

# BeOS

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## I. Introduction

BeOS is an operating system for personal computers which began development by Be Inc. in 1991. It was first written to run on BeBox hardware. BeOS was built for digital media work and was written to take advantage of modern hardware facilities such as symmetric multiprocessing by utilizing modular I/O bandwidth, pervasive multithreading, preemptive multitasking and a 64-bit journaling file system known as BFS. The BeOS GUI was developed on the principles of clarity and a clean, uncluttered design.

BeOS was positioned as a multimedia platform which could be used by a substantial population of desktop users and a competitor to Mac OS and Microsoft Windows (Linux was not relevant as a desktop OS at the time). However, it was ultimately unable to achieve a significant market share and proved commercially unviable for Be Inc. The company was acquired by Palm Inc. and today BeOS is mainly used and developed by a small population of enthusiasts.

The open-source OS Haiku is designed to start up where BeOS left off. Alpha 3 of Haiku was released in June 2011.

## II. Design

BeOS was optimized for digital media work and was written to take advantage of modern hardware facilities such as symmetric multiprocessing by utilizing modular I/O bandwidth, pervasive multithreading, preemptive multitasking and a 64-bit journaling file system known as BFS. The BeOS GUI was developed on the principles of clarity and a clean, uncluttered design.

The API was written in C++ for ease of programming. It has partial POSIX compatibility and access to a command-line interface through Bash, although internally it is not a Unix-derived operating system.

BeOS used Unicode as the default encoding in the GUI, though support for input methods such as bidirectional text input was never realized.

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## III. History

Initially designed to run on AT&T Hobbit-based hardware, BeOS was later modified to run on PowerPC-based processors: first Be's own systems, later Apple Inc.'s PowerPC Reference Platform and Common Hardware Reference Platform, with the hope that Apple would purchase or license BeOS as a replacement for its then aging Mac OS. Apple CEO Gil Amelio started negotiations to buy Be Inc., but negotiations stalled when Be CEO Jean-Louis Gassée wanted \$200 million; Apple was unwilling to offer any more than \$125 million. Apple's board of directors decided NeXTSTEP was a better choice and purchased NeXT in 1996 for \$429 million, bringing back Apple co-founder Steve Jobs.

In 1997, Power Computing began bundling BeOS (on a CD for optional installation) with its line of PowerPC-based Macintosh clones. These systems could dual boot either the Mac OS or BeOS, with a start-up screen offering the choice.

Due to Apple's moves and the mounting debt of Be Inc., BeOS was soon ported to the Intel x86 platform with its R3 release in March 1998. Through the late 1990s, BeOS managed to create a niche of followers, but the company failed to remain viable. As a last-ditch effort to increase interest in the failing operating system, Be Inc. released a stripped-down, but free, copy of BeOS R5 known as BeOS Personal Edition (BeOS PE). BeOS PE could be started from within Microsoft Windows or Linux, and was intended to nurture consumer interest in its product and give developers something to tinker with.

Be Inc. also released a stripped-down version of BeOS for Internet Appliances (BeIA), which soon became the company's business focus in place of BeOS. BeOS PE and BeIA proved to be too little too late, and in 2001 Be's copyrights were sold to Palm, Inc. for some \$11 million. BeOS R5 is considered the last official version, but BeOS R5.1 "Dano", which was under development before Be's sale to Palm and included the BeOS Networking Environment (BONE) networking stack, was leaked to the public shortly after the company's demise.

In 2002, Be Inc. sued Microsoft claiming that Hitachi had been dissuaded from selling PCs loaded with BeOS, and that Compaq had been pressured not to market an Internet appliance in partnership with Be. Be also claimed that Microsoft acted to artificially depress Be Inc.'s initial public offering (IPO). The case was eventually settled out of court for \$23.25 million with no admission of liability on Microsoft's part.

After the split from Palm, PalmSource used parts of BeOS's multimedia framework for its failed Palm OS Cobalt product. With the takeover of PalmSource, the BeOS rights now belong to Access Co.

BeOS was well respected by a small but loyal user base, which was disappointed when Be Inc. failed commercially and no further enhancement of the operating system would be possible. In the years that followed a handful of projects formed to recreate BeOS or key elements of the OS with the eventual goal of then continuing where Be Inc. left off. To ensure that the OS could not be "taken away" from the Be community again, and to attract the efforts of volunteer programmers, these projects were all free and open source software. The modular nature of the original BeOS facilitated recreating the operating system a piece at a time, inserting the newly coded modules into a working BeOS system to test compatibility. Eventually, all of the "servers" (interworking modules of code) were to be replaced with original, freely licensed code.

Within a few years, some of these projects lost momentum and were discontinued. The Blue Eyed Os website is back online after being missing for 2 years but hasn't had a release since 2003, the most recent release available on the Cosmoe web site is from 2004 and active development on E/OS ended in July 2008, BeOS Workstation picked up where Be. Inc left off but that too seems to be dead as well. Development however continues on Haiku, a complete reimplementaion of BeOS. The first alpha release, "Haiku R1 / Alpha 1", was released on September 14, 2009.[7] The second alpha release, "Haiku R1 / Alpha 2", was made available on May 9, 2010.[8] The third alpha release, "Haiku R1 / Alpha 3", was released on June 18, 2011.[9]

ZETA was a commercially available operating system based on the BeOS R5.1 codebase. Originally developed by YellowTAB, the operating system was then distributed by magnussoft. During development by YellowTAB, the company received criticism from the BeOS community for refusing to discuss its legal position with regard to the BeOS codebase (perhaps for contractual reasons). Access Co. (which bought PalmSource, until then the holder of the intellectual property associated with BeOS) has since

declared that YellowTAB had no right to distribute a modified version of BeOS, and magnussoft has ceased distribution of the operating system.

#### Version history

Release	Date	Hardware
DR1–DR5	October 1995	AT&T Hobbit
DR6 (developer release)	January 1996	PowerPC
DR7	April 1996	
DR8	September 1996	
Advanced Access Preview Release	May 1997	
PR1 (preview release)	June 1997	
PR2	October 1997	Power PC and Intel x86
R3	March 1998	
R3.1	June 1998	
R3.2	July 1998	
R4	November 4, 1998	

R4.5 ("Genki")	June 1999	
R5 PE/PRO	March 2000	
R5.1	November 2001	Intel x86

#### IV BeOS R5

BeOS R5 is the final version of BeOS from Be Inc.. It was released in March 2000, and came in two varieties: Professional and Personal.

R5 was the 4th major release of BeOS for a public audience, and the 6th since it left developer-only stages. It changed only slightly from the previous release, BeOS R4.5, and was even seeded to developers as "R4.6". Improved POSIX compliance, particularly in the area of networking, was provided. The OS in general was moved towards the new modular media kit over the former audio-only sound subsystem. For end-users, new logos and some new icons were the only major differences.

R5 was the first release of BeOS for x86 to have a freely downloadable version which could be fully installed on a user's hard drive; previous versions had a free Live CD download, which could not be installed. R5 was also to be the last version to support the PowerPC architecture which BeOS had originated on, including the company's own BeBox hardware. According to Be's marketing, it was the first OS to ship with legal MP3 encoding and decoding support.

Personal Edition, a 48MB download, was the most commonly used version of R5. Stripped of developer tools (though these were later made available as a separate download), mp3 and Indeo encoders, and RealPlayer. It was installed into a 500MB "hardfile" through Windows or Linux, and could be booted either directly from Windows 9x or DOS, or using a boot floppy. Once booted, it could be installed to a real hard drive or partition, and the Be Bootloader could be installed to allow dual-booting. This bootloader uses only the MBR of the hard disk, and will continue to function even if the BeOS is uninstalled.

Professional Edition was only available commercially, and for the first time in BeOS's history, could not be purchased from the company unless you were a developer. Instead, a number of regional resellers sold it - Gobe Software in the

United States, Apacabar and Koch Media in Europe, and Hitachi in Asia. These resellers were responsible for all packaging of the OS, from localisation to CD labelling and packaging. As a result, some variations exist between packaged R5 Professional discs, with some being slipstream updated to the newest patches, and most notably, the inclusion of commercial printer drivers with Gobe releases, and French translations of the user documentation on Apacabar.

The CD shipped with an ISO9660/HFS hybrid partition, containing documentation, GPL licenced source code, the Personal Edition installer (with the aim of you circulating the installer to friends), a copy of Partition Magic for Windows, and the Mac OS boot-loading code for the PowerPC version. Two separate BFS partitions existed, one for x86, one for PowerPC, and the x86 one is directly bootable from CD.

In addition to all the features of Personal Edition, Professional Edition includes the full developers tools, including a rebranded CodeWarrior, RealPlayer G2, Fraunhofer MP3 encoders, and support for both encoding Indeo video, and playback/encoding of Indeo Real Time. Additional media on the CD varied by supplier, but always included some sample multimedia files, including two songs composed by Be staff ("5038" and "virtual (void)") as well as a video of Be staff pushing computer monitors off the roof of their building in Menlo Park.

#### V Products using BeOS

BeOS (and now Zeta) continue to be used in media appliances such as the Edirol DV-7 video editors from [Roland corporation](#) which run on top of a modified BeOS<sup>[10]</sup> and the TuneTracker radio automation software that runs on BeOS and Zeta, but is also sold as a "Station-in-a-Box" with the Zeta operating system included.<sup>[11]</sup>

The Tascam SX-1 digital audio recorder runs a heavily modified version of BeOS that will only launch the recording interface software.

iZ Technology sells the [RADAR 24 and RADAR V](#), hard disk-based, 24-track professional audio recorders based on BeOS 5.<sup>[12]</sup>

Magicbox, a manufacturer of signage and broadcast display machines, uses BeOS to power their [Aavelin](#) product line.<sup>[13]</sup>

[Final Scratch](#), the 12" vinyl timecode record-driven DJ software/hardware system, was first developed on BeOS. The "ProFS" version was sold to a few dozen

DJs prior to the 1.0 release, which ran on a Linux virtual partition.