

# Macintosh System Software Version 6.0 Family (System Software Version 6.0.5)



## Overview

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The Macintosh® System Software Version 6.0 Family is what distinguishes Apple® Macintosh personal computers from all others. It gives you a consistent, simple way to work with any Macintosh computer, and supports more than 3,500 applications for business, education, the graphic arts, engineering, and entertainment.

Macintosh System Software Version 6.0 incorporates all of the features—pull-down menus, movable windows, and icons—that contribute to ease of learning and ease of use, and that have become synonymous with all Macintosh computers. It also contains all of the system's

capabilities for file management, cooperative multitasking, calculations, printing, digital sound, and networking.

Version 6.0.5 of Macintosh System Software includes two additional features that were previously available as operating system options: 32-bit Color QuickDraw<sup>®</sup>, which enables color systems to display up to 16 million colors simultaneously; and the LaserWriter<sup>®</sup> 6.0.1 driver, which supports color and gray-scale laser printing.

Version 6.0.5 of Macintosh System Software will run on all current Macintosh models and is included with every new

Macintosh. This specific version also is required by the Macintosh IIx and some interface cards, and may be required by certain applications and peripherals. And users of the Macintosh IIci, Macintosh Portable, and 32-bit Color QuickDraw may want to upgrade to version 6.0.5 to take advantage of the increased compatibility it provides with some communications, CAD/CAM, and graphics applications.

Users of previous versions of Macintosh System Software can easily upgrade to version 6.0.5, retaining their investment in both their applications and their Macintosh expertise.

# Features

# Benefits

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- Compatibility with thousands of applications and utilities

- Lets you run virtually all Macintosh software.  
- Increases the usefulness of your Macintosh computer.  
- Preserves and enhances your investment in software, hardware, information, and training.

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- Familiar Macintosh user interface, including mouse, icons, windows, pull-down menus, and the Macintosh Finder<sup>®</sup>

- Provides clear, straightforward access to information and resources.  
- Makes most applications intuitive and easy to learn.  
- Allows you to use more applications more productively.  
- Reduces training time for basic system operation.

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- MultiFinder<sup>®</sup> operating system

- Lets you use two or more applications at the same time, and switch among them easily.  
- Allows you to continue working on other tasks while printing or transferring files.

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- Copy-and-paste function for text and graphics

- Allows you to move information back and forth between programs with ease.  
- Minimizes retyping of information.  
- Allows you to use the most appropriate application with the information you have.

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- 32-bit Color QuickDraw

- Produces screen images so true to life that what you see on the screen is of true, photographic quality.  
- Allows the creation of three-dimensional renderings, simulations, and real-time animation sequences.  
- Enables color systems to display up to 16 million colors simultaneously.

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- PostScript<sup>®</sup> typographic-quality text output

- Allows you to create documents of exceptional high quality because you can print at any point size on any PostScript-equipped device, from low-resolution laser printers that print at 300 dots per inch (dpi) to high-end typesetters with 1200 dpi resolution.

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- Standard Apple Numeric Environment (SANE<sup>®</sup>)

- Ensures high-precision calculation results that are consistent from application to application.

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- Built-in AppleTalk<sup>®</sup> network operating system

- Lets you connect a Macintosh computer to an Apple LaserWriter printer, an AppleShare<sup>®</sup> file server, or other network services in order to share information and resources.  
- Lowers the cost of networking.

# Product Details

## The Macintosh Environment

Macintosh set the standard for modern personal computer design with its graphics-based user interface. Its ease of use comes from more than the mouse and windows: the Macintosh is comprehensively designed to deliver the computer's power to both new and experienced users.

The Macintosh system is based on familiarity, directness, and consistency. "Icons" represent familiar objects—such as folders, documents, and a trash can—and reduce the need to learn computer jargon. These icons are manipulated easily and directly: For example, to file a document, you move its icon to a folder and "drop" it in; to destroy a document, you drop it into the Trash icon.

More intricate commands are chosen from pull-down menus that are always accessible on the "desktop." These commands act directly on the selected object; if a command requires more information, you can supply that information by checking boxes or choosing options from a list.

Because you always choose from a list of commands and options, rather than having to remember code words and function keys, the Macintosh system requires less memorization and training than systems with text-based commands. It is also less error-prone.

Common user actions, such as editing text and choosing commands, are handled by the system software rather than by applications. Because the system software is standard in all

Macintosh models, applications are more consistent with one another. This consistency reduces learning time—the actions you learn in one application do not need to be relearned for others.

## Architecture

The Macintosh System Software occupies three layers of the five-layer Macintosh system architecture.

<b>Application</b>
<b>Desktop</b>
<b>Toolbox</b>
<b>Operating System</b>
<b>Hardware</b>

The Desktop layer contains the Finder, desk accessories, and standard utilities. These elements create a consistent and familiar environment for all Macintosh users, regardless of the applications, networks, or peripherals they are using.

The Toolbox layer contains tools that provide the functions that applications rely on, such as QuickDraw graphics, font management, basic text editing, Clipboard functionality, and AppleTalk networking. By constantly improving the quality and range of these tools, Apple enhances the quality and innovation of applications available for the Macintosh. And because the Toolbox is built in, rather than being an option, Macintosh applications tend to look and work alike.

The Operating System layer insulates users and developers from changes in the hardware and makes different hardware features available in a consistent manner. Because of the operating system architecture, Macintosh users can access a variety of information—on low-, medium-, and high-density floppy disks; hard disks; optical media; and remote file servers—in the same, convenient way.

**Read-only Memory**  
Every Macintosh model includes permanent read-only memory (ROM). This memory contains the basic instructions for starting up the computer, running diagnostics, and loading the system software from disk (known as "bootstrapping," or "booting.") The Macintosh ROM also contains most of the Operating System and Toolbox functions. The ROM software speeds the startup process and reduces the amount of disk and memory space consumed by system software.

**Software Structure**  
The Desktop, Toolbox, and Operating System software together constitute approximately 2.5 megabytes of software that is included with every Macintosh. To simplify maintenance and upgrading, it is organized into separate modules, each with a separate programming or user interface.

These modules can be improved and upgraded independently. Since the introduction of the Macintosh, Apple has enhanced or added hundreds of features of the Macintosh System Software without redesigning the

architecture. This smooth growth allows older Macintosh applications to continue to run on newer models of Macintosh, and even to take advantage of new features automatically, without requiring the application itself to be updated. For example, Macintosh applications written for the original 9-inch monochrome Macintosh screen can take advantage of larger color screens, because the QuickDraw graphics module automatically adapts black-and-white applications to color screens.

This modular design will also allow applications designed for the version 6.0 family of the Macintosh System Software to work with the forthcoming Macintosh System Software Version 7.0.

## Features Specific to Version 6.0.5

Version 6.0.5 incorporates hardware support for the Macintosh IIx, the Macintosh Display Card 8-24, the Macintosh Display Card 8-24GC, and certain other interface cards and applications. These products require version 6.0.5 because it specifically supports their features.

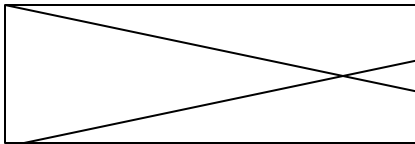
This version also corrects certain problems in the Macintosh IIci, the Macintosh Portable, and 32-bit QuickDraw software, and is recommended for users of those products.

Other than providing that support, version 6.0.5 is identical to other versions in the Macintosh System Software Version 6.0 Family, and can be used on any Macintosh computer.

# Implementation

## Desktop Layer: Interfaces and Utilities

This is the layer that gives the Macintosh its distinctive appearance. The Desktop layer provides you with a comprehensive view of the overall Macintosh system, and a consistent, intuitive environment in which to work. With Desktop utilities, you can install and configure the system software; work with files, disks, and folders; store and organize information for use throughout the system; and customize the Macintosh.



### Standard User Interface

Finder	Desktop management of files, folders, disks, and applications
Installer	Standard or custom software installation
Standard File	Point-and-click file specification
Color Picker	Standard user interface for color selection
Disk Initialization	Floppy disk formatting
Fonts	44 standard fonts for all applications
MacroMaker <sup>s</sup>	Playback of prerecorded actions

### Desk Accessories

Alarm Clock	Clock/calendar with alarm
Calculator	Four-function calculator
NotePad	User "scratch paper" for text
Chooser	Printer, file server, network selection
Control Panel	System configuration and preferences
Find File	Search disks for files by name
Key Caps	Display of key layouts and font images
Scrapbook	Storage of frequently used pictures and text
Puzzle	Classic 15-tile game
Access Privileges	Change access privileges on shared folders
Battery	Battery charge indicator on Macintosh Portable

### Control Panel

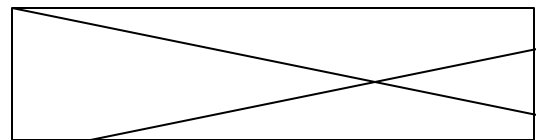
General	General settings
Startup Device	Select disk drive to start up from
Mouse	Set mouse speed and responsiveness
Keyboard	Set keyboard repeat speed
Monitors	Set monitor location and color selection
Sound	Set system beep sound, speaker volume
Color	Set highlight color for text selections
Map	Set physical location and time zone
Portable	Set special attributes of Macintosh Portable

## User Utilities

TeachText	Simple text editor for tutorials and updates
HDSC Setup	Apple SCSI hard disk initialization
Disk First Aid <sup>s</sup>	Disk diagnostics and repair
Print Monitor	Background laser printing for MultiFinder
Font/DAMover	Font and desk accessory configuration
Apple ProDOS <sup>®</sup> and File Exchange	File conversion utility, including IBM DCA/RFT translators
CloseView	Screen enlarger for visually impaired users
EasyAccess	Keyboard shortcuts for physically impaired users

## Toolbox Layer: Programmer Tools

The Toolbox layer contains the tools developers need to give their applications the character of the Macintosh. In the Toolbox layer are high-quality software tools that provide developers with the ability to implement the Macintosh user interface, numerics, audio, graphics, printing, data management, communications, and networking. These tools are supplied in ROM in most Macintosh models, with extensions loaded from the System disk.



### User Interface Toolbox

Window Manager	Draw and manipulate windows
Menu Manager	Draw and choose from pull-down menus
Dialog Manager	Draw and respond to dialog and alert boxes
Control Manager	Draw and respond to buttons and scroll bars
List Manager	Draw and manipulate lists and tables
Sound Manager	Play synthesized or digitized sounds
Notification Manager	Alert user to background tasks that require attention

### Text and Graphics

QuickDraw	32-bit color graphic drawing routines*
Color Manager	Consistent color model across devices*
Palette Manager	Best-fit color mapping to device abilities*
Font Manager	Bitmap font management for screen and printer
TextEdit	Draw user-editable text; manage cut and paste
Script Manager	Text handling for non-Roman languages
Printing Manager	Connect applications to printer drivers

\*Color software is not implemented on Macintosh Plus and SE systems.

<i>AppleTalk Network System</i>	
AppleTalk Manager	Manage network connections
AppleTalk Filing Protocol	Access files across networks
AppleTalk Printer Access Protocol	Communicate with remote printers over AppleTalk
AppleShare	Communicate with remote file servers over AppleTalk

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*Information Access*

FileManager	Access files on disks or servers
ScrapManager	Manage the Clipboard for inter-application data exchange

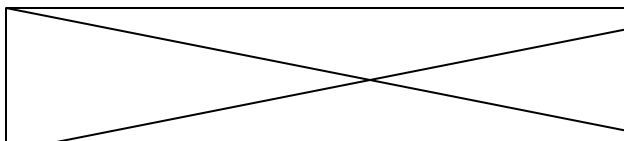
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*Programmer Utilities*

Toolbox Utilities	Fixed-point arithmetic and conversions
Floating-Point Arithmetic	IEEE standard floating-point numeric functions
SNE Transcendentals	IEEE-standard trigonometric, logarithmic, and financial functions
International Utilities	Local language date, time, money, and number formats and conversion

*Operating System Layer: System Tools*

This layer insulates applications from changes in hardware, allowing them to run on any Macintosh model without reconfiguration. The Operating System layer is responsible for controlling and managing the processor, memory, and physical resources of the Macintosh. Like other layers in the Macintosh architecture, this layer is extensible, so new capabilities can be added without disrupting the way people work. Most applications do not use Operating System features directly; instead, they use higher-level Toolbox functions which, in turn, rely on Operating System services. Device drivers, for example, communicate primarily with the File and Printing managers, and not directly with the applications.




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*Operating System Kernel*

StartManager	System diagnostics, wake-up, and startup
TrapDispatcher	Dispatch calls to ROM or RAM code
ResourceManager	Load and store named objects in files
MemoryManager	Manage memory in relocatable blocks
SegmentLoader	Load code segments for execution
EventManager	Handles system and user events
DeviceManager	Communicate with device drivers
MultiFinder	Provide cooperative multitasking among applications and tasks

Backgrounder	Support background printing
DAHandler	Manage desk accessories for MultiFinder
SCSIManager	Control SCSI devices
GraphicsDevice Manager	Provide a standard interface to video drivers
VerticalRetrace Manager	Schedule and perform recurrent tasks
SystemError Handler	Report system errors to the user

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*Device Drivers*

Apple Desktop Bus <sup>®</sup> Driver	Support input devices
Video Driver	Support standard Apple video cards
Keyboard Driver	Support Apple keyboards
Mouse Driver	Support the Apple mouse
Serial Driver	Support built-in serial interface ports
AppleTalk Link Access Protocol Responder	Support AppleTalk networking over the LocalTalk <sup>®</sup> cabling system
Inter-Poll <sup>®</sup>	Identify the Macintosh to the Network Administrator's Utility
Floppy Disk Driver	Support internal and external 400K, 800K, and 1.4MB disk drives
Hard Disk Driver	Support SCSI hard disks
Sound Driver	Support the built-in speaker
ImageWriter <sup>®</sup> Driver	Support ImageWriter I and II printers
AppleTalk ImageWriter Driver	Support ImageWriter II printers connected via AppleTalk
ImageWriter LQ Driver	Support ImageWriter LQ printers
AppleTalk ImageWriter LQ Driver	Support ImageWriter LQ printers connected via AppleTalk
LaserWriter Driver	Support PostScript printers, including the LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX
LaserWriter SC Driver	Support LaserWriter IISC printers
LaserWriter Driver 6.0	Support color PostScript printers

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*Operating System Utilities*

Gestalt	Verify presence of individual features
Package Manager	Support system software extensions
OS Utilities	Perform miscellaneous low-level functions
Time Manager	Schedule tasks to the millisecond
Deferred Task Manager	Defer execution of lengthy interrupt tasks
Slot Manager	Communicate with NuBus <sup>®</sup> interface cards
Shutdown Manager	Perform housekeeping tasks before system shuts down
Desk Manager	Help applications support desk accessories

# Features Comparison Chart

Feature	Macintosh System Software Version 6.0 Family	Other Operating System Graphical User Interface	Other Operating System Graphical User Interface
Price	Included with system		
Hardware requirements	Any Macintosh; hard disk recommended		
Applications available	More than 3,500		
Startup environment	Graphic; directly into Finder		
Setup environment	Graphic Installer and utilities		
Method of file, application, and task management	Macintosh Finder; unified, graphics-based interface		
Filesystem organization	By icon, name, size, or kind		
Filesystem access	Double-click the file to open		
Floppy disk access	Double-click icon that appears when disk is inserted		
Document access	Double-click the document icon to see its contents		
Copy-and-paste facility	Text and structured graphics for most applications		
Printer selection	Graphic: click the printer icon in the Chooser		
File copy from one disk to another	Graphic: Drag the file icon and drag it to the hard disk icon		
Application installation	Graphic: Drag the application disk icon onto hard disk icon		
Installation of memory-resident utilities (INITs, TSRs)	Graphic: Drag the icon into the System Folder		
Device driver installation	Graphic: Drag the icon into the System Folder		
Network operating system	AppleTalk; builtin		
Network printing services	AppleTalk PAP; builtin		
Network file services	AppleShare; builtin		
Network selection and configuration	Graphic: Click the printer or server icon		
Upgrade cost	\$4900		
Upgrade method	One-step installer		

# Technical Specifications Comparison Chart

Feature	Macintosh System Software Version 6.0 Family	Other Operating System Graphical User Interface	Other Operating System Graphical User Interface
Minimum system memory	1 megabyte		
System memory consumed	450 kilobytes*		
Maximum memory	Up to 16 megabytes		
Memory architecture	24-bit linear addressing		
Disk space consumed	1 megabyte*		
Disk formats supported	400K, 800K, and 1.4MB Macintosh disks; 720K, and 1.4MB MS-DOS or OS/2 disks		
File name format	Allows 31 characters, mixed cases, spaces, and symbols		
Maximum file size	4 gigabytes		
Maximum volume size	256 terabytes		
Maximum number of volumes open at once	Limited only by available system memory		
Maximum number of tasks	22		
Maximum total screen display size	65,536 pixels wide by 65,536 pixels tall, each up to 32 bits		
Number of monitors supported simultaneously	Limited only by number of NuBus expansion slots		
Colors supported	Over 16 million		
Fonts supported	32,767 font families		
Numeric calculation data types supported	32-bit single precision; 64-bit double precision; 64-bit computational; 80-bit extended		
Extended numeric calculation range	-1.1E+4932 to -1.9E-4932; 1.7E-4932 to 1.1E+4932		
Maximum number of nodes per network	254 local; more than 16 million networkwide		
Application compatibility	Most Macintosh System Software Version 5.0 Family applications supported		
Processor compatibility	68000, 68020, and 68030 CPUs; 68851 PVMU; 68881 and 68882 FRUs		

\*Measurements are for a networked, multitasking system with printer. Sizes will vary depending on the Macintosh model and its configuration.



# Macintosh System Software Version 6.0 Family

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System Requirements	To use the Macintosh System Software Version 6.0 Family, you'll need the following:	<ul style="list-style-type: none"><li>• A Macintosh Plus, Macintosh SE, Macintosh SE/30, Macintosh Portable, Macintosh II, Macintosh IICX, Macintosh IIx, Macintosh IIci, or Macintosh IIx personal computer</li></ul>	<ul style="list-style-type: none"><li>• One 800K disk drive (hard disk drive or second 800K disk drive recommended)</li></ul>
Ordering Information	Macintosh System Software Version 6.0.5	Order No. M0681/A	With your order, you'll receive: <ul style="list-style-type: none"><li>• Four 800K Macintosh System Software disks</li><li>• Macintosh Reference Manual</li><li>• Update information</li><li>• Software license agreement</li></ul>

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Macintosh System Software Version 6.0.5 is also delivered free of charge to subscribers to the Macintosh System Software Update Program, Macintosh OS Service.