# Burroughs XE500 Series

## MANAGEMENT SUMMARY

In late 1984 Burroughs entered the Unix marketplace with the introduction of the XE550 supermicrocomputer. The XE550 runs the Burroughs Centix operating system, an enhanced version of AT&T's Unix System V. In addition to supporting Unix applications, the XE550 supports BTOS (B Twenty Operating System), the operating system used in the Burroughs B 20 line of microcomputers. In conjunction with the XE550 introduction, Burroughs brought its PT 1500 Programmable Terminal to the market; the PT 1500 will be used with the XE550.

The XE520, introduced earlier in 1984, provides the capabilities of a master workstation and runs 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 XE550, based on Convergent Technologies' Megaframe, 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 Application 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 Application Processor by offloading I/O processing functions. These four 80186-based processors execute the BTOS operating system, which runs in tandem with Centix.

The File Processor handles file processing and controls the integral disk. The FP also executes ISAM and the Centix file system from the Application Processor. ▷



*The XE550 marks Burroughs' entry into the Unix-based computer market. Based on Centix, an enhanced version of Unix System V, the XE550 can reportedly run currently available Unix System V applications. The XE550, built around a multiprocessor architecture, supports up to 12MB of memory, up to 1.3GB of disk storage, and up to 32 users.*

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The XE500 Series is Burroughs' first group of Unix-based systems. The XE500 Series consists of two models, the XE520 and the XE550. The XE520 runs the BTOS operating system, used on Burroughs' B 20 microcomputers. In addition to BTOS, the XE550 runs Centix, based on AT&T's Unix System V. The XE550, which supports up to 32 users, can run a number of Unix-compatible programs.
**MODELS: XE520, XE550.**
**MEMORY: 256KB to 12MB.**
**DISK CAPACITY: 37.5MB to 1.3GB.**
**WORKSTATIONS: Up to 32.**
**PRICE: $26,000-$47,000 (base system range).**

## CHARACTERISTICS

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

**CANADIAN ADDRESS:** Burroughs-Canada, 801 York Mills Road, Don Mills, Ontario, Canada M3B 1X7. Telephone (416) 455-4030.

### DATA FORMAT

**BASIC UNIT:** 32-bit word.

**INTERNAL CODE:** ASCII.

### MAIN STORAGE

XE520 cycle time is 500 nanoseconds while cycle time on the XE550 is 400 nanoseconds. Storage type is NMOS; Dynamic; RAM with ECC. On the XE520, all processors support from 256KB to 768KB main memory. On the XE550, all processors except the Applications Processor support from 256KB to 768KB 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 Application 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. The AP can have a maximum of four ME boards attached to it—one 512KB ME board, and up to three 1MB ME boards.

### PROCESSING COMPONENTS

The XE500 Series incorporates five different microprocessors into its architecture. The system supports an Applica- ▶

# Burroughs XE500 Series

## CHART A. SYSTEM COMPARISON

| MODEL | XE520 | XE550 |
|---|---|---|
| SYSTEM CHARACTERISTICS | | |
| Date of introduction | May 1984 | October 1984 |
| Date of first delivery | July 1984 | December 1984 |
| Microprocessor type | Intel 80186 | Intel 80186/MC 68000 |
| Microprocessor cycle time | 8MHz | 8MHz/10MHz |
| Operating system | BTOS | BTOS/CENTIX |
| Upgradable from | Not applicable | XE520 |
| Upgradable to | XE550 | Not applicable |
| Number of users | 32 | 32 |
| 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) | 0.25MB per processor | 0.25MB per processor other than application processor which is 1.5MB |
| Maximum capacity (bytes) | 0.75MB per processor | 0.75MB per processor other than application processor which is 4MB |
| DISK STORAGE | | |
| Minimum capacity (bytes) | 37.5MB | 75MB |
| Maximum capacity (bytes) | 1342.5MB | 1342.5MB |
| NUMBER OF WORKSTATIONS | 32 | 32 |
| COMMUNICATIONS PROTOCOLS | BSC, SDLC, Poll/Select, TTY | BSC, SDLC, Poll/Select, TTY |

▷ 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 B20 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 10 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.

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.

The entry-level XE550 model features one Application Processor, one File Processor, and one Cluster Processor. System configurations are built according to the user's needs. At full capacity, the XE550 will hold up to 18 cards. The available space is taken up by processor, memory, and external disk cards. Depending upon the configuration, typical systems include more than 8 but fewer than 18 cards.

Each AP supports from 512KB to 4MB of memory. In theory the XE550 can be configured with one to four APs, depending upon the amount of memory on each AP. For example, the XE550 will support three APs, each con- ▷

▶ tions Processor, 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, multiprocessor system servicing limited-function terminals.

The Application Processor (AP), a 32-bit VLSI processor, runs a virtual memory version of Unix, called Centix, as well as other application programs and software tools, called centreSphere, based on Unix System V. The XE550 supports multiple APs, with each AP running its own Centix Kernel and providing support for up to 16 users (depending upon the application.) The AP board contains a 10MHz MC68010 CPU with 512KB of error-correcting (ECC) memory, expandable to 4MB. The first 512KB of memory is contained on the AP board. Additional memory is stored on 512KB and 1MB memory expansion boards; the off-board memory is addressed through a private bus. The AP contains a Memory Management Unit (MMU) which provides high-speed (no-wait) status and a two-level demand paging scheme with 3.5MB of Virtual Address Space per user. The MMU protects the user memory.

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 Application Processor. The XE550's integral removable disk cartridge and up to 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 and 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 the BTOS (B Twenty Operating System) 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 ▶

# Burroughs XE500 Series

## CHART B. DISK/DISKETTE DEVICES

| MODEL | E5437D | MD3-1/-2/-3 |
|---|---|---|
| Type | Winchester 5¼" | Winchester 8" |
| Size (inches) | 5¼" | 8" |
| Number of surfaces | 7 | 10 |
| Formatted capacity per drive (bytes) | 37.5MB | 134.8MB |
| 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 | 625K bytes/sec. | 1.2M bytes/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 |
| Comments | | |

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

▷ figured with 4MB of memory, or four APs that contain less than 4MB of memory each. Realistically, the maximum amount of memory supported by the XE550 is in the 10MB to 12MB range. Each of the 80186-based processors supports from 256KB to 768KB of memory. The disk storage capacity of the XE550 ranges from 75MB to 1.3GB.

Burroughs has also introduced centreSphere, a group of XE550 software packages and productivity tools built around the Centix operating system. The various centreSphere modules offer word processing, spreadsheet, applications development, database management, and networking programs.

Burroughs is targeting the XE500 Series at small-to medium-sized business and office installations for educational institutions, state and federal governments, and distributed data processing environments. The size and operating requirements of the XE500s allow them to be user-installed, without special electrical prerequisites. The XE550 is the size of a two-drawer filing cabinet.

The XE520 Shared Resource Processor System, the cluster processor for B 21, B 22, and B 25 workstations, can be upgraded to the XE550. The XE520 contains the same 80186-based File and Cluster Processors that are found in the XE550. By adding one MC68010-based Applications Processor, the XE520 becomes an entry-level XE550.

## COMPETITIVE POSITION

Competition in the general-purpose commercial computing market for the XE550 comes from the NCR Tower, Model 1632 XP, another Unix system with a Motorola processor. Although the XE550 outperforms the Tower 1632 XP in both the memory and disk capacity categories, (8096KB memory capacity and 260MB disk storage for the 1632 XP), in the lower end of XE550 configurations the two systems are competitive. The Tower 1632 XP supports a total of 16 workstations, while the XE550 can accommodate up to 32 stations. The 1632 XP can connect with NCR's LAN system. Currently, the XE550 does not offer a LAN option. Both companies are targeting their systems for the small business environment. ▷

▶ computing power for the Burroughs Storage Module (SMD) Controller is provided by the SP. When used with the SMD, the SP provides the interface for the Burroughs MD 3 external disk, which provides disk storage of between 135MB to 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, eight KB 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 Application 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 Application 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 four 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 10 RS-232 ports, which, depending upon the service, can operate at speeds of up to 9.6K bps. The TP's Centronics-compatible parallel printer port will support 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 that is 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 (BTOS). The software provides a doorbell interrupt that enables 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. ▶

# Burroughs XE500 Series

## CHART C. WORKSTATIONS

| MODEL | XE520/B25 | XE550/PT 1500 |
|---|---|---|
| DISPLAY PARAMETERS | | |
| Max. chars./screen | 2320 | 2320 |
| 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 is also competitively positioned against AT&T's Unix System V-based 3B5/100 and 3B5/200 systems. The 3B5/100 is powered by the proprietary 7.2MHz WE 32000 microprocessor, which supports full 32-bit operations. The 3B5/100 offers up to 8MB of memory and up to 1.1GB of storage. These characteristics compare to the XE550's maximum memory capacity of 10MB to 12MB and maximum disk storage of 1.3GB. The Motorola MC68010 microprocessor, which the XE550 is built around, is a 16-/32-bit chip that operates at 10MHz. The CPU speed is faster in the XE550; however, the MC68010 does support full 32-bit operations, as the WE 32000 does.

The 3B5/200 is also based on a WE 32000 microprocessor. Like the XE550 processor, the 3B5/200 processor operates at 10MHz. However, the XE550's ability to support multiple Application Processors, which are powered by MC68010 processors, allow the system to be configured with as many as four 10MHz MC68010s. Both the XE550 and 3B5/200 support up to 8MB of memory; the 3B5/200 accommodates up to 2.2GB of storage, compared to the XE550's 1.3GB.

The XE550 has the capability to support up to 32 workstations. This compares to the 40-workstation capability of the 3B5/100 and the 60-workstation capability of the 3B5/200. However, AT&T offers two LAN schemes that permit connection of multiple 3B5s to other 3B systems. As mentioned above, at this time Burroughs does not offer a local area network option for the XE550.

Other XE550 competition comes with the introduction of Sperry's first Unix-based microcomputer, the 5000 Series. The 5000 Series is based on the Motorola MC68010 chip and runs Unix System V. Targeted also for general-purpose business computing, Models 20 and 40 are competitive with the XE550. In the memory department the 5000/40 can handle up to 8MB of memory, while the 5000/20 model's capacity is 2MB. The XE550 has more integral disk that either Sperry models. The 5000/40 can accommodate 16 users.

In the XE550 Series, each enclosure contains a card cage with eight slots; the slot on each end is for a bus repeater. 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 per second or 1.8MB per second, and each RS-232 port operates 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/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 other boards.

The Applications Processor runs a virtual memory version of Unix, called Centix, as well as other application programs and software tools, called centreSphere, based on Unix System V. The AP contains 512KB of ECC RAM, eight KB 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.

# Burroughs XE500 Series

## CHART D. PRINTERS

| MODEL | B 9246-6S | B 9249-31 | AP1351 |
|---|---|---|---|
| Type | Band | Chain | Serial |
| Speed | 600 lpm | 270 lpm | 200/110/35 cps |
| Bidirectional printing | — | — | 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 character | Full character | Dot matrix |
| Horizontal character spacing (char./inch) | 10 cpi | 10 cpi | 10, 12, 13.3, 16.7 cpi |
| Vertical line spacing (lines/inch) | 6 or 8 lines per inch | 6 or 8 lines per inch | 6 or 8 operator selectable, software selectable 1/48-inch |
| 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 inches | 40.5 x 30 x 24.5 inches | 9.9 x 23 x 13 inches |
| Graphics capability | No | No | Not in this configuration |
| Comments | | | |

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

## ⯈ ADVANTAGES AND RESTRICTIONS

There are two main reasons behind Burroughs' developing the XE500 line: 1) to become involved in the Unix environment and 2) to strengthen its niche in the distributed data processing environment. Prior to the introduction of the XE550, Burroughs systems ran only under proprietary operating systems. By running a commercially available operating system, the XE550 offers its users the ability to run a greater number of software packages. Unix System V-based software development has increased since the operating system was initially introduced; as a result of this increase in Unix activity, manufacturers like Burroughs have a growing library of software available for their systems. Moreover, AT&T's ongoing support and enhancement of Unix System V will undoubtedly spur development of further System V applications.

According to Burroughs, the XE550 can reportedly use many of the currently available Unix System V software packages; this could prove to be a major advantage for Burroughs in terms of sales and market compatibility.

The XE550's multiprocessor architecture is advantageous for both XE550 and B 20 users. Through the Intel 80186 processors, the XE550 provides B 20 and BTOS compatibility. The MC68010 applications processor offers 16-/32-bit processing power and provides entry to the Unix environment.

With the introduction of the XE500, Burroughs provides a growth path for B 20 microcomputer users. By supporting the BTOS operating system and providing B 20 workstation compatibility, the XE500 protects the B 20 user's software and peripheral investment. Via a B 20 cluster connection, the XE520 and XE550 have the ability to run BTOS applications, as well as MS-DOS and CP/M-based software. In most cases, the XE550 will support the same peripherals used by the B 20 line. If a peripheral device cannot be directly connected to the XE550, indirect support is allowed through the clustered environment. ⯈

## ⯈ CONFIGURATION RULES

All XE520 configurations must begin with an XE520-1 or XE520-2 base system which include enclosures (base or expansion) having 6 card slots for processors or memory expansion boards. Each processor or memory expansion board takes one card slot. No more than two 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, B 25) may be no further than 1,100 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.

The XE550, when configured as a three-cabinet system, can accommodate up to 18 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 seconds.

### 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 one B 9498 tape drive. The B 9498 is a ½-inch, 9-track, 1600-bpi 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. ⯈

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# Burroughs XE500 Series

▷ At present, the upper parameters for the XE550 are 12MB of memory, 1.3GB of disk storage, and support for 32 users. The entry-level model can be upgraded to a middle- or large-size system at the customer's site. Burroughs claims that it does plan to protect the XE550 user's investment with future product announcements; the company says it will continually release enhancements that will differentiate the XE550 from other Convergent Technologies-based systems currently available from rival vendors.

## USER REACTION

Because the XE500 Series have only been generally available since late 1984, only a small number of systems have been delivered to end users. According to Burroughs, the current user base is not large enough to provide a meaningful cross section of user reactions; Burroughs was thus unable to provide us with a list of users from whom we could obtain assessments of the XE500 Series. □

▶ Local networks can be created by using the XE520 or XE550 as the central processor. XE500 systems can also access communication 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, 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 and controls the Applications Processor. On the XE550, Centix is the heart of a layered software system called *centreSphere*. The centreSphere software offerings include programs for database management, administrative functions, applications development, and office automation. Various centreSphere modules permit the XE550 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.

Individual program offerings are discussed in the "Languages," "Communications," and "Applications" sections below.

DATA BASE MANAGEMENT: The Burroughs *Ingres Relational Database Management System* allows users to organize, share, and manipulate database 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's centreSphere environment provides applications for system management, interactive data management, and office automation.

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 between multiple applications.

*Centre-O/A* (Office Automation) *Interface* provides the user with the most recently accessed objects. *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.

## OPERATING ENVIRONMENT

The XE550 is 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 weights 110 pounds. The XE520 dimensions and weight are identical to those of the XE550.

The ideal operating environment for the XE520 and XE550 consists of an ambient temperature of 50 to 104 degrees Fahrenheit (10 to 40 degrees Celsius) during operation. The relative humidity is 10 to 80 percent during operation.

## 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: maintenance services on-call, on-site, and after hours; carry-in service, contract service, and time and materials service; 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. ▶

# Burroughs XE500 Series

# EQUIPMENT PRICING

| | | Purchase Price ($) | Annual Maint. ($) |
|---|---|---|---|
| **PACKAGED SYSTEMS AND PROCESSORS** | | | |
| XE520-1SY | XE520-1 SRP system and XE520-1 shared resource processor includes: base enclosure, 5MB 100mm cartridge disk drive, 37.5MB 5¼-inch fixed disk drive, file processor with 256KB RAM, 512KB RAM memory expansion board for file processor, and cluster processor with 256KB RAM. | 22,100 | 2,340 |
| XE520-2SY | XE520-2 SRP system and XE520-2 shared resource processor includes: base enclosure, 5MB 100mm cartridge disk drive, 37.5MB 5¼-inch fixed disk drive, file processor with 256KB RAM, 512KB RAM memory expansion board for file processor, cluster processor with 256KB RAM, and storage processor with 256KB RAM. | 40,100 | 4,068 |
| XE550-1SY | XE550-1, XE550 system includes: base enclosure, file processor, ½MB memory expansion, application processor, 1MB memory expansion, cluster processor, 5MB cartridge disk, and 37.5MB fixed disk. | 43,300 | 3,372 |
| XE550-3SY | XE550-3 system includes: base enclosure, file processor, ½MB memory expansion, application processor, 1MB memory expansion, cluster processor, 5MB cartridge disk, and 37.5MB fixed disk. | 37,300 | 2,880 |
| XE551-3 | XE550 expansion increment includes: expansion enclosure, application processor, 1MB memory expansion, storage processor, SMD controller, and cluster processor. | 31,600 | 2,660 |
| **OVERPACKS** | | | |
| E5100B | Expansion enclosure | 7,600 | 597 |
| E5204F | File processor | 4,400 | 341 |
| E5202C | Cluster processor | 3,500 | 318 |
| E5200A | Application processor | 6,345 | 595 |
| E5206S | Storage processor | 3,000 | 271 |
| E5208S | SMD Controller | 2,000 | 186 |
| E5210T | Terminal processor | 3,200 | 248 |
| E5302 | 512KB memory | 3,000 | 310 |
| E5304 | 1MB memory | 7,610 | 695 |
| E5312 | 2 card connector | — | — |
| E5313 | 3 card connector | — | — |
| E5314 | 4 card connector | — | — |
| E5437D | 37.5MB disk drive | 6,600 | 512 |
| CB5204F | Disk cable | — | — |
| **PERIPHERALS** | | | |
| B9498 | Tape streamer | 7,875 | 535 |
| CB9498-1 | Tape streamer cable | — | — |
| B9252 | 150 cps matrix printer | 1,295 | 292 |
| AP1351 | Multifunction printer | 2,395 | 299 |
| XC687-1 | 10-foot cable for AP1351 | 125 | — |
| B9249-31 | 270-lpm printer | 6,500 | 960 |
| B9246-6S | 650-lpm band printer | 14,700 | 2,184 |
| MD3-1 | 134.8MB disk subsystem | 14,000 | 660 |
| MD3-2 | 269.6MB disk subsystem | 20,000 | 1,320 |
| MD3-3 | 404.4MB disk subsystem | 26,000 | 1,980 |
| MD3-0 | 134.8MB disk upgrade | 8,000 | 660 |

| | | 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 | 150 |
| Printers | Line printer | 200 |
| Printers | Nonimpact | 200 |
| Workstation | B 20 series | 100 |
| Workstation | PT1500 terminals | 100 |

# Burroughs XE500 Series

# SOFTWARE PRICES

|  | | New User Unlimited Time Plan | | Current Software User Unlimited Time Plan | |
|---|---|---|---|---|---|
|  | | Unit License ($) | Large Account License ($) | Unit License ($) | Large Account License ($) |
| **XE500 SYSTEM SOFTWARE** | | | | | |
| XE520 MS1 | Operating system | 1,500 | 1,500 | NA | NA |
| XE520 MS2 | Operating system | 1,500 | 1,500 | 600 | 600 |
| XE520 321 | 3270 bisynch | 750 | 750 | NA | NA |
| XE520 RE1 | 2780/3270 | 750 | 750 | NA | NA |
| XE520 SN1 | 3270 SNA | 750 | 750 | NA | NA |
| XE520 X51 | X.25 | 750 | 750 | NA | NA |
| XE520 PS1 | Poll/select | 500 | 500 | NA | NA |
| XE520 PS2 | Poll/select | 500 | 500 | 200 | 200 |
| XE520 PSB | Product service agreement, XE520 site P.S.A., $450 annually. | | | | |

|  | | Initial Payment ($) | Monthly License Fee ($) | PSA-1 ($) | PSA-2 ($) |
|---|---|---|---|---|---|
| **XE550 APPLICATION PROGRAM PRODUCTS** | | | | | |
| XE550 BNX | CENTRIX operating system including utilites, C compiler and Centrease (One copy required for each AP) | 3,250 | 130 | 300 | 552 |
| **COMPILERS** | | | | | |
| XE550 COB | Cobol '74 | 3,250 | 130 | 300 | 552 |
| XE550 SDG | Cobol source code debugger | — | — | — | — |
| XE550 NCG | Cobol native code generator | — | — | — | — |
| XE550 FOR | Fortran '77 | 2,750 | 110 | 252 | 468 |
| XE550 PAS | Pascal | 2,750 | 110 | 252 | 468 |
| XE550 BAI | Basic interpreter | 2,250 | 90 | 204 | 384 |
| **DATA MANAGEMENT** | | | | | |
| XE550 FRM | Forms package | 1,875 | 75 | 168 | 312 |
| XE550 SRT | SORT/MERGE | 500 | 20 | 48 | 84 |
| XE550 ISM | ISAM package | 1,100 | 44 | 96 | 180 |
| **INGRES** | | | | | |
| XE550 INS | INGRES—single AP | 6,000 | 240 | 552 | 1,008 |
| XE550 INM | INGRES—multiple AP | 9,000 | 360 | 816 | 1,512 |
| XE550 ABF | Applications-by-forms | 1,875 | 75 | 168 | 312 |
| XE550 ECB | EQUEL/Cobol | 1,000 | 40 | 96 | 168 |
| **COMMUNICATIONS** | | | | | |
| XE550 SNA | SNA transport | 1,500 | 60 | 132 | 252 |
| XE550 32S | 3270 SNA | 1,500 | 60 | 132 | 252 |
| XE550 32B | 3270/BSC | 2,000 | 60 | 180 | 336 |
| XE550 RJE | 2780/3780 | 1,500 | 60 | 132 | 252 |
| XE550 SJE | SNA RJE | 1,500 | 60 | 132 | 252 |
| XE550 X25 | X.25 interface | 1,250 | 50 | 120 | 216 |
| XE550 BHC | Burroughs host comm | 2,250 | 90 | 204 | 384 |
| **OFFICE PRODUCTIVITY** | | | | | |
| XE550 BWP | Word processing | 3,250 | 130 | 300 | 552 |
| XE550 BSS | Spreadsheet | 3,250 | 130 | 300 | 552 |
| XE550 OAI | O/A interface | 750 | 30 | 72 | 132 |
| **USER INTERFACE** | | | | | |
| XE550 USR | Centrecap | 1,875 | 75 | 168 | 312 |

*Discounts are available for quantity purchases.*
*Extended license is 48 months.*
*NA—Not applicable.* ∎