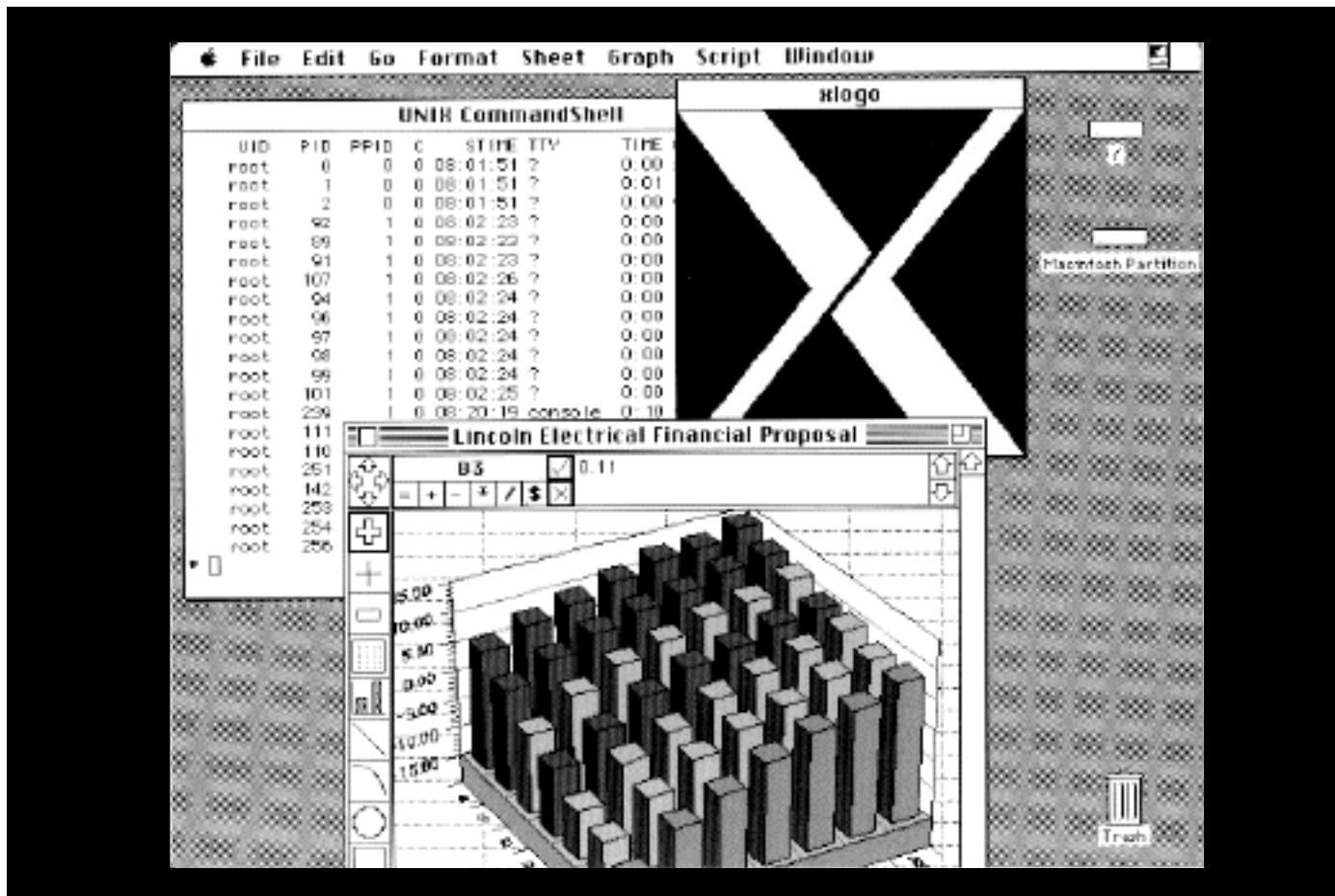# Apple A/UX Operating System Version 2.0

Overview

The Apple® A/UX® operating system Version 2.0 gives users access to the familiar, intuitive desktop of the Macintosh® computer within the UNIX environment. With A/UX 2.0, users can run multiple Macintosh productivity applications, UNIX applications, and X Window System applications simultaneously.

A/UX 2.0 is a full implementation of AT&T's UNIX® System V, Release 2, Version 2 (with BSD 4.3 extensions) that incorporates the ease of use of the Macintosh desktop. This industry-standard, multitasking operating system is uniquely capable of meeting the varied needs of large corporations, government, universities, and technical users who require

UNIX. A/UX complies with the relevant UNIX standards, and supports industry-standard networking, communications, and windowing system products.

A/UX is available on all models of the Macintosh II personal computer, and also on the Macintosh SE/30 personal computer.

Features   *Benefits*

▶ Macintosh look and feel

▶ Gives you the benefits of the intuitive, graphics-based Macintosh desktop with point-and-click access to all your work.

—Support for the MultiFinder® environment

▶ Allows multiple applications to be opened concurrently.

▶ Lets you easily integrate information from multiple applications by cutting and pasting between them.

▶ Allows you to continue working with applications while performing other tasks.

—Macintosh-style startup and shutdown

▶ Allows you to easily start up and shut down without needing to know the technical details of the environment.

—Support for 32-bit Color QuickDraw™ software

▶ Gives you access to the full range of Macintosh graphics capabilities, including true color and full gray scale.

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▶ Support for multiple types of applications within the Macintosh desktop environment, including:
—UNIX System V/BSD 4.3 applications
—Macintosh applications
—X Window System applications (add-on)
—Hybrid applications (UNIX applications that use the Macintosh Toolbox)

▶ Lets you run multiple UNIX, Macintosh, and X Window System applications simultaneously from the Macintosh desktop.

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▶ UNIX integration:
—UNIX shell windows on the Macintosh desktop

▶ Provides traditional UNIX shells (C, Korn, or Bourne) from within Macintosh windows.

—Mouse-driven text editor

▶ Lets you edit text files using a Macintosh mouse-driven editor; eliminates the need to learn a text editor such as *vi*.

—Macintosh and UNIX file systems

▶ Allows you to access UNIX, BSD, and Macintosh file systems in the same manner with point-and-click access.

—Commando (UNIX command builder)

▶ Lets users, even those who use UNIX only occasionally, build UNIX commands from menu selections.

—Cut-and-paste text editing

▶ Lets you cut and paste text between UNIX, Macintosh, and X Window System applications.

—Printer and AppleShare® file server selection through the Chooser

▶ Makes it easy to select a printer or AppleShare file server using the Chooser, a standard Macintosh desk accessory.

Features　　　*Benefits*

▶ Enhanced compliance with additional UNIX standards, including:
—IEEE POSIX 1003.1 FUS
—Berkeley File System
—NFS (Network File System) Version 3.2 enhancements
—Shared libraries
—X Window System support

▶ A/UX complies with all relevant UNIX standards (including AT&T SVID, IEEE POSIX 1003.1, and FIPS #151), letting you port existing UNIX applications to A/UX with minimal effort.

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▶ Built-in Macintosh networking capabilities, including:
—AppleTalk® printing support
—AppleShare file access

▶ Allows Macintosh applications to share printers and use AppleShare files over an AppleTalk network system, using on-board LocalTalk™ or EtherTalk® (sharing the same Ethernet board with TCP/IP protocols). AppleTalk for A/UX is now included in A/UX 2.0.

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▶ Additional hardware and software support:
—Macintosh IIfx

▶ A/UX 2.0 runs on all Macintosh II systems as well as the Macintosh SE/30.

—Serial printing

▶ Lets you print documents on a serially connected LaserWriter® or ImageWriter® printer.

—SuperDrive™

▶ Allows users to store data on and retrieve data from 400K, 800K, or 1.44-megabyte floppy disks.

—Slot, Serial, and Sound Managers

▶ Allows use of Macintosh applications that access the Macintosh Toolbox Slot, Serial, and Sound Manager software.

—Sound

▶ Supports applications that take advantage of Macintosh sound capabilities.

—MacTCP®

▶ Allows use of Macintosh applications that access MacTCP for TCP/IP connectivity.

—Macintosh Communications Toolbox

▶ Lets applications "talk" to the Toolbox without requiring the application to designate a communications protocol.

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▶ International support

▶ The A/UX operating system accepts 8-bit characters and alternative character sets, so Macintosh and A/UX developers can create A/UX applications in many languages. Danish, Dutch, Finnish, Flemish, French, German, Italian, Norwegian, Portuguese, Spanish, and Swedish are supported.

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▶ Macintosh debugger

▶ Allows developers to easily debug their Macintosh applications.

Product Details

Standards Compliance

▶ The A/UX operating system is source-licensed from AT&T, and meets System V Interface Definition (SVID) specifications. Extensions from Berkeley Software Distribution (BSD) Release 4.3 are included in A/UX 2.0. A/UX 2.0 is compliant with both the Federal Information Processing Standard (FIPS) #151 and the IEEE POSIX 1003.1—1988 Full-Use Standard (FUS).

Macintosh Applications Execution

▶ Macintosh applications that adhere to the specifications for the Macintosh 32-bit environment (referred to as "32-bit clean"), as documented in *Inside Macintosh*, run in the A/UX environment without change. Most major Macintosh productivity applications, such as Microsoft Word 4.0, Wingz, MacWrite II, and HyperCard®, are 32-bit clean. Macintosh Toolbox features—including printing, sound, and color—are supported in Version 2.0.

MultiFinder

▶ MultiFinder is the interface for A/UX. With MultiFinder, users can run Macintosh and UNIX applications concurrently, and can switch between Macintosh and UNIX applications quickly.

UNIX Integration

▶ A/UX integrates the functionality of UNIX with the Macintosh MultiFinder environment. Users can have point-and-click access to every file on their system. They can use a Macintosh mouse-driven editor for text files, cut and paste text between applications, and select printers and Apple file servers in the familiar Macintosh way.

AT&T, BSD, and Macintosh file systems are all accessible in a seamless fashion, through icons on the desktop.

Multitasking and Virtual Memory Support

▶ A/UX 2.0 supports the execution of multiple processes simultaneously. Under MultiFinder, multiple Macintosh applications can run simultaneously, just as when using MultiFinder with the Macintosh operating system. At the same time, multiple UNIX and X Window System applications can run in Macintosh windows. A/UX also provides virtual memory, allowing users to run more applications than the physical memory in the system can hold.

Communications

▶ A/UX provides standard UNIX communications such as *cu* and *uucp*, as well as more advanced communication standards from UNIX (TCP/IP) and Macintosh (AppleTalk). Users can connect TCP/IP networks using Ethernet or serial lines (SL/IP). With TCP/IP, users can take advantage of X Window System, Berkeley Networking Services, NFS, and Network Information Services. Users can also connect to AppleTalk networks using EtherTalk (sharing the Ethernet connection with TCP/IP protocols) or LocalTalk. With AppleTalk, users can take advantage of AppleTalk printing and AppleShare file services (client only).

Text Editing and Processing

▶ A/UX 2.0 provides a Macintosh-style mouse-driven text editor as well as the standard UNIX text

editing and processing utilities, including *vi, ex, ed, ditroff, nroff, tbl, eqn*, and *pic*. A/UX 2.0 also includes Adobe Systems' TranScript utility for formatting output to LaserWriter printers.

Programming

▶ A/UX 2.0 offers an assembler, a C compiler, debuggers, the Source Code Control System (SCCS), and related tools to assist in developing new applications or porting existing software to A/UX. Version 2.0 also includes a set of UNIX libraries that allow C programs to access the functionality of the Macintosh Toolbox, so A/UX applications can present the graphics-based user interface that is familiar to Macintosh users, as well as the traditional UNIX appearance. Numerous other languages and tools are available from third-party developers.

AppleCD SC Support

▶ The AppleCD SC® drive can be used as a read-only UNIX file system of up to 500 megabytes, giving information systems providers an inexpensive distribution medium.

System Administration

▶ A/UX 2.0 simplifies configuration and recovery. It automatically configures the smallest kernel possible, and simplifies the manual addition of new drivers. In addition, A/UX 2.0 keeps redundant copies of crucial files so that, in the event of a damaging system crash, it can automatically return the system to a networkable state.

▶ UNIX scripts are provided to aid in system administration functions such as connection of peripherals and modification of user information.

System Requirements	To use the Apple A/UX operating system Version 2.0, you'll need: ▶ One of the following personal computers: —Macintosh SE/30 —Macintosh II with an Apple Paged Memory Management Unit (PMMU) —Macintosh IIx	—Macintosh IICX —Macintosh IIci —Macintosh IIfx ▶ A minimum of 4 megabytes of RAM ▶ An Apple hard disk (minimum 80 megabytes) or the equivalent ▶ An Apple monitor (or equivalent) that is compatible with A/UX Version 2.0	▶ For Ethernet compatibility, the Apple EtherTalk NB Card or the equivalent **Optional Equipment** ▶ Additional memory ▶ An AppleCD SC drive

Technical Specifications	**Portability standard** ▶ AT&T UNIX System V, Release 2, Version 2 ▶ Compliant with the System V Interface Definition (SVID); passes the System V Verification Suite (SVVS) ▶ BSD 4.3 extensions, including signals, job control, groups, sockets, Berkeley Networking Services, subnets, and Berkeley File System ▶ Compliant with FIPS #151 ▶ Compliant with IEEE POSIX 1003.1—1988 FUS **Applications supported** ▶ Macintosh applications that adhere to *Inside Macintosh* specifications ▶ AT&T and BSD UNIX applications ▶ X Window System applications (with add-on package) ▶ Hybrid applications (UNIX applications using the Macintosh Toolbox) **Macintosh look and feel** ▶ Macintosh MultiFinder environment ▶ Macintosh-style startup and shutdown ▶ Support for 32-bit Color QuickDraw	**UNIX integration** ▶ UNIX command builder ▶ UNIX shell windows ▶ Mouse-driven editing ▶ X Window System support (add-on) ▶ Cut-and-paste text editing ▶ Printer and AppleShare file server selection through the Chooser **UNIX command-line interpreters for UNIX shell windows** ▶ Bourne Shell ▶ Korn Shell ▶ C Shell **Development tools** ▶ Editing and processing utilities (Macintosh mouse editor, *vi, ex, ed, ditroff, nroff, tbl, eqn,* and *pic*) ▶ Assembler and C compiler ▶ Shared libraries ▶ *Lint, lex, yacc* ▶ Debuggers (*abd, sdb, MacsBug*) ▶ Linker (*ld*) ▶ Source control (SCCS, *make*, and other UNIX tools) **Communications** ▶ TCP/IP over Ethernet or over serial connection (SL/IP) ▶ AppleTalk printing and file sharing client services via LocalTalk or EtherTalk	▶ Transparent file sharing over Ethernet or serial lines using NFS Version 3.2 ▶ Remote log-in and execution, resource sharing, file transfer, and electronic mail with Berkeley Networking Services (from BSD 4.3) ▶ Domains and subnets ▶ X Window System for A/UX (add-on) **Highlights of hardware supported** ▶ All Macintosh II personal computers and the Macintosh SE/30 ▶ Apple 20-, 40-, 80-, and 160-megabyte hard disk drives ▶ Apple 400K, 800K, and 1.44-megabyte floppy disk drives ▶ AppleCD SC drive ▶ LaserWriter IINT, Laser-Writer IINTX, and Laser-Writer Plus printers; ImageWriter II and ImageWriter LQ printers ▶ All Macintosh monitors and compatible third-party monitors ▶ All domestic Macintosh keyboards and nonextended European Macintosh keyboards (function keys not supported) **System administration** ▶ Autorecovery ▶ Autoconfiguration ▶ Scripts for system administration functions

Ordering Information

Macintosh II fx A/UX System	Order No. B0266LL/A	With your order, you'll receive: ▶ Macintosh IIfx personal computer with A/UX 2.0 installed on an internal 80-megabyte hard disk; 4 megabytes of RAM
Macintosh IIci A/UX System	Order No. B0264LL/A	▶ Macintosh IIci personal computer with A/UX 2.0 installed on an internal 80-megabyte hard disk; 4 megabytes of RAM
Macintosh II cx A/UX System	Order No. B0263LL/A	▶ Macintosh IIcx personal computer with A/UX 2.0 installed on an internal 80-megabyte hard disk; 4 megabytes of RAM
A/UX 2.0 External 80MB Hard Disk	Order No. B0267LL/A	▶ A/UX 2.0 installed on an Apple external 80-mega-byte hard disk
A/UX 2.0 CD-ROM	Order No. B0270LL/A	▶ A/UX 2.0 installed on a single compact disc, with the floppy disks required to install A/UX onto a hard disk
A/UX 2.0 Floppy Disk Product	Order No. B0269LL/A	▶ File index disks along with 800K floppy disks containing A/UX 2.0, as well as the floppy disks required to install A/UX onto a hard disk
A/UX 2.0 Tape Product	Order No. B0268LL/A	▶ A/UX 2.0 installed on a 40-megabyte tape cartridge (QIC-100 format); includes the floppy disks required to install A/UX onto a hard disk
Each of the above products includes a 16-user right-to-use license for one system, a limited warranty statement, and an A/UX 2.0 accessory kit, which contains the following:		▶ Manual: *A/UX Essentials* ▶ Manual: *Setting Up Accounts and Peripherals for A/UX* ▶ Manual: *A/UX Installation Guide* ▶ Manual: *Road Map to A/UX Documentation* ▶ Five utility floppy disks

Manual Sets	A/UX Manuals—User Kit	Order No. M0429LL/A	▶ A set of manuals for users who want to use A/UX with traditional UNIX commands
	A/UX Manuals— Administrator Kit	Order No. M0431LL/A	▶ A set of manuals for system administrators of A/UX systems and workgroups
	A/UX Manuals— Programmer Kit	Order No. M0430LL/A	▶ A set of manuals for users who are developing applications for A/UX
	A/UX Manual Bundle	Order No. B0274LL/A	▶ Includes one of each manual set listed above
Update Products	A/UX Update Tape Product	Order No. B0271LL/A	▶ A 40-megabyte tape cartridge (QIC-100 format) updating any previous version of A/UX to Version 2.0
	A/UX Update CD-ROM Product	Order No. B0273LL/A	▶ A single compact disc updating any previous version of A/UX to Version 2.0
	A/UX Update Floppy Disk Product	Order No. B0272LL/A	▶ Floppy disks updating any previous version of A/UX to Version 2.0
	A/UX Update Manual Kit	Order No. B0275LL/A	▶ A set of manuals updating the manuals of any previous version of A/UX to those of Version 2.0
Licensing Products	A/UX Right To Update	Order No. M0741LL/A	▶ The right to update one system to A/UX Version 2.0 from any system with any previous version of A/UX. (Available only to customers who purchase directly from Apple Computer, Inc., and who have signed the "right to copy" agreement.)
	A/UX Right To Copy	Order No. M0740LL/A	▶ The right to copy A/UX Version 2.0 to one system. (Available only to customers who purchase directly from Apple Computer, Inc., and who have signed the "right to copy" agreement.)

For the name of your nearest authorized Apple A/UX and X Window System dealer, call 1-800-538-9696.

Related Products and Services	**Apple 68851 Paged Memory Management Unit (PMMU)**	Order No. M0221
	Apple EtherTalk NB Card	Order No. M0405
	AppleCD SC Drive	Order No. M2700/B
	Apple Hard Disk 80SC	Order No. M2688/A
	X Window System for A/UX	Order No. M0411LL/A
	Inside Macintosh	Available from APDA™ (see below)
	Technical Answerline	Order No. M0594LL/A
	A/UX Subscription Service	Refer to appropriate data sheet for details.

Information for Programmers and Developers	The Apple Programmers and Developers Association (APDA) provides a wide range of development products and documentation—from Apple and other suppliers—for programmers and developers who work with Apple equipment. For information about APDA, contact:	APDA Apple Computer, Inc. 20525 Mariani Avenue, M/S 33G Cupertino, CA 95014 1-800-282-APDA (1-800-282-2732) Fax: (408) 562-3971 Telex: 171-576 AppleLink®: APDA
	If you plan to develop Apple-compatible hardware or software products for sale through retail channels, you can get valuable support from Apple Developer Programs. Write to:	Apple Developer Programs Apple Computer, Inc. 20525 Mariani Avenue, M/S 51W Cupertino, CA 95014

Apple Computer, Inc.

20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
TLX: 171-576