

Burroughs XE500 Series

MANAGEMENT SUMMARY

UPDATE: *Burroughs has added two models to the XE500 Series, bringing the product line to consist of four Unix-based supermicrocomputers. These models, the XE500-4 and XE500-5, support an Applications Processor (AP) II. The AP II consists of expanded memory processors and so-called X boards, allowing increased memory capacities on the XE500 Series. And, Burroughs has announced a laser printer that runs on the XE500 Series.*

The Burroughs XE500 Series is a 32-bit, general-purpose supermicrocomputer system, with emphasis on departmental systems and office automation environments. In its largest configuration, the XE500 Series can support up to 64 workstations, 36MB of main storage, and 1.6GB of disk storage.

The new additions to the XE500 Series, the XE500-4 and XE500-5, are both configured with a six-slot-capacity base enclosure. The XE500-4 supports a 768KB File Processor, a 768KB Cluster Processor, and has two slots for disk expansion and four slots for processor and memory. The XE500-4 supports a 71MB disk drive and a magnetic tape streamer. The system supports up to 64 B 20 workstations and up to 64 users.

The other new model, the XE500-5, supports a 768KB Storage Processor, a storage controller, a slot for disk

The XE500 Series is a family of supermicrocomputers supporting up to 64 users. The XE520 runs the BTOS operating system used on Burroughs' B 20 microcomputers. In addition to BTOS, the other three XE500 Series models, the XE550, XE500-4, and XE500-5, run Centix, based on AT&T's Unix System V.2.

MODELS: XE520, XE550, XE500-4, XE500-5.

MEMORY: 256KB to 36MB.

DISK CAPACITY: 37.5MB to 1.6GB.

WORKSTATIONS: Up to 64.

PRICE: \$19,000-\$59,000 (base system range).

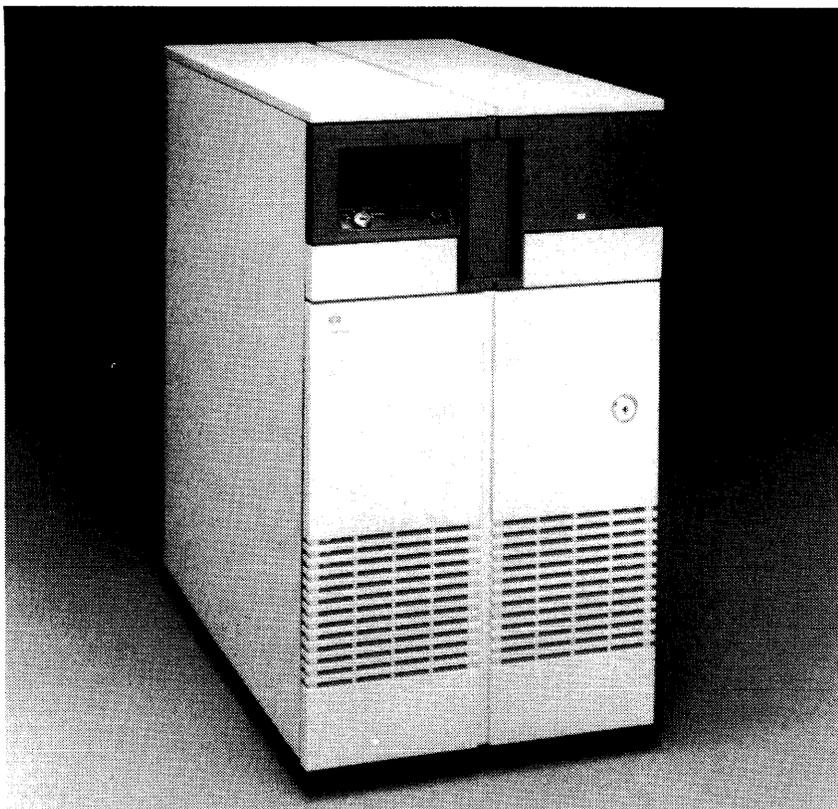
CHARACTERISTICS

VENDOR: Burroughs Corporation, Business Machines Group, Burroughs Place, Detroit, Michigan 48232. Telephone (313) 972-7000.

CANADIAN ADDRESS: Burroughs Canada, 2001 Sheppard Avenue East, North York, Ontario, Canada M2J 4Z7. Telephone (416) 495-0515.

DATA FORMAT

BASIC UNIT: 32-bit word.



The XE500-5 is a multiple processor system capable of running both the BTOS and Centix operating systems. The system uses internal 135MB eight-inch disk drives, and requires an external 1/2-inch tape drive. The XE500-5 supports up to 64 Burroughs B 25, PT 1500, or ASCII-compatible workstations.

Burroughs XE500 Series

CHART A. SYSTEM COMPARISON

MODEL	XE520	XE550	XE500-4	XE500-5
SYSTEM CHARACTERISTICS				
Date of introduction	May 1984	October 1984	October 1986	October 1986
Date of first delivery	July 1984	December 1984	—	—
Microprocessor type	Intel 80186	Intel 80186/ MC 68000	Intel 80186; MC 68010, 68020	Intel 80186; MC 68010, 68020
Microprocessor cycle time	8MHz	8MHz/10MHz	10MHz/16.67MHz	10MHz/16.67MHz
Operating system	BTOS	BTOS/Centix	BTOS/Centix	BTOS/Centix
Upgradable from	Not applicable	XE520	—	—
Upgradable to	XE550	Not applicable	—	—
Number of users	64	64	64	64
Number of serial/parallel I/O ports	32 serial/4 parallel	32 serial/4 parallel	—	—
Number of expansion slots	15	12	—	—
MEMORY				
Minimum capacity (bytes)	0.25M per processor	0.25M per processor other than application processor, which is 1.5M	512K	512K
Maximum capacity (bytes)	0.75M per processor	0.75M per processor other than application processor, which is 4M	6M	6M
DISK STORAGE				
Minimum capacity (bytes)	37.5M	75M	71M	71M
Maximum capacity (bytes)	1.6G	1.6G	1.6G	1.6G
NUMBER OF WORKSTATIONS				
COMMUNICATIONS PROTOCOLS				
	BSC, SDLC, Poll/ Select, TTY	BSC, SDLC, Poll/ Select, TTY, SNA, RJE, 2780/3780, 3270, X.25	BSC, SDLC, Poll/ Select, TTY, SNA, RJE, 2780/3780, 3270, X.25	BSC, SDLC, Poll/ Select, TTY, SNA, RJE, 2780/3780, 3270, X.25

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

expansion, and three slots for processors and memory. The XE500 also supports a 135MB SMD disk drive, a 768KB Cluster Processor, and an external magnetic tape drive. The storage processor/storage controller set supports up to six SMD-compatible disk drives. Like the XE500-4, the XE500-5 supports up to 64 workstations. The options available on the XE500-4 for adding processors also apply to the XE500-5.

These processor options include the new Applications Processor AP II and X boards. The AP II may be configured with the XE500-4 and XE500-5, or added to existing models on-site. The AP II is based on a Motorola 68020 processor and supports up to 32 users. Rated at 2.2 MIPS, the AP II increases instruction throughput two to three times over the previously used 68010s, according to Burroughs.

The new X boards use 256K-bit DRAMS, versus existing boards which use 64K-bit DRAMS. Previous processors required memory expansion boards to perform certain tasks, which consumed processor slots in the cabinet. The X boards save these slots, allowing increased power in less cabinet space. The X boards can be installed in existing XE500 systems and can coexist with previous boards.

Burroughs' new laser printer for the XE500 Series, the AP9208, prints at 8 pages per minute. The AP9208 is priced under \$3,500 and runs in an office environment without requiring much space.

INTERNAL CODE: ASCII.

MAIN STORAGE

XE520 main storage cycle time is 500 nanoseconds, while cycle time on the XE550 is 400 nanoseconds. Storage type is NMOS and Dynamic RAM with ECC. On the XE520, all processors support from 256KB to 768KB of main memory. On the XE550, all processors except the Applications Processor support from 256KB to 768KB of main memory. The Applications Processor supports 512KB to 4MB. The XE520 does not support the Applications Processor, but may be field-upgraded to an XE550.

Memory expansion on the XE550 is provided via a 512KB memory expansion (ME) board, supported by all processors, and a 1MB board, which is compatible with the Applications Processor (AP) only. The boards attach to their respective processors through a private bus. This bus allows each processor to access its off-board memory without interrupting the System Bus.

Memory expansion boards can be attached to any of the processor boards via board-to-board connectors. The File Processor, Cluster Processor, Terminal Processor, and Storage Processor can each have one 512KB ME board attached to them.

Also employed by the XE550, XE500-4, and XE500-5 are expanded memory processors, or X boards, using 256K-bit DRAMS. The X boards can be installed in existing XE500 systems and can coexist with previous boards. Memory on the Applications Processor I board supports a minimum of 512KB and a maximum of 4MB, in 0.5MB or 1MB memory increments. The Applications Processor II board supports a minimum of 2MB and a maximum of 6MB of memory, in 2MB or 4MB increments.

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CHART B. DISK/DISKETTE DEVICES

MODEL	E5437D	MD3-1/-2/-3
Type	Winchester	Winchester
Size (inches)	5¼	8
Number of surfaces	7	10
Formatted capacity per drive (bytes)	37.5M	134.8M
Interface/controller	E5204F file processor	E52085 SMD controller
Number of drives per interface/controller	Up to 4 per controller	Up to 4 per controller
Average access time (nanoseconds)	38.33 ms	38.33 ms
Data transfer rate	625KB/sec.	1.2MB/sec.
Sectors/tracks per surface	16,000 sectors/500 tracks	65,000 sectors/8,200 tracks
Bytes per sector/track	256 bytes/sector; 8192 bytes/track	16,384 bytes/track

▷ The existing models in the XE500 Series include the XE520 which provides the capabilities of a master workstation and runs the B Twenty Operating System (BTOS). It supports the B 20 with greater disk and tape storage, printing capability, and larger cluster configurations. The B 20 workstations execute programs locally while relying on the XE520 for extended print and file services.

The other existing model of the XE500 Series is the XE550, based on Convergent Technologies' Megaframe. The XE550 is a multiprocessor system which includes multiple 16-/32-bit Motorola MC68010 and multiple 16-bit Intel 80186 microprocessors. The XE550 is configured with a combination of five different processors. The MC68010-based Applications Processor (AP) executes the Centix operating system and applications software. The File Processor (FP), Cluster Processor (CP), Storage Processor (SP), and Terminal Processor (TP), all based on the Intel 80186 microprocessor, assist the Applications Processor by offloading I/O processing functions. Those four 80186-based processors execute the BTOS operating system, which runs in tandem with Centix.

The individual processors handle certain system tasks. The File Processor handles file processing and controls the integral disk. The FP also executes ISAM and the Centix file system from the Applications Processor.

The Cluster Processor supports RS-422 and RS-232 communications. PT 1500 terminals and B 20/25 workstations are supported by the CP. The XE550 can, through the B 20 workstation connection, support BTOS-, MS-DOS-, and CP/M-based applications (MS-DOS and CP/M are available as B 20 options).

The Storage Processor is responsible for supporting magnetic tape devices. The Storage Processor, accompanied by a Storage Module Device (SMD), provides the interface for an external disk.

The Terminal Processor off-loads terminal processing from the Applications Processor. The TP includes ten RS-232 ports; each port can support one ASCII terminal. In addition, the TP runs the communications service protocols, such as SNA and X.25. Both the CP and the TP contain one Centronics-compatible interface for 1000-lpm printer support.

PROCESSING COMPONENTS

The XE500 Series incorporates six different microprocessors into its architecture. The system supports an Applications Processor, Applications Processor II, File Processor, Storage Processor, Cluster Processor, and Terminal Processor. The XE520, based on Intel 80186 microprocessors, provides Burroughs B 20 workstation users with increased disk storage while acting as a shared resource processor and file server. The XE550 is based on the Motorola 68010 and Intel 80186 microprocessors, forming a distributed, multi-processor system servicing limited-function terminals.

The Applications Processor (AP), is a 32-bit VLSI processor, and is the heart of the XE550, XE500-4, and XE500-5 system. The Applications Processor's function is the execution of the Centix operating system and application software. The XE550 supports multiple APs, with each Applications Processor executing its own Centix kernel.

The AP is based on the Motorola family of microprocessors. Each AP contains memory on the processor board, which can then be expanded by the addition of memory expansion boards. The AP addresses off-board memory through a private bus; therefore, the AP does not utilize the system bus to access its own memory.

The Applications Processor (AP) II is based on a 68020 chip, with 16.67MHz cycle time. An 68881 co-processor is optional. Up to 32 users can be supported on the AP II.

The File Processor (FP) contains an 8MHz Intel 80186 processor with 256KB to 768KB of ECC memory. An LSI Winchester disk controller is also included with the FP. Like the AP, the FP uses a private bus to address its off-board memory. The FP's responsibilities include file processing and controlling the integral disk. The FP off-loads file-oriented data management processing, such as ISAM and the Centix file system, from the Applications Processor. The XE550's integral removable disk cartridge and up to three 37.5MB of fixed disk storage are also controlled by the FP. The XE520's FP is connected to the control panel to control the status display; it has a WD-1010 LSI Winchester disk drive controller. The FP also controls the bootstrap process and provides the system clock and the reference clock for the other boards on the XE520. An FP expansion enclosure accommodates up to four fixed disks. To perform the processing and control tasks, the FP executes a copy of BTOS (B Twenty Operating System).

Tape support is accomplished through the Storage Processor (SP), which also contains an Intel 80186 microprocessor and 256KB to 768KB of ECC memory. The memory and computing power for the Burroughs Storage Module (SMD) Controller are provided by the SP. When used with the SMD, the SP provides the interface for the Burroughs MD

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CHART C. WORKSTATIONS

MODEL	XE520/B25	XE550/PT 1500
DISPLAY PARAMETERS		
Max. chars./screen	2,320	2,320
Buffer capacity	—	Within 64KB RAM
Screen size (lines x chars.)	29 x 80	29 x 80
Tilt/swivel screen	Yes	Yes
Symbol formation	9 x 12 pixels	Software-controlled
Character phosphor	(P31) green	(P31) green
Total colors/no. simult. displayed	64/8	Monochrome video
KEYBOARD PARAMETERS		
Style	Selectric with 10-key pad	—
Character/code set	All ASCII characters	Domestic and numerous international sets
Detachable	Yes	Yes
Program function keys	10 x 3 (30)	10 user-definable
TERMINAL INTERFACE	RS-422, RS-232	RS-422, RS-232

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

➤ The XE550 system can either directly or indirectly support peripherals used by the B 20 microcomputers. In the cases when a peripheral cannot be directly connected to the XE550, it can be supported through the B 20 cluster arrangement.

COMPETITIVE POSITION

Burroughs has found itself in an interesting position with regard to competitors for the XE500 Series. In addition to competing with several other supermicrocomputer vendors offering Unix-based systems, such as Altos Computer Systems, AT&T Information Systems, Plexus Computers, and Texas Instruments, Burroughs spars with Sperry Corporation's supermicrocomputer. Earlier in 1986, Sperry merged with Burroughs; thus, Sperry's Unix-based, 32-bit supermicro, the Sperry Series 5000, competes directly with Burroughs' XE500 supermicro.

As Burroughs has enhanced the XE500 Series, Sperry, too, recently added three models to the Series 5000. With both sets of systems being actively marketed, one has to wonder what the master plan is for these two systems. However, upon investigation of the Burroughs product line, one finds a candidate for elimination in the B 90. The B 90 is a non-Unix-based minicomputer used primarily by municipal governments and small financial installations.

The B 90 has not been enhanced at all by Burroughs in the past two years. Although Burroughs states it markets the B 90, its installed base is decreasing. One theory is that Burroughs could banish the B 90, and urge B 90 customers to advance to the XE500 Series, which offers state-of-the-art technology and improved price performance ratios over the B 90. The notion of the B 90's imminent demise is reinforced by the addition of a bridge facility to convert CMS applications—which run on the B 90—to the XE500 Unix environment.

The problem of marketing competing Unix systems would still exist though, even if Burroughs dropped the B 90. But, in this case, if Burroughs can attract B 90 users to the XE500 and target the Sperry systems against external com-

➤ 3 external disk, which provides between 135MB and 405MB of formatted disk storage per cabinet.

The Cluster Processor (CP) is designed around the Intel 80186 and supports from 256KB to 768KB of memory. It has on-board error correcting code (ECC) RAM, 8KB of ROM, eight error-code LEDs (Light-Emitting Diodes), and one parallel printer port. The CP contains two RS-422 ports, each capable of supporting up to eight workstations. Depending upon the workstation, the line speeds are either 307K bps or 1.8M bps. Additional communications are provided through the CP's three RS-232 ports, which off-load data from the Applications Processor to the terminals. The CP supports up to 16 Burroughs PT 1500 terminals. Much of the PT 1500 I/O processing is off-loaded from the Applications Processor to the CP. One parallel printer port is included with the CP; it provides the connection for a line printer. Each XE520 system contains up to eight CPs. The CP acts as a front-end processor that supports BTOS and executes in parallel with the FP. On the XE550, the CP runs communications software to support PT 1500 terminals and B 20 workstations.

The Terminal Processor (TP) is also built around the Intel 80186 processor and features 256KB to 768KB of memory. The TP executes the BTOS operating system and provides a virtual terminal interface for nonintelligent terminals. Like the CP, the TP off-loads terminal I/O processing from the AP. The TP contains ten RS-232 ports, which, depending upon the service, can operate at speeds up to 9.6K bps. The TP's Centronics-compatible parallel printer port supports a 1000-lpm printer.

INPUT/OUTPUT CONTROL

In the XE500 Series, processor boards communicate with each other over a high-speed, asynchronous parallel system bus located in the backplane. This bus carries signals and power and transfers 8, 16, or 32 bits of information at a time. The maximum transfer rate is 11MB per second.

Interboard-communications (IBC) consist of request and response blocks passing between the operating systems that execute on the processors. The software provides a doorbell interrupt, enabling one processor to pass requests to another. The system bus also permits direct memory access (DMA) transfers to and from the disk and between processors.

➤ In the XE550 Series, each enclosure contains a card cage with eight slots; the slot on each end is for a bus repeater. ➤

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CHART D. PRINTERS

MODEL	B 9246-6S	B 9249-31	AP1351	AP9208	AP1354
Type	Band	Chain	Serial	Laser	Matrix
Speed	600 lpm	270 lpm	200/110/35 cps	8 ppm	200/40 cps
Bidirectional printing	—	—	Yes	Does not apply	Yes
Paper size	Fanfold 3-16 inch width, 3-14 inch length	Fanfold 3-17 inch width, Up to 14-inch length	Fanfold 5-16 inch width, 3-14 inch length	—	—
Character formation	Full	Full	Dot matrix	Full	Full
Horizontal character spacing (char./inch)	10	10	10, 12, 13.3, 16.7	—	—
Vertical line spacing (lines/inch)	6 or 8	6 or 8	6 or 8 operator-selectable, software-selectable	—	—
Character set	Optional	Optional	Optional	—	—
Controller/Interface	E5202C or E5210T	E5202C or E5210T	E5202C or E5210T	—	—
No. of printers per controller/interface	1	1	Either parallel (1) or RS-232 (multiple)	—	—
Printer dimensions, in. (h x w x d)	43.7 x 30.3 x 33.6	40.5 x 30 x 24.5	9.9 x 23 x 13	—	—
Graphics capability	No	No	Not in this configuration	—	No

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

petitors, the company may be able to offer, maintain, and turn a profit on two separate supermicrocomputer systems.

ADVANTAGES AND RESTRICTIONS

An advantage of the XE500 vis à vis the Burroughs/Sperry merger is that Sperry's Unix-based PCs can be connected to the XE500 Series. Therefore, XE500 users are able to choose from Sperry's PC line. Also in the works is a plan to connect the XE500 Series to Unix-based Sperry 1100 Series mainframes, and to Sperry's Unix-based mid-frame, the 2200. According to Burroughs' User Group, a plan to hook up these systems is in the works, which would add new meaning to the term "connectivity."

Another advantage of the XE500 Series is that a user can build onto the system, adding memory boards as the need for memory increases. Thus, system users can start out with a small configured XE500 and have the ability to grow into a larger configuration, without going out of the product line. As mentioned earlier, the XE500 CMS Bridge is also important, as it provides a migration tool for B 90, B 900, and B 1900 CMS users.

USER REACTION

We received no responses for the XE500 Series in our 1986 Datapro Computer Users Survey. As a matter of policy, Burroughs does not divulge data about its customers. Thus, Burroughs declined to provide us with a list of users from whom we could obtain assessments of the XE500 Series. □

► Bus repeaters extend the system bus from one enclosure to the next.

Memory expansion connector blocks join ME boards to processor boards within an enclosure. This connection is separate from the bus and does not generate traffic on it.

Terminals, workstations, and printers are connected to the XE550 system via the CP ports. Each RS-422 serial port operates at 307KB or 1.8MB per second, and each RS-232 port operates at up to 19.2KB per second. The parallel printer port is Centronics compatible. Two of the three

RS-232 ports are synchronous or asynchronous; the third port is asynchronous only. The back of the CP contains six I/O ports and eight error-code LEDs. Each of the two RS-422 ports is configured with two connectors providing two access points to each line; 1A is paired with 1B; and 2A is paired with 2B. Total bandpass per Cluster Processor or Terminal Processor is 38.4KB per second.

The Terminal Processor can handle a maximum of ten asynchronous terminals simultaneously at speeds up to 9.6KB per second. Four of the ten RS-232 ports are synchronous or asynchronous and can generate interrupts. The remaining six ports are asynchronous only and cannot generate interrupts.

The File Processor is always designated as the master FP for the system. The FP is connected to the control panel and controls the status display, all the disk drives in the system enclosure, and the system bootstrap process. It also provides the system and reference clock for all other boards.

The Applications Processor and Applications Processor II run a virtual memory version of Unix, called Centix, as well as other application programs and software tools, called centreSphere; the operating environment is based on Unix System V.2. The AP contains 512KB of ECC RAM, 8KB of ROM, eight error-code LEDs, and a memory management unit (MMU) that supports a two-level demand paging scheme.

The Storage Processor functions as a tape controller and manages the Storage Module Drives (SMDs) in conjunction with the SMD controller board. It has 256KB of on-board ECC RAM, 8KB of ROM, and eight error-code LEDs.

CONFIGURATION RULES

All XE520 configurations must begin with an XE520-1 or XE520-2 base system, which includes enclosures (base or expansion) having six card slots for processors or memory expansion boards. Each processor or memory expansion board takes one card slot. No more than five enclosures may be configured and a memory expansion board must reside in the same enclosure and be adjacent to the processor it supports. A workstation (B 21, B 22, or B 25) may be no further than 2,800 feet from the XE520. Only one 5MB removable disk cartridge is allowed per XE520 system, and this drive must reside in the base enclosure. An enclosure cannot be configured with disk storage unless it is configured with a file processor. No more than two Burroughs-supplied, communications-oriented products can operate concurrently in a cluster processor. ►

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► The XE550, when configured as a six-cabinet system, can accommodate up to 36 cards. The card slots hold the processor, memory, and external disk control boards. Users can configure an XE550 system according to specific processor, memory, and disk storage needs. The XE550 includes the E-5437D 5¼-inch Winchester disk with 37.5MB of formatted storage. The base enclosure can contain three disks; the expansion enclosure contains up to four disks, one of which is a 5MB Winchester removable disk. This cartridge has a data transfer rate of 30 milliseconds.

The XE500-4 is configured with a six-slot capacity base enclosure. The File Processor is based on an Intel 80186 chip with 768KB of memory. The Cluster Processor is also an Intel 80186 chip with 768KB of memory. A 71MB fixed disk and a ¼-inch magnetic tape cartridge are standard.

The XE500-5 is configured with a six-slot-capacity base enclosure. The Storage Processor and the Cluster Processor are also based on Intel's 80186 chip. Both the SP and CP support 768KB of memory. The basic system supports a 135MB fixed disk. An external ¼-inch tape drive must be configured with the XE500-5 system.

INPUT/OUTPUT UNITS

See Chart B for disk and diskette devices.

See Chart C for workstations.

See Chart D for printers.

The XE550 supports the Burroughs B 9498 Tape Streamer, which interfaces to the XE550 through the Storage Processor. The B 9498 is used for backup storage and software portability. The SP supports two B 9498 tape drives. The B 9498 is a ½-inch, 9-track, 1600-bpi tape drive. (The XE500-5 must be configured with this tape drive.)

COMMUNICATIONS

The Cluster Processor (CP) runs communications software to support the PT 1500 terminals and B 20 workstations. The Terminal Processor (TP) can support parallel printers and telecommunications lines.

Local networks can be created by using the XE520 or XE550 as the central processor. XE500 systems can also access communications links and remote network resources using a variety of protocols, including X.25, SNA, Bisynchronous, 3270, and 2780/3780.

SOFTWARE

OPERATING SYSTEM: The XE520 supports the *BTOS* operating system, which is also the operating system for the B 20 systems. *BTOS* controls the File Processor, Cluster Processor, Terminal Processor, and Storage Processor. On the XE550, XE500-4, and XE500-5, *BTOS* functions as a support operating system to the Centix operating system and provides system-wide file and primary communications services. *Centix* is an enhanced version of Unix System V.2 and controls the Applications Processor. On these models, *Centix* is the heart of a layered software system called *centreSphere*. The *centreSphere* software offerings include programs for data base management, administrative functions, applications development, and office automation. Various *centreSphere* modules permit the XE550, XE500-4, and XE500-5 to access other data processing environments, perform word processing, generate spreadsheets, display up to four windows on the PT 1500 screen, get online help in using the system, and develop customized prompt screens that can be called up with function keys.

DATA BASE MANAGEMENT: The Burroughs *Ingres Relational Database Management System* allows users to organize, share, and manipulate data base information. *Ingres* facilities include forms-based query/update functions, screen-based forms and report editing, and application integration.

LANGUAGES: Cobol 74, Fortran 77, XE550 Basic Interpreter, XE550 Pascal, and XE550 C are provided as components of the *centreSphere* environment on the XE550.

COMMUNICATIONS: In *centreSphere*, packaged on the XE550, *centrCom* provides the communication facilities. *CentrCom* permits access to SNA Transport, SNA 3270, SNA RJE, 3270 Bisynchronous, 2780/3780 Bisynchronous, X.25 Public Switch Network, and Burroughs Host and Terminal Communications.

APPLICATIONS: The XE550, XE500-4, and XE500-5 *centreSphere* environments provide applications for system management and interactive data management.

For system management, a group of tools called *centrExec* is available. The *centrEase Interface*, a menu-driven facility, allows the user to perform many Centix supervisory functions.

For system interaction, *centreWindow* allows the user to view up to four applications on the PT 1500 screen. The applications, which are contained within windows, can be controlled both interactively and programmatically. The program offers different views of the same application, as well as integration among multiple applications.

CentreCap allows programmers to develop customized screens that users recall by touching the PT 1500 keyboard's 10 soft-function keys.

For data management, the *XE550 Index Sequential Access Method (ISAM)* and the *Sort/Merge Facility* are available. Also available is the *centreScreen Forms Facility*, an interactive design and test facility for creating screen formats. Under the blanket title of *centreOffice Office Productivity Tools*, *centreSphere* provides the *centrePlan* spreadsheet and *centreWord*, which allows integration of text and spreadsheet data.

XE550 Computer Management System (CMS) Bridge is based on Burroughs' Master Control Program (MCP) and high-level languages. The XE550 CMS Bridge post compilers translate CMS s-code files into executable object code files for the XE550's Applications Processors.

Burroughs' *Logic and Information Network Compiler (LINC)* is a fourth-generation application development tool. *LINC* segregates information into permanent information records, functional activities and transactions, and inquiry and reporting needs.

OPERATING ENVIRONMENT

All four XE500 Series models are the size of a two-drawer filing cabinet. The system unit measures 29 inches (74 cm) high by 16 inches (40 cm) wide by 28 inches (72 cm) deep. The unit weighs between 150 and 200 pounds (68.1-90.8 kg), depending upon the configuration. The expansion unit weighs 110 pounds.

The ideal operating environment for the XE500 Series consists of an ambient temperature of 55 to 75 degrees Fahrenheit (13 to 35 degrees Celsius) during operation. The relative humidity is 10 to 80 percent during operation.

AC power requirements per enclosure are 115 VAC, 50 to 60 Hz, at 12 amp; or 220 VAC, 50 to 60 Hz, at 6 amp. ►

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SUPPORT SERVICES

DOCUMENTATION: The following manuals are available for the XE520: XE520 System Administrator's Guide (SAG); XE520 System Administrator's Handbook; XE520 System Programmer's Guide; and XE520 BTOS User's Guide. XE550 manuals include System Administrator's Guide (SAG); Administrator's Handbook; System Programmer's Guide (SPG); Centix User's Guide; Centix User's Handbook; BTOS User's Guide; Indexed Sequential Access Method (ISAM) Manual; and language manuals.

TRAINING/EDUCATION: Burroughs offers education services in the form of video presentations, manuals, and

workbooks. Intensive classroom training is offered at Burroughs Education Centers nationwide.

MAINTENANCE: Maintenance plans available for XE500 systems include on-call, on-site, and after-hours maintenance services; carry-in, contract, and time and materials services; installation of additional components or improved XE500 Series products; and relocation coordination.

PRICING

POLICY: Burroughs offers the XE500 Series for purchase only. Installation charges are included in the price list. Large-account license fee discounts are available for some software products.

EQUIPMENT PRICES

		Purchase Price (\$)	Monthly Maint. (\$)	One-Year Lease (\$)	Three-Year Lease (\$)	Five-Year Lease (\$)
PACKAGED SYSTEMS AND PROCESSORS						
XE520-1SY	XE520-1SY includes base enclosure, File Processor, .5MB memory, Cluster Processor, ¼-inch MTC, and 71MB fixed disk	19,000	152.00	—	—	—
XE520-1SY	XE520-1SY includes base enclosure, File Processor, .5MB memory, Cluster Processor, 5MB removable cartridge, and 37MB fixed disk	23,205	202.50	—	—	—
XE520-2SY	XE520-2SY includes base enclosure, File Processor, .5MB memory, two Cluster Processors, Storage Processors, 5MB removable cartridge, and three 37MB fixed disks	42,105	352.50	—	—	—
XE550-TSY	XE550-TSY Unix system includes base enclosure, File Processor, .5MB memory, Applications Processor, .5MB, Communications Processor, ¼-inch MTC, and 71MB fixed disk	25,000	200.00	—	—	—
XE550-ESY	XE550-ESY Unix system includes base enclosure, File Processor, .5MB memory, Applications Processor, .5MB memory, Communications Processor, 5MB removable cartridge, and two 37MB fixed disks	29,400	206.00	—	—	—
XE550-1SY	XE550-1SY Unix system includes base enclosure, File Processor, .5MB memory, Applications Processor, 1MB memory, Cluster Processor, 5MB removable cartridge, and two 37.5MB fixed disks	45,465	292.00	—	—	—
XE550-3SY	XE550-3SY Unix system includes base enclosure, File Processor, .5MB memory expansion, Applications Processor, 1MB memory expansion, Cluster Processor, 5MB removable cartridge, and 37.5MB fixed disk	39,165	249.00	—	—	—
XE551-3	XE551-3 Unix increment contains expansion enclosure, Applications Processor, 1MB memory, Communications Processor, Storage Processor, and SC	28,350	230.50	—	—	—
XE550-BP1	Business Partner includes base enclosure, File Processor, .5MB, Applications Processor, .5MB, Communications Processor, ¼-inch magnetic tape cartridge, 71MB disk, 1MB expansion board, expansion enclosure, terminal, Centix operating system, and Linc development system	59,500	401.50	—	—	—
XE550-CK1	CMS Kit 1 includes 67MB fixed disk, 1MB memory expansion board, data comm adaptor, and PT1500 terminal	7,339	97.00	—	—	—
XE550-CK2	CMS Kit 2 includes two 67MB fixed disks, 1MB memory expansion board, data comm adaptor, and PT1500 terminal	9,964	137.00	—	—	—
OVERPACKS						
E5100B	Expansion enclosure	7,980	51.50	—	—	—
E5204F	File processor	4,840	29.50	—	—	—
E5202C	Cluster processor	3,500	27.50	—	—	—
E5200A	Applications processor	6,345	51.50	—	—	—
E5206S	Storage processor	3,150	23.50	—	—	—
E5208S	SMD controller	2,200	16.00	—	—	—
E5210T	Terminal processor	3,500	21.50	—	—	—
MEMORY						
E5302	512KB memory expansion board	3,150	26.50	—	—	—
E5304	1MB memory expansion board	4,200	32.00	—	—	—

Burroughs XE500 Series

		Purchase Price (\$)	Monthly Maint. (\$)	One-Year Lease (\$)	Three-Year Lease (\$)	Five-Year Lease (\$)
DISK						
E5437D	37.5MB fixed disk drive	4,950	44.00	—	—	—
E5436D	67MB fixed disk, inbuilt	6,000	40.00	—	—	—
MD3-1	135MB disk drive, 1 module	8,000	28.00	—	—	—
MD3-2	270MB disk drive, 2 modules	14,500	55.50	—	—	—
MD3-3	405MB disk drive, 3 modules	21,000	83.00	—	—	—
MD3-1AD	Field add-on module, 135MB	8,000	—	—	—	—
TAPE						
B9498	Tape streamer	7,875	49.00	331	292	292
B5408-1	¼-inch magnetic tape stream kit	3,500	—	—	—	—
PRINTERS						
B9252	150-cps matrix printer	1,359	26.00	—	—	—
AP1351	200-cps multifunction color printer	2,395	27.00	141	117	105
B9249-31	270-lpm chain printer (B21/22 only)	6,500	88.00	436	388	388
B9246-6S	650-lpm line printer	15,435	205.00	611	529	529
AP9208	8-ppm laser printer	3,395	45.00	—	—	—
B9246-12S	1250-lpm train printer, XE500	44,625	440.00	1,745	1,567	1,448
AP1305	55-cps letter-quality printer	2,095	27.00	183	153	129
AP1314	80 column, 200-/40-cps matrix printer	645	9.00	—	—	—
AP1354	132 column, 200-/40-cps matrix printer	895	11.00	—	—	—
AP1311	160-cps, multifunctional, 80-column color printer	1,395	26.00	128	107	96
TERMINALS						
PT1500	Display, keyboard, and power supply for XE550	1,470	14.00	—	—	—

SOFTWARE PRICES

		Single Item (\$)			
XE500 INSTALLATION CHARGES					
System	Complete XE500 system	600			
Expansion	Expansion enclosure	200			
Processor	Processor/memory add-ons	200			
Disk Drives	5¼-inch fixed disk drives	250			
Disk Drives	MD3 disk drives (per cabinet)	200			
Disk Drives	MD3-0 disk upgrade	200			
Tape Units	B9498 tape streamer	150			
Printers	Matrix printer	100			
Printers	Line printer	150			
Printers	Nonimpact	100			
Workstation	B 20 series	100			
Workstation	PT1500 terminals	100			
		New User		Current Software User	
		Unlimited Time Plan		Unlimited Time Plan	
		Large Account License (\$)	PSA-1 Copy 1 (\$)	Large Account License (\$)	PSA-1 Copy 2 (\$)
XE500 SYSTEM SOFTWARE					
XE520 MS4	XE520 MS4 master operating system	1,500	1,500	1,050	150
XE520 MS5	XE520 MS5 master operating system	1,500	1,500	1,050	150
XE520 MS7	XE520 MS7 master operating system	1,500	1,500	1,050	150
XE520 PSB	Product service agreement, XE520 site PSA, \$525 annually.				

Burroughs XE500 Series



		Initial Payment (\$)	Monthly License Fee (\$)	PSA-1 (\$)	PSA-2 (\$)
XE550 SYSTEM SOFTWARE					
XE550 BNX	Centix operating system including utilities, C compiler and Centrease (one copy required for each AP)	3,000	150	300	552
XE550 BND	Centix development extension	NC	NC	NC	NC
XE500 CRT	XE500 bootable cartridge	NC	NC	NC	NC
XE550 BN8	Centix entry system including utilities, C compiler, and Centrease (one copy required for each AP, limited to 8 users)	1,600	80	300	552
XE550 UNI	Unibol development, includes Unibol compiler, linker, run-time interpreter, utility library, symbolic debugger, soft generator, ISAM module	2,400	NC	528	960
COMPILERS					
XE550 COB	Cobol '74	3,250	130	300	552
XE550 CRN	Cobol run-time	600	24	55	100
XE550 SDB	Cobol source code debugger	—	—	—	—
XE550 SDB	Cobol animator	1,500	60	132	152
XE550 UNR	Unibol run-time	1,400	NA	348	528
XE550 FOR	Fortran '77	3,000	150	252	468
XE550 PAS	Pascal	3,000	150	252	468
XE550 BAI	Basic interpreter	3,000	150	204	384
DATA MANAGEMENT					
XE550 FRM	Forms package	2,000	100	168	312
XE550 SRT	SORT/MERGE	600	30	48	84
XE550 ISM	ISAM package	1,200	60	96	180
INGRES					
XE550 INS	INGRES—single AP	6,000	300	552	1,008
XE550 INM	INGRES—multiple AP	9,000	450	816	1,512
XE550 ABF	Applications-by-forms	2,000	100	168	312
XE550 ECB	EQUEL/Cobol	1,000	50	96	168
COMMUNICATIONS					
XE550 SNA	SNA transport	1,000	50	132	252
XE550 32S	3270 SNA	2,000	100	132	252
XE550 32B	3270/BSC	3,000	150	180	336
XE550 RJE	2780/3780	2,000	100	132	252
XE550 SJE	SNA RJE	1,000	50	132	252
XE550 X25	X.25 interface	2,000	100	120	216
XE550 BHC	Burroughs host comm	2,500	125	204	384
OFFICE PRODUCTIVITY					
XE550 CWP	CentreWord word processor	1,675	50	240	—
XE550 CSS	CentrePlan spreadsheet	1,315	40	190	—
XE550 COA	Centre-O/A office functions	3,255	95	465	—
XE550 COS	CentrOffice interoffice systems	5,770	170	895	—
EMULATORS					
XE500 M3	MT emulator for 1-3 users (ET1100/PT1500)	750	35	75	115
XE500 M16	MT emulator for 4-16 users (ET1100/PT1500)	2,000	100	200	300
XE500 M32	MT emulator for 16+ users (ET1100/PT1500)	3,700	185	370	555
XE500 P3	PT emulator for 1-3 users (PT1500/B20)	750	35	75	115
XE500 P16	PT emulator for 4-16 users (PT1500/B20)	2,000	100	200	300
XE500 P32	PT emulator for 16+ users (PT1500/B20)	3,700	185	370	555
USER INTERFACE					
XE550 USR	CentreCap	2,000	80	168	312
CMS BRIDGE to XE500 SYSTEMS					
XE500 CMS	Run-time package post compiled utility, data communication subsystem, post compiled SCL, intrinsics, data communication configuration, XE500 Gemcos Basic (post compiled), XE500 CMS Cande	600	—	275	585
XE500 CPC	Development package run-time package MPL 11, Cobol and RPG compilers, CMS post compilers	3,000	—	585	1,080



Burroughs XE500 Series



XE500 CMS DEVELOPMENT AIDS

		<u>Initial Payment (\$)</u>	<u>Monthly License Fee (\$)</u>	<u>PSA-1 (\$)</u>	<u>PSA-2 (\$)</u>
XE500 DOM	DOMS	2,000	100	140	120
XE500 RPO	On-line	2,000	100	140	290
XE500 ODY	Odesy	1,200	60	75	140
XE500 GMC	Gemcos gen	3,000	150	165	300
XE500 GMB	Gemcos Basic	1,000	50	50	85
XE500 GMT	Gemcos TCL	1,000	50	50	90
XE500 GMF	Gemcos form	600	30	35	60

Discounts are available for quantity purchases.

Extended license is 48 months.

NA—Not applicable. ■