



AGENDA

- whoami
- Historie
- Warum NetBSD?
 - Hardware
 - Features
- Was machen wir jetzt damit?
- Paket Management (pkgsrc)
- Demo
- Community & Mitmachen



WHOAMI

~tm

- Grumpy old Hacker
- Server Ninja bei [SkyLime](#)
 - Unix (illumos, *BSD) und Linux Beratung seit mehr als 20 Jahren
 - illumos SmartOS basierte Cloud Lösung unter [reco-systems.de](#)
- Fokus auf Infrastructure-as-Code & Security / Hardening
- NetBSD und pkgsrc Entwickler seit 2017

HISTORIE

- 1978 Veröffentlichung von **1BSD**
- 1979 bereits die Veröffentlichung von **2BSD**
- 1988 **BSD4.3-Tahoe** (Power 6/32 Plattform)
- 1989 **Networking Release 1 (Net/1)**
 - ohne proprietären AT&T Quellcode
- 1991 Net/2 (ohne AT&T Tools und Dateien)
 - **386BSD**
 - BSD/386 (BSD/OS) proprietär

Harris expands HCX system of superminis

Harris Computer Systems has added the entry-level HCX-5 system to its HCX family of Unix-based superminicomputers. According to the company, the HCX-5 achieves five million instructions per second and was designed for departmental applications.

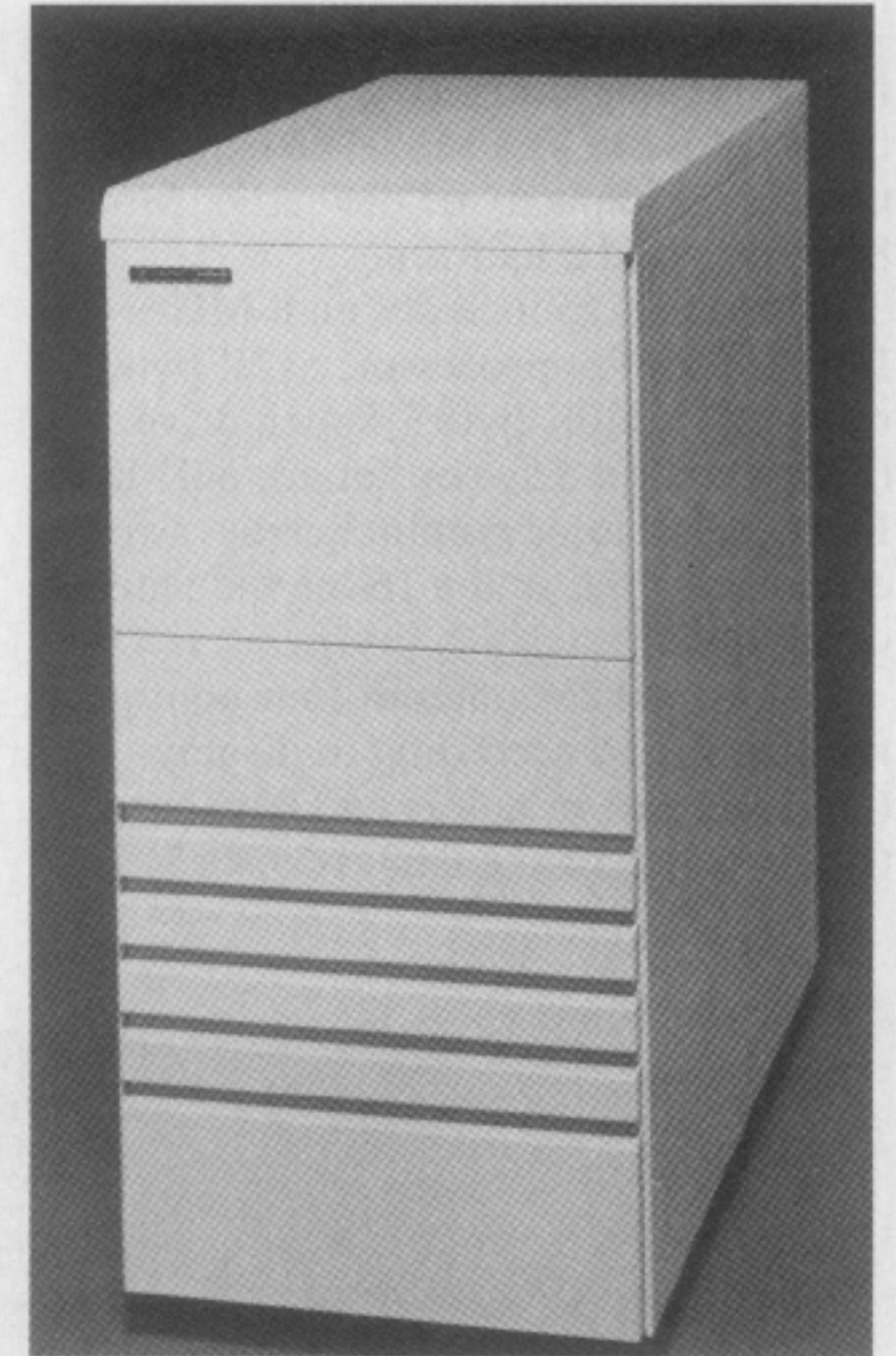
The system features a 40M-byte-per-second VMEbus. It is reportedly completely compatible with other members of the HCX family.

The HCX-5 supports up to 128 users and serves as a departmental computer linking PCs, terminals, and engineering workstations; as a compute and file server; or as a gateway to other superminicomputers and mainframes, according to Harris. It supports Ethernet, NFS, Unix remote functions, X.25 wide-area networking, DARPA Internet protocols, and IBM BSC and SNA.

The HCX-5 operating system, HCX/UX, permits access to AT&T Unix System V.2 and University of California at Berkeley 4.2 BSD environments.

The HCX-5 costs from \$124,500.

Reader Service 55



The Harris HCX-5 joins the HCX family of Unix-based 32-bit superminicomputers. It is rated at 5 MIPS using the C language.

HISTORIE

NETBSD RELEASE

From cgd@agate.berkeley.edu Wed Apr 21 21:11:32 1993
Newsgroups: comp.os.386bsd.announce, comp.unix.bsd, comp.os.386bsd.misc
Subject: **So you say you want an interim release of 386bsd?**
Keywords: 386BSD, NetBSD, free, BSD, sleep

Some of you have undoubtedly been wondering what i've been up to lately... I've told some, i've randomly babbled to more, and now everybody gets to know.

[...]

NetBSD is a new system, based heavily on 386BSD 0.1, with many improvements over 386BSD 0.1, and with different goals than those which are espoused by the principal developers of 386BSD. **NetBSD, as the name implies, is a creation of the members of the network community and without the net, it's likely that this release wouldn't have come about.**

Some could look at NetBSD as simply an interim release of 386BSD. We look at it as more, and therefore have named it differently. The new name and version number reflect two of our goals for NetBSD: an **escape from the political wars** surrounding what we consider a wonderful operating system, and the rapid development of a stable release which we would consider of "**production quality**."

The Future of NetBSD:

--- ----- -- -----

[...]

We intend to integrate free, positive changes from whatever sources will provide them, providing that they are well thought-out and increase the usability of the system.

[...]

Above all, we hope to **create a stable and accessible system,** and to **be responsive to the needs and desires of NetBSD users,** because it is for and because of them that NetBSD exists.

WARUM NetBSD

ALLGEMEIN

- Nachvollziehbar und Überschaubarer
 - Quellcode & Betriebssystem
- [NetBSD Guide / Handbuch](#)
- Einheitliche und vollständige Manpages
- **Unterstützung vieler verschiedener Plattformen**



oshimaya
@oshimyja



Of course it runs NetBSD!
on Dynabook V, with the internal digitizer display.
Yes, enable pressure level of stylus!



86 4:47 AM - Nov 23, 2019



43 people are talking about this



WARUM NetBSD

PLATTFORM SUPPORT - TIER 1

Port	CPU	Machines	Latest Release
amd64	x86_64	64-bit x86-family machines with AMD and Intel CPUs	9.3
evbarm	arm	ARM evaluation boards	9.3
evbmips	mips	MIPS-based evaluation boards	9.3
evbppc	powerpc	PowerPC-based evaluation boards	9.3
hpcarm	arm	StrongARM based Windows CE PDA machines	9.3
i386	i386	32-bit x86-family generic machines ("PC clones")	9.3
sparc64	sparc	Sun UltraSPARC (64-bit)	9.3
xen	i386, x86_64	Xen Virtual Machine Monitor	9.3

WARUM NetBSD

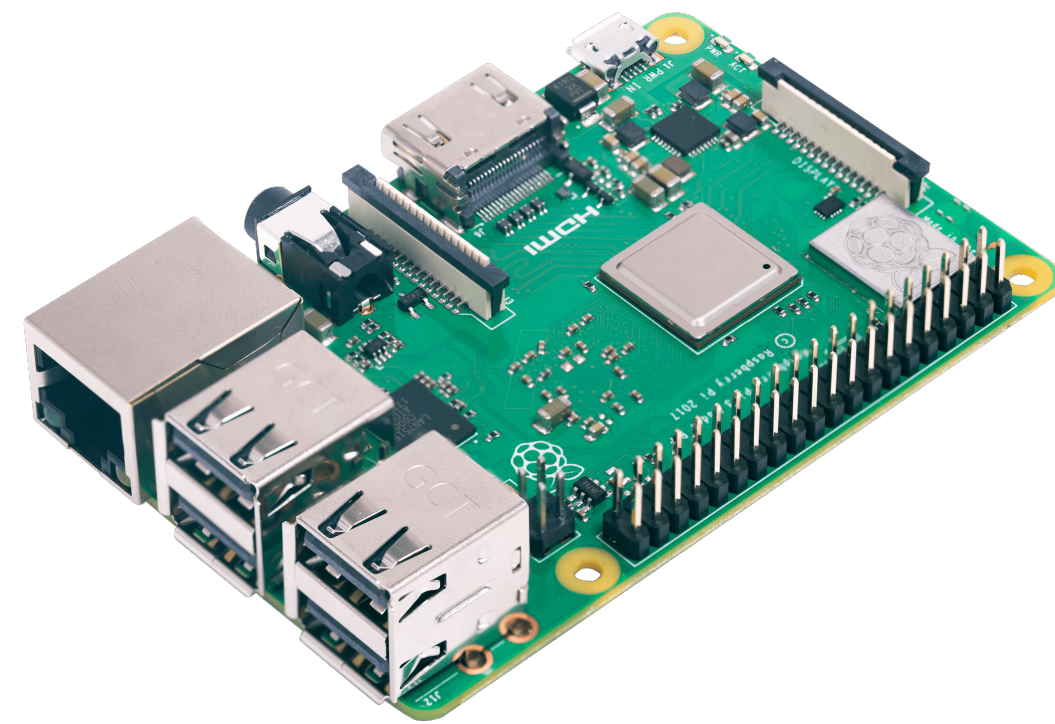
PLATTFORM SUPPORT - TIER 2

Port	CPU	Machines	Latest Release
acorn32	arm	Acorn RiscPC/A7000/NC and compatibles	9.3
algor	mips	Algorithmics MIPS evaluation boards	9.3
alpha	alpha	Digital Alpha (64-bit)	9.3
amiga	m68k	Commodore Amiga, MacroSystem DraCo	9.3
amigappc	powerpc	PowerPC-based Amiga boards	9.3
arc	mips	Machines following the Advanced RISC Computing spec	9.3
atari	m68k	Atari TT030, Falcon, Hades	9.3
bebox	powerpc	Be Inc's BeBox	9.3
cate	arm	Chalice Technology's Strong Arm evaluation board	9.3

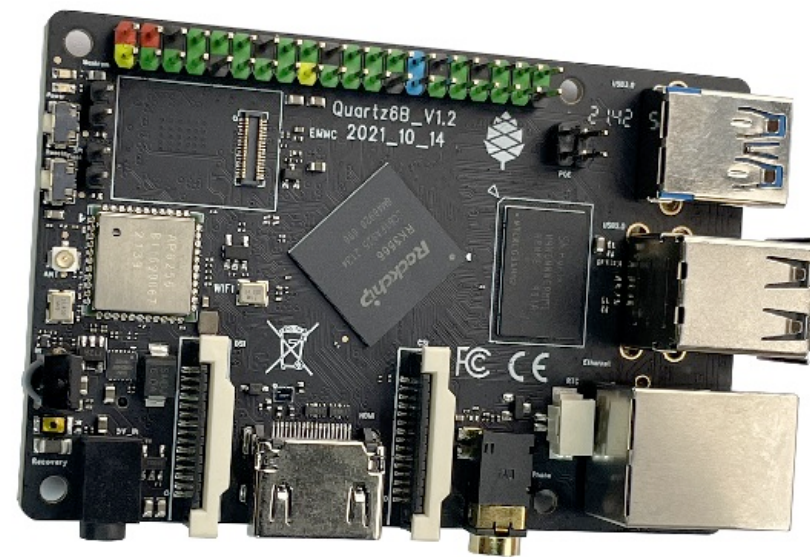
<http://netbsd.org/ports/>

WARUM NetBSD

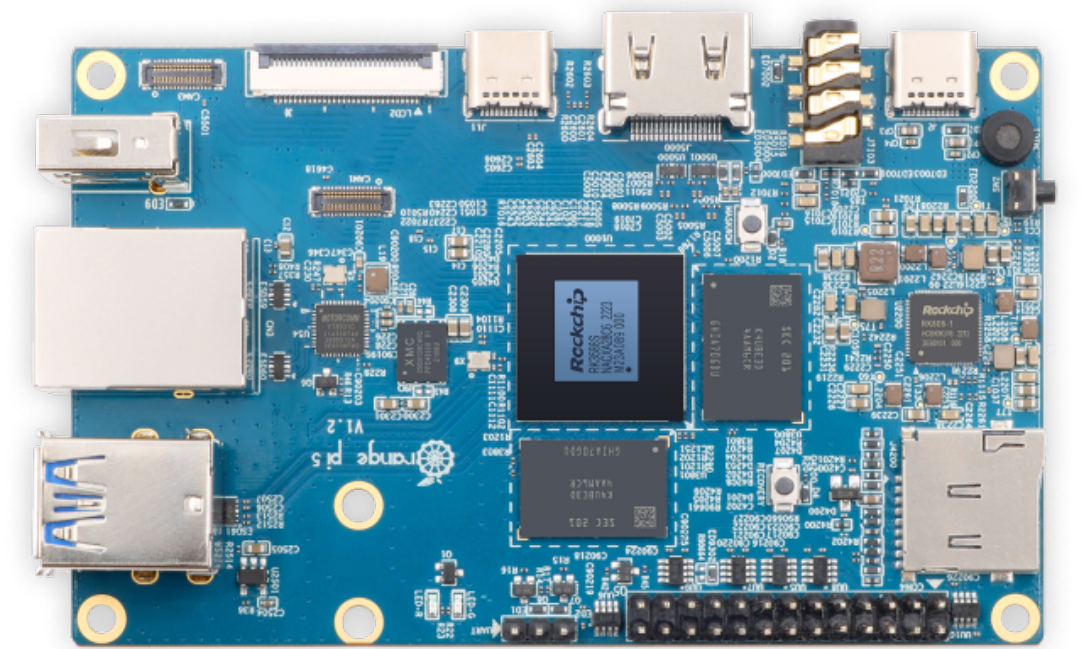
HARDWARE: ARM



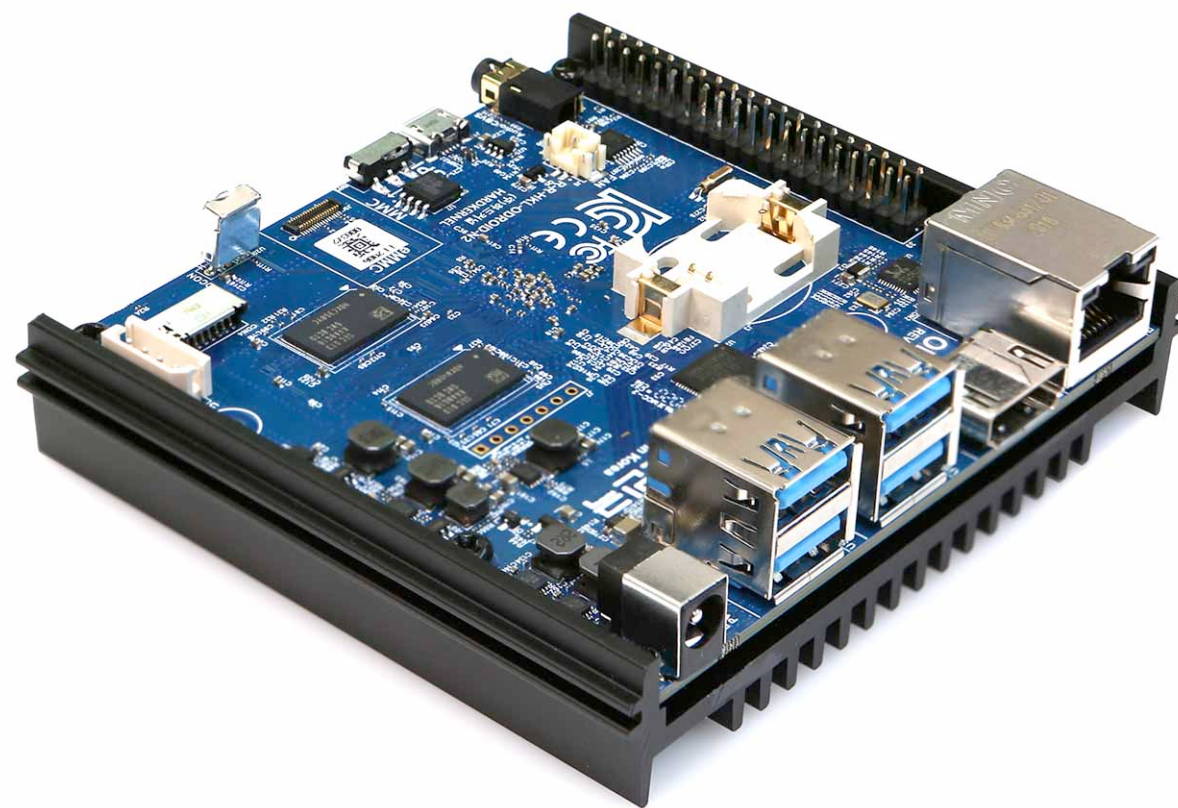
Raspberry Pi 4



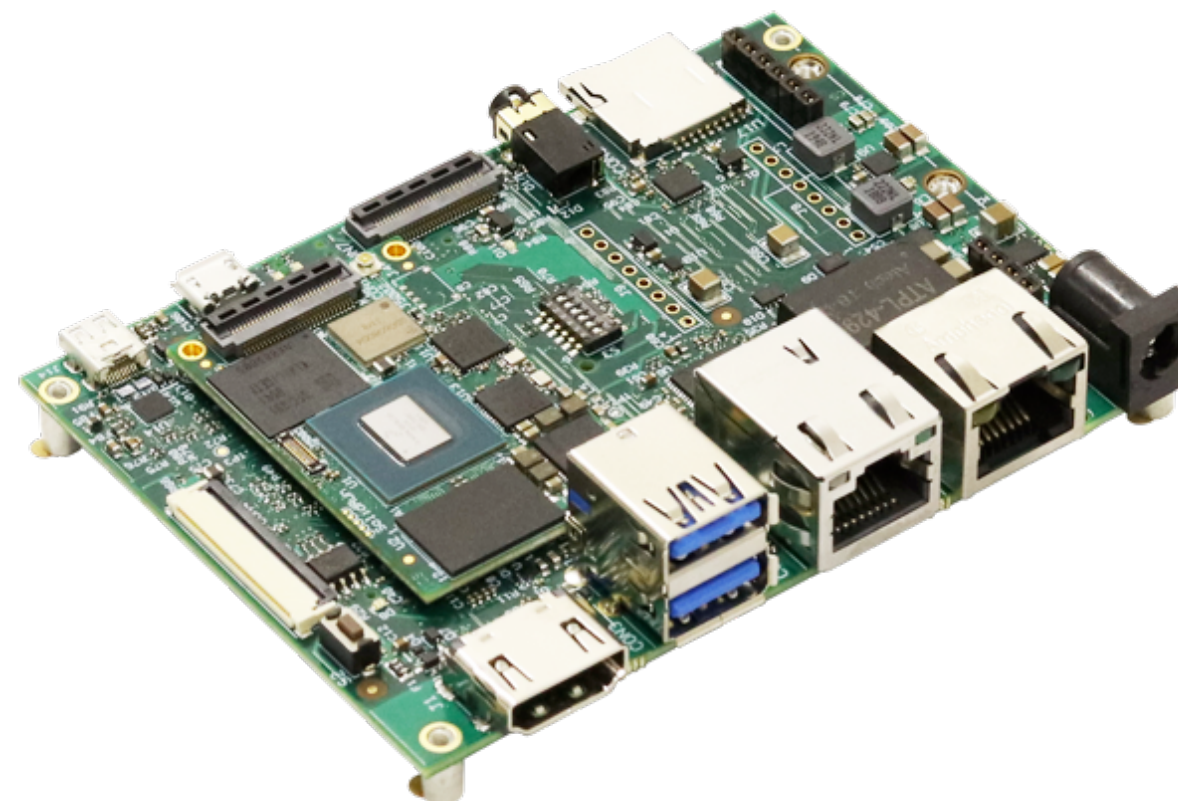
Quartz64



Orange Pi 5



ODROID-N2+

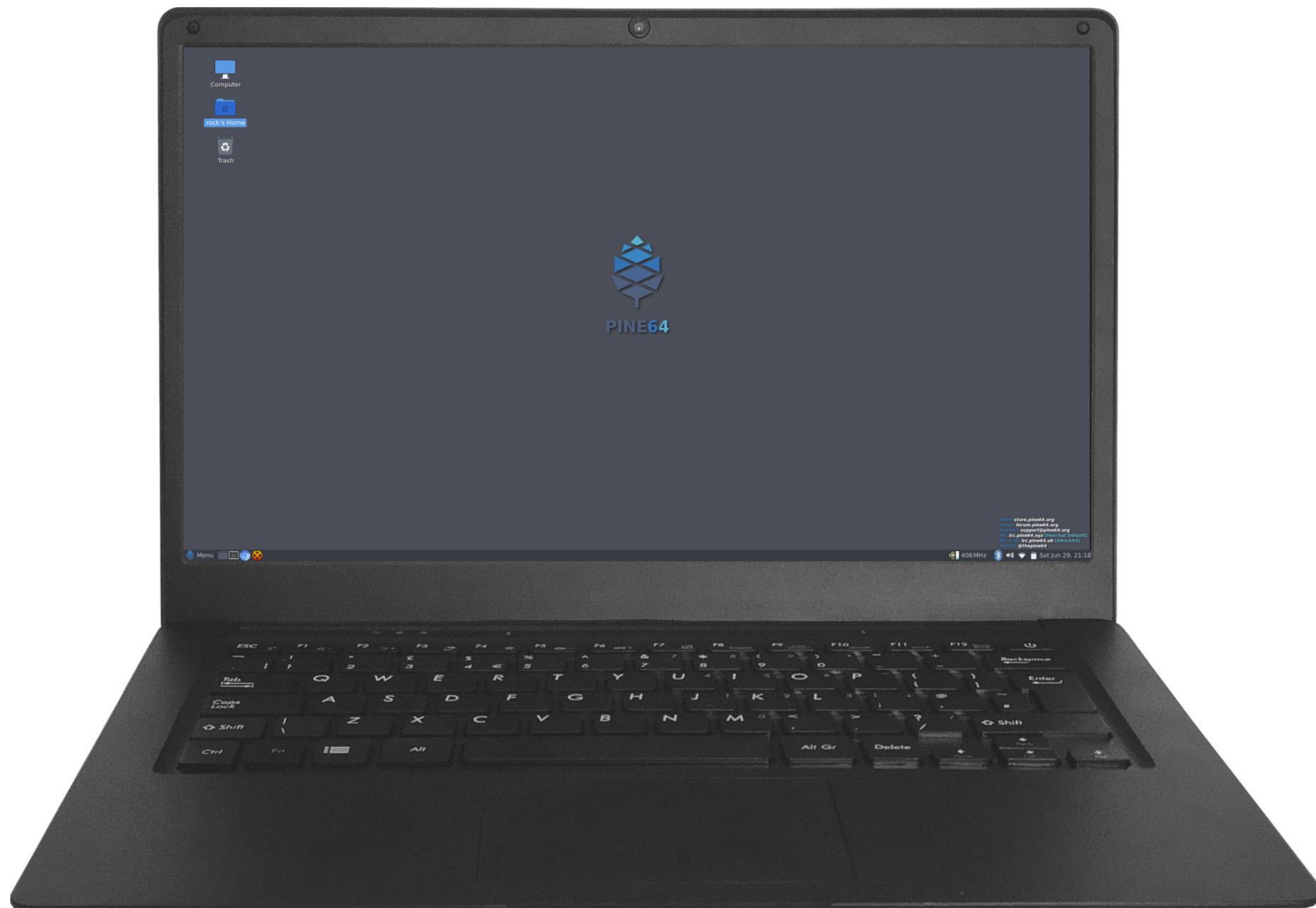


HummingBoard Pulse

Weitere ARM Boards

WARUM NetBSD

HARDWARE: PINEBOOK PRO



ca. 200 Euro

64-Bit Dual-Core ARM 1.8GHz Cortex A72
Quad-Core ARM 1.4GHz Cortex A53
4 GB RAM

...

<https://armbsd.org>

WARUM NetBSD

HARDWARE: EVBPPC (NINTENDO WII)

The background of the slide is a dark, semi-transparent image of the Nintendo Wii menu interface. It shows various channel icons such as Forecast Channel, News Channel, Photo Channel, Internet, Nintendo Channel, NETFLIX, and the homebrew channel. At the bottom, there is a date display showing 'Sun 1/21' and a 'Wii' button on the left.

NetBSD/evbppc
on
Nintendo Wii

WARUM NETBSD

RETRO FEATURES

- **rc.d**
 - Individuelle Scripte zur Serviceverwaltung
 - Ähnlich wie SystemV aber ohne Runlevels
 - kein systemd
- **cron**
 - mit periodic-Scripts wie /etc/daily.local

WARUM NETBSD

MODERN FEATURES

- **rump-Kernel Architektur**
- Moderne Grafiktreiber (Intel, NVidia, AMD, ...)
- Verschiedene Hypervisor:
 - **NVMM Hypervisor**
 - XEN
- Sicherheit:
 - Segvguard, MPROTECT, ASLR

RUMP KERNEL

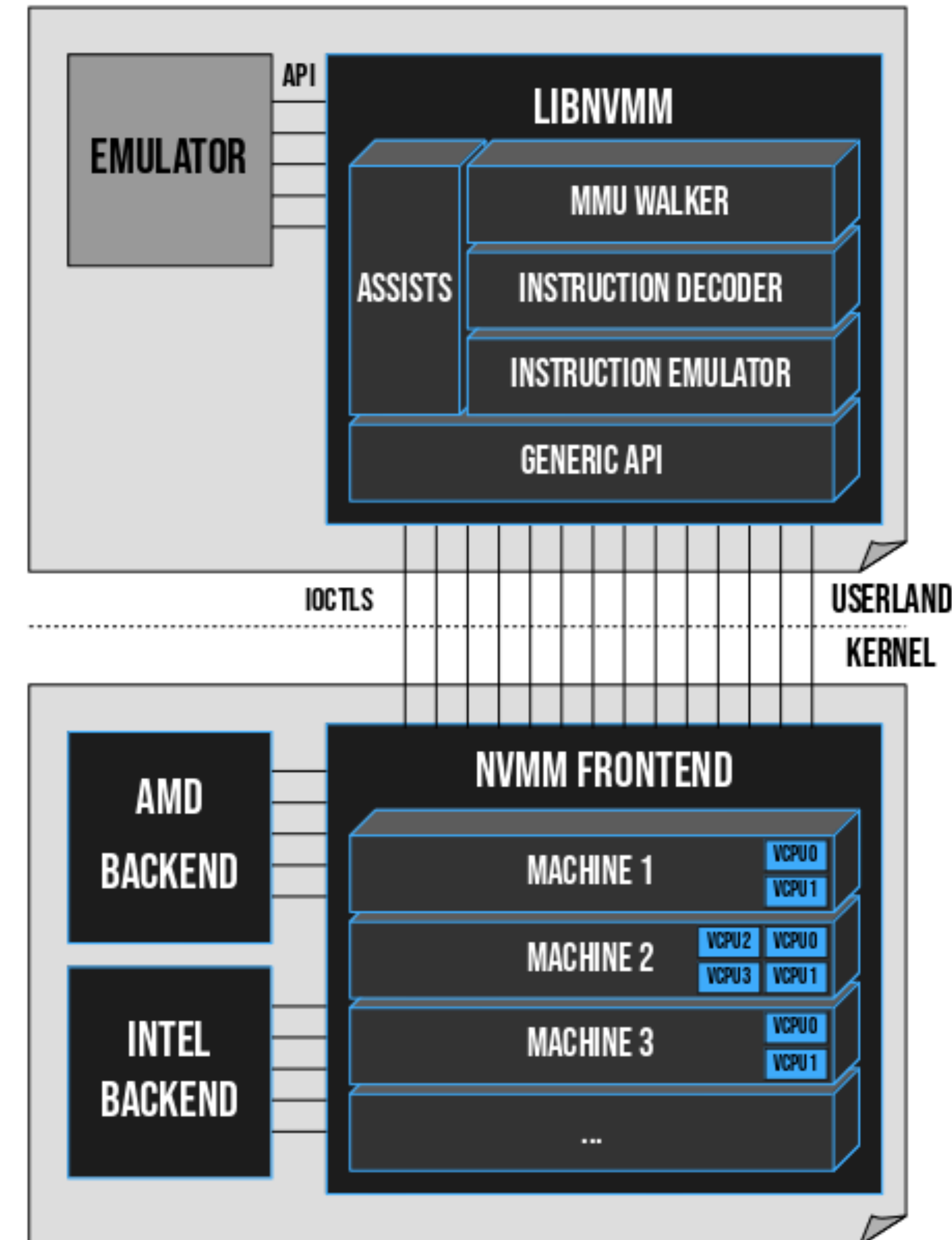
MONOLITHIC KERNEL IM USERSPACE

- Dateisystem Treiber im Dateisystem Image
- NetBSD Audiostream in GNU HURD
- Treiber Entwicklung und Testung
- Treiber auf Bare-Metal Anwendungen

NVMM

NETBSD HYPERVISOR VIRTUAL MACHINE MONITOR

- verhältnismäßig kleines Kernel Module und Userland Library (libnvm) Library (libnvm)
- Keine Userland Emulator
- Qemu nutzt NVMM API
- Alle bekannten Gast Betriebssysteme sind möglich



WARUM NetBSD

MODERN FEATURES

- Dateisystem:
 - **ZFS**
 - LVM
 - FFSv2ea (POSIX.1e ACLs)
- WireGuard (NetBSD 10, current)
- **pkgsrc**

OPENZFS

- Copy-on-Write Dateisystem
- Datenträger-Pools (zpool)
- Redundanz
- Snapshots
- Deduplication
- Verschlüsselung

**UND WAS MACHEN
WIR JETZT DAMIT?**

PKGSRC

ALLGEMEIN

- Framework zum Bauen, Installieren und Verwalten von Software(-Paketen)
- Unterstützt das bereitstellen von Paketen aus Quellcode und aus Binärpaketen
- Basiert auf BSD Makefiles (bmake)
- Über 23.000 Pakete in 45 Kategorien
 - zusätzlich ca. 6100 Pakete in WIP



PKGSRC

VORTEILE

- Dependency-Management
- Un-Privileged Installation
- Installation in eigene Verzeichnisstruktur möglich (/usr/pkg, /opt/local, ...)
- Unterstützung verschiedener Compiler
 - nativer cc, gcc, clang, distcc, ccache
- Verwendbar auf vielen Systemen gleichzeitig

PKGSRC

BINARY PAKETE

- Offizielle pkgsrc-Binär-Pakete für NetBSD
 - <http://cdn.netbsd.org/pub/pkgsrc/packages/NetBSD/>
- **pkgin** als Binary Paketmanager

```
$ pkg_add <paketname>  
  
$ pkgin search <name>  
$ pkgin install <name>
```

PKGSRC

SOURCE PAKETE

- In gewünschtes Paketverzeichnis wechseln, compilieren und installieren

```
$ cd pkgsrc/www/nginx  
  
$ ls  
DESCR  MESSAGE  Makefile  PLIST  distinfo  files  options.mk  patches  
  
$ bmake install
```

- **pkg_rolling-replace** sobald die Quelle aktualisiert wird (neues Release)

DEMO

DURCHS DATEISYSTEM & MEHR

COMMUNITY

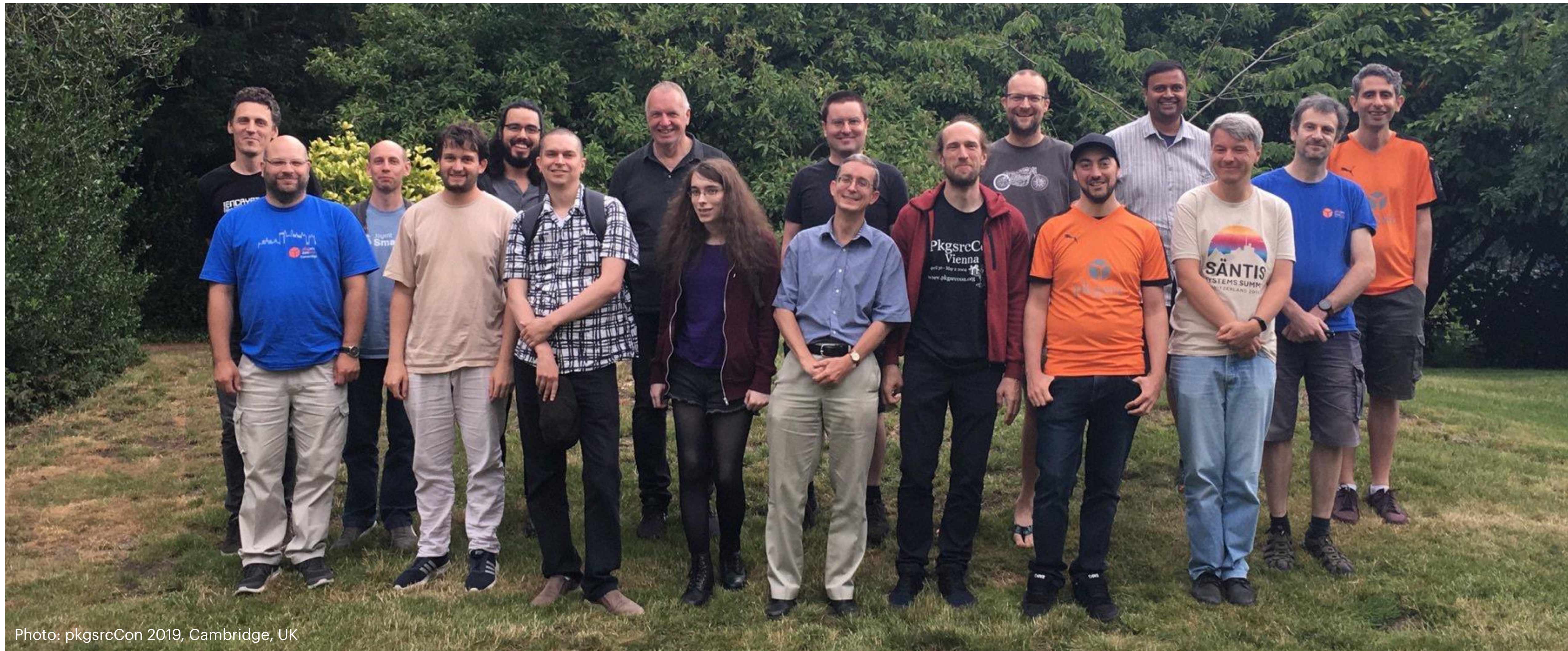


Photo: pkgsrcCon 2019, Cambridge, UK

MITMACHEN

<https://netbsd.org>

10.0 RC6 available!

The NetBSD project is pleased to announce the sixth » **release candidate** « of the upcoming 10.0 release!

Get NetBSD

NetBSD 9.3, released on August 4, 2022. » **Release Notes**

CPU	Machines	Install media
amd64	64-bit x86-family machines with AMD or Intel CPUs	USB image, CD
arm	ARM systems like Raspberry Pi, PINE64, ODROID, "ServerReady" machines more	Various boards, original RPi
i386	32-bit x86-family generic machines	USB image, CD
mips	MIPS systems like EdgeRouter, Loongson, Malta	mips64, mips32
sparc64	Sun UltraSPARC	CD
others	Amiga, Alpha, Apple PowerPC/68K, Dreamcast, SPARC32, VAX, more architectures	various

A signed list of hashes for the NetBSD 9.3 distribution.

The **NetBSD Security Officer's PGP key** used to sign the list of hashes.

MITMACHEN

- <https://netbsd.org>
- Bug Reports via GitHub oder Bugtracker
 - <https://github.com/NetBSD>
 - <http://netbsd.org/support/send-pr.html>
- NetBSD Mailinglist
 - <http://mail-index.netbsd.org>
- IRC
 - #netbsd auf libera.chat

<https://www.unitedbsd.com>

WARUM NUTZE ICH NETBSD?

- Minimalistisch
- Konsistentes System
- OpenZFS Support
- Paketmanager pkgsrc

FRAGEN?

- Quellen und andere NetBSD Präsentationen (en):
 - [What the heck is a NetBSD?](#) von nia
 - [NetBSD not just for toasters!](#) von benny
 - [NetBSD 10: Thirty years, still going strong!](#) von benny

Weitere Fragen?
komm zum illumos Stand