



# PRIMIX<sup>TM</sup> UNIX<sup>†</sup> Operating System Interface and Environment

## Features

Based on UNIX System V by AT&T

Provides standard UNIX System V user environment

Offers portability of UNIX-based applications

Allows the PRIMOS<sup>®</sup> operating system and UNIX to operate simultaneously

Provides common access to PRIMOS and UNIX commands and utilities

Works with other Prime<sup>®</sup> products and with special applications developed for Prime systems

Provides file system integration between PRIMIX<sup>TM</sup> software and PRIMOS

Uses virtual memory technology from Prime

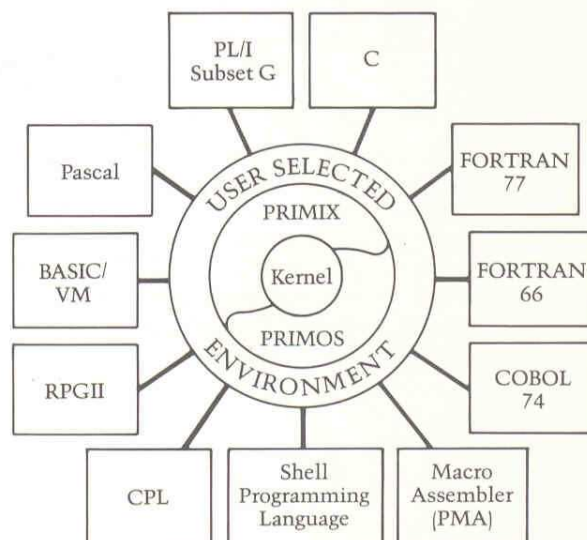
Includes the Prime C compiler

Includes both AT&T Bourne and Berkeley C shells

Provides enhanced security

Operates with PRIMENET<sup>TM</sup> networking software and transparent remote files

Available on all 50 Series<sup>TM</sup> systems



## Description

The PRIMIX operating system is a programming environment that provides UNIX capabilities on all 50 Series systems. Based on UNIX System V, PRIMIX complements the PRIMOS operating system by enabling them to coexist on the same 50 Series computer from Prime.

PRIMIX users receive "the best of both worlds" from the two operating systems. Under PRIMOS, a user can access all of the powerful program development and text management tools of UNIX. UNIX users, in turn, can tap into the wealth of software that runs on the 50 Series, as well as employing the many security and programming benefits of PRIMOS.

PRIMIX provides the standard system calls, libraries and shells of UNIX. In addition, PRIMIX uses a sophisticated virtual memory system based on segmentation and demand paging. The UNIX hierarchical file system of PRIMIX is integrated with the PRIMOS file system and benefits from the PRIMOS file system stability. The PRIMIX user has access to the full line of Prime communications products, languages and utilities. Likewise the PRIMOS user benefits from the availability of UNIX calls and utilities.

PRIMIX and PRIMOS are totally compatible; from the PRIMIX environment, the user can execute any PRIMOS command or utility, and vice versa.

## Utilities

PRIMIX includes an extensive set of UNIX utilities that support program development, compiler development, text processing and communications.

PRIMIX includes the Source Code Control System (SCCS), the *vi* editor, and the *lint* and *yacc* utilities favored for program development environments. Text processing and typesetting can be performed using the *nroff* and *troff* utilities. *Uucp* and *mail* provide UNIX communication capabilities.

PRIMIX supports two shells, the UNIX command line interpreters. In addition to the Bourne shell developed at Bell Labs, the Berkeley C shell is also included. Besides interpreting commands, the shells act as high-level programming languages. The C shell lets users perform Berkeley-style programming, and it provides other features not found in the Bourne shell. These features include the alias mechanism for altering commands, a history of recent commands, and protection against overwriting files.

## File System

PRIMIX file system software instructions support integration of UNIX files into the Prime system. Both PRIMIX and PRIMOS may access all PRIMIX files and data. In addition to the PRIMIX file security system, system administrators can take advantage of the Access Control List (ACL) system within PRIMOS, which controls access to files and directories through user identification. PRIMOS also provides, through a quota system, the ability to limit disk usage by directory.

## C Compiler

PRIMIX includes the Prime C compiler, which implements totally the C language developed by Brian Kernighan and Dennis Ritchie at Bell Labs. The compiler incorporates both the Berkeley and new UNIX extensions while remaining fully compatible with UNIX Version 7, System III, System V, as well as Version 6 C compiler. As a new implementation, Prime C compiler takes advantage of the Prime systems architecture and provides file and object code compatibility with Prime's core language products, including FORTRAN 66, FORTRAN 77, PL/I Subset G, COBOL 74, Pascal and RPG II.

The C compiler is small and flexible, yet powerful enough to do systems programming logically and efficiently. It provides comprehensive error diagnostics and produces listing, object expanded listings, and cross reference files. The C compiler's explicit messages fully describe all errors and warnings. These messages and the compiler's excellent syntactic error recovery ensure accurate detection and reporting of program errors. As a result, programming can be done quickly and easily.

Applications developed in Prime C benefit from complete access to all Prime data management products that support the standard call interface (including PRISAM™ and MIDAS-PLUS™ data management software, and Prime DBMS) and the PL/I style condition mechanism. C is an integral part of Prime's software product offering and is consistent with Prime's other compilers. As a result, the C compiler handles the complex interfaces between mixed language procedures and offers file flexibility and compatibility.



Prime offers an exceptionally broad and comprehensive line of language products to suit user needs in a variety of computer applications. Prime complements its product breadth with two levels of language compatibility. First, all languages generate compatible object code. Common call conventions are shared by C, PL/I Subset G, Pascal, FORTRAN 66, COBOL, RPG-II, and FORTRAN 77. This feature allows for modular, multilingual program design, where users can incorporate existing routines into new programs even when source languages differ. Files are completely compatible across the Prime language product line; data files written in one language can be accessed under another, providing that both languages support data types needed to describe the file contents.

#### Source Level Debugger

By combining the interactive capabilities of PRIMIX with the Prime Source Level Debugger, a user can create, edit, compile, execute, and test programs interactively. Debugger commands allow users to set and clear breakpoints dynamically on source statements, examine and modify variables, step through a program, trace statement execution, restart or proceed from a breakpoint, display source statements, and trace back subroutine activation. This dramatically reduces the testing and debugging time associated with program development.

#### Virtual Memory

PRIMIX uses the advanced virtual memory management capabilities of PRIMOS, which support multiple concurrent processes, each with its own private virtual memory space. Additional virtual memory space is shared among all processes. This mechanism takes advantage of both segmentation and paging to give users an extremely large address space, eliminating concern over program size limitations.

#### Compatibility

Software and hardware compatibility is a fundamental design objective at Prime. It ensures long-term return on investment and smooth, reliable transitions when software and hardware systems are upgraded. Compatibility also makes both central and distributed system installations easier to use. For example, programs written in any Prime language can be developed on a smaller 50 Series system and used for production on a larger 50 Series system. Similarly, programs developed on a host system can be run on a smaller remote system *without recompilation*. Source maintenance, modifications and compilations can be done at any system site as the need arises.

Through the integration of PRIMIX and PRIMOS, all users of 50 Series systems enjoy the same multi-user, interactive benefits regardless of their particular system type or configuration. PRIMOS and PRIMIX ensure a uniform, consistent and familiar set of commands and capabilities.

Additionally, PRIMIX is compatible with other UNIX System V implementations, providing easy portability of software between Prime systems and those of other manufacturers. This will become increasingly important as UNIX emerges as an industry standard.

#### Prime System Performance

The sophisticated design of Prime hardware and software offers high performance capabilities beyond the reach of other minicomputer systems. The virtual memory and embedded design of the PRIMOS operating system are complemented by efficient time scheduling, memory management, and procedure data sharing. Prime's full range of communications products allow users to construct complex communications networks to suit their individual needs. PRIMIX users not only benefit from high performance; they also draw upon the full support of a system engineered for total software integration.

#### Support and Training

Prime provides comprehensive education covering all aspects of application development, training, operation and administration. Additionally, with the purchase of PRIMIX, customers receive a complete set of documentation and manuals.

#### Customer Service

Prime's worldwide Customer Service organization, including field support specialists and Customer Support Center specialists, provides high-quality, competitively-priced service. The Customer Support Center serves as a clearing house for all reported problems. In addition, Software Support Specialists work with customers to provide direct, timely, and accurate problem diagnosis and resolution. They ensure Prime's commitment to high product availability.

Software support is available to all customers who sign a standard software maintenance contract. A telephone hotline (toll-free in the United States) is available for customer assistance. In addition, software support provides on-site assistance, software update services, and problem reporting and escalation.



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