19.2K bps	Up to 19.2K bps	Opt.; 9.6K bps	Opt.; 9.6K bps
Asynchronous			Std.; 9.6K bps	Std.; 9.6K bps
Protocols supported	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780	2780/3780
Type of LAN supported	—	—	—	—
RJE terminals emulated	HASP, SDLC, 2780/3780	HASP, SDLC, 2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: up to 528MB	Fixed: up to 528MB	Fixed: 16MB-64MB	Cartridge: 26MB-52MB
Serial printers	150 cps	150 cps	100/150 cps	100/150 cps
Letter quality printers	40 cps	40 cps	45 cps	45 cps
Line printers	300/600/900 lpm	300/600/900 lpm	300/600 lpm	300/600 lpm
Reel-to-reel tape drives	45 ips 9/800, 9/1600	45 ips 9/800, 9/1600	None	800/1600 bpi
Streaming tape drives	—	—	None	None
Cassette/cartridge tape drives	—	—	None	None
Other peripherals supported			Diskette	
SOFTWARE				
Assembler	Editor	Editor		
Compilers	—	—	Basic, Interpreter	Basic, Interpreter
Operating system	Virtual/multiuser/batch	Virtual/multiuser/batch	Realtime, multitasking	Realtime, multitasking
Operating sys. implemented in firmware	—	—	No	No
Database management system	Integrated in oper. sys.	Integrated in oper. sys.	—	—
Principal industry application	Banking, service bureau, insurance	Banking, service bureau, insurance	Manufacturing, distribution, banking	Manufacturing, distribution, banking
Other packages	Accounts receivable, payroll, order entry	Accounts receivable, payroll, order entry	Financial management, mortgage banking	Financial management, mortgage banking
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 9/1600 bpi auto load tape, 66MB disk, 300 lpm printer, communications, 16 terminals—$105,000	CPU, 9/1600 bpi auto load tape, 132MB disk, 600 lpm printer, communications, 16 terminals—$117,000	CPU, 256KB memory, 16MB disk, VDT printer—$19,300	CPU, 256KB memory, 26MB disk, 100 cps printer, VDT—$31,600
Mo. maintenance of basic configuration	$644	$644	$199	$271
Date of first delivery	—	—	1984	1983
Number installed to date	—	—	—	—
COMMENTS	This system was formerly the 600 Series.	This system was formerly the 600 Series.		

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MANUFACTURER AND MODEL	Nixdorf Computer Corporation Model 55	Norsk Data N.A., Inc. ND 100	Norsk Data N.A., Inc. ND 100/CX	Northern Telecom Inc. 503
WORD LENGTH	16 bits	16 bits	16 bits	8 bits
MAIN MEMORY	256KB-1024KB	500KB-4MB	500KB-4MB	256KB
DISK STORAGE CAPACITY	42MB-264MB	23MB-2.1GB	23MB-2.1GB	1.6MB-10.8MB
NO. WORKSTATIONS SUPPORTED	24	128	128	1
PRICE RANGE	$45,000-100,000	$23,000-$64,200	$103,350	From $5,250
TARGET MARKET	Business	General purpose	General purpose	
CENTRAL PROCESSOR				
CPU manufacturer and model	Nixdorf	ND100	ND100/CX	Intel 8085
Hardware floating point	—	Double	Double	None
Battery backup	Std.	Std.	Std.	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	150	180	150	286
MAIN STORAGE				
Bytes fetched per cycle	—	2	2	—
Memory access	—	—	—	—
Cycle/access time, nanoseconds	400/350	180	180	—
Storage protection	—	Std.	Std.	None
Increment size, bytes	256KB	250KB, 500KB, 1MB, 2MB	250KB, 500KB, 1MB, 2MB	Not applicable
Cache memory, bytes	None	Opt.: 2KB	Opt.: 2KB	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	24	3	3	—
Data transfer rate	—	2.1MB/sec.	2.1MB/sec.	—
COMMUNICATIONS				
Max. number of lines	2	64	64	2
Synchronous	Opt.; 9.6K bps	Opt.	Opt.	Opt., 9.6K bps
Asynchronous	Std.; 9.6K bps	Std.: 9.6K bps	Std.: 9.6K bps	Opt., 9.6K bps
Protocols supported	2780/3780	2780/3780, SDLC, SDLC, Hasp, SIVA, BSC	2780/3780, SDLC, SDLC, Hasp, SIVA, BSC	2770/2780/3780, TC3500, SNA, SDLC
Type of LAN supported	—	Ethernet, HDLC	Ethernet, HDLC	None
RJE terminals emulated	2780/3780	2780/3780, Hasp	2780/3780, Hasp	2780/3780, HASP
IBM 3270 emulation	No	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Removable: 264MB	Fixed and removable: 70 MB, 140MB, 288MB, 450MB	Fixed and removable: 70 MB, 140MB, 288MB, 450MB	.8MB Floppys, 10MB Winchester
Serial printers	100/150 cps	80-300 cps	80-300 cps	120-180 cps
Letter quality printers	45 cps	38/55 cps	38/55 cps	40 cps
Line printers	300/600 lpm	600-1000 lpm	600-1000 lpm	300 lpm
Reel-to-reel tape drives	800/1600 bpi	125 ips; 1600/6250	125 ips; 1600/6250	None
Streaming tape drives	None	90 ips, start/stop	90 ips, start/stop	None
Cassette/cartridge tape drives	None	90 ips	90 ips	None
Other perpherals supported		Card reader	Card reader	None
SOFTWARE				
Assembler		Macro Assembler	Macro Assembler	Only in CP/M 3.0
Compilers	Basic, Interpreter	Cobol, Fortran, ADA, Pascal, APL, C, Simula	Cobol, Fortran, ADA, Pascal, APL, C, Simula	ACOBOL3/AL2000, CP/M 3.0
Operating system	Realtime, multitasking	Realtime, batch, timesh	Realtime, batch, timesh	Multitasking
Operating sys. implemented in firmware	No	Partially	Partially	No
Database management system	—	Sibas	Sibas	dBASE II using CP/M
Principal industry application	Manufacturing, distribution, banking	General purpose	General purpose	
Other packages	Financial management, mortgage banking	Office automation	Office automation	Word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 42MB disk, 100 cps printer, VDT—$45,200	ND-100 CPU, 3 terminal interfacess, 512KB memory, five ¼" 1.2MB floppy disk drives, 23MB fixed disk drive —$23,000	ND-100/CX CPU, 512KB memory, 1.2MB floppy disk drive, printer terminal, terminal interface, 20 position rack, disk controller —$103,350	256K RAM, 15" CRT, CP/M and 2 (.8MB) diskettes—$5,250
Mo. maintenance of basic configuration	$373	$215	$950	$173
Date of first delivery	1983		—	1981
Number installed to date	—		—	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Northern Telecom Inc. 565	Northern Telecom Inc. 585	Northern Telecom Inc. Meridian DV/1	Parallel Computers Inc. 300
WORD LENGTH	8 bits	8 bits	16/32 bits	16/32 bits
MAIN MEMORY	256KB-512KB	256KB-512KB	1MB-4MB*	1MB-4MB
DISK STORAGE CAPACITY	22MB	22MB-342MB	40MB-200MB	84MB-1GB
NO. WORKSTATIONS SUPPORTED	1-4	Up to 100	Up to 100	32
PRICE RANGE	$15,000-$50,000	From $19,950	$25,000-$150,000	$60,000-$100,000
TARGET MARKET	Office Automation	Office Automation	Large Business	General purpose
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8085	Intel 8085	M 68010 & Intel 8286	Motorola 68010
Hardware floating point	None	None	—	None
Battery backup	None	None	Opt.	Std.; full ups
Real-time clock or timer	Std.	Std.	—	Std.
CPU cycle time, nanoseconds	167	167	—	100
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	—	—	—	—
Storage protection	None	None	—	Std.; parity
Increment size, bytes	128K	128K	—	1MB
Cache memory, bytes	None	None	—	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	4	—	Variable	Unlimited
Data transfer rate	—	—	20M bytes/sec.	2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	6	6	Variable	40
Synchronous	Opt, 9.6K bps	Std., 9.6K bps	Opt., 300-9.6K bps	Opt.; up to 500K bps
Asynchronous	Opt., 9.6K bps	Std., 9.6K bps	Opt., 300-9.6K bps	Opt.; up to 19.2K bps
Protocols supported	2770/2780/3780, 3774, 3270, 3274, SDLC, HASP	2770/2780/3780, TC3500, SNA, SDLC	2780/3780/3270,3776, SNA, SDLC	X.25, SNA
Type of LAN supported	Omnilink	Omnilink	Proprietary	Ethernet
RJE terminals emulated	2780/3780, CDC, UT200	2780/3780, HASP	2780/3700, 3776	No
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 22MB Winchester	22MB Winchester, 74.5MB disk pack	Fixed: 40-80/200MB	Fujitsu 8": 84MB-168MB
Serial printers	120-cps	120-cps	45-220 cps	—
Letter quality printers	40 cps	40 cps	40 cps	—
Line printers	300/600/1000 lpm	300/600/1000 lpm	300/600/1000 lpm	—
Reel-to-reel tape drives	800/1600 bpi	800/1600 bpi	1600 bpi	31.5 ips; 1600/3200 bpi
Streaming tape drives	15MB	None	1600 bpi	—
Cassette/cartridge tape drives	1MB per minute	1MB per minute	48MB	1/4"; 90 ips
Other perpherals supported	None	300 cpm card reader	IBM PCs, ASCII terminals 2500 telephone sets	
SOFTWARE				
Assembler	Only in CP/M 2.2	Only in CP/M 2.2	None	M 68000
Compilers	ACOBOL3/AL2000, CP/M 2.2	ACOBOL3/TAL2000, CP/M 2.2	Cobol, Fortran, C Basic, Pascal	C, Fortran, Pascal, Cobol, Basic
Operating system	Multitasking-NT 4.1	Multitasking	XMS, realtime, multitask	Unix 4.2BSD
Operating sys. implemented in firmware	No	No	No	No
Database management system	dBASE II using CP/M	dBASE II using CP/M	Informex	Unify
Principal industry application			Office automation, personal computing	General purpose
Other packages	Word processing, Electronic mail	Word processing, Electronic mail	Telephony	Officeware office automation
PRICING & AVAILABILITY				
Basic system configuration and price	256K RAM, O/S 4.1, memory parity, 22MB disk, 15" CRT, 1 cartridge—$14,950	256K RAM, O/S 4.1, memory parity, 22MB disk, 15" CRT, 1 cartridge tape—$19,950	1 primary processor with 2MB memory, 1 appl. processor with 1MB memory, 40MB disk, 1 LAN link, 1 LAN link interface unit, 1 M420 terminal—$25,000	2 CPUs, each with 1MB, 2 disks, each with 84MB, 1/4" cartridge tape, I/O processor, 16 ports, dual uninterruptible power—$88,900
Mo. maintenance of basic configuration	$507	$696	—	$327
Date of first delivery	1983	1981	1985	July 1984
Number installed to date	Not supplied	Not supplied	Not supplied	20
COMMENTS			*Memory per processor. Additional application processors can be added to the system.	Fault tolerant, user serviceable, uninterruptable power. language systems.

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MANUFACTURER AND MODEL	PERQ Systems Corporation LN3100	PERQ Systems Corporation LN3200	PERQ Systems Corporation LN3300	Point 4 Data Corp. Mark 2T
WORD LENGTH	16 bits	16 bits	16 bits	16-bits
MAIN MEMORY	1MB-2MB	1MB-2MB	1MB-2MB	64KB-128KB
DISK STORAGE CAPACITY	43MB-144MB	43MB-144MB	43MB-144MB	19MB-92MB
NO. WORKSTATIONS SUPPORTED	1	1	1	7
PRICE RANGE	$25,000-$40,000	$25,000-$40,000	$65,000-$80,000	$8,995-$20,000+
TARGET MARKET	Computer-Aided printing and publishing	Computer-aided printing and publishing	Computer-Aided printing and publishing	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Point 4 Mark 2
Hardware floating point	None	None	None	No
Battery backup	None	None	None	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	170	170	170	600
MAIN STORAGE				
Bytes fetched per cycle	4	4	4	2
Memory access	200M bits/sec.	200M bits/sec.	200M bits/sec.	16
Cycle/access time, nanoseconds	680	680	680	400/200
Storage protection	Std.	Std.	Std.	None
Increment size, bytes	1MB-2MB	1MB-2MB	1MB-2MB	64K
Cache memory, bytes	16K	16K	16K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	6	6	6	63
Data transfer rate	10M bits/sec.	10M bits/sec.	10M bits/sec.	1.67MB/sec.
COMMUNICATIONS				
Max. number of lines	2	2	2	7
Synchronous	Std., 19.2K bps	Std., 19.2K bps	Std., 19.2K bps	No
Asynchronous	Std., 19.2K bps	Std., 19.2K bps	Std., 19.2K bps	Std., 9.6K bps
Protocols supported	2780/3780	2780/3780	2780/3780	None .
Type of LAN supported	Ethernet	Ethernet	Ethernet	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	None
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	43-144MB	43-144MB	43-144MB	Winchester 13MB-46MB
Serial printers	200 cps	200 cps	200 cps	20-180 cps
Letter quality printers	40 cps	40 cps	40 cps	75 cps
Line printers	1000 lpm	1000 lpm	1000 lpm	200-600 lpm
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	45 ips, 22MB	45 ips, 22MB	45 ips, 22MB	90 ips; 20MB
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported	1MB Diskettes	1MB Diskettes	1MB Diskettes	
SOFTWARE				
Assembler	PERQ Microcode	PERQ Microcode	PERQ Microcode	Assembler
Compilers	Pascal, Fortran 77, C, Lisp	Pascal, Fortran 77, C, Lisp	Pascal, Fortran 77, C, Lisp	Basic
Operating system	Realtime	Realtime	Realtime	IRIS timesharing
Operating sys. implemented in firmware	No	No	No	No
Database management system	No	No	No	None
Principal industry application	Computer-aided printing and publishing	Computer-aided printing and publishing	Computer-aided printing and publishing	General Purpose Business
Other packages	Decision support sys., CAD/CAM, Elec. Pub., Research and Education	Decision support sys., CAD/CAM, research and education, word proc.	Decision support sys., CAD/CAM, Elec. Pub., Research and Education	Electronic Office, Force Application generator
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory, 43MB disk, tablet, detachable keyboard, Ethernet— $29,200	CPU, 1MB memory, 43MB disk, tablet, detachable keyboard, Ethernet— $27,300	CPU, 1MB memory, 43MB disk, tablet, detachable keyboard, Ethernet— $69,795	CPU, 64KB memory, 19MB disk, 20MB streaming tape, 4 ports—$9,995
Mo. maintenance of basic configuration	$280	$260	$700	Contact vendor
Date of first delivery	March 1983	March 1983	1984	February 1984
Number installed to date	Over 2500	Over 2500	Over 2500	200
COMMENTS	A landscape graphics workstation	A portrait graphics workstation	A color graphics workstation	

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MANUFACTURER AND MODEL	Point 4 Data Corp. Mark 3	Point 4 Data Corp. Mark 5	Point 4 Data Corp. Mark 9	PolyComputers Inc. Polyette
WORD LENGTH	16 bits	16 bits	16 bits	16 bit
MAIN MEMORY	64KB-128KB	128KB	256KB-512KB	256KB-1.7MB
DISK STORAGE CAPACITY	35MB-336MB	35MB-672MB	35MB-672MB	10MB-160MB
NO. WORKSTATIONS SUPPORTED	7	32	72	16
PRICE RANGE	$14,850-$30,000+	$26,700-$100,000+	$30,900-$100,000+	$15,000-$25,000
TARGET MARKET	Business	Business	Business	Trans. Process./On-line Business Applications
CENTRAL PROCESSOR				
CPU manufacturer and model	Point 4 Mark 3	Point 4 Mark 5	Point 4 Mark 9	AMD-290 bit slice
Hardware floating point	No	Opt.	Opt.	No
Battery backup	None	Std.	Std.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	600	400	300	200
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	16	16	16	90MB/sec.
Cycle/access time, nanoseconds	400/200	400/200	200/120	400/200
Storage protection	None	None	Std.	Std.
Increment size, bytes	64K	Not applicable	256K	512K
Cache memory, bytes	None	None	None	2K
INPUT/OUTPUT CONTROL				
No. of I/O channels	63	64	64	32
Data transfer rate	1.67MB/sec.	2.5MB/sec.	2.5MB/sec.	1M byte/sec.
COMMUNICATIONS				
Max. number of lines	7	32	72	100
Synchronous	No	No	No	Opt.; 9.6K bps
Asynchronous	Std., 9.6K bps	Std., 19.2K bps	Std., 19.2K bps	Std.; 19.2K bps
Protocols supported	None	None	None	2780/3780/SDLC
Type of LAN supported	None	None	None	Polynet
RJE terminals emulated	None	No	No	2780/3780
IBM 3270 emulation	No	No	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Winchester 35MB-168MB	SMD/CMD: 35MB-168MB	SMD/CMD: 35MB-168MB	Winchester: 20-85MB
Serial printers	20-180 cps	20-180 cps	20-180 cps	up to 2400 cps
Letter quality printers	75 cps	75 cps	75 cps	up to 200 cps
Line printers	200-600 lpm	200-600 lpm	200-600 lpm	up to 1200 lpm
Reel-to-reel tape drives	None	100 ips	100 ips	None
Streaming tape drives	90 ips; 45MB	90 ips; 45MB	90 ips; 45MB	None
Cassette/cartridge tape drives	None	90 ips; 45MB	90 ips; 45MB	90 ips; 8120 bpi
Other perpherals supported	Diskette	—	Diskette	
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Basic	Basic	Basic	Cobol, Fortran, Pascal
Operating system	Iris timesharing	Iris timesharing	Iris timesharing	Multitasking
Operating sys. implemented in firmware	No	No	No	Partially
Database management system	None	None	None	Included in software
Principal industry application	General Purpose Business	General Purpose Business	General Purpose Business	Business systems
Other packages	Electronic Office, Force Application generator	Electronic Office, Force Application generator	Electronic Office, Force Application generator	Word Proc., applications gen., BLIS Cobol Translator, accounting
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 64KB memory, 35MB disk, 20MB streaming tape, 4 ports—$14,850	CPU, 128KB memory, 35MB disk, 8 ports, 20MB streaming tape—$26,700	CPU, 256KB memory, 35MB disk, 20MB streaming tape, 8 ports—$30,900	256KB, HOST processor, 20MB disk, 20MB tape cassette, high speed printer port, TTY port, 4 RS-232 asynch. ports; operating system plus one compiler—$14,950
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	Contact vendor	$150
Date of first delivery	May 1981	June 1979	July 1984	December 1983
Number installed to date	2000	5000	100	3
COMMENTS		Disk caching feature optional.	Disk caching feature optional.	User processor may be added or deleted without software changes— provides expansion from one to 7 CPUs

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MANUFACTURER AND MODEL	PolyComputers Inc. Poly-X	PolyMorphic Systems System 8813	PolyRianda, Inc. Dancer 1703H2C	Rexon Business Machines Corp. RX100
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	4.3MB	512KB-4MB	256KB-1MB	256KB—960KB
DISK STORAGE CAPACITY	2GB	1.6MB-300MB	80MB-300MB	10MB—30MB
NO. WORKSTATIONS SUPPORTED	256	16	32	1-8
PRICE RANGE	$30,000-$100,000	$6,000-$80,000	$26,000-$45,000	$14,000-$25,000
TARGET MARKET	Transaction Processing/ On-line Bus. Applica.	Business, Education, Engineering	Business/medical	Business & professional data processing
CENTRAL PROCESSOR				
CPU manufacturer and model	AMD-2901 bit slice	Intel iAPX186	F 9445	Intel 8086-2
Hardware floating point	No	None	None	No
Battery backup	Opt.	Opt.	Opt.	No
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	200	125	300	137
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	90MB/sec.	4M bytes/sec.	16	7.38M bits/sec.
Cycle/access time, nanoseconds	400/200	500	150	542
Storage protection	Std.	None	None	None
Increment size, bytes	512K	256K	64KB/128KB	128K
Cache memory, bytes	2K	None	1MB-8MB	64KB (opt.)
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	2	32	14
Data transfer rate	1MB/sec.	2MB/sec.	2MB/sec.	To 625K bytes/sec.
COMMUNICATIONS				
Max. number of lines	100	16	64	9
Synchronous	Opt.; 9.6K bps	Opt., 250K bps	None	Opt.; 2,400 bps
Asynchronous	Std.; 19.2K bps	Std., 19.2K bps	Std.; 19.2K bps	Std.; 19,200 bps
Protocols supported	2780/3780/SDLC	SDLC/HDLC	—	2780/3780
Type of LAN supported	Polynet	PolyNet, Ethernet	OS dependent	None
RJE terminals emulated	2780/3780	None	No	2780/3780
IBM 3270 emulation	Yes	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	160-500MB	Cart: 5MB-80MB; floppys; Fixed:18MB-110MB	Fixed: 80 ,160, 330MB MOSFHD: 1-32MB	Fixed: 10MB-30MB
Serial printers	up to 2400 cps	Not offered by mfr.	up to 1200 cps	150 cps
Letter quality printers	up to 200 cps	Not offered by mfr.	up to 300 cps	35 cps
Line printers	up to 1200 lpm	Not offered by mfr.	up to 1200 lpm	300 lpm
Reel-to-reel tape drives	75 ips	None	Opt.; 25-125 ips	None
Streaming tape drives	25ips; 1600 bpi	90 ips	Opt.: 100/200 ips	25 ips; 1600 bpi
Cassette/cartridge tape drives	90 ips; 8120bpi	None	90 ips; 160MB	90 ips (std.)
Other perpherals supported				Diskettes: 1.2MB
SOFTWARE				
Assembler	Assembler	Macro	Basic, Cobol, B-Basic,	Intel
Compilers	Basic, Iris Basic, C	BASIC, FORTRAN, PASCAL, COBOL, C	B-Cobol	Basic (interpretive)
Operating system	Multitasking	Multitasking	Realtime, batch	Multitasking
Operating sys. implemented in firmware	Partially	Not supplied	No	No
Database management system	Included in software	Third party	Opt.	Idol
Principal industry application	Business systems	General	Medical, insurance, accounting, financial	General accounting
Other packages	Word Proc., Applications generator, BLIS Cobol Translator, Accounting	Accounting, office automation, CAD/CAM, word processing	General accounting	Spreadsheet, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	756KB, HOST processor, two user processors, 34MB Winchester, streaming tape, high speed printer port, TTY port, 8 RS-232 ports, operating system & one compiler—$35,950	CPU, 2MB memory, 8 users, 55MB disk, terminals w/high res. graphics, concurrent DOS and GSX graphics software, built in networking—$36,000	CPU, 256KB memory, 160MB disk, 160MB cartridge tape, 2MB cache disk, 17 user + parallel port—$28,300	CPU, 256KB memory, 10MB disk, streaming cartridge tape, 1 CRT, 150 cps printer —$14,000
Mo. maintenance of basic configuration	$300	Not supplied	Contact vendor	Consult dealers
Date of first delivery	June 1983	January 1984	October 1983	November 1982
Number installed to date	10	Not supplied	120	1500
COMMENTS	User processor may be added or deleted without software changes— provides expansion from one to 17 CPUs	System unit will support an additional 8 users after which systems of up to 16 users can be networked		

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MANUFACTURER AND MODEL	Rexon Business Machines Corp. RX200	Rexon Business Machines Corp. RX400/450	Rexon Business Machines Corp. RX105	Rexon Business Machines Corp. RX205
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-960KB	256KB-960KB	512KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	28MB-56MB	56MB-280MB	40MB-80MB	70MB-140MB
NO. WORKSTATIONS SUPPORTED	1-12	1-16/1-32	8	12
PRICE RANGE	$16,500-$35,000	$20,000-$75,000	$15,000-$30,000	$18,500-$40,000
TARGET MARKET	Business & professional data processing	Business & professional data processing	Business & professional data processing	Business & professional data processing
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8086-2	Intel 8086-2	Intel 8086-2	Intel 8086-2
Hardware floating point	No	No	Opt., double precision	Opt., double precision
Battery backup	No	No	None	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	137	137	166	166
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	7.38M bits/sec.	7.38M bits/sec.	16M bits/sec.	16M bits/sec.
Cycle/access time, nanoseconds	542	542	333	333
Storage protection	None	None	Std.	Std.
Increment size, bytes	128K	128K	512K	512K
Cache memory, bytes	64K	64K (opt.)	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	18	22/38	14	18
Data transfer rate	To 625K bytes/sec.	To 625K bytes/sec.	—	—
COMMUNICATIONS				
Max. number of lines	13	17/32	9	13
Synchronous	Opt.; 2,400 bps	Opt.; 2,400 bps	None	None
Asynchronous	Std.; 19,200 bps	Std.; 19,200 bps	Std.; 19,200 bps	Std.; 19,200 bps
Protocols supported	2780/3780	2780/3780	None	None
Type of LAN supported	None	None	Micnet	Micnet
RJE terminals emulated	2780/3780	2780/3780	None	None
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 28MB-56MB	Fixed: 56MB-280MB	Fixed: 40MB-80MB	Fixed: 70MB-140MB
Serial printers	150 cps	150 cps	Any RS-232-C	Any RS-232-C
Letter quality printers	35 cps	35 cps	35 cps	35 cps
Line printers	300 lpm	300 lpm	To 600 lpm	To 600 lpm
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	25 ips; 1600 bpi	25 ips; 1600 bpi	25 ips; 1600 bpi	25 ips; 1600 bpi
Cassette/cartridge tape drives	90 ips	90 ips (std)	90 ips; 45MB (std.)	90 ips; 45MB (std.)
Other perpherals supported	1.2MB diskettes	1.2MB Diskettes	1.2MB Diskettes	1.2MB Diskettes
SOFTWARE				
Assembler	Intel	Intel	None	None
Compilers	Basic (interpretive)	Basic (interpretive)	Micro Focus Lev II, Cobol, SMC, Basic	Micro Focus Lev II, Cobol, SMC, Basic
Operating system	Multitasking	Multitasking	Multitasking, Xenix 3.0	Multitasking, Xenix 3.0
Operating sys. implemented in firmware	No	No	No	No
Database management system	Idol	Idol	—	—
Principal industry application	General accounting	General accounting	General accounting	General accounting
Other packages	Spreadsheet, word processing	Spreadsheet, word processing	—	—
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 28MB disk, streaming cartridge tape, 1 CRT, 150 cps printer —$16,500	CPU, 256KB memory, 56MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —$24,000/$35,000	CPU, 512KB memory, 40MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —$18,000	CPU, 512KB memory, 70MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —$22,000
Mo. maintenance of basic configuration	Consult dealers	Consult dealer	Consult dealer	Consult dealer
Date of first delivery	November 1983	June 1982/August 1984	November 1984	November 1984
Number installed to date	400	1000	—	—
COMMENTS				

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MANUFACTURER AND MODEL	Rexon Business Machines Corp. RX405	Sentinel Computer Corp. DS-130	Sentinel Computer Corp. DS-140	Sentinel Computer Corp. DS-170 & DS-180
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	128K-196K	160K-896K	288K-896K
DISK STORAGE CAPACITY	116MB-330MB	19.1MB-72MB	51.4MB-1.2GB	80MB-1.2GB
NO. WORKSTATIONS SUPPORTED	16	5	32	32
PRICE RANGE	$23,000-$75,000	$16,700-$35,000	$21,200-$60,000	$36,500-$85,000
TARGET MARKET	Business & professional data processing	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8086-2	Intel 8086	Intel 8086	Intel 8086
Hardware floating point	Opt., double precision	Double	Double	Double
Battery backup	None	Opt.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	166	750	750	750
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	16M bits/sec.	20 bits/sec.	20 bits/sec.	20 bits/sec.
Cycle/access time, nanoseconds	333	660	660	660
Storage protection	Std.	None	None	None
Increment size, bytes	512K	32K	32K	32K
Cache memory, bytes	None	4K	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	18	32	32	32
Data transfer rate	—	19.2KB/sec	19.2KB/sec	19.2KB/sec
COMMUNICATIONS				
Max. number of lines	17	32	32	32
Synchronous	None	9.6K bps	9.6K bps	9.6K bps
Asynchronous	Std.; 19,200 bps	19.2K bps	19.2K bps	19.2K bps
Protocols supported	None	2780/3780	2780/3780	2780/3780
Type of LAN supported	Micnet	None	None	None
RJE terminals emulated	None	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 116MB-330MB	Fixed: 19.1MB-72MB	Fixed: 19.1MB-288MB	Fixed: 168.5MB Removable: 80MB-300MB
Serial printers	Any RS-232-C	55-340 cps	55-340 cps	55-340 cps
Letter quality printers	35 cps	55 cps	55 cps	55 cps
Line printers	To 600 lpm	300-600 lpm	300-600 lpm	300-600 lpm
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	25 ips; 1600 bpi	100 ips; 1600 bpi	100 ips; 1600 bpi	100 ips; 1600 bpi
Cassette/cartridge tape drives	90 ips; 45MB (std.)	60-100MB	60-100MB	60-100MB
Other perpherals supported	1.2MB Diskettes	Diskettes 1.6MB	Diskettes 1.6MB	Diskettes 1.6MB
SOFTWARE				
Assembler	None	Macro (DBL)	Macro (DBL)	Macro (DBL)
Compilers	Micro Focus Lev II, Cobol, SMC, Basic	Basic, Cobol, Pascal, Fortran	Basic, Cobol, Pascal, Fortran	Basic, Cobol, Pascal, Fortran
Operating system	Multitasking, Xenix 3.0	Multitasking, batch	Multitasking, batch	Multitasking, batch
Operating sys. implemented in firmware	No	Partially	Partially	Partially
Database management system	—	DBOS	DBOS	DBOS
Principal industry application	General accounting	Industrial, Distribution	Industrial, distribution	Industrial, Distribution
Other packages	—	Medical, credit union, accounting	Medical, credit union, accounting	Medical, credit union, accounting
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, 116MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —$26,000	CPU, 128KB memory, 19.1MB disk, 1.6MB floppy, 1920 char. CRT, 5 slot card cage, operating system —$16,700	CPU, 160KB memory, 51.4MB disk, 1.6MB floppy, 1920 char. CRT, 12 slot card cage, operating system —$21,200	CPU, 288KB memory, 80MB removable disk, 1.6MB floppy, 1920 char. CRT, 12 slot card cage, operating system —$36,500
Mo. maintenance of basic configuration	Consult dealer	$134	$170	$292
Date of first delivery	November 1984	February 1985	March 1985	March 1984
Number installed to date	—	Not supplied	Not supplied	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Sequent Computer Systems Balance 8000	Sperry Corp. System 80 Models 4 & 6	Sperry Corp. System 80 Model 8	Terak Corporation 8510
WORD LENGTH	16/32 bits	16 bits	16 bits	16 bits
MAIN MEMORY	1MB-28MB	524KB-4MB	1MB-8MB	128KB-512KB
DISK STORAGE CAPACITY	70MB-5GB	128MB-1.3GB	617MB-12GB	2MB-4MB
NO. WORKSTATIONS SUPPORTED	128	40	120	1
PRICE RANGE	$50,000-$225,000	$66,082-$300,000	$123,900-$700,000	$12,000-$40,000
TARGET MARKET	Technical	Commercial	Commercial	Technical
CENTRAL PROCESSOR				
CPU manufacturer and model	NSC 32032	Proprietary	Proprietary	DEC LSI-11/23
Hardware floating point	Double precision	Single/double	Single/double	Std.
Battery backup	None	—	—	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	200	180	120	600
MAIN STORAGE				
Bytes fetched per cycle	8	4	8	2
Memory access	192M bits/sec.	—	—	16
Cycle/access time, nanoseconds	300	400	480	600
Storage protection	Std.	Std.	Std.	None
Increment size, bytes	512K	262K, 524K	1MB, 2MB	64K
Cache memory, bytes	8K	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	3	6	1
Data transfer rate	1.5M bytes/sec.	6MB/sec.	8MB/sec.	2M bytes/sec.
COMMUNICATIONS				
Max. number of lines	128	8	28	8
Synchronous	None bps	Opt.; to 56K bps	Opt.; to 56K bps	None
Asynchronous	Opt.; 19.2K bps	Opt.; to 19.2K bps	Opt.; to 19.2K bps	4 Std./4 Opt.; 19.2K bps
Protocols supported	Ethernet, TCP/IP, UUCP	BSC, TTY, Univac, BC-7 X.25, DCA, 3270, UTS	BSC, TTY, Univac, BC-7,m X.25, DCA, 3270, UTS	Async
Type of LAN supported	Ethernet	Usernet	Usernet	None
RJE terminals emulated	None	HASP	HASP	None
IBM 3270 emulation	None	Yes	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 70MB/400MB	Fixed: 118.2MB-491MB Removable: 72.3MB	Fixed: 118.2MB-491MB Removable: 29MB-200MB	Winchester: to 40MB; Floppy: 1.2MB
Serial printers	—	80-200cps	80-200 cps	120cps
Letter quality printers	—	55cps	55 cps	None
Line printers	—	180-1200lpm	180-1200 lpm	None
Reel-to-reel tape drives	None	75ips; 800/1600 bpi	75ips; 80/1600	None
Streaming tape drives	25 ips; 1600 bpi	Start/stop; 100/25ips	Start/stop; 100/25 ips	None
Cassette/cartridge tape drives	1/4" streaming	25 ips; 200-1600 bpi	25-125 ips; 200-1600 bpi	None
Other perpherals supported		Card equipment, diskette	Card equipment, diskette	640x480 mono graphics-2 planes
SOFTWARE				
Assembler	Macro	Basic assembler	Basic assembler	Assembler
Compilers	C, Fortran, Pascal	Cobol, Fortran IV, Basic, RPGII, Escort, Mapper	Cobol, Fortran IV, Basic, RPGII, Escort, Mapper	Fortran, Pascal, Basic, C
Operating system	Unix, multitasking	Batch, Realtime	Batch, Real-time	RT-11, Venix, UCSD Pasc.
Operating sys. implemented in firmware	No	Partially	Partially	No
Database management system	None	DMS	DMS	None
Principal industry application	CAE, CAM, general purpose	Office automation, decision support	Office automation, decision support	CAD/D-mechanical/ technical
Other packages		Accounting, wholesale/ distribution, manu-facturing	Accounting, wholesale/ distribution, manu-facturing	Spreadsheet, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	2 CPUs, 2MB memory, SCSI, Ethernet, streaming tape, 2-70MB disks, 16 terminal lines —$56,000	Model 4: CPU, 524KB memory; 118.2MB disk; console w/keyboard; 2 workstations w/keyboards 1MB diskette; 180 lpm printer—$91,689	CPU, 1MB memory; 3MB add-on memory; two 1MB diskette drives; four 491MB disk drives; four tape units; eight 200 cps printers; 1200 lpm printers; 40 terminals/ keyboards—$651,914	DesignPro turnkey CAD/D system, mono, 10MB Winchester, 1.2MB floppy, Digitizer, software—$27,400
Mo. maintenance of basic configuration	Contact distributor	$618	$3,761	
Date of first delivery	August 1984	July 1982	December 1983	January 1983
Number installed to date	16	Not supplied	Not supplied	500
COMMENTS	Multiprocessor		Supports variety of Series 90 peripherals	

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MANUFACTURER AND MODEL	Terak Corporation 8600	Texas Instruments, Inc. Business System 352A	Texas Instruments, Inc. Business System 371A, 372A	Texas Instruments, Inc. Business System 661A
WORD LENGTH	16 bits	16 bits	16 bit	16 bit
MAIN MEMORY	128KB-512KB	256KB-1MB	256KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	2MB-4MB	17MB	18MB-43MB	80MB
NO. WORKSTATIONS SUPPORTED	1	7	7	40
PRICE RANGE	$18,000-$50,000	$9,995	—	$34,800-$37,800
TARGET MARKET	Technical	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	LSI-11/23, Intel 8086	TI 99000	TI 99000	TI 990/10A
Hardware floating point	Std.	None	None	None
Battery backup	None	None	None	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	600	200	220	200
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	16	27M bits/sec.	27M bits/sec.	27M bits/sec.
Cycle/access time, nanoseconds	600	—	—	—
Storage protection	None	Mem Map	Mem Map	Std. ECC
Increment size, bytes	64K	256K	256K	256K,512K,1M,1.5M,2M
Cache memory, bytes	None	None	None	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	1	1	1	12
Data transfer rate	2M bytes/sec.	3.2MB/sec.	3.2MB/sec.	3MB/second
COMMUNICATIONS				
Max. number of lines	8	6	6	40
Synchronous	None	Opt., 19.2K bps	Opt., 9.6K bps	Opt., 19.2K bps
Asynchronous	4 Std./4 Opt.; 19.2K bps	Opt., 9.6K bps	Opt., 9.6K bps	Std.,9.6K bps;Opt.,19.2K
Protocols supported	Async	SNA, X.25, 3780/2780	SNA, X.25, 3780/2780	SNA, X.25, 3780/2780
Type of LAN supported	None	Ethernet	Ethernet	Ethernet
RJE terminals emulated	None	3780/2780	3780/2780	3780/2780
IBM 3270 emulation	No	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: to 40MB; Floppy: 1.2MB	Winchester: 17MB	Winchester: 18MB-43MB	Fixed: 67MB Removable: 13MB
Serial printers	120cps	150 cps	150 cps	150 cps
Letter quality printers	None	35 cps	35 cps	35 cps
Line printers	None	None	None	300-600 lpm
Reel-to-reel tape drives	None	None	None	45 ips; 1600 bpi
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	None	None	14.5MB, 30 ips read	None
Other perpherals supported	640x480 mono graphics- 6 planes	1.2MB diskette, 931 VDT	93 VDT	931 VDT
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Fortran, Pascal, Basic, C	Cobol, Basic, Fortran, Pascal	Cobol, Basic, Fortran, Pascal	Cobol, Basic, Fortran, Pascal
Operating system	RT-11, Venix, UCSD Pasc.	Multitasking	Multitasking	Multitasking
Operating sys. implemented in firmware	No	No	No	No
Database management system	None	DBMS	DBMS	DBMS
Principal industry application	CAD/D-mechanical/ technical			
Other packages	Spreadsheet, word processing	Word processing, Data Dictionary, Query, Screen Design	Word processing, Data Dictionary, Query, Screen Design	Word processing, Data Dictionary, Query, Screen Design
PRICING & AVAILABILITY				
Basic system configuration and price	DesignPro turnkey CAD/D system, color, 10MB Winchester, 1.2MB floppy, Digitizer, software—$39,000	CPU, 256KB memory, 17MB disk, 1.2MB disk-ette, video display terminal—$9,995	CPU, 256KB memory, 18MB Winchester, 14.5MB cartridge tape drive, video display terminal —$15,500	CPU, 512KB memory, 67MB fixed disk, 13MB removable disk, video display terminal, 13-slot chassis—$34,800
Mo. maintenance of basic configuration		$120	$130	$296
Date of first delivery	January 1983	April 1984	April 1984	September 1983
Number installed to date	300	—	—	—
COMMENTS		Disk capacities are formatted	Disk capacities are formatted.	Disk capacities are formatted.

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MANUFACTURER AND MODEL	Texas Instruments, Inc. Business System 671A, 672A	Texas Instruments, Inc. Business System 690A, 691A	Texas Instruments, Inc. Business System 861A/B	Texas Instruments, Inc. Business System 872A/B
WORD LENGTH	16 bit	16 bit	16 -bit	16 bit
MAIN MEMORY	512KB-2MB	512KB-2MB	512KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	18MB-43MB	138MB-425MB	80MB	43MB
NO. WORKSTATIONS SUPPORTED	16	40	40	40
PRICE RANGE	—	$42,950-$54,950	$45,600-$46,200	$38,300
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	TI 990/10A	TI 990/10A	TI 990/12	TI 990/12
Hardware floating point	Opt.	None	Single/double	Single/double
Battery backup	None	Opt.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	200	200	220	220
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access	27M bits/sec.	27M bits/sec.	73M bits/sec.	73M bits/sec.
Cycle/access time, nanoseconds	—	—	—	—
Storage protection	Std. ECC	Std. ECC	Std. ECC	Std. ECC
Increment size, bytes	256K,512K,1M,1.5M,2M	256K,512K,1M,1.5M,2M	256K, 512K, 768K, 1M	256K, 512K, 768K, 1M
Cache memory, bytes	4K	4K	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	12	12	10	10
Data transfer rate	3MB/second	3MB/second	3MB/second	3MB/second
COMMUNICATIONS				
Max. number of lines	40	40	40	40
Synchronous	Opt., 19.2K bps	Opt.; 19.2K bps	Opt.,50-19.2K bps	Opt.,50-19.2K bps
Asynchronous	Std.,9.6K bps;Opt.,19.2K	Std.;9.6K bps;Opt.,19.2K	Std.,50-19.2K bps	Std.,50-19.2K bps
Protocols supported	SNA, X.25, 3780/2780	SNA, X.25, 3780/2780	SNA, X.25, 3780/2780	SNA, X.25, 3780/2780
Type of LAN supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE terminals emulated	3780/2780	3780/2780	3780/2780	3780/2780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Winchester:18MB-43MB	Winchester:138MB-425MB	Fixed: 67MB Removable: 13MB	Winchester: 43MB Removable: 13MB
Serial printers	150 cps	150 cps	150 cps	150 cps
Letter quality printers	35 cps	35 cps	35 cps	35 cps
Line printers	300-600 lpm	300-600 lpm	300-600 lpm	300-600 lpm
Reel-to-reel tape drives	45 ips; 1600 bpi	45 ips; 1600 bpi	45 ips; 1600 bpi	45 ips; 1600 bpi
Streaming tape drives	None	100/50 ips; 1600/3200bpi	None	None
Cassette/cartridge tape drives	14.5MB; 30 ips read	None	None	14.5MB, 30 ips read
Other perpherals supported	931 VDT	931 VDT	931 VDT	931 VDT
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Cobol, Basic, Fortran, Pascal	Cobol, Basic, Fortran, Pascal	Cobol, Basic, Fortran, Pascal	Cobol, Basic, Fortran, Pascal
Operating system	Multitasking	Multitasking	Multitasking	Multitasking
Operating sys. implemented in firmware	No	No	No	No
Database management system	DBMS	DBMS	DBMS	DBMS
Principal industry application				
Other packages	Word processing, Data Dictionary, Query, Screen Design	Word processing, Data Dictionary, Query, Screen Design	Word processing, Data Dictionary, Query, Screen Design	Word processing, Data Dictionary, Query, Screen Design
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, 13MB Winchester, 14.5MB cartridge tape drive, video display terminal —$25,400	CPU, 512KB memory, 138MB Winchester, 91MB streaming tape, video display terminal, 13-slot chassis—42,950	CPU, 512KB memory, 67MB fixed disk, 13MB removable disk, two video display terminals, 13-slot chassis, 4-channel comm. board —45,600	CPU, 512KB memory, 43MB Winchester, 14.5MB cartridge tape drive, two video display terminals, 13-slot chassis, 4-channel comm. board—38,300
Mo. maintenance of basic configuration	$181	$271	$427	$317
Date of first delivery	September 1983	August 1984	September 1983	September 1983
Number installed to date	—	—	—	—
COMMENTS	Disk capacities are formatted.	Disk capacities are formatted.	Disk capacities are formatted. Fiber optics optional.	Disk capacities are formatted. Fiber optics optional.

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MANUFACTURER AND MODEL	Texas Instruments, Inc. Business System 890A/B, 891A/B	Tolerant Systems	The Ultimate Corp. Model 2000/2000S	The Ultimate Corp. Chiron
WORD LENGTH	16 bits	16/32 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	2MB-180MB	128KB-512KB	256KB-1024KB
DISK STORAGE CAPACITY	138MB-425MB	80MB-600GB	33MB-308MB (unformatted)	30MB-120MB
NO. WORKSTATIONS SUPPORTED	40	Up to 1500	32	32
PRICE RANGE	$54,950-$64,550	$75,000+	$36,000-$50,000	$36,000-$50,000
TARGET MARKET	Business	Business	Small Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	TI 990/12	NS 32000	DEC LSI 11/23	Honeywell DPS6
Hardware floating point	Single/double	NS 32081	Single precision	Double
Battery backup	Opt.	Opt.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	220	—	165	300
MAIN STORAGE				
Bytes fetched per cycle	2	8	2	4
Memory access	73M bits/sec.	150	175	—
Cycle/access time, nanoseconds	—	500	375	420/520
Storage protection	Std. ECC	Std.	Std.	Std.
Increment size, bytes	256K, 512K, 768K, 1M	1MB	128K	256K
Cache memory, bytes	4K	8KB	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	10	Up to 30	None	—
Data transfer rate	3MB/second	3MB/sec. each channel	NA	—
COMMUNICATIONS				
Max. number of lines	40	Up to 5400	32	32
Synchronous	Opt.,50-19.2K bps	Up to 56K bps	Opt. 19.2K bps	Opt.
Asynchronous	Std.,50-19.2K bps	Up to 19.2K bps	Std., 9.6K bps	Std.
Protocols supported	SNA, X.25, 3780/2780	Async TTY, IBM 3270 BSC & SNA/SDLC, X.25	Asynch	—
Type of LAN supported	Ethernet	Various	UltiNet (OSI)	UltiNet (OSI)
RJE terminals emulated	3780/2780	IBM 2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 138MB-425MB	Fixed: 84MB, 168MB, 536 MB; Removable: 300MB	Winchester: 33MB-308MB (unformatted)	—
Serial printers	150 cps	Various	180 cps	180 cps
Letter quality printers	35 cps	Various	35-55 cps	35-55 cps
Line printers	300-600 lpm	Any Centronics printer	300-600 lpm	150-1000 lpm
Reel-to-reel tape drives	45 ips; 1600 bpi	1600/6250 bpi	None	45/175 ips
Streaming tape drives	100/50 ips; 1600/3200bpi	—	Start/stop; 25 ips	None
Cassette/cartridge tape drives	None	—	None	None
Other perpherals supported	931 VDT		None	None
SOFTWARE				
Assembler	Assembler	Yes	Macro	Macro
Compilers	Cobol, Basic, Fortran, Pascal	Cobol, Pascal, Fortran, C	Basic, Recall	Basic, Recall
Operating system	Multitasking	TX: Transactions	Multitasking	Multitasking
Operating sys. implemented in firmware	No	Partially	Fully	Fully
Database management system	DBMS	Oracle-compatible	Ultimate (Pick-generic)	Ultimate (Pick-generic)
Principal industry application		—	Various commercial and business applications	Various commercial and business applications
Other packages	Word processing, Data Dictionary, Query, Screen Design	Any Unix-compatible	UltiWord, UltiPlot, UltiCalc, UltiNet	UltiWord, UltiPlot, UltiCalc, UltiNet
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, 138MB Winchester, 91MB streaming tape, two video display terminals, 13-slot chassis, 4-channel comm. board $54,950	2 system building blocks, each w/4MB ECC memory, up to 2 3MB/sec I/O channels, 2 high-speed buses, 1 communi-cation line, tape sub-system w/controller— $154,000	Model 2000 CPU, UltiWord, UltiPlot, 8-slot chassis, processor, 128KB memory, 33MB disk drive & controller, tape drive & controller, 7 open ports—$35,000	CPU, UltiWord, UltiPlot, 5-slot chassis, 256KB memory, streamer tape, 40MB disk drive, high-performance processor (3X), 4 open ports— $36,000
Mo. maintenance of basic configuration	$402	$3,000	$365	$300
Date of first delivery	September 1983	First quarter 1984	January 1982	1984
Number installed to date	—	—	1180	1208
COMMENTS	Disk capacities are formatted. Fiber optics optional.	A fault-tolerant system that can be built on 1 to 15 building blocks.		

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MANUFACTURER AND MODEL	The Ultimate Corp. Model 2020	The Ultimate Corp. Model C/2	The Ultimate Corp. Model D/2	The Ultimate Corp. Model E/2
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-1024K	256K-2MB	256K-2MB	1MB-2MB
DISK STORAGE CAPACITY	33MB-308MB (unformatted)	80MB-2.3GB	80MB-2.3GB	80-2.3GB
NO. WORKSTATIONS SUPPORTED	32	252	252	252
PRICE RANGE	$45,000—$70,000	$80,000-$140,000	$107,000-$250,000	$180,000-$350,000
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	DEC LSI 11/23	Honeywell DPS 6	Honeywell DPS 6	Honeywell DPS 6
Hardware floating point	Single precision	Double	Double	Double
Battery backup	Opt.	Opt.	Opt.	Opt.
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	165	300	300	300
MAIN STORAGE				
Bytes fetched per cycle	2	4	4	4
Memory access	175 ns.	—	—	—
Cycle/access time, nanoseconds	375	420/520	420/520	420/520
Storage protection	Std.	Std.	Std.	Std.
Increment size, bytes	128K	256K	256K	256K
Cache memory, bytes	None	4K	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	None	1024	1024	1024
Data transfer rate	None	16MB/sec.	16MB/sec.	16MB/sec.
COMMUNICATIONS				
Max. number of lines	32	252	252	252
Synchronous	Opt.; 19.2KB	Opt.	Opt.	Opt.
Asynchronous	Std., 9.6K bps	Std.	Std.	Std.
Protocols supported	—	2780/3780	2780/3780	2780/3780
Type of LAN supported	UltiNet (OSI)	UltiNet (OSI)	UltiNet (OSI)	UltiNet (OSI)
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 33-308MB (unformatted)	80MB-1GB	80MB-1GB	80MB-1GB
Serial printers	180 cps	180 cps	180 cps	180 CPS
Letter quality printers	35-55 cps	35-55 cps	35-55 cps	35-55 cps
Line printers	300-600 lpm	150-2000 lpm	150-2000 cpm	150-2000 lpm
Reel-to-reel tape drives	None	45/75 ips	45/75 ips	45/75 ips
Streaming tape drives	Start/stop; 25 ips	None	None	None
Cassette/cartridge tape drives	None	None	None	None
Other perpherals supported				
SOFTWARE				
Assembler	Macro	Macro	Macro	Macro
Compilers	Basic, Recall	Basic, Recall	Basic, Recall	Basic, Recall
Operating system	Multitasking	Multitasking	Multitasking	Multitasking
Operating sys. implemented in firmware	Fully	Fully	Fully	Fully
Database management system	Ultimate (Pick-generic)	Ultimate (Pick-generic)	Ultimate (Pick-generic)	Ultimate (Pick-generic)
Principal industry application	Various commercial and business applications	Various commercial and business applications	Various commercial and business applications	Various commercial and business applications
Other packages	UltiWord, UltiPlot, UltiCalc, UltiNet	UltiWord, UltiPlot, UltiCalc, UltiNet	UltiWord, UltiPlot, UltiCalc, UltiNet	UltiWord, UltiPlot, UltiCalc, UltiNet
PRICING & AVAILABILITY				
Basic system configuration and price	Model 2020 CPU, Ulti-Word, UltiPlot, LSI-11 processor, 512KB memory with dual ported peripheral processor, 33MB disk drive & controller, tape drive & controller, 7 printer ports—$45,000	DPS6, Ultiword, Ulti-plot, 10-slot chassis, 256KB memory, high-performance processor (1X), tape controller, tape drive, 80MB disk, 8 open ports—$80,000	DPS6, UltiWord, Ulti-Plot, 10-slot chassis, 512K memory, 288MB disk & controller, tape drive & controller—$180,000	DPS6, UltiWord, Ulti-Plot, full control panel 20-slot chassis, two cabinets, 1MB memory, 288MB disk & controller, tape drive & controller —180,000
Mo. maintenance of basic configuration	$385	$610	$650	$1,030
Date of first delivery	1984	April 1979	April 1979	April 1979
Number installed to date	1180	1200+	1200	1200
COMMENTS				

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MANUFACTURER AND MODEL	Wang Laboratories Inc. VS 15	Wang Laboratories Inc. VS 25	Wang Laboratories Inc. VS 45	Wicat Systems Inc. S160
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-2MB	512KB-2MB	512KB-2MB	512KB-4.5MB
DISK STORAGE CAPACITY	33MB-2.6GB	34-76MB	34MB-2.5GB	10MB-474MB
NO. WORKSTATIONS SUPPORTED	10	10	20	6-16
PRICE RANGE	$13,500-$108,000	$25,000-$40,500	$26,000-$61,000	$37,000-$50,000
TARGET MARKET	DDP, networked office auto., elec. comm.	DDP, networked office auto., elec. comm.	DDP, networked office auto., elec. comm.	General Purpose
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	MC 68000
Hardware floating point	Double	Double	Double	Double
Battery backup	—	—	—	None
Real-time clock or timer	Std.	Std.	Std.	Std.
CPU cycle time, nanoseconds	400	500	500	125
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	2
Memory access	—	—	—	—
Cycle/access time, nanoseconds	—	480	480	750
Storage protection	Std.	Std.	Std.	ECC
Increment size, bytes	256K	256K	256K	512KB
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	6	7	6-16
Data transfer rate	—	—	—	50-19.2K bps
COMMUNICATIONS				
Max. number of lines	4	68	68	16
Synchronous	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 56K bps
Asynchronous	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 9.6K bps	Opt.; 19.2K bps
Protocols supported	2780/3780; 3274; 3277, TTY, SNA, general async	2780/3780; 3270; 3274, 3777; TTY	2780/3780; 3270; 3274, 3777; TTY	2780/3780, X.25
Type of LAN supported	WangNet	WangNet	WangNet	Ethernet, Arcnet
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 33MB-147MB int. 75MB-640MB external,	Fixed: 34-76MB	Fixed/cartridge 90MB Removable: 75MB-288MB	Disk: 80MB-474MB,
Serial printers	120-192 cps	120-192 cps	120-192 cps	200 cps
Letter quality printers	20; 55 cps	20; 35 cps	20; 35 cps	55 cps
Line printers	250-1100 lpm	250-1100 lpm	250-1100 lpm	300-1000 lpm
Reel-to-reel tape drives	30-75 ips	30-75ips	30-75 ips	25, 50; 100 ips
Streaming tape drives	None	None	None	25, 50; 100 ips
Cassette/cartridge tape drives	30 ips	30 ips	30 ips	30/60 ips
Other peripherals supported	Laser printer, cart.disk 9MB-14MB, diskette 360KB	Laser printer 12ppm	Laser printer 12ppm Fixed disk: 640MB	terminal with touch panel
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Wicat Assembler, A68
Compilers	Cobol, Basic, Fortran, PL/1, RPG	Cobol, Basic, Fortran, PL/1, RPG	Cobol, Basic, Fortran, PL/1, RPG	APL, Basic, Cobol, Fortran, Pascal
Operating system	Realtime	Real-time	Real-time	WMCS, Uniplis V
Operating sys. implemented in firmware	No	No	No	None
Database management system	Pace, VS DMS Total	VS DMS; Wang Total	VS DMS; Wang Total	Unify
Principal industry application	Accounting, pension, personnel	Accounting, pension, personnel	Accounting, pension, personnel	Business, Scientific, Educational
Other packages	Modeling and simulation	Modeling and simulation	Modeling and simulation	—
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1024KB memory, 76MB fixed disk, 5¼ Winchester Drive, two 4230 tape cartridge WP software, one port —29,150	CPU, 512KB memory, 34MB disk, 1.2MB DSDD diskette drive, 16-port serial device controller 250 lpm printer, Assembler, Operating system—$34,000	CPU, 512KB memory, 34MB disk, 1.2MB DSDD diskette drive, 32-port serial device controller Assembler, 250lpm printer, Operating system—$42,000	CPU, 512KB memory, 6 ports, 1 sync/async port, 1 parallel port, 80 MB disk, floating point, tape drive, operating system, language—$37,290
Mo. maintenance of basic configuration	$245*/$217**	$238	$247	—
Date of first delivery	June 1984	July 1982	September 1982	June 1983
Number installed to date	—	—	—	212
COMMENTS	*Without remote diagnostics **With remote diagnostics			Up to 4 disk drives per controller are supported.

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MANUFACTURER AND MODEL	Wicat Systems Inc. S200	Wicat Systems Inc. S220	Wicat Systems Inc. S2220	
WORD LENGTH	16 bits	16 bits	16 bits	
MAIN MEMORY	512KB-5MB	512KB-12MB	512KB-12MB	
DISK STORAGE CAPACITY	80MB-474MB	80MB-474MB	80MB-474MB	
NO. WORKSTATIONS SUPPORTED	4-32	4-48	4-64	
PRICE RANGE	$45,000-$75,000	$50,000-$95,000	$58,000-$120,000	
TARGET MARKET	General Purpose	General Purpose	General Purpose	
CENTRAL PROCESSOR				
CPU manufacturer and model	MC 68000	MC 68000	MC 68000	
Hardware floating point	Double	Double	Double	
Battery backup	None	None	None	
Real-time clock or timer	Std.	Std.	Std.	
CPU cycle time, nanoseconds	125	125	80	
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	
Memory access	32	32	50	
Cycle/access time, nanoseconds	500	500	320	
Storage protection	Std.: parity, opt.: ECC	Std.: parity, opt.: ECC	Std.: parity, opt.: ECC	
Increment size, bytes	512KB, 1MB	512KB, 1MB	1MB	
Cache memory, bytes	None	None	4KB	
INPUT/OUTPUT CONTROL				
No. of I/O channels	4-32	4-48	64	
Data transfer rate	50-19.2K bps	50-19.2K bps	50-19.2K bps	
COMMUNICATIONS				
Max. number of lines	32	48	64	
Synchronous	Opt.; 56K bps	Opt.; 56K bps	Opt.; 56K bps	
Asynchronous	Opt.; 19.2K bps	Opt.; 19.2K bps	Opt.; 19.2K bps	
Protocols supported	2780/3780, X.25	2780/3780, X.25	2780/3780, X.25	
Type of LAN supported	Ethernet, Arcnet	Ethernet, Arcnet	Ethernet, Arcnet	
RJE terminals emulated	2780/3780	2780/3780	2780/3780	
IBM 3270 emulation	Yes	Yes	Yes	
PERIPHERAL EQUIPMENT				
Disks supported	Disk: 80MB-474MB,	Disk: 80MB-474MB,	Disk: 80MB-474MB,	
Serial printers	200 cps	200 cps	200 cps	
Letter quality printers	55 cps	55 cps	55 cps	
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	
Reel-to-reel tape drives	25, 50; 100 ips	25, 50; 100 ips	25, 50; 100 ips	
Streaming tape drives	25, 50; 100 ips	25, 50; 100 ips	25, 50; 100 ips	
Cassette/cartridge tape drives	30/60 ips	30/60 ips	30/60 ips	
Other perpherals supported	terminal with touch panel	terminal with touch panel	terminal with touch panel	
SOFTWARE				
Assembler	Wicat Assembler, A68	Wicat Assembler, A68	Wicat Assembler, A68	
Compilers	APL, Basic, Cobol, Fortran, Pascal	APL, Basic, Cobol, Fortran, Pascal	APL, Basic, Cobol, Fortran, Pascal	
Operating system	WMCS, Uniplis V	WMCS, Uniplis V	WMCS, Uniplis V	
Operating sys. implemented in firmware	None	None	None	
Database management system	Unify	Unify	Unify	
Principal industry application	Business, Scientific, Educational	Business, Scientific, Educational	Business, Scientific, Educational	
Other packages	—	—	—	
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory, 1 sync/async port, 1 parallel port, 80MB disk, floating point tape drive, operating system, language—$45,600	CPU, 1MB memory, 1 sync port, 8 ports, 1 par. a port, 80MB disk, floating point, tape drive, operating system, language—$50,550	CPU, 1MB memory, 8 ports, 1 parallel port, 80 MB disk, floating point, tape drive, operating system, language—$58,880	
Mo. maintenance of basic configuration	—	—	—	
Date of first delivery	August 1982	June 1984	October 1984	
Number installed to date	180	50	13	
COMMENTS	WMCS operating system and one language are free on all Wicat systems	WMCS operating system and one language are free on all Wicat systems		