

Showing and Debugging HAIKU with QEMU

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What is Haiku?

- Operating System
 - Desktop focused (x86)
- Free Software (MIT licence)
- From the ground up (no Linux, no X11)
- Inspired by the BeOS
 - C/C++
 - Keep It Smart & Simple
 - Binary compatibility as goal for R1

Distribution

- **Disk images**
 - Raw BFS image for QEMU
 - VMDK for Vmware and VirtualBox
 - Anyboot (ISO + MBR + BFS)
 - Burn to CD (live + Installer)
 - dd to USB keys...
- QEMU can use any of those

Online Demo

- **Free Live OS Zoo**
 - QEMU + VNC + Java applet
 - Allows testing many Oses
- **haiku.php**
 - QEMU + VNC + Java applet
 - Tailored for Haiku
 - `-usbdevice wacom-tablet` for absolute mouse
 - (Generic HID tablet driver not yet finished)
 - 3 years to get the Wacom tablet fix patch in QEMU

Debugging the Kernel and Drivers

- `dprintf()` and `-serial stdio`
- Kernel Debugging Land
 - Comfy place with hangman game
 - Internal gdb stub
- Emulated devices can be instrumented

Bootloaders

- Before the kernel runs, so no KDL yet
- QEMU's own gdb stub is useful
 - At least until the mmu is switched on
- haiku_loader is binary (multiboot/U-Boot/...)
 - But an elf version is built as well
 - `symbol-file boot_loader_u-boot`

Supported architectures for Haiku

Architecture	Platforms	Status	Emulators
x86	PC	100,00%	QEMU, VirtualBox, VMware
PowerPC	PowerMac, Pegasos, (SAM440, AmigaOne ?)	25,00%	QEMU, PearPC
ARM	Gumstix, BeagleBoard, Neo FreeRunner, Efika MX...	10,00%	QEMU
m68k	Atari Falcon, Amiga	10,00%	ARAnyM, UAE, QEMU-m68k
MIPSEL	Yeeloong	2,00%	QEMU
X86_64	PC	2,00%	QEMU

Debugging QEMU

- More guest OSes = more test cases
- Wacom tablet: bad coordinate scaling & buttons
- HD audio: WAKEEN bits not honoured
 - Interrupt storm with the Haiku driver
 - Other OS handle codec status change in irq handler

Remaining issues

- Haiku
 - Full HPET
- QEMU
 - Upstream Haiku port
 - VNC: WebSockets ? (Java \neq Web)
 - Audio streaming
 - [twolame](#) ?
 - VNC audio ?

Conclusions

- More guest OSes = more test cases
- More emulated devices = more test cases
- Mutual benefit

Want to help?

- <http://haiku-os.org/>
- <http://dev.haiku-os.org/>
- <irc://irc.freenode.org/haiku>