

All About Minicomputers

What is the future of 8- and 16-bit minicomputer systems? Well, it's evident they don't die easily. They are continuing to be squeezed from the low end by supermicrocomputers and from the high end by superminicomputers, but are still very much a part of the market. We are witnessing the rise of the next computer generation, and should be seeing the fall of the general-purpose 8- and 16-bit minicomputer systems. However, that has not happened *yet*. Not only are they still in existence, but still in demand for customers whose applications do not require the functionality or the speed of a 32-bit system, or the price tag that goes along with it. True, there are low-cost 32-bit supermicrocomputers that can beat the price of an 8- or 16-bit system, but dollar-for-dollar, the capabilities have to be weighed against the costs.

Although few new 8- and 16-bit vendors are entering the market, the existing manufacturers are not neglecting their present system families, and are continuing to introduce low-, mid-, and high-range systems. Of the 37 vendors listed in the comparison columns at the end of this report, 11 have introduced new systems. In addition, some vendors have enhanced their existing systems by increasing memory and providing additional capabilities, while in many cases, also decreasing prices.

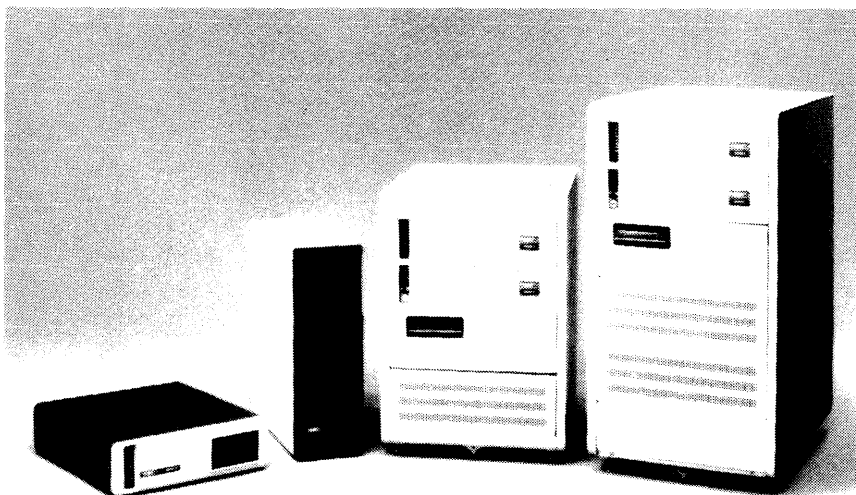
One trend that stands out is that more and more minicomputer vendors are attempting to build totally compatible growth families, tying in personal computers or supermicrocomputers at the low-end, 8- and 16-bit systems in the mid-range, and 32-bit superminicomputers at the high-end. This enables a small company to start with a cost-effective computer, grow into the mid-range systems, and expand into the 32-bit superminicomputer systems with little or no software recompilation; a real asset and cost-saver to the user.

Vendors realize the necessity of this compatibility and those that provide this range of systems will be the success-

The 8- and 16-bit minicomputers are still an important part of the medium-systems market, serving in a variety of roles. Vendors continue to introduce new systems at both the high and low ends and are putting more emphasis on system compatibility. High-growth areas for minicomputers are in the office automation and industrial environments. This report provides detailed comparison charts that present the salient characteristics of 126 minicomputers from 37 vendors. The report also discusses the current state of the minicomputer market, and provides both a guide to the chart entries and guidelines for selecting a minicomputer system.

ful ones. Honeywell is an example of a vendor presently offering this type of affinity among its systems with its DPS-6 family, offering micros, 16-bit systems, and 32-bit superminicomputer systems in the same system family with software portability up the line. Hewlett-Packard is working towards this end as well with the introduction of its RISC (reduced instruction set computer) architecture, allowing software portability from its 16-bit systems to its RISC high-end systems. IBM is also heading in this direction with its Series/1-PC and System/36-PC models.

Vendors are striving not only for compatibility among their own systems, but also with other vendors' systems as well in both software and communications areas. Because IBM is the big gun, vendors are interested in making their products, whether hardware or software, compatible with IBM. That is only the beginning, and future happenings will see vendors also attempting to be compatible with non-IBM vendors. At the communications end, we see more vendors offering IBM's SNA (Systems Network Architecture) protocols, and a definite interest in LU 6.2 (Logical



Point 4 Data Corporation offers a family of multiuser business systems. Shown from left to right is the Mark 2 entry-level system supporting up to seven users, the Mark 4 Tower system supporting up to 16 users, the Mark 5 mid-range system supporting up to 32 users, and the Mark 9 high-performance system supporting up to 64 users.

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▷ Unit Type), known as program-to-program or peer-to-peer communications, allowing mainframes, minis, and micros to communicate on an equal basis with one another, by-passing the host.

We can see Unix as one solution in striving toward compatibility in the software arena, with more vendors introducing Unix-based operating systems alongside of their own proprietary operating systems. A sampling of systems that presently offer a Unix-based operating system include Digital Equipment Corporation's PDP-11 systems and IBM's high-end Series/1, with HP planning to introduce a Unix-based system on its HP-1000 Series later this year. Industry statistics show that there are somewhere in the range of 200,000 Unix systems installed in the U.S. today.

DEFINING A MINICOMPUTER

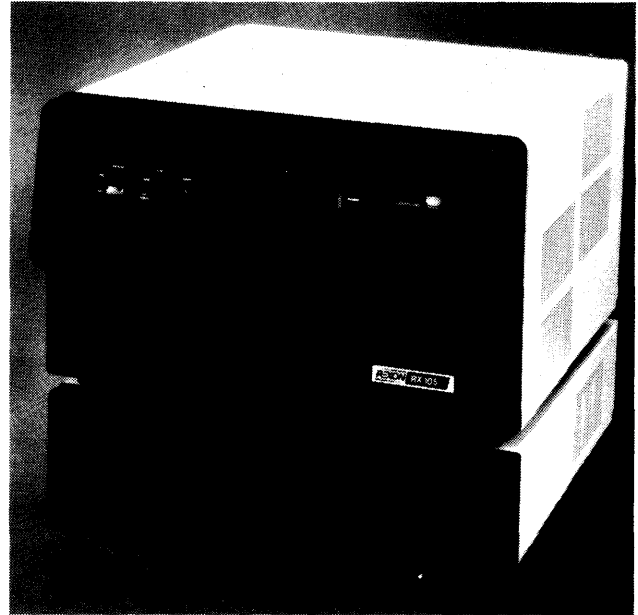
The microcomputer, with its increased power and performance, and the declining prices of the superminicomputer continue to threaten the existence of the minicomputer. And, even though the lines of definition are becoming more blurred as capabilities are extended, for the moment all three levels of systems are still needed. We can see it coming to the place where instead of attempting to define the systems as supermicros, minis, or superminis, the market will begin to use such definitive terms as small, intermediate, or large minicomputers, and the classification will be determined by number of users, speed, and other factors, as well as by word length. For the purposes of this report, however, the systems are distinguishable mainly by their word length, overall configurability, and price. The minicomputers listed in this report are characterized as follows:

- A word length of 8 or 16 bits
- A main memory capacity of less than 12 million bytes
- A purchase price for a stripped-down, entry-level system of around \$10,000
- A purchase price for a typical configuration of approximately \$25,000 and up

Information on 32-bit systems can be found in *All About Superminicomputers* in this section of DATAPRO 70.

SELECTING A SYSTEM

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 requirements will be, and whether the system will expand to meet these requirements. In case further expansion might be required, the system should be compatible with a



The Rexon RX105 computer includes an 80286-based processor and 80MB of disk storage, with an optional 5 1/4-inch diskette unit.

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 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/performance ratio

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 "new-comer" microcomputer vendor. Reliability was also high on the list of reasons for choosing one system over another. ▷

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▷ Another reason users often chose one system over another was the compatibility of the user's existing software with the new system.

MINICOMPUTER ADVANTAGES

The 8- and 16-bit minicomputers still provide some definite advantages, although as the supermicrocomputers 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 supermicrocomputer as on a minicomputer, 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 some of the systems offer as high as 24 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. Minicomputers 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. Minicomputers can support hard disks to provide for disk storage capacities of several gigabytes.

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 for upgradability. In many cases, the original peripherals and software are portable to the larger system, protecting much of the user's investment. In addition, many minicomputer vendors, in order to hold their share of the market, are now also offering microcomputer systems that can either be used as standalone systems, or be connected to a minicomputer. It is definitely important to consider this issue of upgradability if a business is expected to grow substantially in the years ahead.

Minicomputers can also provide for extensive 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. However, others feel that LANs have not yet met their expectations and still have a lot of problems to be solved to become effective. Through the use of an effective 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. Many systems are adopting Xerox' Ethernet, and it is viewed as the de facto 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 proto-

cols supported in the comparison charts shows that most minicomputers 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 superminicomputers.

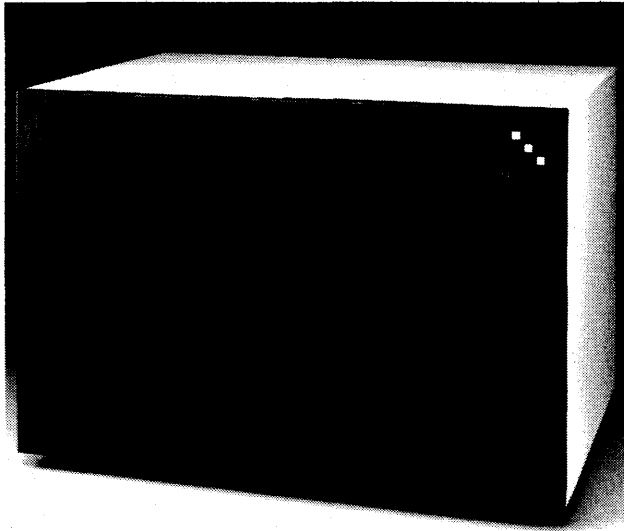
Another important issue is that of data security. Most minicomputer systems provide a higher degree of data protection than microcomputers; however, realizing the importance of data security, vendors have considerably improved the security features of the microcomputers.

The software issue is a particularly important one. One of the strengths of the minicomputer is still software availability and compatibility in both systems and applications software for computer system families. More and more minicomputer vendors are realizing the importance of protecting their current users' investments by building this compatibility into their software. Minicomputer vendors that are beginning to offer micros are also offering software compatibility right up the line. Even though applications software is being developed for micro systems at a fast pace, its dependability has yet to be proven in many cases, and it does not yet equal the capabilities and 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 minicomputer vendors' systems. Through specific software programs, minicomputer 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 those vendors determine their particular market segments and strengths, the minicomputer will continue to dominate in vertical markets.

The existing software base of the 8- and 16-bit minicomputer is also helping it to hold its ground against the superminicomputer. 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 instruction set does not benefit the application, then the 16-bit system will generally give more performance for a specific application.

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The MDS/Qantel System 78 is the high end of the family of multiuser, interactive business computers. A basic configuration includes 2 megabytes of main memory, a 4-channel, intelligent controller that manages a full network of intelligent video workstations and provides a communications link to other Qantel systems, a realtime clock, and a printer controller.

▷ THE MINICOMPUTER MARKET

Although the 8- and 16-bit minicomputers still maintain a firm toehold in the computer industry, carving out some new niches for itself, and taking on new roles, 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—the supermicrocomputer at the low end, and the superminicomputer at the high end. There's no doubt there will come a day when the 8- and 16-bit minicomputer will finally succumb, but it will not be for a few years yet. Vendors (and users) still like that stepping stone between the microcomputers and the superminicomputers that the 8- and 16-bit systems provide.

In order to stay competitive, minicomputer vendors will continue to reduce minicomputer prices, increase capabilities, and introduce new models. 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 8- and 16-bit minicomputers has decreased, but is still holding at a healthy level. For example, IBM sold more of its Series/1 systems last year than ever before. The high-growth areas for the minicomputer in the coming year will include the office automation and the industrial/factory automation environments.

We are watching technologies unfold that, while not necessarily new to the vendor's laboratories, are fairly new to the marketplace, such as the RISC architecture and parallel processing. Hewlett-Packard is growing its 16-bit, general-purpose systems, as well as its 32-bit engineering systems, into RISC architecture systems, which are to provide com-

plete software portability within each computer family. The first of these systems will be available before the end of 1986.

We will see more vendors utilizing the services of VARs (Value Added Resellers) than ever before to allow their systems to reach a worldwide market that would be impossible with the vendor's own sales force.

We will also see more enhancements to existing systems, such as increased memory, increased communications capabilities, and enhanced mass storage features.

Even with the enhancements, we will continue to see vendors lowering the price of their systems to gain a greater share of the market. One of IBM's directives for the Series/1 is to lower the price while continuing to expand the system. Hewlett-Packard has introduced the HP 3000 Model 70 to replace the Model 68, offering a 20 to 35 percent performance increase, but priced 20 percent lower. We are beginning to see the minicomputer 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 minicomputers 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. In addition, minicomputers are being produced as ruggedized industrial products that can be placed in any environment without special wiring or air-conditioning.

The minicomputer 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.

Standardization and compatibility will be the emphasis of the future. A question in the user's mind is, will the technologies of the future be compatible with our present in-house system(s)? Standalone systems, whether a microcomputer, minicomputer, or whatever, are not good enough anymore—users want total compatibility right up the line.

Communications and software products must be flexible enough to coexist in environments with other vendors' equipment—being able to communicate with and access other systems. As mentioned earlier in the report, vendors will be striving for compatibility between their own systems as well as between their systems and other vendors. This is a vendor's dream (which sometimes becomes a nightmare) that has not yet materialized, although great strides have been made in that area. Many vendors have

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▷ already introduced document interchange programs to convert documents produced by one vendor into readable documents for their own systems, such as Sperry, IBM, Wang, and Digital Equipment.

Where does all this leave the 8- and 16-bit systems? For the present, still on firm ground. Reasons are again: the cost of 8- and 16-bit systems versus those with new architectures will certainly be lower (for the present); there is a wider range of software available for the already-established 8- and 16-bit systems than for the new architectures; there are always those diehards that prefer to stay with the old and familiar; and, as already mentioned, some companies just do not require the speed and functionality of 32-bit systems.

THE COMPARISON CHARTS

The key functional characteristics of 126 commercially available minicomputers from 37 vendors are presented in the accompanying comparison charts. Every attempt was made to include all the major suppliers of minicomputers in this report. The 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.

The minicomputers listed in this report have an 8- or 16-bit word length. The 16-bit word length 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.

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, in some cases, 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 data to and/or receive it 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 ▷

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▷ arithmetic increments of 32; for example, a single-precision floating-point can operate on 32 bits simultaneously, a double-precision on 64, and so forth.

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

A *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.

MIPS indicates how many millions of instructions the computer can execute per second.

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 timesharing 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's Ethernet LAN. ▷

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▷ *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.

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 2,000 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.

Nonimpact printers can apply to a variety of printer types, including laser and thermal. The speed of these printers is normally expressed in pages per minute (ppm). This entry indicates the type and speed of the nonimpact printers available.

Reel-to-reel tape drives indicates the applicability and the speed in inches per second (ips) of tape drives that accommodate industry-standard 1/2-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, 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.

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▷ 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.

Operating system name indicates the name(s) of the operating systems offered by the vendor for a specific system or model. A number of vendors offer more than one operating system for their machines. (For example, a manufacturer might offer both a proprietary realtime system and a time-sharing, Unix-based operating system for the same minicomputer.)

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 timesharing 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 "timesharing," 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 could include CAD/CAE and power generation; principal applications for the commercial market could include transaction processing, distributed processing, office automation, and general business packages. In some cases, the vendors have supplied the names of specific application packages for their target industries.

Other packages are those software products that are not principal market applications for the system; they are secondary packages 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.

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- *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 February 1986.

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.

MANUFACTURERS

Listed below, for your convenience in obtaining additional information, are the names, addresses, and telephone numbers of the 37 vendors whose products are listed in the comparison charts that follow.

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

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

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

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

CalComp Incorporated, (formerly Terak Corp.) 14151 N. 76th Street, Scottsdale, AZ 85260. Telephone (602) 998-4800.

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

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

Computer Designed Systems, Inc., 10911 Olson Memorial Highway, 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 Drive, San Antonio, TX 78284. Telephone (512) 699-7000.

Digital Equipment Corporation, 146 Main Street, 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 Boulevard, Cupertino, CA 95014. Telephone (408) 255-0900.

GEAC Computers, Inc., 350 Steelcase Road West, Markham, Ontario 93R 1B3, Canada.

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

Global Turnkey Systems, Inc., 4 North Street, Waldwick, NJ 07463. Telephone (201) 445-5050.

Hewlett-Packard Co., 10520 Ridgeview Court, Cupertino, CA 95014. Telephone (408) 865-6478.

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

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

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

McDonnell Douglas Computer Systems Co., 4000 MacArthur Boulevard, Newport Beach, CA 92660. Telephone (714) 250-1000.

MDS/Qantel Business Computers, 4142 Point Eden Way, Hayward, CA 94545. Telephone (415) 887-7777.

Modular Computer Systems, Inc. (MODCOMP), 1650 W. McNab Road, P.O. Box 6099, Ft. Lauderdale, FL 33310. Telephone (305) 974-1380.

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

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

Northern Telecom Systems Corp., 9705 Data Park, P.O. Box 1222, Minneapolis, MN 55440. Telephone (612) 932-8000.

Plessey Peripherals Systems, 17466 Daimler Avenue, Irvine, CA 92714. Telephone (714) 540-9945.

Point 4 Computer Corporation, 15442 Del Amo, Tustin, CA 92714. Telephone (714) 838-2225.

PolyMorphic Systems, 7334H Hollister Avenue, Goleta, CA 93117. Telephone (805) 685-6238.

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

Second Source Computers, Inc. (SSCI), 14712 Bentley Circle, Tustin, CA 92668. Telephone (714) 832-7724.

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

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

SyFa Data Systems Corp., 1800 Jay Ell Drive, P.O. Box 851077, Richardson, TX 75081. Telephone (214) 783-0993.

Texas Instruments, Inc., P.O. Box 809063, Dallas, TX 75380. Telephone (214) 995-6611.

The Ultimate Corp., 717 Ridgedale Avenue, East Hanover, NJ 07936. Telephone (201) 887-9222.

Wang Laboratories, Inc., 1 Industrial Avenue, Lowell, MA 01851. Telephone (617) 459-5000. ◀

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MANUFACTURER AND MODEL	August Systems Inc. Series 330 Tri-Gard System	August Systems Inc. Series 330 TRI-DAC System	Barrister Information Systems Corporation Model 145	Barrister Information Systems Corporation Model 150
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-1MB	256KB-1MB	2048KB	1MB-2MB
DISK STORAGE CAPACITY	Not Required (*)	Not Required (*)	160MB-2400MB	50MB-400MB
NO. WORKSTATIONS SUPPORTED	Not Applicable	4 or more Colorgraphic	32	24
PRICE RANGE	\$50,000 to \$200,000	\$125,000-\$600,000	\$153,900-\$300,000	\$34,600-\$75,000
TARGET MARKET	Industrial control & Safety shutdown	Industrial control & Critical Data Acquisition	Legal Industry	Legal Industry
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8086	Intel 8086	Data Gen. Super Eclipse	Barrister 150
Hardware floating point	Yes, 8087	Yes, 8087	None	None
Battery backup	Optional	Optional	Standard	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	500	500	150	400
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	32 bits/microsec.	32 bits/microsec.	16	16
Cycle/access time, nanoseconds	200	200	225	400
Storage protection	Optional, ECC	Optional, ECC	Standard	Standard
Increment size, bytes	512K	256K/512K	2048K	1024K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	Up to 7000 Digital I/O	4K Digital, 12K Analog	32	24
Data transfer rate	50K bytes/sec.	50K bytes/sec.	2.2M bytes/sec.	2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	40	40	8	8
Synchronous	Optional	Optional	Opt., 4K bps	Opt., 4K bps
Asynchronous	Opt., 38.4K bps	Opt., 38.4K bps/channel	Opt., 4K bps	Opt., 4K bps
Protocols supported	Modbus, TI, RS-232-C	Modbus, TI, RS-232-C	Bisync, programmable	Bisync, programmable
Type of LAN supported	None	None	Barrister/Net	Barrister/Net
RJE terminals emulated	None	None	None	None
IBM 3270 emulation	No	No	Programmable	Programmable
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 20MB, 40MB	Fixed: 20MB, 40MB	Removable: 160MB-2400MB	Fixed/removable: 50MB-400MB
Serial printers	150 cps	150 cps	25-200 cps	25-200 cps
Letter-quality printers	None	None	25-40 cps, 12 ppm	25-40 cps, 12 ppm
Line printers	300 lpm	300 lpm	430-730 lpm	430-730 lpm
Nonimpact printers	—	—	Laser	Laser
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	None	None	None	None
Other peripherals supported	Diskette: 300KB	Diskette: 300KB	Optical character readers	Optical character readers
SOFTWARE				
Assembler	ASM86	ASM86	Assembler, Trial	Assembler, Trial
Compilers	Fortran 77, PLM 86	Fortran 77, PLM 86	C-Compiler	C-Compiler
Operating system name	—	—	—	—
Operating system	Realtime, FT, proc. cont	Realtime, FT, Proc Contr	Barrister MBOS	Barrister MBOS
Operating system implemented in firmware	Partially or fully	Partially or fully	Fully	Fully
Database management system	None	None	BIMS	BIMS
Principal industry application	Process, critical HVAC control, safety shutdown	Process safety shutdown, crit. HVAC w/colorgraph.	Legal applications	Legal applications
Other packages	Modbus protocol, Data Base Builder, Ladder Logic Builder	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, 1600 B&W program station, Tri-Gard software—\$50,000	Triple CPUS, I/O nest, 16 DI, 16 DO, B&W program station, color control console, Tri-Dac software—\$125,000	CPU, 2048KB Memory, 2-80MB disk, workstation modem, message printer, MBOS operating system, word processing—\$153,900	CPU, 1024KB Memory, 50MB disk, workstation, modem, message printer, MBOS operating system, word processing—\$34,600
Mo. maintenance of basic configuration	Optional	Optional	\$1,134	\$372
Date of first delivery	November 1984	October 1984	March 1984	August 1983
Number installed to date	50 incl 25 of prev 300G	40 incl 15 of prev 300D	15	150
COMMENTS	On-Line workstation not typically implemented. (*) Disk not required for on-line control operation (all-RAM, portions EPROM).	Multiple units in star network configuration with multiple color graphic workstations (*) Disk not required for online control.		

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MANUFACTURER AND MODEL	Barrister Information Systems Corporation Model 160	BTI Computer Systems BTI 6000	Burroughs Corp. B 90 Series	Burroughs Corp. B 900 Series
WORD LENGTH	16 bits	16 bits	8 bits	8 bits
MAIN MEMORY	1MB-2MB	128K-1MB	128KB-1.5MB	608KB-3.3MB
DISK STORAGE CAPACITY	160MB-2400MB	Up to 400MB	18MB-231MB	37MB-1.7GB
NO. WORKSTATIONS SUPPORTED	24	32	2-12	4-36
PRICE RANGE	\$69,900-\$175,000	From \$40,950	From \$14,000	From \$23,000
TARGET MARKET	Legal Industry	Business	Business/Commercial	Business/Commercial
CENTRAL PROCESSOR				
CPU manufacturer and model	Barrister 160	Proprietary	Proprietary	Proprietary
Hardware floating point	None	No	No	No
Battery backup	Optional	Standard	No	No
Realtime clock or timer	Standard	Standard	Optional	Standard
CPU cycle time, nanoseconds	400	—	—	—
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	—	—	—
Memory access, bits/sec.	16	—	—	—
Cycle/access time, nanoseconds	400	—	250	210
Storage protection	Standard	None	Standard	Standard
Increment size, bytes	1024K	Not applicable	128K, 256K, 512K	128K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	24	5	6-11	—
Data transfer rate	2.5M bytes/sec.	—	—	—
COMMUNICATIONS				
Max. number of lines	8	32	2-5	4-18
Synchronous	Opt., 4K bps	No	Opt., 19.2K bps	Opt., 19.2K bps
Asynchronous	Opt., 4K bps	9.6K bps	Opt., 38.4K bps	Opt., 38.4K bps
Protocols supported	Bisync, programmable	2780/3780	2780/3780, BDLC, SNA, X.25, 3270, RJE	2780/3780, SNA, BDLC, SNA, X.25, 3270, BNA
Type of LAN supported	Barrister/Net	None	None	None
RJE terminals emulated	None	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Programmable	No	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Removable: 160MB-2400MB	Fixed: 2MB-54MB Pack: 80MB-252MB	Cartridge: 4.6MB, 9.2MB Fixed: 18MB-37MB	Fixed: 18MB-77MB Pack: 65MB, 130MB
Serial printers	25-200 cps	20-120cps	180-230 cps	180-230 cps
Letter-quality printers	25-40 cps, 12 ppm	None	None	None
Line printers	430-730 lpm	300 lpm	85-600 lpm	160-1250 lpm
Nonimpact printers	Laser	—	—	—
Reel-to-reel tape drives	None	45 ips	None	None
Streaming tape drives	None	None	25/100 ips	25/100 ips
Cassette/cartridge tape drives	None	10MB	10 ips cassette	10 ips cassette
Other peripherals supported	Optical character readers	—	Super mini disk: 6MB Winchester: 9.6, 14.4MB	Cartridge: 4.6-9.2MB, Mini disk, card readers
SOFTWARE				
Assembler	Assembler, Trial	No	—	—
Compilers	C-Compiler	Basic	Cobol, RPG, MPL II, NDL	Cobol, RPG, NDL, MPL II
Operating system name	—	—	—	—
Operating system	Barrister MBOS	Multitasking	Realtime, multitasking	Realtime, multitasking
Operating system implemented in firmware	Fully	Partially	Fully	Fully
Database management system	BIMS	—	None	None
Principal industry application	Legal applications	Accounting	General business	General business
Other packages	Word processing, legal, accounting, financial modeling, info. mgmt.	—	Mfg., hospital, educ., word management, Reporter, Domain	Mfg., hospital, educ., word Mgmt, Reporter, Domain
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1024KB Memory, 2-80MB disk, workstation modem, message printer, MBOS operating system, word processing—\$69,900	CPU, tape cartridge, 27MB disk—\$40,950	B 96 with 512KB memory, 40MB fixed disk, tape streamer, and controls—\$29,300	B930 with 4 processors, two 256KB & two 64KB memory modules, data comm. I/O extender, tape streamer, 80MB fixed disk—\$40,400
Mo. maintenance of basic configuration	\$467	\$270 plus peripherals	—	—
Date of first delivery	August 1983	1978	December 1979	August 1980
Number installed to date	140	3500	—	—
COMMENTS			B 90 Series consists of 5 models: B 91, B 92, B 93, B 95 and B 96.	The B 900 Series consists of 2 models: B920, B930.

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MANUFACTURER AND MODEL	Burroughs Corp. B 1900 Series	CalComp Corporation 8510	CalComp Corporation 8600	Centurion Dealers Computer Corp. 6400/6500
WORD LENGTH	16 bits	16 bits	16 bits	8, 16 bits
MAIN MEMORY	131KB-2MB	128KB-512KB	128KB-512KB	128KB-512KB
DISK STORAGE CAPACITY	65MB-8GB	2MB-4MB	2MB-4MB	64MB-288MB
NO. WORKSTATIONS SUPPORTED	4-60	1	1	Up to 20
PRICE RANGE	From \$62,000	\$12,000-\$40,000	\$18,000-\$50,000	\$28,000-\$33,000
TARGET MARKET	Business/Commercial	Technical	Technical	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Digital LSI-11/23	LSI-11/23, Intel 8086	Centurion CPU6
Hardware floating point	No	Standard	Standard	No
Battery backup	No	None	None	None
Realtime clock or timer	Optional	Standard	Standard	Standard
CPU cycle time, nanoseconds	67/250	600	600	200
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	2	2	1
Memory access, bits/sec.	—	16	16	8
Cycle/access time, nanoseconds	300-500	600	600	800
Storage protection	Standard	None	None	Standard
Increment size, bytes	131K, 262K, 524K, 1M	64K	64K	128K
Cache memory, bytes	8K-16K	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	15	1	1	32
Data transfer rate	—	2M bytes/sec.	2M bytes/sec.	19.2K bytes/sec.
COMMUNICATIONS				
Max. number of lines	8-32	8	8	1
Synchronous	Opt., 19.2K bps	None	None	No
Asynchronous	Opt., 50K bps	4 Std./4 Opt., 19.2K bps	4 Std./4 opt., 19.2K bps	Std., 9.6K bps
Protocols supported	2780/3780, X.25, BDLC, BNA, SNA, 3270	Async	Async	XModem
Type of LAN supported	None	None	None	None
RJE terminals emulated	2780/3780	None	None	3780
IBM 3270 emulation	Yes	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Pack: 65MB, 130MB Fixed: 402MB-1608MB	Winchester: to 40MB; Floppy: 1.2MB	Winchester: to 40MB; Floppy: 1.2MB	64MB-96MB
Serial printers	None	120 cps	120cps	120 cps-150 cps
Letter-quality printers	None	None	None	45 cps
Line printers	270-2000 lpm	None	None	None
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	50 ips; 1600 bpi	None	None	1600 bpi
Streaming tape drives	25/100 ips	None	None	55 ips
Cassette/cartridge tape drives	10 ips cassette	None	None	40MB
Other peripherals supported	Card equipment	640x480 mono graphics- 2 planes	640x480 mono graphics- 6 planes	—
SOFTWARE				
Assembler	—	Assembler	Assembler	Assembler
Compilers	Cobol, Fortran, Basic, RPG, NDL, Pascal	Fortran, Pascal, Basic, C	Fortran, Pascal, Basic, C	Basic, CPL
Operating system name	—	RT-11, Venix, UCSD Pasc.	RT-11, Venix, UCSD Pasc.	CFAS
Operating system	Realtime, multitasking	—	—	Realtime, multitasking
Operating system implemented in firmware	Fully	No	No	None
Database management system	DMS II	None	None	None
Principal industry application	Business	CAD/D-mechanical/ technical	CAD/D-mechanical/ technical	Financial
Other packages	Mfg., banking, educ., distribution	Spreadsheet, word processing	Spreadsheet, word processing	Service industry, accounting, inventory control
PRICING & AVAILABILITY				
Basic system configuration and price	B1990-SP with 512KB memory, 4 comm. interfaces, Maintenance Access Processor and ET1100 workstation—\$59,300	DesignPro turnkey CAD/D system, mono, 10MB Winchester, 1.2MB floppy, Digitizer, software—\$27,400	DesignPro turnkey CAD/D system, color, 10MB Winchester, 1.2MB floppy, Digitizer, software—\$39,000	—
Mo. maintenance of basic configuration	—	—	—	\$440/\$400
Date of first delivery	1980	January 1983	January 1983	October 1979
Number installed to date	—	500	300	130/40
COMMENTS	6 models: B 1905, B 1915 B 1955, B 1985, B 1990-SP, B 1990-DP.	—	—	6400—cabinet model 6500—desk model

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MANUFACTURER AND MODEL	Centurion Dealers Computer Corp. 7000	Chrislin Industries Inc. CI-Micro-11	Computer Designed Systems Adviser 100	Computer Designed Systems Adviser 600
WORD LENGTH	8, 16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-16MB	256KB-4MB	64KB-512KB	64KB-1MB
DISK STORAGE CAPACITY	35MB-4GB	Up to 140MB	23MB-288MB	23MB-800MB
NO. WORKSTATIONS SUPPORTED	Up to 32	10	8	24
PRICE RANGE	\$20,000-\$75,000	\$10,000-\$25,000	\$20,000-\$100,000	\$50,000-\$250,000
TARGET MARKET	Business	Technical, business	Business/Manufacturing/ Distribution	Business, Manufacturing, Distribution
CENTRAL PROCESSOR				
CPU manufacturer and model	Centurion CPU7	DEC LSI 11/73	Proprietary	Proprietary
Hardware floating point	No	Double	Single	Double
Battery backup	None	Optional	Optional	Optional
Realtime clock or timer	Standard	Optional	Standard	Standard
CPU cycle time, nanoseconds	184-333	None	200	100
MIPS	—	—	2.6	4.2
MAIN STORAGE				
Bytes fetched per cycle	1	4	4	6
Memory access, bits/sec.	24	1.2M	64	64
Cycle/access time, nanoseconds	200	400/240	100	100
Storage protection	Standard	Standard	Optional	Optional
Increment size, bytes	512K	256K	32K	64K
Cache memory, bytes	None	8K	None	2K
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	4	8	16
Data transfer rate	38.4K bytes/sec.	512K bytes/sec.	256K bytes/sec.	512K bytes/sec.
COMMUNICATIONS				
Max. number of lines	8	32	12	24
Synchronous	No	Optional	Optional	Optional
Asynchronous	Std., 9.6K bps	Standard	Standard	Standard
Protocols supported	XModel	Any DEC supported	All IBM	All IBM
Type of LAN supported	None	DECnet	None	—
RJE terminals emulated	None	VT100	None	2780/3780
IBM 3270 emulation	No	No	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 35MB-515MB	Fixed: 10-140MB	Pack: 32MB-96MB	Pack: 32MB-96MB Fixed: 80MB-300MB
Serial printers	120 cps-150 cps	50-100 cps	20-350 cps	20-350 cps
Letter-quality printers	45 cps	—	20-250 cps	20-250 cps
Line printers	300 lpm-600 lpm	—	300/600/1200 lpm	300/600/1200 lpm
Nonimpact printers	None	—	—	—
Reel-to-reel tape drives	None	—	800/1600 bpi	800/1600 bpi
Streaming tape drives	55 ips/40MB	—	Optional	None
Cassette/cartridge tape drives	40MB-60MB	—	Optional	None
Other peripherals supported	—	—	—	—
SOFTWARE				
Assembler	Centurion Assembler,	Macro	No	Yes
Compilers	CPL, Cobol	Fortran, Basic, Pascal, Cobol	Abol	Abol, Cobol, Basic, Fortran, Pascal, RPG
Operating system name	ZBOS	—	—	—
Operating system	Realtime, multitasking	Multitasking	Realtime,multitask,batch	Realtime,multitask,batch
Operating system implemented in firmware	None	Fully	Partially	Partially
Database management system	None	Various	Advisor +	Advisor +
Principal industry application	Financial	Manufacturing	Manufacturing, distribu- tion	Manufacturing, fixed assets, distribution
Other packages	Service industry, accounting, inventory control	Accounting	Medical, construction, fixed assets	Medical, construction,
PRICING & AVAILABILITY				
Basic system configuration and price	—	CPU, 4MB memory, terminal, 200MB Winchester, 2MB floppy and RSX11-M software— \$20,000	64KB memory, 1 CRT, 23MB disk, 300 lpm printer— \$30,000	CPU, 128KB memory, 2 CRTs, 80MB disk, 300 lpm printer—\$80,000
Mo. maintenance of basic configuration	—	Contact vendor	\$300	\$750
Date of first delivery	May 1985	Jan. 83	1975	1977
Number installed to date	100	—	—	—
COMMENTS	Bit-slice Mini imple- mented in IEEE-796 (multibus)	—	—	—

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MANUFACTURER AND MODEL	Computer Designed Systems Adviser 900	Computer Extension Systems, Inc. OMNIPAC	Datapoint Corp. Starport 1600	Datapoint Corp. 8400
WORD LENGTH	16 bits	12 bits	16 bits	16 bits
MAIN MEMORY	512KB-6MB	8KB-1MB	512KB	512KB-1MB
DISK STORAGE CAPACITY	800MB-4.2GB	10MB-240MB	1.2MB-60MB	130MB
NO. WORKSTATIONS SUPPORTED	64	16	17	8
PRICE RANGE	\$100,000-\$500,000	\$15,000-\$28,000	\$5,995	\$7,500-\$15,000
TARGET MARKET	Business, Manufacturing, Distribution	Business	Business/Office Automation (entry level sys)	Business/Office Automation
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Intel 80286	Intel 80286
Hardware floating point	Double	None	None	—
Battery backup	Optional	None	None	—
Realtime clock or timer	Standard	Standard	—	—
CPU cycle time, nanoseconds	100	980	375	—
MIPS	8.6	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	6	2	—	—
Memory access, bits/sec.	64	15	—	—
Cycle/access time, nanoseconds	100	980	375	—
Storage protection	Optional	None	—	—
Increment size, bytes	64K	8K	512K	—
Cache memory, bytes	4K	None	None	—
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	32	—	—
Data transfer rate	512K bytes/sec.	1M word/sec.	—	—
COMMUNICATIONS				
Max. number of lines	64	32	—	—
Synchronous	Optional	Optional	—	—
Asynchronous	Standard	Optional	—	—
Protocols supported	All IBM	—	—	2780/3780, 3270, Datapoll, DSSLAVE, Multilink Datapoint ARC Network
Type of LAN supported	None	DECnet	ARC Network	—
RJE terminals emulated	3780	—	—	—
IBM 3270 emulation	Yes	No	—	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 80MB-600MB	Winchester: 120MB	Fixed: 20MB, 40MB Diskette: 1.2MB	Fixed: 40MB Cartridge: 10MB-20MB
Serial printers	20-350 cps	120 cps	160 cps	120-300 cps
Letter-quality printers	20-250 cps	40 cps	35 cps	35-80 cps
Line printers	300/600/1200 lpm	300 lpm	—	300-600 lpm
Nonimpact printers	—	—	—	Laser
Reel-to-reel tape drives	800/1600 bpi	None	—	None
Streaming tape drives	None	None	60MB	None
Cassette/cartridge tape drives	None	None	—	10MB-20MB
Other peripherals supported	—	Diskette	—	—
SOFTWARE				
Assembler	Yes	PAL	None	—
Compilers	Abol, Cobol, Basic, Fortran, Pascal, RPG	Dibol, Pascal, Basic, WPS8, Fortran IV	GW Basic, Databus	Databus
Operating system name	—	—	MS-DOS	—
Operating system	Realtime, multitask, batch	Multiprocessing	Multitasking	Multitasking
Operating system implemented in firmware	Partially	No	—	—
Database management system	Advisor +	None	None	None
Principal industry application	Manufacturing, distribution	Office automation	Office automation	Office automation
Other packages	Medical, construction, fixed assets	—	Full line of application packages	Full line of application packages
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 128KB memory, 2CRTs 80MB disk, 300 lpm printer—\$150,000	CPU, 40MB disk, 128KB word memory—\$15,000	CPU, 512K memory, 1 serial port, 1 parallel port, 14" monitor, 1.2MB diskette, 20MB disk, MS-DOS, GW Basic, User Diag.—\$5,995	CPU, 512K memory, 10MB cartridge disk, 40MB fixed disk, Arc network interface—\$20,000
Mo. maintenance of basic configuration	\$1,025	Contact vendor	\$530	\$207
Date of first delivery	1977	1980	1981	August 1983
Number installed to date	—	200	500	—
COMMENTS		Supports all DEC compatible peripherals.	*36,780 workstations supported with local area network	supported with local area network

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MANUFACTURER AND MODEL	Datapoint Corp. 8600	Datapoint Corp. 8850	Digital Equipment Corp. PDP-11/23-Plus	Digital Equipment Corp. PDP-11/24
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-1MB	512KB-4MB	256KB-4MB	1MB-4MB
DISK STORAGE CAPACITY	180MB	512KB-over 2 bil. bytes	20.8MB-41.6MB	20.8MB-36GB
NO. WORKSTATIONS SUPPORTED	24	24	10 active	10 active
PRICE RANGE	\$7,500-\$15,000	\$16,500-\$59,950	From \$6,690	From \$11,000
TARGET MARKET	Business/Office Automation	Business/Office Automation	Business/technical	Business/technical
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	—	None	Optional	Standard
Battery backup	—	None	No	Optional
Realtime clock or timer	—	Standard	Standard	Standard
CPU cycle time, nanoseconds	—	—	—	—
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	4	2	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	—	—	560	510
Storage protection	—	—	Standard	Standard
Increment size, bytes	—	512K	256KB, 512KB	1M
Cache memory, bytes	—	1MB	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	8	14	9
Data transfer rate	—	1.2M bytes/sec.	—	—
COMMUNICATIONS				
Max. number of lines	2	3	2	—
Synchronous	—	Opt., 40.8K bps	Opt., 1M bps	Opt., 1M bps
Asynchronous	—	—	Opt., 9.6K bps	Opt., 9.6K bps
Protocols supported	2780/3780, 3270, Datapoll, DSSSLAVE, Multilink Datapoint ARC Network	2780/3780 HASP Datapoll, 3278 ARC*	DDCMP, DNA, X.25, HASP, SNA, 200UT, Univac 1004 DECnet, Ethernet	DDCMP, DNA, X.25, HASP, SNA, 200 UT, Univac 1004 DECnet, Ethernet
Type of LAN supported	2780/3780, Hasp	2780/3780	2780/3780	2780/3780
RJE terminals emulated	Yes	Yes	Yes	Yes
IBM 3270 emulation	—	—	—	—
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 10MB-60MB Removable: 10MB-20MB	Fixed: 266MB Removable: 67MB	Winchester: 10MB-41.6MB Cartridge: 5.2MB-41MB	Winchester: 121KB-456KB Pack: 205MB, floppy
Serial printers	120-300 cps	35-160 cps	30-600 cps	30-600 cps
Letter-quality printers	35-80 cps	35 cps	30 cps	—
Line printers	300-1000 lpm	300-600 lpm	300-1200 lpm	300-1200 lpm
Nonimpact printers	Laser	Laser	Laser: 8/12 ppm	Laser: 8/12 ppm
Reel-to-reel tape drives	25 ips	25 ips	24 ips; 1600 bpi	45 ips; 800/1600 bpi
Streaming tape drives	None	None	None	25/100 ips; 40MB
Cassette/cartridge tape drives	10MB-20MB	20MB	60MB cassette	30 ips; 800 bpi
Other peripherals supported	Diskettes DS-DD 8MB	Color business graphics	—	Card readers
SOFTWARE				
Assembler	—	SNAP3 Macro	Assembler and macro	Assembler and macro
Compilers	Basic, RPB, Cobol, Databus	Basic PLS, Fortran, Databus, Datashare, Cobol, RPG Plus, Chain	Cobol, Fortran, Basic, Coral, Pascal, Dibol	Cobol, Fortran, Basic, Coral, Dibol
Operating system name	—	—	See Comments below	See Comments below
Operating system	Multitasking	Multitasking	Batch, realtime	Realtime, multitasking
Operating system implemented in firmware	—	—	No	No
Database management system	None	None	None	None
Principal industry application	Office automation	Office automation	—	—
Other packages	Full line of application packages	Full line of application packages	Graphics, Datatrieve, word processing	Graphics, Datatrieve, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256K memory, 10MB cartridge disk, 40MB fixed disk, Arc network interface —\$20,000	CPU, 512K memory, 202MB disk, console, 8 port serial interface, 2 peripheral processors —\$60,000	PDP-11/23-Plus with 512KB memory, 2 disks and controllers— \$19,950	PDP 11/24 CPU, power supply, 1MB memory, KT24 PAX module, I/O connection panel, CPU cabinet w/power controller, mounting space for disk devices— \$14,000
Mo. maintenance of basic configuration	\$225	\$530	\$249	\$118
Date of first delivery	September 1981	1981	January 1982	March 1981
Number installed to date	—	500	—	—
COMMENTS	supported with local area network	*36,780 workstations supported with local area network	Utilizes DEC's RSX-11M, RSX-11M-Plus, RSTS/E, CTS 300, DMS11, and Ultrix-11	Utilizes DEC's RT-11, RSX-11M, RSX-11S, RSTS/E, CTS-300, DSM-11, RSX-11M-Plus, and Ultrix 11 operating systems

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MANUFACTURER AND MODEL	Digital Equipment Corp. PDP-11/44	Display Data Corp. in * sight	GEAC Computers Inc. 6000	GEAC Computers Inc. 8000
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	1MB-4MB	128KB	512KB-2MB	1MB-3MB
DISK STORAGE CAPACITY	20.8MB-3.6GB	15MB-192MB	2GB	4.8GB
NO. WORKSTATIONS SUPPORTED	48 active	16	30	100
PRICE RANGE	From \$29,300	From \$25,000	\$75,000+	\$114,000+
TARGET MARKET	Business/technical	Business	Business/Financial/ Library	Business/Financial/ Library
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Dist. Data Series 9000	Proprietary GEAC 250	Proprietary GEAC 250
Hardware floating point	Optional	None	Triple	Triple
Battery backup	Optional	None	Standard	Standard
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	—	150	240	240
MIPS	—	—	0.5	0.7
MAIN STORAGE				
Bytes fetched per cycle	2	2	—	—
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	490	450	320	320
Storage protection	Standard	None	Standard	Standard
Increment size, bytes	1M	128K	128K	128K
Cache memory, bytes	8K	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	14	4	3-15	3-19
Data transfer rate	1M bytes/sec.	1M words/sec.	—	—
COMMUNICATIONS				
Max. number of lines	—	8	64	64
Synchronous	Opt., 1M bps	None	Std., up to 19.2 bps	Std., up to 19.2 bps
Asynchronous	Opt., 9.6K bps	Std., 9.6K bps	Std., up to 19.2 bps	Std., up to 19.2 bps
Protocols supported	DDCMP, DNA, X.25, HASP, SNA, 200 UT, Univac 1004	X3.28, 2780/3780, TTY	X.3.28, X.25	X.3.28, X.25, IBM 2780/3780/3270 bsc
Type of LAN supported	DECnet, Ethernet	Omninet	None	None
RJE terminals emulated	2780/3780	2780/3780	3780	3780
IBM 3270 emulation	Yes	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 121MB-456MB Pack: 205MB 30-600 cps	Fixed: 40MB-64MB (up to 3 per system) 80-320 cps 55 cps	Fixed: 160MB, 344MB 400 lpm 150 cps	Fixed: 160MB, 344MB 400 lpm 150 cps
Serial printers	—	300 lpm	360-1000 lpm	360-1000 lpm
Letter-quality printers	—	—	None	None
Line printers	300-1200 lpm	—	None	None
Nonimpact printers	Laser: 8/12 ppm	—	None	None
Reel-to-reel tape drives	45/125 ips; 800/1600 bpi	None	100 ips; 1600 bpi	100 ips; 1600 bpi
Streaming tape drives	25/100 ips; 40MB	None	25 ips	25 ips
Cassette/cartridge tape drives	30 ips; 800 bpi	20MB-64MB; 30-90 ips	None	None
Other peripherals supported	—	—	—	—
SOFTWARE				
Assembler	Assembler and macro	Macro	None	None
Compilers	Cobol, Basic, Fortran, Coral, Dibal, Pascal	None	ZOPL, ABL (proprietary) Basic, Pascal, C	ZOPL, ABL (proprietary) Basic, Pascal, C
Operating system name	See Comments below	OS/80 6.0	—	—
Operating system	Batch, realtime	Realtime, multitasking	Realtime, multitasking	Realtime, multitasking
Operating system implemented in firmware	No	—	Partially	Partially
Database management system	None	in * Sight Dev. Sys.	None	None
Principal industry application	—	Auto dealer, route dist.	Financial, library	Financial, library
Other packages	Graphics, Datatrieve word processing	Truck dealer	—	—
PRICING & AVAILABILITY				
Basic system configuration and price	CPU with 1MB memory, power supply, I/O connection panel, cabinet w/ power controller, mounting space for disk storage devices— \$29,950	CPU, 128K memory, 30MB disk, 16 ports, CRT, printer— \$25,000	2 CPUs, 512K memory, 160MB disk, tape, 8 ports—\$93,000	4 CPUs, 1MB memory, 160MB disk, tape, 8 ports—\$133,000
Mo. maintenance of basic configuration	\$165	\$215	—	—
Date of first delivery	June 1980	September 1986	November 1980	November 1978
Number installed to date	—	—	200	300
COMMENTS	Utilizes RT-11, RSX-11S, RSX-11M, RSX-11M-Plus, RSTS/E, Ultrix-11, DMS-11, and CTS-300 operating systems	—	—	—

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MANUFACTURER AND MODEL	General Robotics MicroMainFrame	General Robotics Cobra	General Turnkey Systems Model MC-30	General Turnkey Systems Model 5000-6000
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	1MB-4MB	512KB-2MB	384KB	1024KB
DISK STORAGE CAPACITY	1MB-2GB	1MB-135MB	50MB-100MB	50MB-1200MB
NO. WORKSTATIONS SUPPORTED	—	—	16	64
PRICE RANGE	\$5,000-\$20,000	\$3,000-\$10,000	\$25,000-\$35,000	\$18,000-\$58,000
TARGET MARKET	Technical/Business	Technical/Business	Business	Business
CENTRAL PROCESSOR	Digital KDJ-11	Digital J-11	INI	Data General
CPU manufacturer and model	Single/double	Single/double	Double precision	Double precision
Hardware floating point	None	None	Standard	Standard
Battery backup	Optional	Standard	Standard	Standard
Realtime clock or timer	120	120	375	400
CPU cycle time, nanoseconds	3.6	3.6	—	—
MIPS	—	—	—	—
MAIN STORAGE	2	2	—	—
Bytes fetched per cycle	—	—	—	—
Memory access, bits/sec.	150	150	—	—
Cycle/access time, nanoseconds	None	None	Standard	Standard
Storage protection	512K	4K	—	—
Increment size, bytes	4K	—	—	—
Cache memory, bytes	—	—	—	—
INPUT/OUTPUT CONTROL	16-64	16-64	—	—
No. of I/O channels	19.2K bps	19.2K bps	—	—
Data transfer rate	64	64	16	64
COMMUNICATIONS	—	—	—	—
Max. number of lines	Std., 19.2K bps	Std., 19.2K bps	Std., 9,600 bps	Std., 9,600 bps
Synchronous	RS-232-C	RS-232-C	RS-232-C	RS-232-C
Asynchronous	—	—	—	—
Protocols supported	Ethernet, DECnet	Ethernet, DECnet	None	None
Type of LAN supported	None	None	None	None
RJE terminals emulated	No	No	No	No
IBM 3270 emulation	1MB, 80MB	1MB, 135MB	Fixed; removable	Fixed: 50MB, 24MB Removable: 80MB, 300MB
PERIPHERAL EQUIPMENT	30-180 cps	30-180 cps	180 cps	180 cps
Disks supported	45 cps	45 cps	180 cps	180 cps
Serial printers	300-1500 lpm	300-1500 lpm	300-1000 lpm	300-1000 lpm
Letter-quality printers	—	—	—	—
Line printers	—	—	1600 bpi	1600 bpi
Nonimpact printers	—	—	None	None
Reel-to-reel tape drives	90 ips	—	None	None
Streaming tape drives	87,200 bytes/sec.; 20-100	—	None	None
Cassette/cartridge tape drives	—	—	—	—
Other peripherals supported	—	—	—	—
SOFTWARE	—	—	Global	Global
Assembler	Cobol, Pascal, Basic, Fortran, C	Cobol, Pascal, Basic, Fortran, C	Basic	Basic
Compilers	—	—	—	—
Operating system name	See Comments below	See Comments below	Champ	Champ
Operating system	Realtime, batch	Realtime, Batch	Realtime	Realtime
Operating system implemented in firmware	No	No	Fully	Fully
Database management system	None	None	Champ	Champ
Principal industry application	RTFILE, RMS	FTFILE, RMS	Distribution	Distribution
Other packages	wholesale	Numerous	Accounting, report writer	Accounting, report writer
PRICING & AVAILABILITY	Numerous	—	—	—
Basic system configuration and price	CPU, 4MB memory, 16 serial ports, 160MB SMD disk, streaming cartridge tape— \$14,500 (in quantity)	Cobra single board mainframe supporting 1 floppy drive, 1 Winchester drive, 4 SIO, 512KB memory— \$5,500 (in quantity)	CPU, 384KB memory, 50MB disk, CRT, 64 lpm printer— \$33,050	CPU, 128KB memory, 50MB disk, 3 CRTs, 64 lpm printer— \$62,850
Mo. maintenance of basic configuration	—	—	\$303	\$481
Date of first delivery	March 1984	March 1984	January 1984	January 1980
Number installed to date	Over 700	Over	40	200
COMMENTS	Operating systems include RT-11, TSX+, RSTS, RSX11M/M+, Mumps, Unix. Flexibility in system configuration available, both low and high end systems.	Single board mainframe. Operating systems include RT-11, TXS+, RSTS, RSX11M/M+, Mumps, Unix	RDD software included	RDD software included

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MANUFACTURER AND MODEL	Hewlett-Packard Co. HP 1000 E/F Series	Hewlett-Packard Co. HP 1000 Micro 26	Hewlett-Packard Co. HP 1000 Micro 27	Hewlett-Packard Co. HP 1000 Micro 29
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-2MB	512KB-8MB	512KB-8MB	768KB-6MB
DISK STORAGE CAPACITY	28MB-20GB	20MB-3.2GB	20MB-3.2GB	20MB-3.2GB
NO. WORKSTATIONS SUPPORTED	*	*24	*24	*24
PRICE RANGE	\$23,750-\$32,750	\$16,240-\$32,000	From \$14,000	From \$24,600
TARGET MARKET	Scientific/Technical	Scientific/Technical	Scientific/Technical	Scientific/Technical
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	HP A600	HP A700	HP A900
Hardware floating point	Optional	None	Double	Double
Battery backup	Optional	Optional	Optional	Optional
Realtime clock or timer	None	None	—	—
CPU cycle time, nanoseconds	—	—	—	—
MIPS	1.0	1.0	1.0	3.0
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	4
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	665/420	454	500	181
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	128K	128K	128K, 256K, 512K, 1M	768K, 1.5MB, 3MB
Cache memory, bytes	None	None	None	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	9-14	12	12	12
Data transfer rate	900K bytes/sec.	900K bytes/sec.	4.27M bytes/sec.	900K bytes/sec.
COMMUNICATIONS				
Max. number of lines	—	—	—	—
Synchronous	Opt., 9.6K bps	Opt., 57.2K bps	Opt., 57.6K bps	Opt., 57.2K bps
Asynchronous	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps
Protocols supported	X.25, HDLC, Bisync, RJE, MRJE, IEEE 802.3, IMF	X.25, HDLC, bisync, RJE, MRJE, IEEE 802.3, IMF	X.25, HDLC, Bisync, RJE, MRJE, IEEE 802.3, IMF	X.25, HDLC, Bisync, RJE, MRJE, IEEE 802.3, IMF
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
Nonimpact printers	Laser: 12 ppm	Laser: 12 ppm	Laser: 12 ppm	Laser: 12 ppm
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 peripherals 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 name	RTE-6/VM	RTE-A	RTE-A	RTE-A
Operating system	Realtime	Realtime	Realtime	Realtime
Operating system 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	manufacturing, process control, graphics	Mfg., process control, graphics	Mfg., process control, graphics	Mfg., process control, graphics
PRICING & AVAILABILITY				
Basic system configuration and price	E-Series CPU, 256KB memory, operating system, 10 I/O ports—\$23,750	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
Mo. maintenance of basic configuration	\$155	\$61	\$57	\$85
Date of first delivery	December 1981	August 1983	August 1983	August 1983
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 26	Hewlett-Packard Co. HP 1000 Model 27	Hewlett-Packard Co. HP 1000 Model 29	Hewlett-Packard HP 3000 Series 37
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-8MB	512KB-8MB	768KB-24MB	512KB-2MB
DISK STORAGE CAPACITY	23.8MB-20GB	23.8MB-20GB	23.8MB-20GB	2.1GB
NO. WORKSTATIONS SUPPORTED	*24	*24	*24	32
PRICE RANGE	From \$16,000	From \$24,000	From \$34,000	From \$21,950
TARGET MARKET	Scientific/Technical	Scientific/Technical	Scientific/Technical	Business/Commercial
CENTRAL PROCESSOR				
CPU manufacturer and model	HP A600+	HP A700	HP A900	Proprietary
Hardware floating point	No	Double	Double	Single extended prec.
Battery backup	Optional	Optional	Optional	Standard
Realtime clock or timer	—	—	—	Standard
CPU cycle time, nanoseconds	—	—	—	—
MIPS	1.0	1.0	3.0	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	4	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	454	500	181	170
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	128K, 256K, 512K, 1M	128K, 256K, 512K, 1M	768K, 1.5M, 3M	512K
Cache memory, bytes	None	None	4K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	18	20	20	3
Data transfer rate	4.27M bytes/sec.	4.27M bytes/sec.	4.27M bytes/sec.	1M bytes/sec.
COMMUNICATIONS				
Max. number of lines	—	—	—	3
Synchronous	Opt., 57.2K bps	Opt., 57.2K bps	Opt., 57.2K bps	Std., 19.2K bps
Asynchronous	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 9.6K bps
Protocols supported	X.25, HDLC, Bisync, RJE, MRJE, IEEE 802.3, IMF	X.25, HDLC, Bisync, RJE, MRJE, IEEE 802.3, IMF	2780/3780, X.25, HDLC	HDLC/SDLC, X.25, RS-422, RS-232-C, CCITT V.24/.35
Type of LAN supported	None	None	None	LAN IEEE 802.3
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: 50MB-404MB Removable: 404MB
Serial printers	30-108 cps	30-108 cps	30-108 cps	40-200 cps
Letter-quality printers	40 cps	40 cps	40 cps	40-45 cps
Line printers	250-1000 lpm	250-1000 lpm	250-1000 lpm	300-1200 lpm
Nonimpact printers	Laser: 12 ppm	Laser: 12 ppm	Laser: 12 ppm	Laser: 8-45 ppm
Reel-to-reel tape drives	800/1600 bpi	800/1600 bpi	800/1600 bpi	45 ips-75 ips
Streaming tape drives	None	None	None	1600/6250 bpi
Cassette/cartridge tape drives	None	None	None	10,000 bpi; 67MB
Other peripherals supported	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet	Diskettes, plotters, graphics tablet	Diskettes; plotters
SOFTWARE				
Assembler	Macro/1000	Macro/1000	Macro/1000	—
Compilers	Basic, Fortran, Pascal	Basic, Fortran, Pascal	Basic, Fortran, Pascal	Basic, Cobol, Pascal, Fortran, RPG, SPL
Operating system name	RTE-A	RTE-A	RTE-A	MPE
Operating system	Realtime	Realtime	Realtime	Realtime, multiprogr.
Operating system implemented in firmware	—	—	Not supplied	—
Database management system	Image/1000	Image/1000	Image/1000	Image/V, TurboImage/V
Principal industry application	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement	Manufacturing, engineering, measurement	Office Automation
Other packages	Mfg., process control, graphics	Mfg., process control, graphics	Mfg., process control, graphics	Financial, sales, graphics, distribution
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, RTE-A operating system, 512KB memory, 16 available I/O channels—\$16,240	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—\$21,950
Mo. maintenance of basic configuration	\$67	\$72	\$90	—
Date of first delivery	March 1982	March 1982	December 1982	October 1984
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.	*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 42	Hewlett-Packard HP 3000 Series 58	Hewlett-Packard HP 3000 Series 70	Honeywell DPS 6/22
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	1MB-3MB	4MB-8MB	8MB-16MB	512KB-1.8MB
DISK STORAGE CAPACITY	28MB-3.2GB	28MB-4.2GB	50MB-9.7GB	28MB-80MB
NO. WORKSTATIONS SUPPORTED	92	152	400	5
PRICE RANGE	From \$37,800	From \$75,000	From \$150,000	From \$12,995
TARGET MARKET	Business/Commercial	Business/Commercial	Business/Commercial	Technical/Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Double	Double	Double	Single/double
Battery backup	Standard	Standard	Standard	None
Realtime clock or timer	Standard	Standard	Standard	No
CPU cycle time, nanoseconds	—	—	75	270
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	—
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	430	430	145	1080
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	512K, 1M	1M, 2M	1M, 4M	256K/512K
Cache memory, bytes	None	32K	128KB	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	2	7	15	10
Data transfer rate	1M bytes/sec.	1M bytes/sec.	1M bytes/sec x 3	—
COMMUNICATIONS				
Max. number of lines	3 sync	5	24	—
Synchronous	Std., 19.2K bps	Std., 19.2K bps	Std., 19.2K bps	Optional
Asynchronous	Opt., 9.6K bps	Opt., 9.6K bps	Opt., 9.6K bps	Standard
Protocols supported	HDLC/SDLC, X.25, RS-422, RS-232-C, CCITT V.24/.35	HDLC/SDLC, X.25, RS-422 RS-232-C, CCITT V.24/.35	HDLC/SDLC, X.25, RS-422 RS-232-C, CCITT V.24/.35	BSC, SDLC, HDLC, DSA, SNA, TTY
Type of LAN supported	None	IEEE 802.3	IEEE 802.3	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	IBM 2780/3780, HASP
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 50MB-404MB Removable: 404MB	Fixed: 50MB-404MB Removable: 404MB	Fixed: 50MB-404MB Removable: 404MB	Fixed: 20MB-28MB Removable: 20MB
Serial printers	40-200 cps	40-200 cps	40-200 cps	100-400 cps
Letter-quality printers	40-45 cps	40-45 cps	25-40 cps	35-55 cps
Line printers	300-1200 lpm	300-1200 lpm	300-1200 lpm	None
Nonimpact printers	Laser: 8-45 ppm	Laser: 8-45 ppm	Laser: 8-45 ppm	Laser
Reel-to-reel tape drives	45 ips-75 ips	45 ips-75 ips	45 ips-75 ips	None
Streaming tape drives	1600/6250 bpi	1600/6250 bpi	1600/6250 bpi	55 ips; 8000 bpi
Cassette/cartridge tape drives	10,000 bpi; 67MB	10,000 bpi; 67MB	10,000 bpi; 67MB	Cartridge: 20MB-40MB
Other peripherals supported	Diskettes; plotters	Diskettes; plotters	Diskettes; plotters	
SOFTWARE				
Assembler	—	—	—	Advanced Assembler
Compilers	Basic, Cobol, Pascal, Fortran, RPG, SPL	Basic, Cobol, Pascal, Fortran, RPG, SPL	Basic, Cobol, Pascal, Fortran, RPG, SPL	Cobol, Basic, RPG II, Fortran, Pascal, C
Operating system name	MPE	MPE	MPE	GCOS 6
Operating system	Realtime, batch	Transaction oriented	Transaction oriented	Multitasking
Operating system implemented in firmware	—	partially	Partially	—
Database management system	Image/V, TurboImage/V	Image/V, TurboImage/V	TurboImage/V	DM6
Principal industry application	Manufacturing	Manufacturing	Manufacturing	Office, data entry, manufacturing
Other packages	Office Auto., materials mgmt., production mgmt., graphics, distribution	Office Auto., materials mgmt., production mgmt., graphics, distribution	Office Auto., materials mgmt., production mgmt., graphics, distribution	Accounting, program development
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 4MB memory, 2 general I/O channels, disk caching, operating system— \$75,000	CPU, 4MB memory, 2 general I/O channels, disk caching, operating system—\$75,000	CPU, 8MB memory, 2 general I/O channels, 1 intermodule bus, disk caching, operating system— \$150,000	CPU, 512K memory, 5 workstation ports, 650KB diskette, 1 expansion slot, 28MB fixed disk— \$12,995
Mo. maintenance of basic configuration	—	—	\$550	Contact dealer
Date of first delivery	October 1985	October 1985	1986	December 1984
Number installed to date	—	—	—	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Honeywell DPS 6/40	Honeywell DPS 6/42	Honeywell DPS 6/45	Honeywell DPS 6/70
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	512KB-2MB	512KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	1GB	1GB	1GB	40MB-3GB
NO. WORKSTATIONS SUPPORTED	28	32	32	32
PRICE RANGE	From \$27,000	From \$19,300	From \$20,000	From \$30,500
TARGET MARKET	Technical/Business	Technical/business	Technical/Business	Technical/Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Single/double	Single/double	Single/double	—
Battery backup	Optional	Optional	Optional	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	250	250	250	—
MIPS				
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	425	425	425	425
Cycle/access time, nanoseconds	500	500	500	300
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	256K	1MB	256K	1MB
Cache memory, bytes	None	None	None	8K
INPUT/OUTPUT CONTROL				
No. of I/O channels	3	3	3	3
Data transfer rate	—	—	—	—
COMMUNICATIONS				
Max. number of lines	28	32	32	32
Synchronous	Optional	Optional	Optional	Optional
Asynchronous	Standard	Standard	Standard	Standard
Protocols supported	BSC, SDLC, HDLC, SNA, TTY, DSA	BSC, SDLC, HDLC, SNA, TTY, DSA	BSC, SDLC, HDLC, SNA, TTY, DSA	BSC, SDLC, HDLC, SNA, TTY, DSA
Type of LAN supported	Ethernet	Ethernet	Ethernet	Ethernet
RJE terminals emulated	IBM 2780/3780, HASP	2780/3780, 3270, HASP	IBM 2780/3780, HASP	IBM 2780/3780, HASP
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 67MB-413MB Cartridge: 40MB-80MB	Fixed: 67MB-413MB Cartridge: 40MB-80MB	Fixed: 67MB-413MB Cartridge: 40MB-80MB	Fixed: 67MB-413MB Cartridge: 40MB-80MB
Serial printers	80-400 cps	80-400 cps	80-400 cps	80-400 cps
Letter-quality printers	35 cps, 55 cps	35-55 cps	35 cps, 55 cps	35 cps, 55 cps
Line printers	300-1200 lpm	300-1200 lpm	300-1200 lpm	300-1200 lpm
Nonimpact printers	Laser	Laser	Laser	Laser
Reel-to-reel tape drives	75-125 ips; 1600/6250 bpi	75-125 ips; 1600/6250 bpi	75/125 ips, 1600/6250 bpi	75/125 ips, 1600/6250 bpi
Streaming tape drives	125 ips; 1600/6250 bpi	55 ips; 1600/6250 bpi	125 ips, 1600/6250 bpi	125 ips, 1600/6250 bpi
Cassette/cartridge tape drives	None	None	None	None
Other peripherals supported	Diskette: 650KB	Diskette: 650KB	Diskette: 650KB	Diskette: 650KB
SOFTWARE				
Assembler	Macro	Macro	Macro	Macro
Compilers	Cobol, Basic, RPG II, Fortran, Pascal, C, ADA	Cobol, Basic, RPG II, Fortran, Pascal, C, ADA	Cobol, Basic, RPG II, Fortran, Pascal, C, ADA	Cobol, Basic, RPG II, Fortran, Pascal, C, ADA
Operating system name	GCOS 6	GCOS 6	GCOS 6	GCOS 6
Operating system	Realtime	Realtime	Realtime	Realtime
Operating system implemented in firmware	None	None	None	None
Database management system	DM6	DM6, Oracle	DM6	DM6
Principal industry application	Manufacturing, distribution, pharmacy	Manufacturing, distribution, pharmacy	Manufacturing, distribution, pharmacy	Manufacturing, distribution, pharmacy
Other packages	Office automation, accounting, hospital	Office automation, accounting, hospital	Office automation, accounting, hospital	Office automation, accounting, hospital
PRICING & AVAILABILITY				
Basic system configuration and price	512KB memory, 40MB disk 650KB diskette, communications controller, 4 RS-422 ports, 2 megabus slots, console—\$27,000	2MB memory, 650KB diskette, 132MB fixed disk, streamer and adapter, MDC III comm. contr. 4 RS-422 ports—\$48,000	512KB memory, 80MB cart. disk, 650KB diskette communications controller, 4 workstation ports, printer port, console—\$45,500	CPU, 2MB memory, cache memory, 4 RS-232 port, 650KB diskette, disk controller—\$30,500
Mo. maintenance of basic configuration	\$162	\$207	\$258	—
Date of first delivery	April 1983	August 1985	November 1983	September 1985
Number installed to date	Not supplied	Not supplied	Not supplied	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Honeywell DPS 6/75	IBM Series 1 Model 4954	IBM Series 1 Model 4956	IBM System 36 Model 5360
WORD LENGTH	16 bits	16 bits	16 bit	8 bit
MAIN MEMORY	1MB-2MB	64KB-1024KB	1MB-2MB	128KB-2MB
DISK STORAGE CAPACITY	2GB	9.3MB-800MB	9.3MB-800MB	30MB-1432MB
NO. WORKSTATIONS SUPPORTED	96	256	256	136
PRICE RANGE	From \$35,000	From \$8,500	From \$12,500	\$21,000-\$87,100
TARGET MARKET	Technical/Business	Business	Business	General Business
CENTRAL PROCESSOR				
CPU manufacturer and model	proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Double	Double	Double	No
Battery backup	Optional	Optional	Optional	—
Realtime clock or timer	Standard	Optional	Optional	—
CPU cycle time, nanoseconds	220	—	—	—
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	—	—	—
Memory access, bits/sec.	425	—	—	—
Cycle/access time, nanoseconds	500	1.4 ms	550	—
Storage protection	Standard	None	Standard	Standard
Increment size, bytes	256K	64K	1M	128K, 256K
Cache memory, bytes	8K	64K	64K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	3-13	3-13	4
Data transfer rate	—	2.4M bytes/sec.	2.4M bytes/sec.	2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	96	—	—	4
Synchronous	Opt., 19.2K bps	Opt., 56K bps	Opt., 56K bps	Std., 56K bps
Asynchronous	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps	Opt.
Protocols supported	BSC, HDLC, SDLC, SNA, TTY, DSA	BSC, X.25, HDLC/SDLC, SNA	BSC, X.25, HDLC/SDLC, SNA	X.25, SNA, BSC, SDLC
Type of LAN supported	Ethernet	Industrial, PC, Token	Industrial, PC, Token	None
RJE terminals emulated	IBM 2780/3780	2780/3780	2780/3780	—
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 67MB, 413MB Removable: 40MB, 80MB	Fixed: 9.3-200MB	Fixed: 9.3-200MB	Fixed: 30MB-1432MB
Serial printers	80-400 cps	40-160 cps	40-160 cps	40-200 cps
Letter-quality printers	35, 55 cps	None	None	40/60 cps
Line printers	300-1200 lpm	140-560 lpm	140-560 lpm	95-650 lpm
Nonimpact printers	Laser	—	—	—
Reel-to-reel tape drives	75/125 ips; 1600/6250 bpi	45/75 ips; 800/1600 bpi	45/75 ips; 800/1600 bpi	None
Streaming tape drives	125 ips; 1600/6250 bpi	50/100 ips; 80M	50/100 ips; 80M	12.5/100 ips; 1600 bpi
Cassette/cartridge tape drives	None	None	None	None
Other peripherals supported	Diskette: 650KB	Diskette	Diskette	Diskette
SOFTWARE				
Assembler	Macro	Macro	Macro	Assembler
Compilers	Cobol, Basic, RPG II, Fortran, Pascal, C, ADA	Cobol, Fortran IV, PL/1, Basic, Pascal	Cobol, Fortran IV, PL/1, Basic, Pascal	Basic, Cobol, Fortran IV, RPG II
Operating system name	GCOS 6	EDX, RPS	EDX, RPS, IX	SSP
Operating system	Realtime	Multitasking	Multitasking	Multitasking
Operating system implemented in firmware	None	No	No	—
Database management system	DM6	None	None	None
Principal industry application	Manufacturing, distribution, pharmacy	Industrial, retail, financial, transportation, communications, telephone management, insurance, government	Industrial, retail, financial, transportation, communications, telephone management, insurance, government	Manufacturing, Distribution
Other packages	Office Automation, Accounting, hospital	—	—	Office automation
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory; 80MB disk, printer port; 4 workstation ports; 650KB diskette, console—\$60,000	CPU, 64KB memory, 13 I/O feature slots—\$8,500	CPU, 1MB memory, 13 I/O slots 12,500	Model A11, 128KB memory, diskette drive, 30MB disk—\$21,000
Mo. maintenance of basic configuration	\$458	\$45	\$37	\$96
Date of first delivery	November 1983	1982	1983	July 1983
Number installed to date	Not supplied	—	—	—
COMMENTS				

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MANUFACTURER AND MODEL	IBM System 36 Model 5362	IBM System 38 Model 4	IBM System 38 Model 6	IBM System 38 Model 18
WORD LENGTH	8 bit	8 bits	8 bits	8 bits
MAIN MEMORY	128KB-1MB	1MB-2MB	2MB-6MB	4MB-8MB
DISK STORAGE CAPACITY	30MB-120MB	64MB-3306MB	64.5MB-3306MB	64.5MB-6225.9MB
NO. WORKSTATIONS SUPPORTED	92	256	256	256
PRICE RANGE	\$41,000-\$100,000	\$61,000-\$127,000	\$95,000-\$147,990	\$122,840-\$202,990
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	—	—	—	—
Realtime clock or timer	—	—	—	—
CPU cycle time, nanoseconds	—	200	133	133
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	—
Memory access, bits/sec.	—	—	—	4 bytes/sec.
Cycle/access time, nanoseconds	—	1100	400	400
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	128K-1MB	128K	1M	2M
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	4	1	1	1
Data transfer rate	2.5M bytes/sec.	2.5M bytes/sec.	2.5M bytes/sec.	2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	4	8	8	12
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, X.25
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-120MB	Fixed: 64MB, 285MB	Fixed: 64MB, 387.1MB	Fixed: 64MB, 387.1MB
Serial printers	40-200 cps	40-120 cps	40-120 cps	40-120 cps
Letter-quality printers	40/60 cps	—	—	—
Line printers	95-650 lpm	200-1200 lpm	200-1200 lpm	200-1200 lpm
Nonimpact printers	—	—	—	—
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 peripherals 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 name	SSP	CPF	CPF	CPF
Operating system	Multitasking	Multitasking, batch	Multitasking, batch	Multitasking, batch
Operating system 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 A02, 128KB memory, diskette drive, 60MB disk—\$15,000	CPU, 1M memory, 64.5MB disk, system console, diskette & one workstation controller—\$49,140	CPU, 6,144KB memory, 129MB disk, system console and keyboard display, diskette, one workstation controller—\$103,570	CPU, 2MB memory, 129MB disk, diskette, system console, & one workstation controller—\$131,070
Mo. maintenance of basic configuration	\$70	\$474	\$971	\$656
Date of first delivery	April 1984	August 1980	March 1984	1985
Number installed to date	—	Not supplied	—	—
COMMENTS				

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MANUFACTURER AND MODEL	IBM System 38 Model 40	IBM System 38 Model 20	IBM 8100 Information System	MAI/Basic Four 1600
WORD LENGTH	8 bits	8 bits	8 bits	8 bits
MAIN MEMORY	4MB-16MB	4MB-8MB	256KB-8MB	128KB-512KB
DISK STORAGE CAPACITY	64.5MB-6225.9MB	64.5MB-6225.9MB	29MB-2GB	22MB-120MB
NO. WORKSTATIONS SUPPORTED	256	256	Depends on configuration	16
PRICE RANGE	\$207,000-\$317,990	\$147,000-\$228,000	\$19,000-\$160,000	\$16,420-\$65,000
TARGET MARKET	Business/Commercial	Business/Commercial	Disributed Processing	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	—	—	Double	No
Battery backup	—	—	—	Standard
Realtime clock or timer	—	—	—	Standard
CPU cycle time, nanoseconds	—	—	—	200
MIPS	3.0	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	4	4	—	8
Memory access, bits/sec.	—	—	—	8 bits/sec.
Cycle/access time, nanoseconds	333	400	800/1600	600
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	8MB, 12MB, 16MB	4MB, 6MB, 8MB	128K-8M	32K
Cache memory, bytes	None	None	None	Opt., 32K
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	—	8	—
Data transfer rate	—	—	—	20K bytes/sec.
COMMUNICATIONS				
Max. number of lines	12	12	6-11	16
Synchronous	Std., 9.6K bps	Std., 9.6K bps	Std., 38.4K bps	Opt., 9,600 bps
Asynchronous	Opt., 1.2K bps	Opt., 1.2K bps	Opt.	Std., 9,600 bps
Protocols supported	SDLC, BSC, 3270, X.25	SDLC, BSC, 3270, X.25	SDLC, BSC, SNA	2780/3780, 2770/3770, 3270, X.25
Type of LAN supported	—	—	None	B4NET
RJE terminals emulated	3770	3770	—	2770/2780, 3770/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 64MB-729.8MB	Fixed: 64MB-729.8MB	Fixed: 131MB Removable: 29, 65, 129MB	Fixed: 22MB, 43MB, 120MB
Serial printers	40-560 cps	40-560 cps	40-450 cps	120-160 cps
Letter-quality printers	40-120 cps	40-120 cps	—	40 cps
Line printers	44-1200 lpm	44-1200 lpm	120-600 lpm	150/200/300 lpm
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	12-50 ips; 200-1600	12-50 ips; 200-1600	None	175 ips
Streaming tape drives	—	—	12.5/100 ips, 1600 bpi	100 ips
Cassette/cartridge tape drives	—	—	None	30 ips
Other peripherals supported	—	—	Card readers, diskette	—
SOFTWARE				
Assembler	None	None	Assembler	None
Compilers	RPG, Cobol, Basic	RPG, Cobol, Basic	Cobol, Fortran, APL, PL/1	Business Basic
Operating system name	CPF	CPF	DPPX, DPCX	—
Operating system	Batch, realtime, multita	Batch, realtime, multita	—	Multitasking
Operating system implemented in firmware	—	—	—	Fully
Database management system	None	None	DTMS	Origin
Principal industry application	General business	General business	Distributed Processing	Various business
Other packages	Manufacturing, distri- bution, Office 88	Manufacturing, distri- bution, Office 88	—	Electronic mail, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 12,228K memory, 129MB disk storage— \$246,410	CPU, 6144K memory, 258MB disk storage— \$190,980	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
Mo. maintenance of basic configuration	\$1,048	\$1,059	\$170	\$129
Date of first delivery	September 1984	September 1984	August 1979	July 1984
Number installed to date	—	—	—	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	McDonnell Douglas Computer Systems Co. M6310	McDonnell Douglas Computer Systems Co. M6325	McDonnell Douglas Computer Systems Co. M6527	MDS Qantel Business Computers System 45
WORD LENGTH	16 bits	16 bits	16 bits	8 bits
MAIN MEMORY	512KB-1024KB	512KB-1024KB	512KB-1024KB	256K-1MB
DISK STORAGE CAPACITY	40MB-120MB	40MB-225MB	40MB-745MB	45MB-2.6GB
NO. WORKSTATIONS SUPPORTED	16	32	48	32
PRICE RANGE	From \$26,000	From \$26,000	From \$39,000	\$18,000-\$50,000
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	MDC Bit sliced	MDC Bit sliced	MDC Bit sliced	2901 bit slice
Hardware floating point	None	None	None	None
Battery backup	Standard	Standard	Standard	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	80	80	80	91
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	1
Memory access, bits/sec.	50M bits/sec.	50M bits/sec.	50M bits/sec.	14.2M bits/sec.
Cycle/access time, nanoseconds	320	320	320	565
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	256KB, 512KB	256KB, 512KB	512KB	128K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	32	32	8
Data transfer rate	780K bytes/sec.	780K bytes/sec.	780K bytes/sec.	558K bytes/sec.
COMMUNICATIONS				
Max. number of lines	48	48	48	Unlimited
Synchronous	No	No	No	Opt. 38.4K bps
Asynchronous	Std., 19.2K bps	Std., 19.2K bps	Std., 19.2K bps	Opt. 38.4K bps
Protocols supported	2780/3780,2770, 3741	2780/3780,2770, 3741	2780/3780,2770, 3741	3740, HASP, RJE
Type of LAN supported	None	None	None	Best Net
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 40MB	Fixed: 40MB	Fixed: 40MB, 260MB	Fixed: 45MB-430MB
Serial printers	120-400 cps	120-400 cps	120-400 cps	180 cps
Letter-quality printers	33 cps	33 cps	33 cps	35 cps
Line printers	150-1200 lpm	150-1200 lpm	150-1200 lpm	300-1000 lpm
Nonimpact printers	—	—	—	None
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	100/50ips; 1600/3200 bpi	100/50ips; 1600/3200 bpi	100/50ips; 1600/3200 bpi	25-100 ips; 1600-3200bpi
Cassette/cartridge tape drives	90 ips	90 ips	90 ips	Streaming: 60MB
Other peripherals supported	—	—	—	2.6 Diskette
SOFTWARE				
Assembler	Macro	Macro	Macro	Macro
Compilers	Basic, English, Natural, All	Basic, English, Natural, All	Basic, English, Natural, All	QIC Basic, Cobol
Operating system name	—	—	—	Best/AOS
Operating system	Multitasking	Multitasking	Multitasking	Multitasking
Operating system implemented in firmware	Partially	Partially	Partially	Partially
Database management system	Reality Database Mgmt.	Reality Database Mgmt.	Reality Database Mgmt.	None
Principal industry application	Gen. busines, manufacturing, dist., gov. MRE office automation	Gen. busines, manufacturing, dist., gov. MRE office automation	Gen. busines, manufacturing, dist., gov. MRE office automation	Manuf., retail, hotel, sports, transportation
Other packages	—	—	—	Spread sheet, word processing
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, cabinet, 256KB memory, 40MB fixed disk, ¼" streaming tape drive, 1RS232+7RS422 ports —\$26,000	CPU, cabinet, 256KB memory, 40MB fixed disk, ¼" streaming tape drive, 1RS232+7RS422 ports —\$26,000	CPU, cabinet, 512KB memory, 40MB fixed disk, ½" streaming tape drive, 1RS232+7RS422 ports —\$39,000	CPU, 256K memory, ¼" streaming cartridge tape, 45MB disk drive, Best/AOS— \$16,950
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	Contact vendor	\$210
Date of first delivery	January 1985	January 1985	December 1984	February 1986
Number installed to date	—	—	—	—
COMMENTS	—	—	—	Sold by value added dealers in U.S. and internationally

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MANUFACTURER AND MODEL	MDS Qantel Business Computers System 55	MDS Qantel Business Computers System 58	MDS Qantel Business Computers System 78	Modular Computer Systems Classic CT/15
WORD LENGTH	8 bits	8 bits	8 bits	16 bits
MAIN MEMORY	512K-4MB	1MB-16MB	2MB-16MB	512KB-2MB
DISK STORAGE CAPACITY	45MB-2.6GB	45MB-2.6GB	45MB-2.6GB	13.5MB
NO. WORKSTATIONS SUPPORTED	64	64	150	16-32
PRICE RANGE	\$25,000-\$80,000	\$50,000-\$150,000	\$100,000-\$300,000	\$11,500-\$19,400
TARGET MARKET	Business	Business	Business	Scientific/Technical/ Factory/Process Contr.
CENTRAL PROCESSOR				
CPU manufacturer and model	2901 bit slice	2901 bit slice	2901 bit slice	Proprietary
Hardware floating point	None	None	None	Single/double
Battery backup	None	None	None	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	71.4	72.4	50	—
MIPS	—	—	—	0.15
MAIN STORAGE				
Bytes fetched per cycle	1	1	8	2
Memory access, bits/sec.	22.3M bits/sec.	22.3M bits/sec.	320M bits/sec.	—
Cycle/access time, nanoseconds	358	358	200	480
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	512K	512K	2M	512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	14	16	16
Data transfer rate	830K bytes/sec.	830K bytes/sec.	1.25M bytes/sec.	600K bytes/sec.
COMMUNICATIONS				
Max. number of lines	Unlimited	Unlimited	Unlimited	16
Synchronous	Opt., 38.4K bps	Opt., 38.4K bps	Opt., 38.4K bps	Opt., 9.6K bps
Asynchronous	Opt., 38.4K bps	Opt., 38.4K bps	Opt., 38.4K bps	Opt., 19.2K bps
Protocols supported	3740, HASP, RJE	3740, HASP, RJE	3740, HASP, RJE	X.25, 2780/3780
Type of LAN supported	Best Net	Best Net	Best Net	None
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	Yes	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 45MB-430MB	Fixed: 45MB-430MB	Fixed: 45MB-430MB	Fixed: 132-264MB, Cart: 13.5MB, Winchester: 20MB
Serial printers	180 cps	180 cps	180 cps	64-440 lpm
Letter-quality printers	35 cps	35 cps	35 cps	None
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	300-1000 lpm
Nonimpact printers	None	None	None	—
Reel-to-reel tape drives	None	None	None	75ips; 800/1600 bpi
Streaming tape drives	25-100 ips; 1600-3200bpi	25-100 ips; 1600-3200bpi	25-100 ips; 1600-3200bpi	100/25 ips; 1600 bpi
Cassette/cartridge tape drives	Streaming: 60MB	Streaming: 60MB	Streaming: 60MB	None
Other peripherals supported	2.6 Diskette	2.6 Diskette	2.6 Diskette	Data capture terminal
SOFTWARE				
Assembler	Macro	Macro	Macro	Assembler, Macro
Compilers	QIC Basic, Cobol	QIC Basic, Cobol	QIC Basic, Cobol	Cobol, Fortran, Pascal, Coral 66
Operating system name	Best/AOS	Best/AOS	Best/AOS	MAX IV
Operating system	Multitasking	Multitasking	Multitasking	Realtime
Operating system implemented in firmware	Partially	Partially	Partially	Partially
Database management system	None	None	None	Infinity
Principal industry application	Manuf., retail, hotel, sports, transportation	Manuf., retail, hotel, sports, transportation	Manuf., retail, hotel, sports, transportation	Factory automation
Other packages	Spread sheet, word processing	Spread sheet, word processing	Spread sheet, word processing	None
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512K memory, ¼" streaming cartridge tape, 150MB disk drive, Best/AOS— \$32,950	CPU, 1MB memory, four-channel video network contr., printer contr., realtime clock, Best/AOS— \$27,950	CPU, 2MB memory, four-channel video network contr., printer contr., realtime clock, Best/AOS— \$64,950	CPU, 512KB memory, 20MB disk, printer, 653KB diskette— \$20,000
Mo. maintenance of basic configuration	\$290	\$105	\$425	\$211
Date of first delivery	February 1986	February 1986	February 1986	1985
Number installed to date	—	—	—	—
COMMENTS	Sold by value added dealers in U.S. and internationally	Sold by value added dealers in U.S. and internationally	Sold by value added dealers in U.S. and internationally	

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MANUFACTURER AND MODEL	Modular Computer Systems Classic II/15	Modular Computer Systems Classic II/25	Modular Computer Systems Classic II/45	Modular Computer Systems Classic II/75
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	512KB-1MB	512KB-2MB	1MB-4MB
DISK STORAGE CAPACITY	13MB-1.2GB	13MB-1.2GB	13MB-1.2GB	13MB-1.2GB
NO. WORKSTATIONS SUPPORTED	16	64	128	256+
PRICE RANGE	\$16,000-\$45,000	\$24,000-\$70,000	\$42,000-\$80,000	\$49,000-\$110,000
TARGET MARKET	Scientific/Technical/ Factory/Process Contr.	Scientific/Technical/ Factory/Process Contr.	Scientific/Technical/ Factory/Process Contr.	Scientific/Technical/ Factory/Process Contr.
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	Single/double	Single/double	Single/double	Single/double
Battery backup	Optional	Optional	Optional	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	—	—	—	—
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	480	250	250	125
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	512K	512K	512K	512K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	16	16	48	64
Data transfer rate	600K bytes/sec.	1M bytes/sec.	5M bytes/sec.	8M bytes/sec.
COMMUNICATIONS				
Max. number of lines	16	32	256	256
Synchronous	Opt., 9.6K bps	Standard	Standard	Opt., 25K bps
Asynchronous	Opt., 19.2K bps	Standard	Standard	Opt., 19.2K bps
Protocols supported	X.25, 2780/3780	X.25, 2780/3780	X.25, 2780/3780	X.25, 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	Fixed: 132-264MB, Cart: 13.5MB, Winchester: 20MB	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
Serial printers	64-440 lpm	64-440 lpm	64-440 lpm	64-440 lpm
Letter-quality printers	None	None	None	None
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	300-1000 lpm
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	75ips; 800/1600 bpi	75ips; 800/1600 bpi	75ips; 800/1600 bpi	75 ips; 800/1600 bpi
Streaming tape drives	100/25 ips; 1600 bpi	100/25 ips; 1600 bpi	100/25 ips; 1600 bpi	100/25 ips; 1600 bpi
Cassette/cartridge tape drives	None	None	None	None
Other peripherals supported	Data capture terminal	Data capture terminal	Data capture terminal	Data capture terminal
SOFTWARE				
Assembler	Assembler, Macro	Assembler, Macro	Assembler, Macro	Assembler, Macro
Compilers	Cobol, Fortran, Pascal, Coral 66	Cobol, Fortran, Pascal, Coral 66	Cobol, Fortran, Pascal, Coral 66	Cobol, Fortran, Pascal, Coral 66
Operating system name	—	—	—	—
Operating system	Realtime	Realtime	Realtime	Realtime
Operating system implemented in firmware	Partially	Partially	Partially	Partially
Database management system	Infinity	Infinity	Infinity	Infinity
Principal industry application	Factory automation	Factory automation	Factory automation	Factory automation
Other packages	None	None	None	None
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 512KB memory, 67MB disk, 300 lpm printer—\$32,200	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
Mo. maintenance of basic configuration	\$316	\$489	\$690	\$969
Date of first delivery	January 1984	May 1982	May 1982	May 1982
Number installed to date	250	500+	300+	300+
COMMENTS				

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MANUFACTURER AND MODEL	Nixdorf Computer Corporation 8850/35	Nixdorf Computer Corporation 8850/45	Nixdorf Computer Corporation 8850/55	Nixdorf Computer Corporation 8850/65
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB	128KB	128KB	128KB
DISK STORAGE CAPACITY	Up to 66MB	Up to 132MB	Up to 528MB	Up to 528MB
NO. WORKSTATIONS SUPPORTED	9	16	32	32
PRICE RANGE	—	—	—	—
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	—	—	—	—
Hardware floating point	—	—	—	—
Battery backup	Standard	Standard	Standard	Standard
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	1100	700	450	375
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	400	400	400	400
Storage protection	—	—	—	—
Increment size, bytes	Not applicable	Not applicable	Not applicable	Not applicable
Cache memory, bytes	None	None	None	2KB
INPUT/OUTPUT CONTROL				
No. of I/O channels	9	16	32	32
Data transfer rate	—	—	—	—
COMMUNICATIONS				
Max. number of lines	2	2	2	2
Synchronous	Up to 19.2K bps	Up to 19.2K bps	Up to 19.2K bps	Up to 19.2K bps
Asynchronous	—	—	—	—
Protocols supported	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780, 3270/3271, 3777-3, 3274, 3276	2780/3780, 3270/3271, 3777-3, 3274, 3276
Type of LAN supported	—	—	—	—
RJE terminals emulated	Hasp, SDLC, 2780/3780	Hasp, SDLC, 2780/3780	HASP, SDLC, 2780/3780	HASP, SDLC, 2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 8MB, 32MB, 66MB	Fixed: 8MB, 32MB, 66MB, 132MB	Fixed: up to 528MB	Fixed: up to 528MB
Serial printers	150 cps	150 cps	150 cps	150 cps
Letter-quality printers	40 cps	40 cps	40 cps	40 cps
Line printers	300/600/900 lpm	300/600/900 lpm	300/600/900 lpm	300/600/900 lpm
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	45 ips 9/800, 9/1600	45 ips 9/800, 9/1600	45 ips 9/800, 9/1600	45 ips 9/800, 9/1600
Streaming tape drives	—	—	—	—
Cassette/cartridge tape drives	—	—	—	—
Other peripherals supported	—	—	—	—
SOFTWARE				
Assembler	Editor	Editor	Editor	Editor
Compilers	—	—	—	—
Operating system name	—	—	—	—
Operating system	Virtual multiuser batch	Virtual multiuser batch	Virtual/multiuser/batch	Virtual/multiuser/batch
Operating system implemented in firmware	—	—	—	—
Database management system	Integrated in oper. sys.	Integrated in oper. sys.	Integrated in oper. sys.	Integrated in oper. sys.
Principal industry application	Banking, service bureau, insurance	Banking, service bureau, insurance	Banking, service bureau, insurance	Banking, service bureau, insurance
Other packages	Accounts receivable, payroll, order entry, government	Accounts receivable, payroll, order entry, government	Accounts receivable, payroll, order entry	Accounts receivable, payroll, order entry
PRICING & AVAILABILITY				
Basic system configuration and price	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	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
Mo. maintenance of basic configuration	\$393	\$644	\$644	\$644
Date of first delivery	—	—	—	—
Number installed to date	—	—	—	—
COMMENTS	This system was formerly the 600 Series.	This system was formerly the 600 Series.	This system was formerly the 600 Series.	This system was formerly the 600 Series.

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MANUFACTURER AND MODEL	Nixdorf Computer Corporation 8870/25	Nixdorf Computer Corporation 8870/45	Nixdorf Computer Corporation 8870/75	Norsk Data N.A., Inc. ND-100 Satellite
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-1024KB	256KB-1024KB	512KB-1024KB	1MB-2MB
DISK STORAGE CAPACITY	42MB-132MB	66MB-264MB	396MB-1GB	28MB-75MB
NO. WORKSTATIONS SUPPORTED	10	16	24	9
PRICE RANGE	\$20,000-35,000	\$30,000-45,000	\$60,000-\$80,000	\$17,500-\$35,000
TARGET MARKET	Business	Business	Business	General purpose
CENTRAL PROCESSOR				
CPU manufacturer and model	Nixdorf	Nixdorf	Nixdorf	ND-100
Hardware floating point	—	—	—	Double
Battery backup	Standard	Standard	Standard	Standard
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	300	300	150	180
MIPS	—	—	—	0.22
MAIN STORAGE				
Bytes fetched per cycle	—	—	—	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	500	400/350	400/350	180
Storage protection	Standard	—	—	Standard
Increment size, bytes	256KB	256KB	512KB	1MB
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	8	12	24	3
Data transfer rate	9.6K bps	—	—	2.1M bytes/sec.
COMMUNICATIONS				
Max. number of lines	2	2	2	9
Synchronous	Opt., 9.6K bps	Opt., 9.6K bps	Opt., 9.6K bps	Optional
Asynchronous	Std., 9.6K bps	Std., 9.6K bps	Std., 9.6K bps	Std., 9.6K bps
Protocols supported	2780/3780	2780/3780	2780/3780	2780/3780, SDLC, HASP, SIVA, BSC
Type of LAN supported	—	—	—	Ethernet, HDLC
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780, HASP
IBM 3270 emulation	No	No	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: up to 132MB	Fixed: up to 264MB	Fixed: 264MB	Fixed and removable: 70 MB, 140MB, 288MB, 450MB
Serial printers	100/150 cps	100/150 cps	100/150 cps	80-300 cps
Letter-quality printers	45 cps	45 cps	45 cps	38/55 cps
Line printers	300/600 lpm	300/600 lpm	300/600 lpm	600-1000 lpm
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	None	None	1600/3200 bpi	125 ips; 1600/6250
Streaming tape drives	None	1600/3200 SMI	None	90 ips, start/stop
Cassette/cartridge tape drives	45MB SMC	None	None	90 ips
Other peripherals supported	Diskette	—	—	Card reader
SOFTWARE				
Assembler	—	—	—	Macro Assembler
Compilers	Basic, Interpreter	Basic, Interpreter	Basic, Interpreter	Cobol, Fortran, ADA, Pascal, APL, C, Simula
Operating system name	—	—	—	Sintran III
Operating system	Realtime, multitasking	Realtime, multitasking	Realtime, multitasking	Realtime, batch, timesh
Operating system implemented in firmware	No	No	No	Partially
Database management system	—	—	—	Sibas
Principal industry application	Manufacturing, distribution, banking	Manufacturing, distribution, banking	Manufacturing, distribution, banking	General purpose
Other packages	Financial management, mortgage banking	Financial management, mortgage banking	Financial management, mortgage banking	Office automation
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 32MB disk, VDT printer— \$19,300	CPU, 256KB memory, 66MB disk, 100 cps printer, VDT— \$31,000	CPU, 512KB memory, 396MB disk, 100 cps printer, VDT— \$50,000	ND-100 CPU, 3 terminal interfaces, 1MB memory, ¼" 1.2MB diskette drives, 28MB fixed disk drive— \$17,500
Mo. maintenance of basic configuration	\$199	\$271	\$373	—
Date of first delivery	1985	1985	1985	—
Number installed to date	—	—	—	—
COMMENTS				

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MANUFACTURER AND MODEL	Norsk Data N.A., Inc. ND-100 Compact	Norsk Data N.A., Inc. ND-100/CX	Northern Telecom Inc. 503	Northern Telecom Inc. 565
WORD LENGTH	16 bits	16 bits	8 bits	8 bits
MAIN MEMORY	1MB-14MB	1MB-16MB	256KB	256KB-512KB
DISK STORAGE CAPACITY	28MB-7.2GB	28MB-7.2GB	1.6MB-10.8MB	22MB
NO. WORKSTATIONS SUPPORTED	48	256	1	1-4
PRICE RANGE	\$30,000-\$49,000	\$77,500	From \$5,250	\$15,000-\$50,000
TARGET MARKET	General purpose	General purpose		Office Automation
CENTRAL PROCESSOR				
CPU manufacturer and model	ND100	ND-100/CX	Intel 8085	Intel 8085
Hardware floating point	Double	Double	None	None
Battery backup	Standard	Standard	None	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	180	180	286	167
MIPS	0.22	0.32	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	—	—
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	180	180	—	—
Storage protection	Standard	Standard	None	None
Increment size, bytes	500KB, 1MB, 2MB	500KB, 1MB, 2MB	Not applicable	128K
Cache memory, bytes	Opt., 2KB	2KB	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	3	3	—	4
Data transfer rate	2.1M bytes/sec.	2.1M bytes/sec.	—	—
COMMUNICATIONS				
Max. number of lines	—	256	2	6
Synchronous	Optional	Optional	Opt., 9.6K bps	Opt., 9.6K bps
Asynchronous	Std., 9.6K bps	Std., 9.6K bps	Opt., 9.6K bps	Opt., 9.6K bps
Protocols supported	2780/3780, SDLC, HASP, SIVA, BSC	2780/3780, SDLC, HASP, SIVA, BSC	2770/2780/3780, TC3500, SNA, SDLC	2770/2780/3780, 3774, 3270, 3274, SDLC, HASP
Type of LAN supported	Ethernet, HDLC	Ethernet, HDLC	None	Omnalink
RJE terminals emulated	2780/3780, HASP	2780/3780, HASP	2780/3780, HASP	2780/3780, CDC, UT200
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed and removable: 70 MB, 140MB, 288MB, 450MB	Fixed and removable: 70 MB, 140MB, 288MB, 450MB	Diskette: 0.8MB Winchester: 10MB	Fixed: 22MB Winchester
Serial printers	80-300 cps	80-300 cps	120-180 cps	120 cps
Letter-quality printers	38/55 cps	38/55 cps	40 cps	40 cps
Line printers	600-1000 lpm	600-1000 lpm	300 lpm	300/600/1000 lpm
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	125 ips; 1600/6250	125 ips; 1600/6250	None	800/1600 bpi
Streaming tape drives	90 ips, start/stop	90 ips, start/stop	None	15MB
Cassette/cartridge tape drives	90 ips	90 ips	None	1MB per minute
Other peripherals supported	Card reader	Card reader	None	None
SOFTWARE				
Assembler	Macro Assembler	Macro Assembler	Only in CP/M 3.0	Only in CP/M 2.2
Compilers	Cobol, Fortran, Pascal, APL, C, Simula	Cobol, Fortran, Pascal, APL, C, Simula	ACOBOL3/AL2000, CP/M 3.0	ACOBOL3/AL2000, CP/M 2.2
Operating system name	Sintran III	Sintran III	—	—
Operating system	Realtime, batch, timesh	Realtime, batch, timesh	Multitasking	Multitasking-NT 4.1
Operating system implemented in firmware	Partially	Partially	No	No
Database management system	Sibas	Sibas	dBASE II using CP/M	dBASE II using CP/M
Principal industry application	General purpose	General purpose		
Other packages	Office automation	Office automation	Word processing (contact vendor for add'l applications)	Word processing, electronic mail (contact vendor for add'l appli.)
PRICING & AVAILABILITY				
Basic system configuration and price	ND-100 CPU, 1MB memory, 1.2MB diskette drive, 28MB fixed disk drive, 1 terminal— \$30,000	ND-100/CX CPU, 512KB memory, 1.2MB diskette drive, printer terminal, terminal interface, 20 position rack, disk controller— \$77,500	256K RAM, 15" CRT, CP/M and 2 (.8MB) diskettes—\$5,250	256K RAM, O/S 4.1, memory parity, 22MB disk, 15" CRT, 1 cartridge—\$14,950
Mo. maintenance of basic configuration	—	—	\$173	\$507
Date of first delivery	—	—	1981	1983
Number installed to date	—	—	Not supplied	Not supplied
COMMENTS				

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MANUFACTURER AND MODEL	Northern Telecom Inc. 585	Plessey Peripherals Systems 6300/8300 Series	Plessey Peripherals Systems 6600/8600 Series	Point 4 Data Corp. Mark 2
WORD LENGTH	8 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-512KB	256KB-4MB	256KB-4MB	64KB-128KB
DISK STORAGE CAPACITY	22MB-342MB	20MB-140MB	80MB-160MB	13MB-86MB
NO. WORKSTATIONS SUPPORTED	16	16	16	7
PRICE RANGE	From \$19,950	—	—	\$8,995-\$20,000+
TARGET MARKET	Office Automation	OEM/Business	OEM/Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8085	LSI 11/23-LSI 11/73	LSI 11/23-LSI 11/73	Point 4 Mark 2
Hardware floating point	None	Opt., double	Opt., double	No
Battery backup	None	Optional	Optional	None
Realtime clock or timer	Standard	Optional	Optional	Standard
CPU cycle time, nanoseconds	167	None	None	600
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	—	2	2	2
Memory access, bits/sec.	—	—	—	160M bits/sec.
Cycle/access time, nanoseconds	—	—	—	400/200
Storage protection	None	None	None	None
Increment size, bytes	128K	256KB	256KB	64K
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	—	2 std., 128 opt.	2 std., 128 opt.	63
Data transfer rate	—	512K bytes/sec.	1.2M bytes/sec.	1.67M bytes/sec.
COMMUNICATIONS				
Max. number of lines	6	2 std., 64 opt.	2 std., 64 opt.	7
Synchronous	Std., 9.6K bps	Opt., 56K bps	Opt., 56K bps	No
Asynchronous	Std., 9.6K bps	Std., 19.2K bps	Std., 19.2K bps	Std., 9.6K bps
Protocols supported	2770/2780/3780, TC3500, SNA, SDLC	X.25, V.28	X.25, V.28	None
Type of LAN supported	Omnalink	Ethernet	Ethernet	None
RJE terminals emulated	2780/3780, HASP	None	None	None
IBM 3270 emulation	Yes	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 22MB Disk pack: 74.5MB	Fixed: 10MB-140MB Cartridge: 20MB	Fixed: 80MB-1.2GB	Winchester: 13MB-86MB
Serial printers	120 cps	20-520 cps	20-520 cps	20-180 cps
Letter-quality printers	40 cps	600 lpm	600 lpm	75 cps
Line printers	300/600/1000 lpm	600 lpm	600 lpm	200-600 lpm
Nonimpact printers	—	1200 lpm	1200 lpm	—
Reel-to-reel tape drives	800/1600 bpi	25-125 ips	25-125 ips	None
Streaming tape drives	None	25/75/125 ips	25/75/125 ips	90 ips; 20MB, 45MB
Cassette/cartridge tape drives	1MB per minute	20MB-45MB	20MB-45MB	¼" cartridge, cassette
Other peripherals supported	300 cpm card reader	Diskettes	Diskettes	Diskette, 1MB
SOFTWARE				
Assembler	Only in CP/M 2.2	Macro-II	Macro-II	Assembler
Compilers	ACOBOL3/TAL2000, CP/M 2.2	Basic, Fortran, Cobol, Pascal, C	Basic, Fortran, Cobol, Pascal, C	Iris Basic, SM Basic
Operating system name	—	RSTS, RSX, RT-11, DSM,	RSTS, RSX, RT-11, DSM,	Iris Timesharing
Operating system	Multitasking	Realtime, batch, multitasking	Realtime, batch, multitasking	Realtime
Operating system implemented in firmware	No	None	None	No
Database management system	dBASE II using CP/M	—	—	SMC Idol
Principal industry application	—	Scientific, general purpose	Scientific, general purpose	General purpose business,
Other packages	Word processing, Electronic mail	Office automation	Office automation	electronic office, force application generator
PRICING & AVAILABILITY				
Basic system configuration and price	256K RAM, O/S 4.1, memory parity, 22MB disk, 15" CRT, 1 cartridge tape— \$19,950	LSI-11/23 CPU, 256KB memory, 20MB disk, 1MB diskette, 2 RS-232-C ports— \$8,480	LSI-11/23 CPU, 256KB memory, 80MB disk, 1MB diskette, 2 RS-232-C ports— \$14,550	CPU, 64KB memory, 19MB disk, 20MB streaming tape, 4 ports—\$8,995
Mo. maintenance of basic configuration	\$696	\$120	\$180	Contact vendor
Date of first delivery	1981	—	—	February 1984
Number installed to date	Not supplied	—	—	2000
COMMENTS				

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MANUFACTURER AND MODEL	Point 4 Data Corp. Mark 3	Point 4 Data Corp. Mark 4	Point 4 Data Corp. Mark 5	Point 4 Data Corp. Mark 9
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	64KB-128KB	512KB	128KB	512KB
DISK STORAGE CAPACITY	35MB-336MB	86MB-258MB	84MB-688MB	84MB-688MB
NO. WORKSTATIONS SUPPORTED	7	16	32	128
PRICE RANGE	\$14,850-\$30,000+	\$21,995-\$35,000	\$28,200-\$100,000+	\$34,200-\$100,000+
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Point 4 Mark 3	Point 4 Mark 4	Point 4 Mark 5	Point 4 Mark 9
Hardware floating point	No	None	Optional	Optional
Battery backup	None	None	Standard	Standard
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	600	280	400	300
MIPS	—	3.5	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	4	2	2
Memory access, bits/sec.	160M bits/sec.	160M bits/sec.	160M bits/sec.	160M bits/sec.
Cycle/access time, nanoseconds	400/200	120	400/200	200/120
Storage protection	None	None	None	Standard EDAC
Increment size, bytes	64K	—	—	—
Cache memory, bytes	None	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	63	20	64	64
Data transfer rate	1.67M bytes/sec.	2.9M bytes/sec.	2.5M bytes/sec.	2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	7	17	32	128
Synchronous	No	Opt., 19.2K bps	Opt., 19.2K bps	Opt., 19.2K bps
Asynchronous	Std., 9.6K bps	Std., 19.2K bps	Std., 19.2K bps	Std., 19.2K bps
Protocols supported	None	2780/3780	2780/3780	2780/3780
Type of LAN supported	None	None	None	None
RJE terminals emulated	None	None	No	No
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Winchester: 84MB-168MB	SMD/CMD: 86MB-258MB	SMD/CMD: 84MB-688MB	SMD/CMD: 84MB-688MB
Serial printers	20-180 cps	20-180 cps	20-180 cps	20-180 cps
Letter-quality printers	75 cps	75 cps	75 cps	75 cps
Line printers	200-600 lpm	200-600 lpm	200-600 lpm	200-600 lpm
Nonimpact printers	—	None	—	—
Reel-to-reel tape drives	None	None	100 ips	100 ips
Streaming tape drives	90 ips; 20MB, 40MB	90 ips; 20MB, 45MB	90 ips; 20MB, 45MB	90 ips; 20MB, 45MB
Cassette/cartridge tape drives	¼" cartridge, cassette	¼" cartridge, cassette	¼" cartridge, cassette	¼" cartridge, cassette
Other peripherals supported	Diskette, 1MB	Diskette, 1MB	—	Diskette, 1MB
SOFTWARE				
Assembler	Assembler	Assembler	Assembler	Assembler
Compilers	Iris Basic	Iris Basic, SM Basic	Iris Basic, SM Basic	Iris Basic, SM Basic
Operating system name	—	Iris Timesharing	Iris Timesharing	Iris Timesharing
Operating system	Iris timesharing	Realtime	Realtime	Realtime
Operating system implemented in firmware	No	No	No	No
Database management system	None	SMC Idol	SMC Idol	SMC Idol
Principal industry application	General purpose business,	General purpose business,	General purpose business,	General purpose business,
Other packages	electronic office, force application generator, PC connection	electronic office, force application generator, PC connection	electronic office, force application generator, PC connection	electronic office, force application generator, PC connection
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 64KB memory, 84MB disk, 20MB streaming tape, 4 ports—\$17,900	CPU, 512KB memory, 86MB disk, 8 ports, 45MB streaming tape—\$21,995	CPU, 128KB memory, 84MB disk, 8 ports, 20MB streaming tape—\$28,200	CPU, 256KB memory, 84MB disk, 20MB streaming tape, 8 ports—\$34,200
Mo. maintenance of basic configuration	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Date of first delivery	May 1981	May 1985	June 1979	July 1984
Number installed to date	4000	1000	8000	1000
COMMENTS			Disk caching feature optional.	Disk caching feature optional.

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MANUFACTURER AND MODEL	Point 4 Data Corp. Mark 12	PolyMorphic Systems System 8813	Rexon Business Machines Corp. RX100	Rexon Business Machines Corp. RX200
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-16MB	512KB-4MB	256KB—960KB	256KB-960KB
DISK STORAGE CAPACITY	84MB-688MB	1.6MB-300MB	10MB—30MB	28MB-56MB
NO. WORKSTATIONS SUPPORTED	128	16	1-8	1-12
PRICE RANGE	\$42,430-\$150,000+	\$6,000-\$80,000	\$10,000-\$25,000	\$13,000-\$35,000
TARGET MARKET	Business	Business, Education, Engineering	Business, Professional Data Processing	Business, Professional Data Processing
CENTRAL PROCESSOR				
CPU manufacturer and model	Point 4 Mark 12	Intel iAPX186	Intel 8086-2	Intel 8086-2
Hardware floating point	None	None	No	No
Battery backup	Optional	Optional	No	No
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	64	125	137	137
MIPS	15.6	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	8	2	2	2
Memory access, bits/sec.	267M bits/sec.	4M bytes/sec.	9.84M bits/sec.	9.84M bits/sec.
Cycle/access time, nanoseconds	35	500	542	542
Storage protection	Standard EDAC	None	None	None
Increment size, bytes	2MB	256K	128K	128K
Cache memory, bytes	128KB	None	Optional, 64KB	Optional, 64K
INPUT/OUTPUT CONTROL				
No. of I/O channels	64	2	16	20
Data transfer rate	2.5M bytes/sec.	2M bytes/sec.	To 625K bytes/sec.	—
COMMUNICATIONS				
Max. number of lines	128	16	9	13
Synchronous	Opt., 19.2K bps	Opt., 250K bps	Opt., 2,400 bps	Opt., 2.4K bps
Asynchronous	Std., 19.2K bps	Std., 19.2K bps	Std., 19,200 bps	Std., 19.2K bps
Protocols supported	2780/3780	SDLC/HDLC	2780/3780	2780/3780
Type of LAN supported	None	PolyNet, Ethernet	None	None
RJE terminals emulated	None	None	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	SMD/CMD: 84MB-688MB	Cart: 5MB-80MB; diskette Fixed: 18MB-110MB	Fixed: 10MB-30MB	Fixed: 28MB-56MB
Serial printers	20-180 cps	Not offered by mfr.	To 400 cps	To 400 cps
Letter-quality printers	75 cps	Not offered by mfr.	35 cps	35 cps
Line printers	200-600 lpm	Not offered by mfr.	To 600 lpm	To 600 cps
Nonimpact printers	None	Not offered by mfr.	—	None
Reel-to-reel tape drives	100 ips	None	None	None
Streaming tape drives	90 ips; 20MB, 45MB	90 ips	25/100 ips; 1600 bpi	25/100 ips; 1600 bpi
Cassette/cartridge tape drives	¼" cartridge, cassette	None	90 ips; 20MB (std.) 8" diskettes; attached PCs	90 ips; 20MB (std.) 8" diskettes; attached PCs
Other peripherals supported				
SOFTWARE				
Assembler	Assembler	Macro	None	None
Compilers	Iris Basic, SM Basic	BASIC, FORTRAN, PASCAL, COBOL, C	Basic (interpretive)	Basic (interpretive)
Operating system name	Iris Timesharing	—	—	—
Operating system	Realtime	Multitasking	Multitasking	Multitasking
Operating system implemented in firmware	No	Not supplied	No	No
Database management system	SMC Idol	Third party	Idol	Idol
Principal industry application	General purpose, business	General	General accounting (open systems)	General accounting
Other packages	electronic office, force application generator, PC connection	Accounting, office automation, CAD/CAM, word processing	Spreadsheet, word processing, PC Harmony	Spreadsheet, word processing, PC harmony
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 128KB memory, 8 ports, 84MB Disk, 20MB streaming tape— \$42,430	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, 10MB disk, streaming cartridge tape, 1 CRT, 150 cps printer —\$11,400	CPU, 256KB memory, 28MB disk, streaming cartridge tape, 1 CRT, 150 cps printer —\$13,200
Mo. maintenance of basic configuration	Contact vendor	—	Consult dealers	Consult dealers
Date of first delivery	December 1985	January 1984	November 1982	November 1983
Number installed to date	200	—	1800	700
COMMENTS	Disk caching feature optional	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. RX105	Rexon Business Machines Corp. RX205	Rexon Business Machines Corp. RX400/450	Rexon Business Machines Corp. RX405
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	512KB-2MB	256KB-960KB	512KB-2MB
DISK STORAGE CAPACITY	40MB-80MB	70MB-140MB	56MB-280MB	227MB-454MB
NO. WORKSTATIONS SUPPORTED	8	16	Up to 32	32
PRICE RANGE	\$13,500-\$30,000	\$16,000-\$40,000	\$20,000-\$75,000	\$26,000-\$75,000
TARGET MARKET	Business, Professional Data Processing	Business, Professional Data Processing	Business, Professional Data Processing	Business, Professional Data Processing
CENTRAL PROCESSOR	Intel 80286	Intel 80286	Intel 8086-2	Intel 80286
CPU manufacturer and model	Opt., double precision	Opt., double precision	No	Opt., double precision
Hardware floating point	None	None	No	None
Battery backup	Standard	Standard	Standard	Standard
Realtime clock or timer	166	166	137	100
CPU cycle time, nanoseconds	—	—	—	—
MIPS	—	—	—	—
MAIN STORAGE	2	2	2	2
Bytes fetched per cycle	16M bits/sec.	16M bits/sec.	9.84M bits/sec.	26M bits/sec.
Memory access, bits/sec.	333	333	542	200
Cycle/access time, nanoseconds	Standard	Standard	None	Standard
Storage protection	512K	512K	128K	512K
Increment size, bytes	None	None	Optional, 64K	None
Cache memory, bytes	—	—	—	—
INPUT/OUTPUT CONTROL	24	24	24/40	40
No. of I/O channels	—	—	—	—
Data transfer rate	—	—	—	—
COMMUNICATIONS	17	17	17/32	33
Max. number of lines	Opt., 2.4K bps	Opt., 2.4K bps	Opt., 2.4K bps	Opt., 2.4K bps
Synchronous	Std., 19.2K bps	Opt., 19.2 bps	Std., 19.2K bps	Std., 19.2K bps
Asynchronous	2780/3780	2780/3780	2780/3780	2780/3780
Protocols supported	—	—	—	—
Type of LAN supported	Micnet	Micnet	None	Micnet
RJE terminals emulated	None	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT	Fixed: 40MB-80MB	Fixed: 85MB-170MB	Fixed: 140MB-280MB	Fixed: 227MB-454MB
Disks supported	—	—	—	—
Serial printers	To 400 cps	To 400 cps	To 400 cps	To 400 cps
Letter-quality printers	35 cps	35 cps	35 cps	35 cps
Line printers	To 600 lpm	To 600 lpm	To 600 cps	To 600 lpm
Nonimpact printers	None	—	—	—
Reel-to-reel tape drives	None	None	None	None
Streaming tape drives	25/100 ips; 1600 bpi	25/100 ips; 1600 bpi	25/100 ips; 1600 bpi	25/100 ips; 1600 bpi
Cassette/cartridge tape drives	90 ips; 60MB (std.)	90 ips; 60MB (std.)	90 ips; 20MB (std)	90 ips; 60MB (std.)
Other peripherals supported	5 1/4", 8" diskettes, attached PCs	5 1/4", 8" diskettes, attached PCs	8" diskettes, attached PCs	5 1/4", 8" diskettes, attached PCs
SOFTWARE	None	None	None	None
Assembler	Micro Focus Lev II, Cobol, SMC Basic, RM Cobol	Micro Focus Lev II Cobol, SMC Basic RM/Cobol	Basic (interpretive)	Micro Focus Lev II Cobol, SMC Basic, RM Cobol
Compilers	—	—	—	—
Operating system name	Multitasking	Multitasking	Multitasking	Multitasking
Operating system	No	No	No	No
Operating system implemented in firmware	Informix, Idol	Informix, Idol	Idol	Informix, Idol
Database management system	General accounting (open systems)	General accounting (open systems)	General accounting (open systems)	General accounting (open systems)
Principal industry application	Multiplan, R Office, PC Harmony, Tango	Multiplan, R Office, PC Harmony, Tango	Spreadsheet, word processing, PC Harmony	Multiplan, R Office, PC Harmony, Tango
Other packages	—	—	—	—
PRICING & AVAILABILITY	CPU, 512KB memory, 40MB disk, streaming cartridge tape, 1 CRT, 1-150 cps printer —\$15,000	CPU, 512KB memory, 70MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —\$17,400	CPU, 256KB memory, 56MB disk, streaming cartridge tape, 1 CRT, 1-150 cps printer —\$22,400/\$32,400	CPU, 512KB memory, 116MB disk, streaming cartridge tape, 1 CRT, 1 150 cps printer —\$27,400
Mo. maintenance of basic configuration	Consult dealer	Consult dealer	Consult dealer	Consult dealer
Date of first delivery	November 1984	November 1984	June 1982/August 1984	November 1984
Number installed to date	—	—	1300	—
COMMENTS	Xenix System V or Recap operating system conversion support available for languages other than those shown	Xenix System V or Recap operating system conversion support available for languages other than those shown	—	Xenix System V or Recap operating system conversion support available for languages other than those shown

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MANUFACTURER AND MODEL	Second Source Computers Incorporated SSCI-100	Second Source Computers Incorporated SSCI-800	Sentinel Computer Corp. DS-130	Sentinel Computer Corp. DS-140
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB-1MB	256KB-2MB	128KB-196KB	160KB-896KB
DISK STORAGE CAPACITY	10MB-512MB	10MB-1024MB	30MB-72MB	544MB-1.2GB
NO. WORKSTATIONS SUPPORTED	8	32	5	32
PRICE RANGE	\$8,500-\$25,000	\$40,000-\$125,000	\$16,700-\$35,000	\$21,200-\$60,000
TARGET MARKET	Scientific	Scientific	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	SSCI	SSCI	Intel 8086	Intel 8086
Hardware floating point	No	Single/double	Double	Double
Battery backup	Optional	Optional	Optional	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	165	150	750	750
MIPS	0.6	1.2	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	4	2	2
Memory access, bits/sec.	—	—	20 bits/sec.	20 bits/sec.
Cycle/access time, nanoseconds	495	150	660	660
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	—	256K	32K	32K
Cache memory, bytes	None	2K	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	64	64	32	32
Data transfer rate	4M bytes/sec.	5.3M bytes/sec.	19.2K bytes/sec.	19.2K bytes/sec.
COMMUNICATIONS				
Max. number of lines	64	128	32	32
Synchronous	Opt., 50K bps	Opt., 50K bps	9.6K bps	9.6K bps
Asynchronous	Std., 9.6K bps	Std., 9.6K bps	19.2K bps	19.2K bps
Protocols supported	SDLC, UDLC, BSC	SDLC, UDLC, BSC	2780/3780	2780/3780
Type of LAN supported	—	—	None	None
RJE terminals emulated	HASP	HASP	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 80MB-512MB Cartridge: 10MB-300MB	Fixed: 80MB-512MB Cartridge: 10MB-300MB	Fixed: 30MB-72MB	Fixed: 30MB-288MB
Serial printers	200 cps	200 cps	55-340 cps	55-340 cps
Letter-quality printers	200 cps	200 cps	55 cps	55 cps
Line printers	300-1200 lpm	300-1200 lpm	300-600 lpm	300-600 lpm
Nonimpact printers	Laser: 8 ppm	Laser: 8 ppm	—	—
Reel-to-reel tape drives	75 ips; 800/1600 bpi	75 ips; 800/1600 bpi	None	None
Streaming tape drives	90 ips	90 ips	100 ips; 1600 bpi	100 ips; 1600 bpi
Cassette/cartridge tape drives	—	—	60MB-100MB	60-100MB
Other peripherals supported	—	—	Diskettes 1.6MB	Diskettes 1.6MB
SOFTWARE				
Assembler	Macro	Macro	Macro (DBL)	Macro (DBL)
Compilers	Fortran IV, Fortran 77, C, Cobol 74	Fortran IV, Fortran 77, C, Cobol 74	Basic, Cobol, Pascal, Fortran	Basic, Cobol, Pascal, Fortran
Operating system name	Vortex II, Unix V	Vortex II, Unix V	—	—
Operating system	Realtime, batch, multita	Realtime, batch, multita	Multitasking, batch	Multitasking, batch
Operating system implemented in firmware	—	Partially	Partially	Partially
Database management system	—	Total	DBOS	DBOS
Principal industry application	CAD/CAM, scientific ATE, communications	CAD/CAM, scientific ATE, communications	Industrial, distribution	Industrial, distribution
Other packages	—	—	Medical, credit union, accounting	Medical, credit union, accounting
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 1MB memory, 80MB disk— \$26,500	CPU, 2MB memory, 160MB disk— \$72,300	CPU, 128KB memory, 30MB disk, 1.6MB diskette, 1920 char. CRT, 5 slot card cage, operating system —\$16,700	CPU, 544KB memory, 72MB disk, 1.6MB floppy, 1920 char. CRT, 12 slot card cage, operating system —\$21,200
Mo. maintenance of basic configuration	\$278	\$683	\$134	\$170
Date of first delivery	1982	1980	February 1985	March 1985
Number installed to date	150	1000	—	—
COMMENTS				

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MANUFACTURER AND MODEL	Sentinel Computer Corp. DS-170	Sperry Corp. System 80 Models 4 & 6	Sperry Corp. System 80 Model 8	SyFa Data Systems Corporation SyFA 150
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	544KB-896KB	524KB-4MB	1MB-8MB	128KB
DISK STORAGE CAPACITY	188MB-1.2GB	128MB-1.3GB	617MB-12GB	36MB-108MB
NO. WORKSTATIONS SUPPORTED	32	40	120	8
PRICE RANGE	\$36,500-\$85,000	\$66,082-\$300,000	\$123,900-\$700,000	\$16,690-\$60,000
TARGET MARKET	Business	Commercial	Commercial	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Intel 8086	Proprietary	Proprietary	Proprietary
Hardware floating point	Double	Single/double	Single/double	No
Battery backup	Optional	—	—	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	750	180	120	150
MIPS	—	—	—	0.5
MAIN STORAGE				
Bytes fetched per cycle	2	4	8	2
Memory access, bits/sec.	20 bits/sec.	—	—	—
Cycle/access time, nanoseconds	660	400	480	750
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	32K	262K, 524K	1MB, 2MB	None
Cache memory, bytes	4K	None	None	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	32	3	6	31
Data transfer rate	19.2K bytes/sec.	6M bytes/sec.	8M bytes/sec.	4M bytes/sec.
COMMUNICATIONS				
Max. number of lines	32	8	28	9
Synchronous	9.6K bps	Opt., to 56K bps	Opt., to 56K bps	Opt., 4.8K bps
Asynchronous	19.2K bps	Opt., to 19.2K bps	Opt., to 19.2K bps	Opt., 9.6K bps
Protocols supported	2780/3780	BSC, TTY, Univac, BC-7 X.25, DCA, 3270, UTS	BSC, TTY, Univac, BC-7,m X.25, DCA, 3270, UTS	BSC
Type of LAN supported	None	Usernet	Usernet	None
RJE terminals emulated	2780/3780	HASP	HASP	2780/3780, HASP
IBM 3270 emulation	No	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 188.5MB-344MB	Fixed: 118.2MB-491MB Removable: 72.3MB	Fixed: 118.2MB-491MB Removable: 29MB-200MB	Fixed 36MB, 86MB
Serial printers	55-340 cps	80-400 cps	80-400 cps	200 cps
Letter-quality printers	55 cps	55 cps	55 cps	30 cps
Line printers	300-600 lpm	180-1200 lpm	180-2000 lpm	300-1000 lpm
Nonimpact printers	—	—	—	None
Reel-to-reel tape drives	None	75ips; 800/1600 bpi	75ips; 80/1600	None
Streaming tape drives	100 ips; 1600 bpi	Start/stop; 100/25ips	Start/stop; 100/25 ips	None
Cassette/cartridge tape drives	60MB-100MB	25 ips; 200-1600 bpi	25-125 ips; 200-6250 bpi	None
Other peripherals supported	Diskettes 1.6MB	Card equipment, diskette	Card equipment, diskette	90 ips; 60MB
SOFTWARE				
Assembler	Macro (DBL)	Basic Assembler	Basic Assembler	None
Compilers	Basic, Cobol, Pascal, Fortran	Cobol, Fortran IV, Basic, RPGII, Escort, Mapper	Cobol, Fortran IV, Basic, RPGII, Escort, Mapper	SyBOL
Operating system name	—	—	—	SyCLOPS
Operating system	Multitasking, batch	Batch, realtime	Batch, realtime	Realtime/batch/multitask
Operating system implemented in firmware	Partially	Partially	Partially	Ram memory resident
Database management system	DBOS	DMS	DMS	None
Principal industry application	Industrial, Distribution	Office automation, decision support	Office automation, decision support	Mfg., transaction proc., distribution, insurance
Other packages	Medical, credit union, accounting	Accounting, wholesale/distribution, manufacturing	Accounting, wholesale/distribution, manufacturing	—
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 544KB memory, 188MB disk, 1.6MB floppy, 1920 char. CRT, 12 slot card cage, operating system, cartridge tape— \$36,500	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 \$3,761	CPU, operating system, utilities, 128KB memory, controller, 8-port multiplexer, 36MB disk, 60 MB tape— \$16,690
Mo. maintenance of basic configuration	\$292	\$618	\$3,761	—
Date of first delivery	March 1984	July 1982	December 1983	1984
Number installed to date	—	—	—	—
COMMENTS			Supports variety of Series 90 peripherals	Upgrades to a 170 Transaction Processor

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MANUFACTURER AND MODEL	SyFA Data Systems Corporation SyFA 170	SyFA Data Systems Corporation SyFA 190	SyFA Data Systems Corporation SyFA 300	SyFA Data Systems Corporation SyFA 1000
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	128KB-256KB	128KB-256KB	128KB-304KB	128KB-384KB
DISK STORAGE CAPACITY	36MB-108MB	36MB-258MB	80MB-1360MB	80MB-1360MB
NO. WORKSTATIONS SUPPORTED	16	16	24	24
PRICE RANGE	\$20,640-\$75,000	\$22,690-\$80,000	\$37,140-\$155,000	\$66,440-\$200,000
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Proprietary	Proprietary	Proprietary	Proprietary
Hardware floating point	None	None	No	No
Battery backup	None	None	None	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	150	150	150	150
MIPS	0.7	0.9	0.9	0.9
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	550	500	500	500
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	128K	128K	128K	128K
Cache memory, bytes	None	None	None	2K
INPUT/OUTPUT CONTROL				
No. of I/O channels	31	31	31	31
Data transfer rate	4M bytes/sec.	4M bytes/sec.	4M bytes/sec.	4M bytes/sec.
COMMUNICATIONS				
Max. number of lines	17	17	25	25
Synchronous	Opt., 9.6K bps	Opt., 56K bps	Opt., 56K bps	Opt., 56K bps
Asynchronous	Opt., 9.6K bps	Opt., 9.6K bps	Opt., 9.6K bps	Opt., 9.6K bps
Protocols supported	BSC, SNA, X.25	BSC, SNA, X.25	BSC, SNA, X.25	BSC, SNA, X.25
Type of LAN supported	SyFAnet	SyFAnet	SyFAnet	SyFAnet
RJE terminals emulated	2780/3780, HASP	2780/3780, HASP	2780/3780/HASP	2780/3780, HASP
IBM 3270 emulation	Yes	Yes	Yes	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 36MB, 86MB	Fixed: 36MB, 86MB	Fixed: 160MB-340MB Removable: 80MB	Fixed: 160MB-340MB
Serial printers	200 cps	200 cps	200 cps	200 cps
Letter-quality printers	30 cps	30 cps	30 cps	30 cps
Line printers	300-1000 lpm	300-1000 lpm	300-1000 lpm	300-1000 lpm
Nonimpact printers	Nonw	None	None	None
Reel-to-reel tape drives	None	None	25 ips; 1600 bpi	25 ips; 1600 bpi
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	90 ips; 60MB	90 ips; 60MB	None	None
Other peripherals supported				
SOFTWARE				
Assembler	None	None	None	No
Compilers	SyBOL	SyBOL	SyBol	SyBOL
Operating system name	SyCLOPS	SyCLOPS	SyCLOPS	SyCLOPS
Operating system	Realtime/batch/multitask	Realtime/batch/multitask	Realtime/batch/multitask	Realtime/batch/multitask
Operating system implemented in firmware	Ram memory resident	RAM memory resident	RAM memory resident	RAM memory resident
Database management system	None	None	—	None
Principal industry application	Mfg., transaction proc., distribution, insurance	Mfg., transaction proc., distribution, insurance	Mfg., distribution, trans. proc., insurance	Manufacturing, insurance distribution, trans- action processing
Other packages				
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, operating system, utilities, 128KB memory, controller, 8-port mul- tiplexer, 36MB disk, 60MB cartridge tape, terminal— \$20,690	CPU, operating system, utilities, 128KB memory, 2KB cache memory, 8-port multiplexer, 36MB disk, 60MB cartridge tape, terminal— \$22,690	CPU, operating system, utilities, 128KB memory, 2KB cache memory, 8-port multiplexer, 80MB disk, terminal— \$37,140	CPU, operating system, utilities, 128KB memory, 2KB cache memory, 8-port multiplexer, 3-80MB disk, terminal— \$66,440
Mo. maintenance of basic configuration	—	—	—	—
Date of first delivery	1984	1985	May 1980	July 1975
Number installed to date	—	—	—	—
COMMENTS	Upgrades to a 190 Transaction Processor or to a 170 Resource Processor on SyFAnet	Upgrades to a 190 Resource Processor on r SyFAnet	Upgrades to a 1000 Transaction Processor or 1000 Resource Processor on SyFAnet	Upgrades to a 1000 Resource Processor on SyFAnet

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MANUFACTURER AND MODEL	Texas Instruments, Inc. Business System 352A	Texas Instruments, Inc. Business System 373A, 374A, 375A	Texas Instruments, Inc. Business System 661A	Texas Instruments, Inc. Business System 671A, 672A
WORD LENGTH	16 bits	16 bit	16 bit	16 bit
MAIN MEMORY	256KB-2MB	256KB-2MB	512KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	17MB	18MB-43MB	80MB	18MB-43MB
NO. WORKSTATIONS SUPPORTED	7	7	40	16
PRICE RANGE	\$9,995	—	\$34,800-\$37,800	—
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	TI 99000	TI 99000	TI 990/10A	TI 990/10A
Hardware floating point	None	None	None	Optional
Battery backup	None	None	Optional	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	200	220	200	200
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	27M bits/sec.	27M bits/sec.	27M bits/sec.	27M bits/sec.
Cycle/access time, nanoseconds	—	—	—	—
Storage protection	Mem Map	Mem Map	Standard, ECC	Standard, ECC
Increment size, bytes	512K	512K	256K, 512K, 1M, 1.5M, 2M	256K, 512K, 1M, 1.5M, 2M
Cache memory, bytes	None	None	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	1	1	12	12
Data transfer rate	3.2M bytes/sec.	3.2M bytes/sec.	3M bytes/sec.	3M bytes/sec.
COMMUNICATIONS				
Max. number of lines	6	6	40	40
Synchronous	Opt., 19.2K bps	Opt., 9.6K bps	Opt., 19.2K bps	Opt., 19.2K bps
Asynchronous	Opt., 9.6K bps	Opt., 9.6K bps	Std., 9.6K bps; Opt., 19.2K	Std., 9.6K bps; Opt., 19.2K
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: 17MB	Winchester: 18MB-43MB	Fixed: 67MB Removable: 13MB	Winchester: 18MB-43MB
Serial printers	150 cps	150 cps	150 cps	150 cps
Letter-quality printers	35 cps	35 cps	35 cps	35 cps
Line printers	None	None	300-600 lpm	300-600 lpm
Nonimpact printers	None	None	—	—
Reel-to-reel tape drives	None	None	45 ips; 1600 bpi	45 ips; 1600 bpi
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	None	14.5MB, 30 ips read	None	14.5MB; 30 ips read
Other peripherals supported	1.2MB diskette, 931 VDT	93 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 name	—	—	—	—
Operating system	Multitasking	Multitasking	Multitasking	Multitasking
Operating system 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, 256KB memory, 17MB disk, 1.2MB diskette, 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	CPU, 512KB memory, 13MB Winchester, 14.5MB cartridge tape drive, video display terminal—\$25,400
Mo. maintenance of basic configuration	\$120	\$130	\$296	\$181
Date of first delivery	April 1984	April 1984	September 1983	September 1983
Number installed to date	—	—	—	—
COMMENTS	Disk capacities are formatted	Disk capacities are formatted.	Disk capacities are formatted.	Disk capacities are formatted.

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MANUFACTURER AND MODEL	Texas Instruments, Inc. Business System 690A, 691A	Texas Instruments, Inc. Business System 861A/B	Texas Instruments, Inc. Business System 872A/B	Texas Instruments, Inc. Business System 890A/B, 891A/B
WORD LENGTH	16 bit	16 bit	16 bit	16 bits
MAIN MEMORY	512KB-2MB	512KB-2MB	512KB-2MB	512KB-2MB
DISK STORAGE CAPACITY	138MB-425MB	80MB	43MB	138MB-425MB
NO. WORKSTATIONS SUPPORTED	40	40	40	40
PRICE RANGE	\$42,950-\$54,950	\$45,600-\$46,200	\$38,300	\$54,950-\$64,550
TARGET MARKET	Business	Business	Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	TI 990/10A	TI 990/12	TI 990/12	TI 990/12
Hardware floating point	None	Single/double	Single/double	Single/double
Battery backup	Optional	Optional	Optional	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	200	220	220	220
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	2	2	2
Memory access, bits/sec.	27M bits/sec.	73M bits/sec.	73M bits/sec.	73M bits/sec.
Cycle/access time, nanoseconds	—	—	—	—
Storage protection	Standard, ECC	Standard, ECC	Standard, ECC	Standard, ECC
Increment size, bytes	256K, 512K, 1M, 1.5M, 2M	256K, 512K, 768K, 1M	256K, 512K, 768K, 1M	256K, 512K, 768K, 1M
Cache memory, bytes	4K	4K	4K	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	12	10	10	10
Data transfer rate	3M bytes/sec.	3M bytes/sec.	3M bytes/sec.	3M bytes/sec.
COMMUNICATIONS				
Max. number of lines	40	40	40	40
Synchronous	Opt., 19.2K bps	Opt., 50-19.2K bps	Opt., 50-19.2K bps	Opt., 50-19.2K bps
Asynchronous	Std., 9.6K bps; Opt., 19.2K	Std., 50-19.2K bps	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: 138MB-425MB	Fixed: 67MB Removable: 13MB	Winchester: 43MB Removable: 13MB	Winchester: 138MB-425MB
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
Nonimpact printers	—	—	—	—
Reel-to-reel tape drives	45 ips; 1600 bpi	45 ips; 1600 bpi	45 ips; 1600 bpi	45 ips; 1600 bpi
Streaming tape drives	100/50 ips; 1600/3200bpi	None	None	100/50 ips; 1600/3200bpi
Cassette/cartridge tape drives	None	None	14.5MB, 30 ips read	None
Other peripherals 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 name	—	—	—	—
Operating system	Multitasking	Multitasking	Multitasking	Multitasking
Operating system 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, 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	CPU, 512KB memory, 138MB Winchester, 91MB streaming tape, two video display terminals, 13-slot chassis, 4-channel comm. board \$54,950
Mo. maintenance of basic configuration	\$271	\$427	\$317	\$402
Date of first delivery	August 1984	September 1983	September 1983	September 1983
Number installed to date	—	—	—	—
COMMENTS	Disk capacities are formatted.	Disk capacities are formatted. Fiber optics optional.	Disk capacities are formatted. Fiber optics optional.	Disk capacities are formatted. Fiber optics optional.

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MANUFACTURER AND MODEL	The Ultimate Corp. Model 1500	The Ultimate Corp. Model 1510, 1520	The Ultimate Corp. Model 3030	The Ultimate Corp. Model 6000
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	256KB	512KB	—	512KB-2MB
DISK STORAGE CAPACITY	48MB-192MB	48MB-192MB	344MB-1030MB	86MB-172MB
NO. WORKSTATIONS SUPPORTED	8	16	64	32
PRICE RANGE	\$11,500-\$31,300	\$22,500-\$34,300	\$77,000-\$130,000	\$35,300
TARGET MARKET	Business	Business	Small Business	Business
CENTRAL PROCESSOR				
CPU manufacturer and model	Ultimate Co-processor	Digital KDF11-AA	Digital LSI-11/23	Honeywell DPS 6
Hardware floating point	None	—	None	Double
Battery backup	None	No	Optional	Optional
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	—	—	—	170
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	—	—	2
Memory access, bits/sec.	—	—	—	—
Cycle/access time, nanoseconds	—	—	—	420/520
Storage protection	None	—	—	Standard
Increment size, bytes	—	—	—	512K, 1M
Cache memory, bytes	None	None	None	4K
INPUT/OUTPUT CONTROL				
No. of I/O channels	None	—	—	1024
Data transfer rate	None	—	—	6M bytes/sec.
COMMUNICATIONS				
Max. number of lines	8	16	64	32
Synchronous	No	Optional	Optional	Optional
Asynchronous	Standard	Standard	Standard	Standard
Protocols supported	—	—	—	2780/3780, X.25
Type of LAN supported	None	Ethernet	Ethernet	UltiNet (OSI)
RJE terminals emulated	2780/3780	—	—	2780/3780
IBM 3270 emulation	No	No	No	No
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 48MB, 86MB	Fixed: 48MB, 86MB	Fixed: 344MB	Fixed: 86MB
Serial printers	—	—	—	180 cps
Letter-quality printers	—	—	—	35-55 cps
Line printers	—	—	—	None
Nonimpact printers	—	—	—	None
Reel-to-reel tape drives	—	—	—	None
Streaming tape drives	—	—	25 ips	None
Cassette/cartridge tape drives	55 ips	55 ips	—	55 ips
Other peripherals supported	—	—	—	—
SOFTWARE				
Assembler	—	—	—	Macro
Compilers	Extended Basic	—	—	Basic, Recall
Operating system name	Ultimate or Pick-based	Pick	Pick	Ultimate
Operating system	Multuser	—	—	Multitasking
Operating system implemented in firmware	Partially	—	—	Fully
Database management system	Integrated with OS	—	—	Ultimate (Pick-generic)
Principal industry application	Business	—	—	Various commercial and business applications
Other packages	Varied	—	—	UltiWord, UltiPlot, UltiCalc, UltiNet
PRICING & AVAILABILITY				
Basic system configuration and price	CPU, 256KB memory, 48MB disk, 8 CRT ports, Ultiplot, Ultiword— \$19,500	1510 CPU, UltiWord, Ultiplot, 512KB memory, co-processor, 48MB fixed disk, 16 ports— \$22,500	LSI-11/23 processor, Ultiword, Ultiplot, 2 512MB disk drives, 344MB fixed disk drive, 64 ports— \$77,000	DPS6, Ultiword, Ultiplot, 512KB EDAC memory, 67MB fixed disk drive, 32 ports, 3X Ultimate co-processor, 67MB fixed disk drive, 32 ports— \$35,300 \$265
Mo. maintenance of basic configuration	\$95	\$125	—	—
Date of first delivery	—	—	—	—
Number installed to date	—	—	—	—
COMMENTS				

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MANUFACTURER AND MODEL	The Ultimate Corp. Model 6200, 6400	The Ultimate Corp. Model 6600	The Ultimate Corp. Model 6800	Wang Laboratories Inc. VS 15
WORD LENGTH	16 bits	16 bits	16 bits	16 bits
MAIN MEMORY	512KB-2MB	512KB-2MB	512KB-2MB	256KB-2MB
DISK STORAGE CAPACITY	160MB-1280MB	512MB-4120MB	512MB-4120MB	33MB-2.6GB
NO. WORKSTATIONS SUPPORTED	256	256	256	16
PRICE RANGE	\$69,000	\$119,000	\$179,000	\$13,500-\$65,000
TARGET MARKET	Business	Business	Business	DDP, Networked Office Automation
CENTRAL PROCESSOR				
CPU manufacturer and model	Honeywell DPS 6	Honeywell DPS 6	Honeywell DPS 6	Proprietary
Hardware floating point	Double	Double	Double	Double precision
Battery backup	Optional	Optional	Optional	None
Realtime clock or timer	Standard	Standard	Standard	Standard
CPU cycle time, nanoseconds	170	170	170	400
MIPS	—	—	—	—
MAIN STORAGE				
Bytes fetched per cycle	2	4	4	2
Memory access, bits/sec.	—	—	—	2.5M bits/sec.
Cycle/access time, nanoseconds	420/520	420/520	420/520	480
Storage protection	Standard	Standard	Standard	Standard
Increment size, bytes	512K, 1M	512K, 1M	1M	256K
Cache memory, bytes	4K	4K	4K	None
INPUT/OUTPUT CONTROL				
No. of I/O channels	1024	1024	1024	6
Data transfer rate	6M bytes/sec.	6M bytes/sec.	6M bytes/sec.	To 2.5M bytes/sec.
COMMUNICATIONS				
Max. number of lines	256	256	256	4
Synchronous	Optional	Optional	Optional	Opt., 64K bps
Asynchronous	Standard	Standard	Standard	Opt., 19.2K bps
Protocols supported	2780/3780, X.25	2780/3780, X.25	2780/3780, X.25	2780/3780; 3274; 3777, TTY, SNA, VT100, others
Type of LAN supported	UlniNet (OSI)	UlniNet (OSI)	UlniNet (OSI)	WangNet
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780, 3777
IBM 3270 emulation	No	No	No	Yes
PERIPHERAL EQUIPMENT				
Disks supported	Fixed: 160MB, 515MB	Fixed: 515MB	Fixed: 160MB-512MB	Fixed: 33MB-620MB Removable: 76MB-288MB
Serial printers	180 cps	180 cps	180 cps	120-192 cps
Letter-quality printers	35-55 cps	35-55 cps	35-55 cps	20-55 cps
Line printers	150-2000 lpm	150-2000 lpm	150-2000 lpm	250-1100 lpm
Nonimpact printers	None	None	None	Laser: 8/12/24 ppm
Reel-to-reel tape drives	45/75 ips	75 ips	45/75 ips	30-75 ips
Streaming tape drives	None	None	None	None
Cassette/cartridge tape drives	55 ips	55 ips	55 ips	30 ips
Other peripherals supported	Diskette 650MB	Diskette 650MB	Diskette 650MB	Diskette 360KB
SOFTWARE				
Assembler	Macro	Macro	Macro	Macro Assembler
Compilers	Basic, Recall	Basic, Recall	Basic, Recall	Cobol, Basic, PL/1, Fortran 77, RPG II
Operating system name	Ultimate	Ultimate	Ultimate	Wang VS OS
Operating system	Multitasking	Multitasking	Multitasking	Realtime, multitasking
Operating system implemented in firmware	Fully	Fully	Fully	Partially
Database management system	Ultimate (Pick-generic)	Ultimate (Pick-generic)	Ultimate (Pick-generic)	Pace, VS DMS Total
Principal industry application	Various commercial and business applications	Various commercial and business applications	Various commercial and business applications	—
Other packages	UlniWord, UlniPlot, UlniCalc, UlniNet	UlniWord, UlniPlot, UlniCalc, UlniNet	UlniWord, UlniPlot, UlniCalc, UlniNet	—
PRICING & AVAILABILITY				
Basic system configuration and price	6200 cpu, 512KB memory, 3X Ultimate coprocessor, 5 1/4" diskette, 256 ports —\$69,000	5X Ultimate co-processor and full control panels, battery backup, 512KB EDAC memory, 5 1/4" diskette, 256 ports —\$119,000	7X Ultimate co-processor and 4K cache memory, 1MB EDAC memory and controller Model 70/20, I/O processor, 256 ports —\$179,000	CPU, 1024KB memory, 76MB fixed disk, 2 workstations—\$21,000
Mo. maintenance of basic configuration	\$370	\$370	—	\$110
Date of first delivery	—	—	—	June 1984
Number installed to date	—	—	—	—
COMMENTS				Supports remote power ON and remote administration