Always in the shadow: the history of Minix-vmd

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- ▶ 1987 Andy Tanenbaum releases MINIX 1.0
- ▶ 1990-11-02 Mail to Andy "Minix met TCP/IP versie 0.1"
- ▶ 1991-05-01 Mail to Bruce Evans about my VM implementation
- ▶ 1992-02-08 Mail with Kees Bot about his boot minitor 1.1
- ▶ 1992-05-07 Asynchronous I/O

- ▶ 1996-01-12 First mention of Minix-vmd?
- ▶ 1997-10-31
  Message-ID: <uqlc36.r7o.ln@mega.am.cs.vu.nl>
  From: kjb=731205@cs.vu.nl (Kees J Bot)
  Newsgroups: comp.os.minix
  Subject: Re: Individual source files?
  Date: Fri, 31 Oct 1997 14:18:22 +0100
  Organization: One Minix-vmd system, it works!
  NNTP-Posting-Host: mega.am.cs.vu.nl
- ▶ 2000-04-07 MINIX open source!

- ▶ 2005 Start of MINIX3 project
- ▶ 2005-01-31 First VFS code in Minix-vmd
- ▶ 2009-06-25 First IPv6 code in Minix-vmd

"microkernel" improvements

- replyrec
- sys_findproc
- SYSSIGNON, MMSIGNON, FSSIGNON

Inet

- open/close/read/write/ioctl
- strict layering problem
- very strict multi-homing problem
- blocking listen problem

VM

- one single 4G address space
- copy-on-access (instead of copy-on-write)

NTP client/server: tsd

- ▶ fractional clock "divisor"
  2016-01-25 19:47:18 noname tsd: avg. phase diff -1.74448
  ms, avg. freq diff -0.0 107014 ppm, delay 6725 s, rate
  19886.372179 (-4.47507e-09)

Improvements by kjb

- Boot monitor
- bioswini
- acd
- part, subpartitions, /dev/c#d#s#
- "flexible" directories
- queryparam
- CMOS calibration

Dogfood

TCP/IP

- home router (since 2001 permanently on over ADSL/VDSL)
- ppp, first ISDN, then, pptp, now pppoe
- ipv6, happy eyeballs experiements
- DNS with nsd, unbound. DNSSEC
- SSC

Mail

- smail (heavily hacked by kjb)
- my own blocklist
- my own virus scanner
- mh, antiword, lynx -dump, gpg

Usenet

- leafnode (heavily hacked)
- trn

Misc.

- ncsa httpd
- backups (synctree and remsync by kjb)
- script to make install CD/USB images
  bootable images (including source) at
  http://stereo.hq.phicoh.net/Minix-vmd/images/