

PRIME

The Prime 50 Series
Your Long Term System
Solution

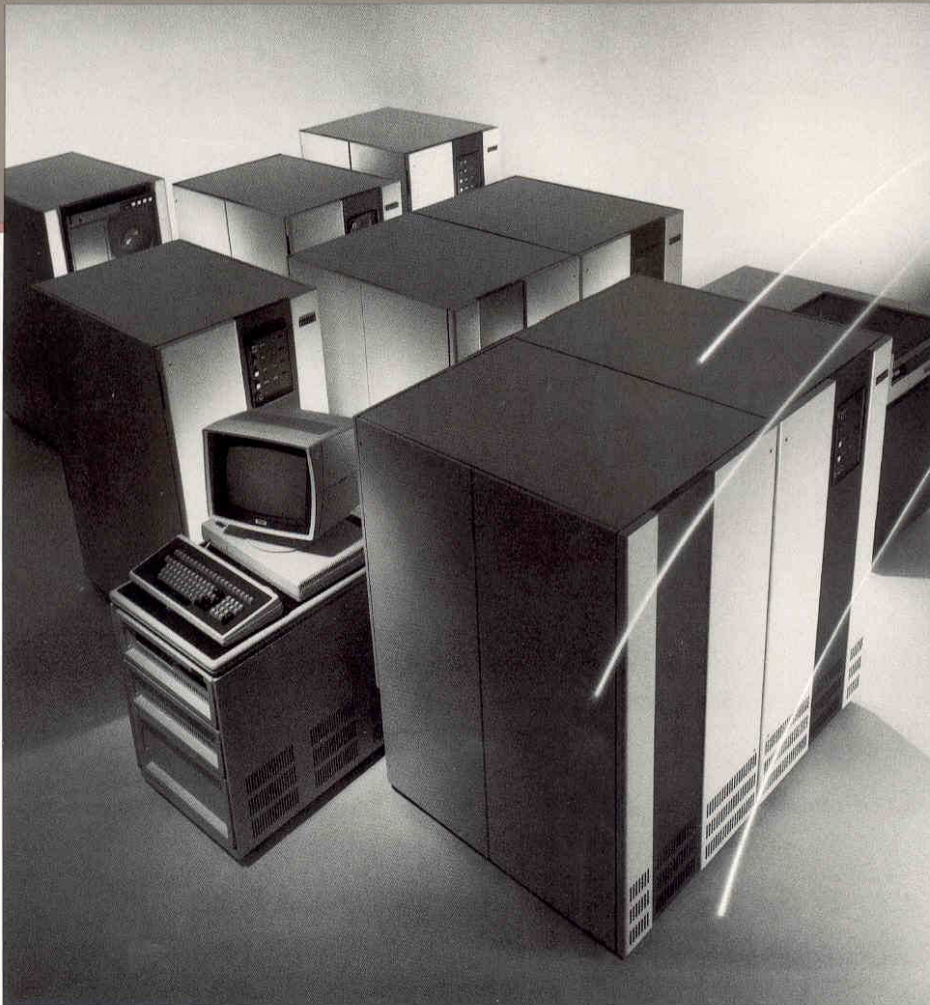


The Prime 50 Series: All the Compatibility, Reliability and Performance Your Company Needs – for Today and the Future.

There are many ways to evaluate a computer system. You can look at it in terms of performance. Or cost. Or applications support.

But one of the best ways to judge a computer system today is in terms of the future. You're about to invest a lot of money, not only in hardware and software but in all the training and development time that goes along with it. So the system you buy must be able to withstand the toughest test of all – the test of time.

With the Prime 50 Series, you can be sure that it will.



The Computer Family You'll Never Outgrow.

The Prime 50 Series consists of the industry's broadest range of totally compatible systems. All feature 32-bit architecture for high performance and accuracy. All have virtual memory with up to 32 million bytes of program space for each user. And all run the multi-user, multi-functional PRIMOS® operating system.

Our complete line of systems gives you the flexibility to choose the level of performance that's right for your current information processing needs, while planning for your organization's growth.

In addition, the Prime 50 Series family offers a wide selection of peripherals and terminals. This gives you the ability to custom-configure systems to meet your changing requirements.

Maximize Your Investment, Minimize Your Risk.

The compatibility of the Prime 50 Series line lets you grow from our smallest system all the way to our largest...without rewriting your software, retraining your staff or replacing your peripherals.

You can also benefit from a full complement of industry-standard software languages, sophisticated programming utilities and communications capabilities. Prime's many software advantages help you handle today's applications needs without worrying about tomorrow's.

Communications has always been one of Prime's strengths. With our communications products, you can link your computer with other Prime systems, and with other vendors' equipment. This lets you tie all your systems

together, creating a highly efficient information processing network.

So whether you want to run intensive scientific computations, automate your office, or improve your CAD/CAM/CAE operations, choose the computer system designed to fill today's needs...and tomorrow's.

Choose a system from the Prime 50 Series.

Power for the Most Demanding Applications. Now and in the Future.

Every member of the Prime 50 Series has some of the computer industry's most advanced performance and reliability features.

Virtual Memory Management Treats Big Problems Like Small Ones.

Users with large applications on most computers can run out of memory before they run out of work. This is almost impossible with Prime's Virtual Memory Management, which allocates every user up to 32 million bytes of address space for programs and data.

Each user has an additional 480 million bytes available for shared programs, data, libraries, and the PRIMOS operating system. These vast amounts allow users to work with programs that are actually larger than the computer's physical address space, while still receiving fast response.

And since PRIMOS is embedded in every user's virtual memory space, it reduces system overhead while keeping all operating system functions instantly available.

High Speed Cache and MOS Memories for High Performance.

Every Prime 50 Series system uses MOS memory, with storage densities as high as 2Mbytes per board. The memory logic includes an error correcting code that ensures data integrity, and an interleaving capability that allows up to 64 bits of data to be loaded into the CPU during transfer cycles.

Our systems also offer high speed cache. It stores frequently used data and instructions in a special high speed memory, increasing execution time and reducing system overhead.

A hardware process exchange mechanism in each system acts as a monitor to allocate CPU resources maintained in a priority queue. Upon request, the mechanism dispatches a process for execution. Then it re-orders the remaining processes without software intervention.

And Many More Hardware Features in Every Prime 50 Series Computer.

These powerful tools give the Prime 50 Series exceptionally sophisticated technical capabilities.

◆ **Arithmetic Unit.** A 32-bit-wide arithmetic unit performs integer arithmetic logical operations. It controls such complex address formations as base-plus-displacement and indexing. Other features include operand handling, rounding on numeric operations, and instructions for binary-to-decimal and decimal-to-binary conversions.

◆ **Instruction Set.** The standard set includes over 500 instructions for enhancing operating system

communications, data handling and compiler flexibility.

◆ **Multi-segment Environment.** Prime 50 Series programs operate in a multi-segment environment which includes a stack segment for local variables, an instruction or procedure segment, and a linkage segment for statistically allocated variables and linking to common data.

◆ **Stack Architecture.** Stack architecture optimizes the efficiency of subroutine calls, arithmetic expression evaluation and dynamic allocation of temporary storage. This is the supporting mechanism for re-entrant and/or recursive procedures. Hardware-implemented procedure call and return instructions eliminate the overhead of software stack management routines.

◆ **Input and Output.** All of our systems support direct-to-memory input and output operations. Our high speed peripherals use Direct Memory Access (DMA) channels or Direct Memory Transfer (DMT) channels, with throughput rates reaching 2.5Mb per second. Direct Memory Queue (DMQ) channels provide circular queues for communications devices. This eliminates interrupt handling on a character-by-character basis, thus reducing the operating system overhead.

Prime's medium and high-end systems also support a burst mode I/O facility that allows significantly higher transfer rates of up to 9Mb per second between the

processor and peripheral controllers. This facility increases system throughput by reducing the processor's I/O workload, which also improves high speed peripheral performance.

◆ **Register Sets.** Each Prime computer has at least 128 32-bit hardware registers divided into four sections. Our largest model has 256 32-bit registers divided into eight sections.

One register function controls firmware and operating system functions. Another controls the processor's 32 DMA channels. The remaining sections contain the machine status of active processes. The process exchange facility automatically manages register assignment to the processes.



Long Term Integrity and Reliability:
One of Our Core Benefits.

System design is the key to reliability. With most computers, the hardware is designed first, then the operating system. The result of this "cart before the horse" development is an operating system – and a computer – that never really runs the way it should.

We designed our PRIMOS operating system first. Then we built the hardware to match it. The result – a perfect union of capabilities. One that delivers all the performance you need, without sacrificing reliability.

We also created a full set of integrity features for the Prime 50 Series. Although totally transparent to the user, they make sure our systems deliver all the uptime you need.

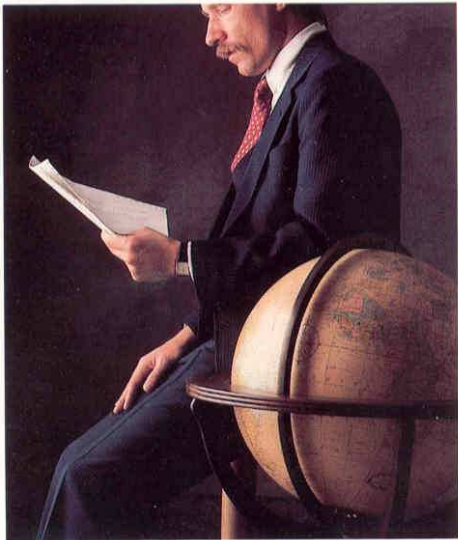
Among the features are a diagnostic status test that automatically examines the validity of the CPU logic and indicates the cause of any malfunction. Parity checking ensures data integrity throughout the CPU's internal busses, registers, arithmetic unit, I/O and other data paths.

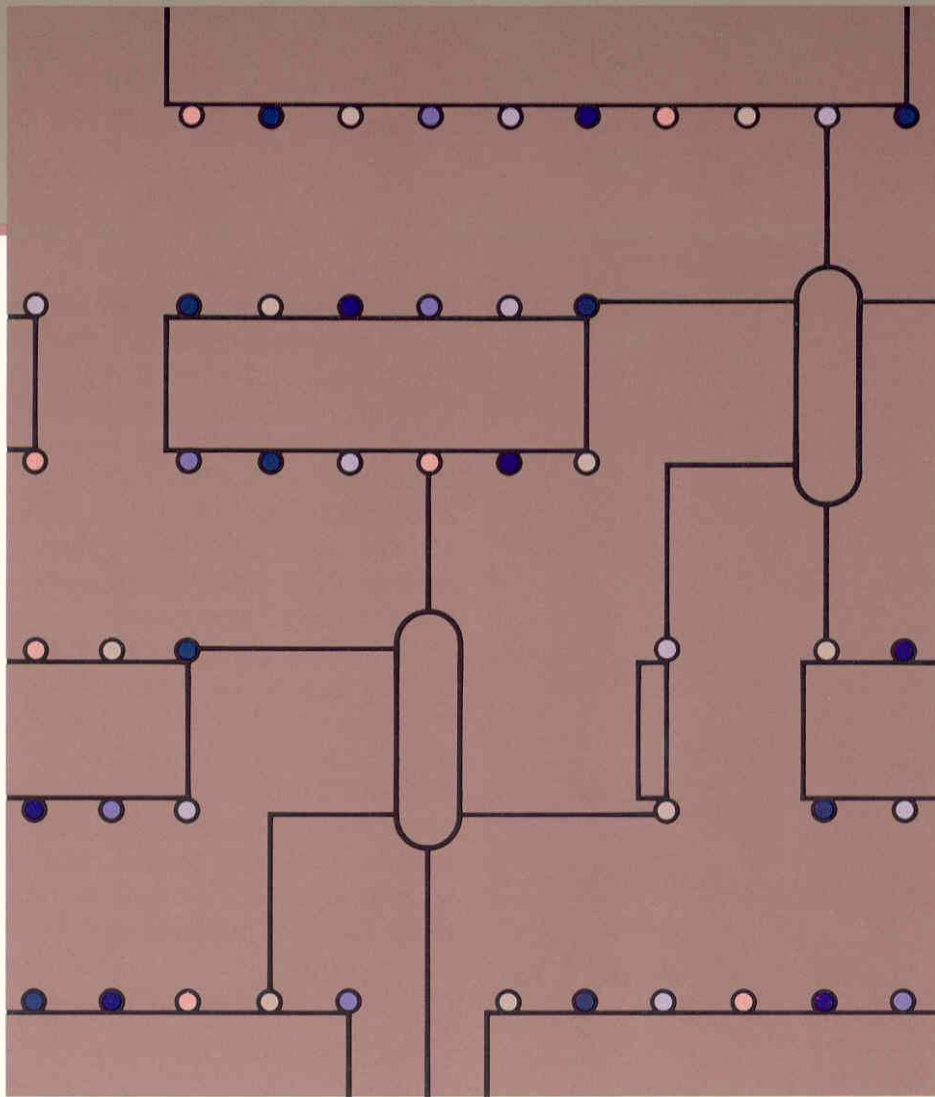
These features will also help you verify if data is accurate, as well as isolate and correct small problems before they can multiply.

A hierarchical multi-ring protection system ensures the security of Prime 50 Series systems. It gives multiple users full access to specified programs, while guarding other programs and databases from unauthorized usage. This protects against downtime resulting from the harm that unauthorized personnel can cause, and from many kinds of accidents.

Our computers are designed to be as easy to service as they are to use. A built-in Virtual Control Panel on some systems and an advanced diagnostic processor in our new models speeds up the process of locating problems. With these devices, a Prime customer service representative can control your system from our service center as if he or she were at the local system console. The representative can diagnose the problem from the service center and provide direction for finding a solution. Or if a service call is needed, another customer service representative can arrive with the right part, saving you time and money.

In addition to its diagnostic capability, the Virtual Control Panel can be used for quickly installing new revisions of our operating system. It's just one more way we keep Prime 50 Series systems continually up and running.





Prime 50 Series Communications Open Up a New World of Capabilities – All Over the World.

Prime's sophisticated set of communications products allows you to extend the range of your Prime system to include users located around the building, around the town, and even around the world.

PRIMENET™

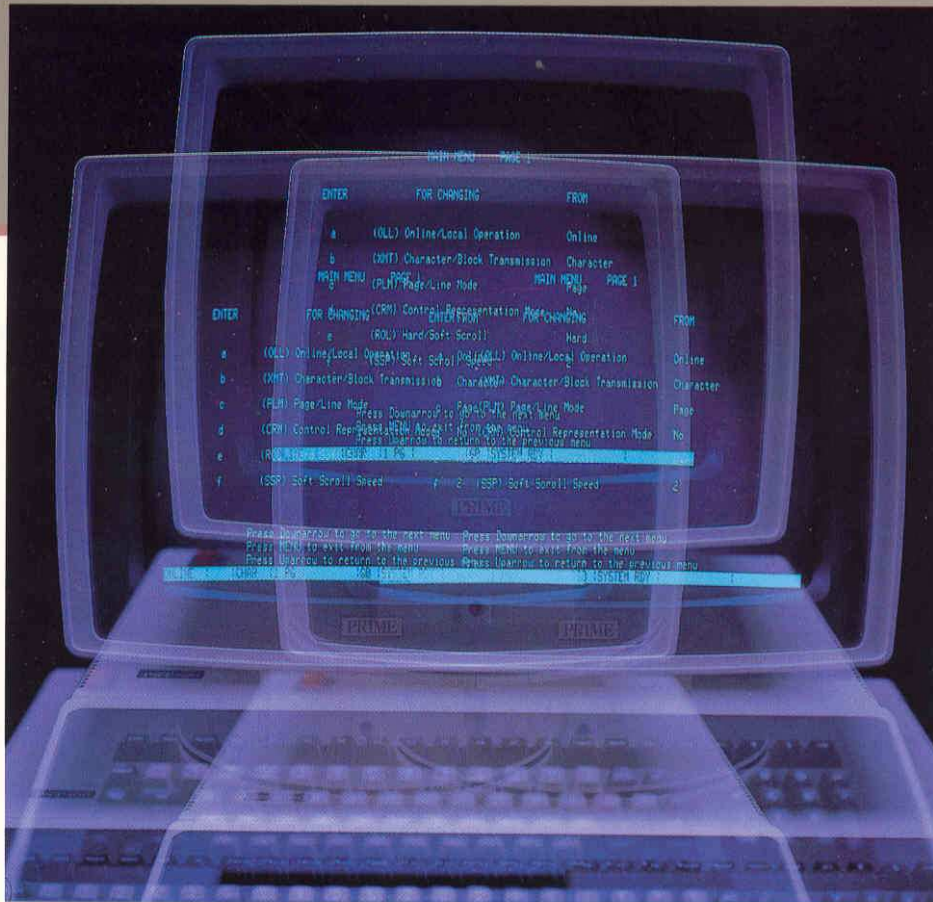
Based on a variety of services and transmission methods, PRIMENET supports high-level communications between Prime systems by providing a reliable, standardized medium for remote access.

The PRIMENET implementation is completely transparent to users; it eliminates the need to learn new commands or understand the link between the sys-

tems and the location of information. Through a remote file access service, users or programs can access data anywhere in the network without specifying where it is. A remote login service lets remote terminal users log into any network system and run programs as if they were tied in locally. PRIMOS security features protect data from unauthorized access.

In addition to its transparency and ease of use, PRIMENET meets the CCITT X.25 standard for Packet Switching Networks. Substantial cost savings are possible in many environments by using domestic and/or international public data networks (PDNs). PRIMENET's X.25 support allows Prime systems to communicate directly with a PDN, without costly additional hardware.

PRIMENET also supports RINGNET™ for high-speed local area networking, and point-to-point synchronous networks. The combination of these three communications links provides a wide range of options for developing a network of Prime systems.



An available inter-process communications service allows programs to communicate with each other and enables users to implement fully distributed applications in any high-level language. To aid in this process, PRIMENET has a File Transfer Service that performs batch data transfer across the network, notifies users when their files arrive and keeps a log of all transfers.

Configuring PRIMENET is simple. In one configuration session, the administrator can define the entire network, specify the services to be provided, and create the security passwords needed to access them.

DPTX

Prime's Distributed Processing Terminal Executive connects Prime systems with IBM 3270 networks. It works with all major IBM

telecommunications monitors and access methods. Users continue to access their IBM programs while simultaneously taking advantage of Prime's interactive capability.

DPTX software translates data and command formats automatically, so IBM and Prime systems can exchange information. It can do this in several ways. One DPTX service lets Prime terminals and programs look like 3270 terminals to a remote host. Another connects 3270 terminals to Prime systems, so users can access Prime system resources. A third DPTX system lets 3270 terminals connect Prime and IBM systems concurrently.

RJE

Prime has Remote Job Entry (RJE) emulation packages to support IBM 2780/3780, IBM HASP, CDC 200 UT, ICL 7020, Honeywell GRTS, UNIVAC 1004 and ICL XBM protocols.

Powerful Software Tools Help Make Difficult Programming Tasks Much Easier.

The PRIMOS operating system is our most important software tool. Fully compatible across the entire Prime 50 Series line, PRIMOS can support up to 255 processes simultaneously. Up to 128 of them can be used for terminal control. For maximum efficiency, PRIMOS also can perform all resource management tasks.

The PRIMOS and Prime 50 Series security system is so powerful that it can protect data on disks as well as in the database. Access Control Lists allow users to control both who can use their files, and how.

To help in developing your own applications, PRIMOS offers two powerful program development tools: CPL (Command Procedure Language) and EMACS, a full screen editor. And an application subsystem can totally isolate the user from PRIMOS, taking it out of the picture.

Having a single operating system for all of our systems means that your programs will run on every Prime 50 Series computer.



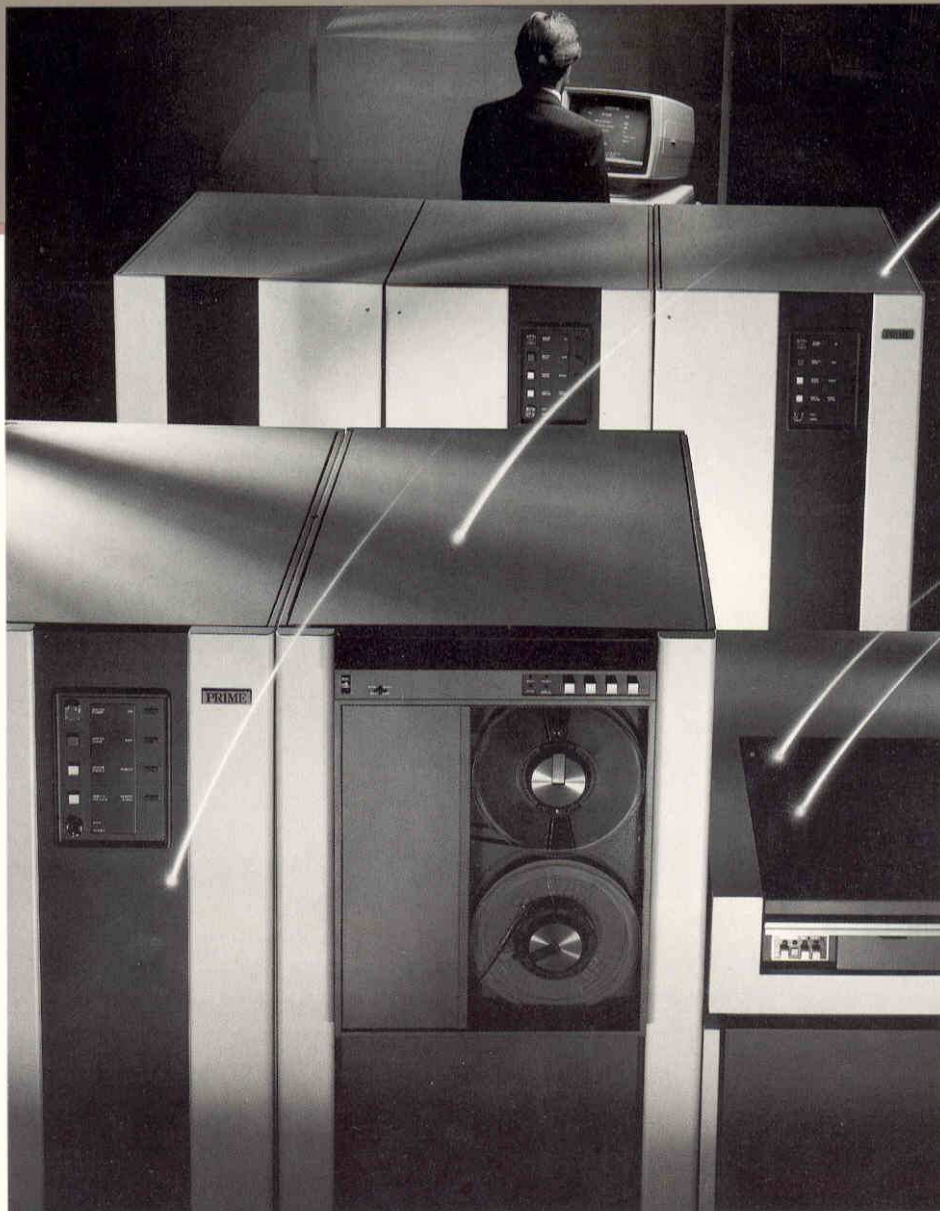
And since we started with PRIMOS, we're committed to it for the future – your software will continue to run with Prime's hardware.

We Speak Your Language.

Prime offers a plethora of industry-standard languages, so you can tailor your system to meet your specific business challenges and opportunities. FORTRAN '77, COBOL '79, PL/1 Subset G, C, PASCAL, RPGII, BASIC and a Source Level Debugger for fast and efficient application development are among your many choices.

All our languages are compatible at the object-code level, so programs can access routines and procedures written in any other Prime language. Files are also compatible, simplifying file sharing among programs.

Complementing our languages are Prime's data management facilities. These include MIDAS-PLUS, an indexed sequential file access system that provides flexible data retrieval with minimal data redundancy. MIDAS QUERY and report language. DISCOVER, Prime's DBMS query and report writer. FORMS, the Forms Management System. And Prime INFORMATION[™], a user-oriented relational database management system for commercial applications.



Application Software That
Makes Your Organization More
Productive.

Office Automation Gets Your Office Moving at Electronic Speed. Prime's Office Automation System (OAS) is a sophisticated yet easy-to-use package that runs on all the Prime 50 Series systems. It can automate five key office tasks to increase productivity – word processing, electronic mail, electronic filing, communications and personal computing.

OAS comes with our Prime PRODUCER 100™ workstations, giving users complete format control over words, lines, columns, paragraphs, and documents. Now

users can create everything from lists to letters to contracts in record time. And with the split-screen capability of the Prime PRODUCER 100, OAS users can edit, copy and combine up to seven different documents on a single screen display.

In addition, OAS can put thousands of documents at your fingertips with an electronic filing system that works just like most manual methods. You can set up personal, department and corporate files the same way you would in a file drawer. Access files through a number of different categories. And copy and route files electronically.

The electronic mail system works with our word processing software to let you forward, annotate and reply to messages sent throughout your company. This feature flags your incoming mail and tells you when your messages have been received. You can even set security levels for each piece of correspondence you send.

Prime also has a word processing system for companies that don't need all the editing capability of our OAS word processing software. This host-based package is fully compatible with Prime's word processing workstations. It lets you format reports and, with electronic mail, send them throughout the company.

Multiplan™, the financial planning and modeling software, runs on the Prime PRODUCER 100. This powerful spreadsheet program is designed to meet the requirements of both operational management and financial staff analysts. For example, Multiplan

can display up to seven different analysis sheets at the same time, or it can zero in on seven parts of the same sheet. And you can integrate the financial information into a word-processed document.

Draw Your Own Conclusions with CAD/CAM Packages.

Prime has complete, integrated solutions to your CAD/CAM needs. Our state-of-the-art application programs work together, forming a system that handles your projects from concept through finished product.

Our wide range of CAD/CAM applications can solve your mechanical, electronic and plant design challenges. For mechanical design projects, PRIME MEDUSA has the latest technology for 2- and 3-dimensional design, drafting and documentation. When a design is complete, the PRIME MEDUSA databases can interface to engineering and manufacturing programs like PDA/PATRAN-G.TM PATRAN-G is the proven graphics pre- and post-processor developed by PDA Engineering. It also features an interface to analysis systems such as SASI ANSYS,TM a large-scale, general purpose finite element analysis program.

LOCAM,TM for computer aided process planning, provides an easy to use interactive interface between design and manufacturing. Graphic Numerical Control (GNC) is a numerical control tape preparation system for 2- and 3-axis machining. GNC interfaces directly to PRIME MEDUSA.

The electronics industry can benefit from Prime's Electronic Design Management System,TM EDMS,TM the only computer aided

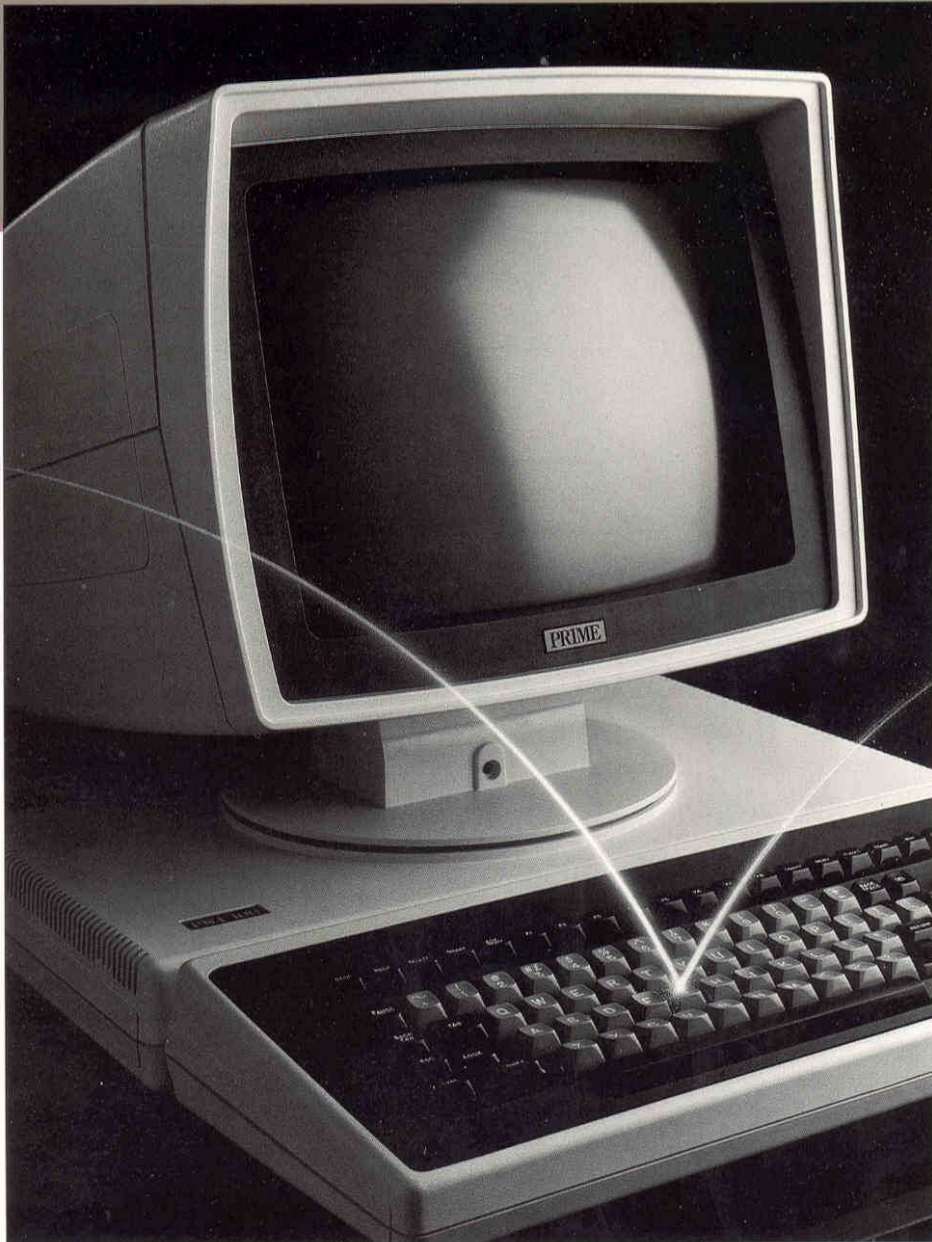
engineering system for digital electronic design. EDMS spans logical design to physical implementation by combining database management capabilities and interfaces to applications software.

Prime also offers the THEMISTM Logic Simulator, an advanced hierarchical logic system. An integrated interface from EDMS to THEMIS allows input files containing a list of parts used in designing circuit interconnections to be extracted from EDMS and input into THEMIS for circuit simulation.

The Plant Design Management System, PDMS, is a proven system for modeling, analysis and detailed documentation of plant engineering products. Using PDMS, designers can build a three-dimensional model of an entire plant, with all pipes, vessels and structural components.

And Prime markets the Product Design Graphic System,TM PDGSTM for computer aided design and drafting. PDGS is a comprehensive CAD/CAM solution that automotive designers and engineers developed for their own use. It combines powerful hardware and software to design multi-point irregular shapes, complete free-form surface areas and mechanical components. PDGS offers Finite Element Modeling and a complete Numerical Control capability. In many cases, numerical control specialists can select the necessary tools and begin the manufacturing process without reformatting data.





Primé's Peripherals Give You The Option for Growth.

Prime offers an array of fully compatible peripheral products to support and complement the Prime 50 Series. Compatibility ensures easy system upgrades and expansions. And upgrades never make peripherals obsolete.

We group peripherals into three categories: mass storage devices, printers and terminals.

Mass Storage Devices

Prime has large capacity, removable media storage module drive (SMD) disk subsystems; large capacity, fixed media drive (FMD) disk subsystems; and medium capacity cartridge module drive (CMD) disk subsystems.

Customers can choose the level of storage that's right for their application. SMD devices are available in 80 or 300Mb sizes. FMDs come in 68, 158, 160, 315 and 675Mb sizes. And CMD sizes are 32, 64, and 96Mb.

One type of controller can support four of these devices in any combination; up to four controllers can be configured on our larger systems. A maximum of 10 billion bytes of storage may be on-line to any system. This configuration flexibility, coupled with broad support by PRIMOS, protects a customer's investment in storage equipment.

Our line of tape products is one of the fullest in the industry. Customers can choose from six kinds of tape equipment: an advanced 75 ips, 6250 bpi GCR/PE unit; a 75 ips or 45 ips vacuum column NRZI/PE (800/1600 bpi) unit; a 45 ips NRZI only (800 bpi) unit; a 7-track 556 bpi; a streaming tape device; and a cartridge tape device.

Printers

Our 1000 lpm, 64 character set line printer is ideally suited to applications that need high quality printing, high volume throughput and a heavy duty-cycle. It features vertical forms control, static eliminator and off-line testing. With a 96 character set, the printer is rated at 750 lpm.

Line printer models that operate at 300 or 600 lpm with a 64 character set satisfy high quality, medium throughput requirements.

A 300 lpm matrix printer/plotter is excellent for low to medium output needs. Parallel and serial interface models are available with a full 96 character upper and lower case character set. The serial model can be used as a remote printer.

Documents from Prime's microprocessor-controlled letter quality printer are as attractive as those from electric office typewriters. It prints 55 characters per second with a standard 96 character upper and lower case character set, and supports many customized and international character fonts.

The 200 character per second matrix printer is designed for low cost, low output printing needs.

Display Terminals

The innovative Prime PRODUCER 100 is a microprocessor-controlled office workstation with local storage. Completely ergonomically designed, it features a 15-inch monitor that tilts and swivels; a green phosphor, anti-glare screen; and a 98-key detachable keyboard. Its 5.25-inch mini-floppy diskettes and drives have a capacity of 630Kb. Mass storage options include a Winchester hard disk with a capacity of 5, 10 or 16Mb.

The Prime PRODUCER 100 runs all of our Office Automation System functions, and Multiplan financial software.

The Prime Systems Terminal, PST100, is a microprocessor-controlled, ASCII, buffered display terminal ideally suited to interactive or block mode communications. With many of the same design advantages of the Prime PRODUCER 100, it contains 22 user-programmable function keys and self-diagnostic capabilities.

The PST100's line and block graphics make it especially useful in business applications. However, the terminal's many features also make it an excellent choice for technical and scientific uses.

Prime Supports Your System Like Nobody Else.

We've located our sales and service offices around the world to be near our customers and the Prime systems they use. In fact, we have sales, service and support professionals in over 40 countries. Wherever you are, you'll find Prime people working together to give you the kind of assistance a business needs to grow and prosper.

In addition to this fully staffed support organization, Prime maintains a network of Educational Training Centers. Specialists from these facilities will arrange for courses, either at the center or on your own premises, to help you get the most from your Prime products.



The Prime 50 Series. Long Range Solutions From the Widest Range of 32-Bit Systems.

When all is said and done, choosing a computer is much more than buying a chunk of machinery. It's a long-term investment in the future of your business. The Prime 50 Series will protect that investment, and pay you big dividends in increased productivity.

The assets of the Prime 50 Series are substantial. A fully-developed operating system and a dozen different industry-standard operating languages and tools. A sophisticated networking and communications capability that lets our systems talk to each other and to those of other vendors. Advanced application packages so you can handle everything from office automation to incredibly complex computer aided design projects. And high performance operation that's designed into every single Prime product, not added later as an option.

So if you're thinking about buying a computer or adding to your current installation, consider the one family that has all the performance, reliability, compatibility and support your business needs today...and tomorrow.

Consider the Prime 50 Series. Then choose it.

For further information about us or any of our products, contact your nearest Prime marketing representative. Or write Prime Computer, Inc., Prime Park, Natick, MA 01760.

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PRIME®

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