Haiku (operating system)

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Haiku is a free and open-source operating system compatible with the now discontinued BeOS. Its development began in 2001, and the operating system became self-hosting in 2008.[4] The first alpha release was made in September 2009, and the most recent was November 2012; development is ongoing as of 2017 with nightly releases.

Haiku is supported by Haiku, Inc., a non-profit organization based in Rochester, New York, United States, founded in 2003 by former project leader Michael Phipps.[5]

Haiku

Developer	Haiku, Inc.
OS family	BeOS
Working state	Alpha
Source model	Open source
Initial release	2002
Latest preview	R1 Alpha 4.1 / November 14, 2012
Marketing target	Personal computer
Available in	Multilingual
Platforms	IA-32, ARM,[1] and x86-64[2][3]
Kernel type	Hybrid
Default user interface	OpenTracker
License	MIT License and Be Sample Code License
Official website	www.haiku-os.org (https://www.haiku-os.org/)

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History

Haiku began as the *OpenBeOS* project in 2001, the year that Be, Inc. was bought by Palm, Inc. and BeOS development was discontinued; the focus of the project was to support the BeOS user community by creating an open-source, backward-compatible replacement for BeOS. The first project by OpenBeOS was a community-created "stop-gap" update for BeOS 5.0.3 in 2002. In 2003, the non-profit organization Haiku, Inc. was registered in Rochester, New York, to financially support development, and in 2004, after a notification of infringement of Palm's trademark of the BeOS name was sent to OpenBeOS, the project was renamed *Haiku*. However, development only reached its first milestone in September 2009 with the release of Haiku R1/Alpha 1. As of September 2017 R1/Alpha 4.1 (released in November 2012) remained the latest release, but the Haiku website reported in 2017 that work continues,[6] and nightly builds continue to be released with the site recommending that users try the nightly build rather than the alpha release.[7]

Technology

Haiku is written in C++ and provides an object-oriented API.

The modular design[8] of BeOS allowed individual components of Haiku to initially be developed in teams in relative isolation, in many cases developing them as replacements for the BeOS components prior to the completion of other parts of the operating system. The original teams developing these components, including both servers and APIs (collectively known in Haiku as "kits"), included:

- **App/Interface** – develops the Interface, App and Support kits.
- **BFS** – develops the Be File System, which is mostly complete with the resulting OpenBFS.
- **Game** – develops the Game Kit and its APIs.
- **Input Server** – the server that handles input devices, such as keyboards and mice, and how they communicate with other parts of the system.
- **Kernel** – develops the kernel, the core of the operating system.
- **Media** – develops the audio server and related APIs.
- **MIDI** – implements the MIDI protocol.
- **Network** – writes drivers for network devices and APIs relating to networking.
- **OpenGL** – develops OpenGL support.
- **Preferences** – recreates the preferences suite.
- **Printing** – works on the print servers and drivers for printers.
- **Screen Saver** – implements screen saver function.
- **Storage** – develops the storage kit and drivers for required filesystems.
- **Translation** – recreates the reading/writing/conversion modules for the different file formats.

A few kits have been deemed feature complete and the rest are in various stages of development.

The Haiku kernel is a modular hybrid kernel and a fork of NewOS,[9] a modular kernel written by former Be Inc. engineer Travis Geiselbrecht. Like the rest of the system it is currently still under heavy development. Many features have been implemented, including a virtual file system (VFS) layer and rudimentary symmetric multiprocessing (SMP) support.

Package management

As of September 2013, Haiku includes a package management system called "Haiku Depot," enabling software to be compiled into dependency tracking compressed packages.[10] Packages can also be activated by installing them from remote repositories with pkgman, or dropping them over a special *packages* directory. Haiku package management mounts activated packages over a read only system directory. The Haiku package management system performs dependency solving with libsolv from the openSUSE project.[11]

Compatibility with BeOS

Haiku R1 aims to be compatible with BeOS at both the source and binary level, allowing software written and compiled for BeOS to be compiled and run without modification on Haiku. This provides Haiku users with an instant library of applications to choose from (even programs whose developers are no longer in business or have no interest in updating them), in addition to allowing development of applications to resume from where they had been terminated following the demise of Be, Inc.

This dedication to compatibility has its drawbacks though — requiring Haiku to use a forked version of the GCC compiler, based on version 2.95, released in 2001, which is now 16 years old.[12] Switching to the newer version 4 of GCC breaks compatibility with BeOS software; therefore Haiku supports being built as a hybrid GCC4/GCC2 environment.[13] This allows the system to run both GCC version 2 and version 4 binaries at the same time. The changes done to GCC 2.95 for Haiku include wide characters support and backport of fixes from GCC 3 and later.[14]

Note that this compatibility applies to 32-bit x86 systems only. The PowerPC version of BeOS R5 will not be supported. As a consequence, the ARM, 68k, 64-bit x86 and PPC ports of Haiku use only the GCC version 4 compiler.

Despite these attempts, compatibility with a number of system add-ons that use private APIs will not be implemented. These include additional filesystem drivers and media codec add-ons, although the only affected add-ons for BeOS R5 not easily re-implemented are Indeo 5 media decoders for which no specification exists.

R5 binary applications that run successfully under Haiku (as of May 2006) include: Opera, Firefox, NetPositive, *Quake II*, *Quake III*, SeaMonkey, Vision and VLC.

Driver compatibility is incomplete, and unlikely to cover all kinds of BeOS drivers. 2D graphics drivers in general work exactly the same as on R5, as do network drivers. Moreover, Haiku offers a source-level FreeBSD network driver compatibility layer, which means that it can support any network hardware that will work on FreeBSD. Audio drivers using API versions prior to BeOS R5 are as-yet unsupported, and unlikely to be so; however, R5-era drivers work.

Low-level device drivers, namely for storage devices and SCSI adapters, will not be compatible. USB drivers for both the second- (BeOS 5) and third- (BeOS Dano) generation USB stacks will work, however.

In some other aspects, Haiku is already more advanced than BeOS. For example, the interface kit allows the use of a layout system to automatically place widgets in windows, while on BeOS the developer had to specify the exact position of each widget by hand. This allows for GUIs that will render correctly with any font size and makes localization of applications much easier, as a longer string in a translated language will make the widget grow, instead of being partly invisible if the widget size were fixed.

Beyond R1

Initial planning for R2 has started through the "Glass Elevator" project (a reference to the children's novel *Charlie and the Great Glass Elevator*). The only detail confirmed so far is that it will switch to a current GCC release.

A compatibility layer is planned that will allow applications developed for Haiku R1 to run on Haiku R2 and later. This was mentioned in a discussion on the Haiku mailing list by one of the lead developers, Axel Dörfler. Suggested new features include file indexing on par with Unix's Beagle, Google Desktop and macOS's Spotlight, greater integration of scalable vector graphics into the desktop, proper support for multiple users, and additional kits.[15]

System requirements

- A 32-bit x86 architecture like Intel's IA-32[16]
- Memory: 128 MB, to compile Haiku within itself 1 GB[16]
- Hard disk: 700 MB[16]

See also

- Be File System
- BeOS API
- Comparison of operating systems
- Haiku Vector Icon Format
- KDL
- List of BeOS programs

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External links

- Official website (https://www.haiku-os.org/)
- Haiku Tech Talk at Google (February 13, 2007) (https://www.youtube.com/watch?v=LxAQxGQB1A8) on YouTube
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