Macintosh II

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The **Apple Macintosh II** was the first personal computer model of the Macintosh II series in the Apple Macintosh line. (Not to be confused with the Apple II series of non-Macintosh computers.)

Introduced in March, 1987 and retailing for US $5,498 [1], the Macintosh II was the first "modular" Macintosh model, so called because it came in a horizontal desktop case like many PCs of the time. All previous Macintosh computers used an all-in-one design with a built-in black-and-white CRT.

The Macintosh II introduced space for an internal hard disk (originally 20 MB or 40 MB) and an optional second floppy disk drive. It also was the first Macintosh computer, simultaneously with the Macintosh SE, to use the Apple Desktop Bus (ADB), introduced with the Apple IIGS, for keyboard and mouse interface.

The primary improvement in the Mac II was Color QuickDraw in ROM, a color version of the graphics language which was the heart of the machine. Among the many innovations in Color QuickDraw were an ability to handle any display size, any color depth, and multiple monitors. The Mac II was the first personal computer which could display true color 24-bit photorealistic images[*citation needed*]. Because Color QuickDraw was included in the Mac II's ROM, earlier Macintoshes could not be upgraded to display color, and many early adopters felt betrayed by Apple. After a year or two, Apple changed direction and began shipping Color QuickDraw in the operating system, allowing earlier computers to at least run color programs in black and white.

Macintosh II

Release date	March 2, 1987
Introductory price	5500
Discontinued	January 15, 1990
Operating system	*3.3*– 6.0.8, 7.0-7.5.5 or with 68030 32-bit upgrade Mac OS 7.6.1
CPU	Motorola 68020 @ 16 MHz
Memory	1 MB, expandable to 20 MB (68 MB via FDHD upgrade kit) (120 ns 30-pin SIMM)

The Macintosh II was designed by hardware engineers Michael Dhuey (computer) and Brian Berkeley (monitor). A basic system with 20 Mb drive and monitor cost about $5200, A complete color-capable system could cost as much as $10,000 once the cost of the color monitor, video card, hard disk, keyboard and RAM were added. This price point placed it in competition with workstations from Silicon Graphics, Sun Microsystems and Hewlett-Packard although it still used the Mac OS instead of the Unix of those systems. The OS features placed it more squarely in competition with i386 based PCs and the Amiga 2000, which used a Motorola 68000 CPU instead of the 68020 in the Mac II.

The project was begun by Dhuey and Berkeley without the knowledge of Apple head Steve Jobs (who opposed features like expansion slots). Initially referred to as "Little Big Mac", it was codenamed "Milwaukee" after Dhuey's hometown, and later went through a series of new names, including "Reno", "Uzi" and "Paris" (after Jean-Louis Gassee, Apple's then products manager, who protected the semi-clandestine project from cancellation).[2]

Introduced in 1987, the Mac II featured a Motorola 68020 processor operating at 16 MHz teamed with a Motorola 68881 floating point unit. The machine shipped with a socket for an MMU, but the "Apple HMMU Chip" (VLSI VI475 chip) was installed that did not implement virtual memory (what it did was that it translated 24-bit addresses to 32-bit addresses for the Mac OS which was not 32-bit clean until System 7). Standard memory was 1 megabyte, expandable to 68 MB, though not without the special FDHD upgrade kit; otherwise, 20 MB was the maximum.[3] RAM could be maxed out to 128 MB, however, if the ROMs were upgraded to those used in the IIx (or if MODE32 was used), as the Mac II's memory controller supported higher-density memory modules than did the stock ROM.[4][5] The Mac II had eight 30-pin SIMMs, and memory was installed in groups of four. A 5.25-inch 40 MB internal SCSI hard disk was optional, as was a second internal 800 kilobyte 3.5-inch floppy disk drive. Six NuBus slots were available for expansion (at least one of which had to be used for a graphics card, as the Mac II had no onboard graphics). It is possible to connect as many as six displays to a Macintosh II by filling all of the NuBus slots with graphics cards.

The **Macintosh II** along with the Macintosh SE, were the first Apple computers (since the Apple I) to be sold without a keyboard. Instead the customer was offered the choice of the new ADB Apple Keyboard or the Apple Extended Keyboard.

The Macintosh II was followed by a series of related models including the Macintosh IIx and Macintosh IIfx, all of which used the Motorola 68030 processor. It was possible to upgrade a Macintosh II to a Macintosh IIx or IIfx with a motherboard swap. The Macintosh II was the first Macintosh to have the Chimes of Death accompany the Sad Mac logo whenever a serious hardware error occurred.

Macintosh II motherboard

The original ROMs in the Macintosh II contained a bug which prevented the system from recognizing more than one megabyte of memory address space on a Nubus card. For example, if a video card with four megabytes of video RAM was installed, only one megabyte of video RAM would be recognized by the system. Macintosh IIs manufactured up until about November 1987 had this defect. Apple offered a well publicized recall of the faulty ROMs and released a program to test whether a particular Macintosh II had the defect. As a result, Macintosh IIs with the original ROMS are now very rare.

The new extensions featured for the Macintosh II at the time were A/ROSE and Sound Manager.

See also

- List of display interfaces
- Macintosh XL
- Macintosh Plus
- Macintosh SE

References

1. ^ Macintosh II and Macintosh SE announced (http://macgui.com/usenet/?group=14&id=1509)
2. ^ Levy, Steven. *Insanely Great: The Life and Times of* Macintosh*, the Computer That Changed Everything.* New York: Viking, 1994; p. 229-231
3. ^ Apple Announces 68030 Macintosh IIx With High Density Compatible Drive (http://www.krsaborio.net /research/1980s/88/880919_c.htm) by John Cook and Carol Cochrane, Business Wire 09/19/88 (retrieved 09/20/2009)

4. **^** MACINTOSH II ROM, RAM, FPU, & PMMU CONFIGURATIONS (http://mirrors.vanadac.com /home.earthlink.net/~gamba2/mac2config.txt) by gamba (retrieved 09/20/2009)
5. **^** Series: The 24-bit ROM Blues (http://db.tidbits.com/series/1193) by Adam C. Engst, Tidbits, 4/22/1991 (retrieved 09/21/2009)

External links

- apple-history.com (http://www.apple-history.com/)
- Mac II profile (http://www.lowendmac.com/ii/macintosh-ii.html) on Low End Mac
- Macintosh II technical specifications (http://docs.info.apple.com/article.html?artnum=112168) at apple.com

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