



# NetBSD & pkgsrc



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[agc@NetBSD.org](mailto:agc@NetBSD.org)

BSDTW

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# pkgsrc

- Pkgsrc is 20 years old
- 23 platforms - NetBSD is just one
- Quarterly branches for 13 years

# pkgsrc releases

- 2017Q3 branched in September - 56th release
- PGP/GPG signature validation for 2 years
- Use digests on patches
- Multiple digests on distfiles

# pkgsrc bulk builds

- Bulk builds can use any toolchain
- Less than 3 hours across 6 zones on Joyent
- Use as compiler regression test suite

# pkgsrc development

- khorben - Hardening pkgsrc at EuroBSDcon
- jam updating foreign package format support
- New Linux HPC developers added
- No plans to move to pkg or synth



# pkgsrc

- pkgin for binary package management
- Joyent has signed release binary packages for
  - Linux
  - Mac OS X
  - Illumos



# pkgsrc

- Plans for signed TNF packages for
  - i386
  - amd64
  - arm

# NetBSD Release News

- 7.1 released March 11 2017
- 8.0 Release process started June 6th 2017
- Current status - about to be released RSN

# ARM hardware

- Tegra K1 (SoC), NVIDIA Jetson TK1 (Dev Board)
- Allwinner - A31, A83T, H2+ and H3 (all SoC)
- A13, A64, R8 and GR8 in current
- A20 support is in 7, plans for FDT-ing

# More ARM hardware

- A83T: BananaPi BPI-M3
- H2+: Xunlong Orange Pi Zero
- H3: FriendlyARM, Sinovoip, Xunlong
  - NanoPi NEO (256MB) up to
  - OrangePi Plus 2E (2GB)



SoC

# SoC

A13



# SoC

A13

H5



# SoC

A10

A13

H5

# SoC

A10

A13

H5

R8

# SoC

A10

A13

H5

R8

H2+

# SoC

A10

A13

H5

R8

H2+

A80

# SoC

A10

A13

H5

R8

H2+

A20

A80

# SoC

A10

A13

H5

A83T

R8

H2+

A20

A80

# SoC

A10

A13

H5

H3

A83T

R8

H2+

A20

A80



# SoC

A10

A31

A13

H5

H3

A83T

R8

H2+

A20

A80



# SoC

A10

A64

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A83T

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A80

# SoC

A10

A64

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A31

H5

H3

R8

A83T

H2+

A20

A80

GR8

# SoC

A10

A64

A10s

A13

A31

H5

H3

R8

A83T

H2+

A20

A80

GR8

# SoC

A10

A64

A10s

A13

A31

H5

H3

A83T

R8

A31s

H2+

A20

A80

GR8

# SoC

A10 A64 A10s A13

A31 H5

A83T H3 R8

A31s H2+ A20

GR8 A80 R40

# SoC

A10 A64 A10s A13

A31 H5 V3s

A83T H3 R8

A31s H2+ A20

GR8 A80 R40

# SoC

A10 A64 A10s A13

A31 H6 H5 V3s

A83T H3 R8

A31s H2+ A20

GR8 A80 R40



# SoC

A10 A64 A10s A13

A31 H6 H5 V3s A33

A83T H3 R8

A31s H2+ A20

GR8 A80 R40



# SoC

A10 A64 A10s A13

A31 H6 H5 V3s A33

A83T H3 R8

A31s H2+ A20

A23 A80

GR8 R40



# Example Boards

# Example Boards

Xunlong Orange Pi Zero

# Example Boards

Xunlong Orange Pi Zero

Lichee Pi Zero

# Example Boards

Olimex A10 OLinuXino-LIME

Xunlong Orange Pi Zero

Lichee Pi Zero

# Example Boards

Olimex A10 OLinuXino-LIME

Xunlong Orange Pi Zero

Lichee Pi Zero

Cubietech Cubietruck



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Olimex A13 OLinuXino



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Sinovoip Banana Pi BPI-M2U

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Lichee Pi Zero

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Cubietech Cubieboard 4

Olimex A13 OLinuXino

Sinovoip Banana Pi BPI-M2U

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Olimex A13 OLinuXino

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Olimex A10 OLinuXino-LIME

Pocket C.H.I.P.

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Olimex A13 OLinuXino

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Olimex A13 OLinuXino-MICRO



# Example Boards

Olimex A10 OLinuXino-LIME

Olimex A33 OLinuXino

Pocket C.H.I.P. LeMaker Banana Pi Xunlong Orange Pi Zero

Lichee Pi Zero

Merii Hummingbird A31

Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
Cubietech Cubieboard 4

Olimex A13 OLinuXino

Olimex A13 OLinuXino-MICRO Sinovoip Banana Pi BPI-M2U



# Example Boards

Olimex A10 OLinuXino-LIME  
Olimex A33 OLinuXino  
LeMaker Banana Pi  
Xunlong Orange Pi Zero  
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Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
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C.H.I.P.  
Olimex A13 OLinuXino  
Sinovoip Banana Pi BPI-M2U  
Olimex A13 OLinuXino-MICRO

# Example Boards

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Olimex A33 OLinuXino  
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Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
Cubietech Cubieboard 4  
C.H.I.P.  
Olimex A13 OLinuXino  
Sinovoip Banana Pi BPI-M2U  
Olimex A13 OLinuXino-MICRO  
Pine64

# Example Boards

Olimex A10 OLinuXino-LIME  
Olimex A33 OLinuXino  
LeMaker Banana Pi  
Xunlong Orange Pi Zero  
Pocket C.H.I.P.  
Lichee Pi Zero C.H.I.P Pro  
Merii Hummingbird A31  
Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
Cubietech Cubieboard 4  
C.H.I.P.  
Olimex A13 OLinuXino  
Sinovoip Banana Pi BPI-M2U  
Olimex A13 OLinuXino-MICRO Pine64

# Example Boards

Olimex A10 OLinuXino-LIME  
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LeMaker Banana Pi  
Xunlong Orange Pi Zero  
Pocket C.H.I.P.  
Cubietech Cubieboard 2  
Lichee Pi Zero C.H.I.P Pro  
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Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
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Olimex A10 OLinuXino-LIME  
Olimex A33 OLinuXino-FriendlyARM Nano Pi NEO  
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Cubietech Cubieboard 2  
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Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
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Sinovoip Banana Pi BPI-M3 Cubietech Cubietruck  
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Sinovoip Banana Pi BPI-M2U  
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C.H.I.P.  
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Xunlong Orange Pi Plus 2E  
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Olimex A10 OLinuXino-LIME  
Olimex A33 OLinuXino-FriendlyARM Nano Pi NEO  
LeMaker Banana Pi  
Xunlong Orange Pi Zero  
Pocket C.H.I.P.  
Cubietech Cubieboard 2  
Lichee Pi Zero  
C.H.I.P. Pro  
Pinebook  
Merii Hummingbird A31  
Sinovoip Banana Pi BPI-M3  
Cubietech Cubietruck  
Cubietech Cubieboard 4  
C.H.I.P.  
FriendlyARM Nano Pi NEO2  
Olimex A13 OLinuXino  
Xunlong Orange Pi Plus 2E  
Sinovoip Banana Pi BPI-M2U  
Olimex A13 OLinuXino-MICRO  
Pine64



# Other hardware

- Intel QAT card support
- Support for VAXstation 4000 TURBOchannel  
USB and GPIO
- RISC-V - work in progress
- Aarch64 - watching brief



```
xterm
load averages: 0.85, 1.18, 0.84;
40 processes: 39 sleeping, 1 on CPU
CPU states: 1.9% user, 0.0% nice, 2.2% system, 0.0% interrupt, 95.9% idle
Memory: 79M Act, 12M Wired, 17M Exec, 35M File, 77M Free
Swap: 384M Total, 384M Free

PID USERNAME PRI NICE SIZE RES STATE TIME WCPU CPU COMMAND
734 mathew 84 0 5380K 2884K ttyraw 0:02 1.37% 1.37% tcsh
717 root 85 0 33M 12M select 0:53 1.03% 1.03% XdecNetBSD
1328 root 85 0 9320K 4008K netio 0:04 0.63% 0.59% ftp
925 root 79 0 7236K 3092K wait 0:12 0.34% 0.34% make
804 mathew 85 0 11M 4676K select 0:19 0.00% 0.00% ssh
41 root 78 0 14M 4664K wait 0:16 0.00% 0.00% xdm
296 root 81 0 6980K 3100K wait 0:13 0.00% 0.00% make
1366 mathew 85 0 15M 5752K select 0:08 0.00% 0.00% xterm
0 root 124 0 0K 8080K syncer 0:06 0.00% 0.00% [system]
404 mathew 85 0 10M 4612K select 0:06 0.00% 0.00% xterm
338 root 85 0 10M 11M pause 0:04 0.00% 0.00% ntpd
110 mathew 85 0 10M 4660K select 0:04 0.00% 0.00% xterm
763 mathew 85 0 9000K 3928K select 0:03 0.00% 0.00% xsm
883 mathew 85 0 8828K 2936K select 0:03 0.00% 0.00% xeyes
831 mathew 85 0 6256K 2872K pause 0:03 0.00% 0.00% tcsh
812 mathew 43 0 5824K 1960K CPU 0:02 0.00% 0.00% top
567 mathew 85 0 10M 4668K select 0:02 0.00% 0.00% xterm
```

```
xterm
root has logged on console from local.
mathew has logged on pts/1 from :0.0.
mathew has logged on pts/2 from :0.0.
mathew has logged on pts/3 from :0.0.
mathew has logged on pts/4 from :0.0.
[ariana]:"/sbin/uname
/sbin/uname: Command not found.
[ariana]:"/uname -a
NetBSD ariana 8.0_BETA NetBSD 8.0_BETA (GENERIC_USB.201709060310Z) pmax
[ariana]:"/sbin/dmesg | grep sfb
sfb0 at tc0 slot 0 offset 0x0: 1280x1024, 8bpp
wsdisplay0 at sfb0 kbduw 1: console (std, vt100 emulation), using wskbd0
[ariana]:"/
```

```
xterm
Requesting http://cdn.NetBSD.org/pub/pkgsrc/distfiles/olvm4.src4.tar.gz
100% |*****| 377 KiB 283.61 KiB/s 00:00 ETA
386560 bytes retrieved in 00:01 (250.75 KiB/s)
=> Checksum SHA1 OK for olvm4.src4.tar.gz
=> Checksum RMD160 OK for olvm4.src4.tar.gz
=> Checksum SHA512 OK for olvm4.src4.tar.gz
==> Installing dependencies for olvm4-4.4nb4
=> Tool dependency inake-[0-9]*: NOT found
=> Verifying reinstall for ../devel/inake
=> Bootstrap dependency digest=20010302: found digest=20160304
==> Checking for vulnerabilities in inake-1.0.7nb3
=> Fetching inake-1.0.7.tar.bz2
=> Total size: 156543 bytes
Trying [2610:10:20:722:a800:ff:feda:470f]:80 ...
ftp: Can't connect to '2610:10:20:722:a800:ff:feda:470f:80': No route to host
Trying 131.252.210.176:80 ...
Requesting http://xorg.freedesktop.org/releases/individual/util/inake-1.0.7.tar.bz2
Redirected to https://www.x.org/releases/individual/util/inake-1.0.7.tar.bz2
Trying [2610:10:20:722:a800:ff:feda:470f]:443 ...
ftp: Can't connect to '2610:10:20:722:a800:ff:feda:470f:443': No route to host
Trying 131.252.210.176:443 ...
Requesting https://www.x.org/releases/individual/util/inake-1.0.7.tar.bz2
83% |*****| 128 KiB 2.46 KiB/s - stalled -
```

```
xterm
23:24 (hardware) http://www.pcwuseun.ca/details.asp?id=254&type=Peripheral s?
23:28 (ali) nope... hang on, kan posta en bild i C64-gruppen p@fejan
23:34 (ali) hrrr
23:35 (ali) den @ extrem lik excelerator dock
23:35 (ali) fast utan loggan
23:35 (ali) och LEDen @ p@undersidan d@ loggan @ p@bilden ist@let f@
ovanf@ springan
23:35 (ali) allts@det n@te vara en variant
23:37 (hardware) antagligen
23:39 (hardware) kallades @en oc-118n
23:45 :: l@rsd [Lars@c83-254-8-96.bredband.comhem.se] has quit [Quit:
Vanished!]
Day changed to 19 Sep 2017
12:11 (peli) snart dags att plocka fram m@sa
12:13 (crash) peli: du f@ g@ ide, och komma fram p@v@anten :)
17:46 (hardware) https://twitter.com/MFA_tiddysucker/status/910090636039780352
19:57 (crash) hardware: otur :P
19:57 (hardware) https://twitter.com/hardware/status/910189197675425793
19:58 (hardware) crash: undrar hur hennes framtida sexliv kommer se ut :P
21:02 (crash) hardware: kanske fortfarande @ hett d@ nere sen blixten
21:29 (mathew) hardware, kor du X pa din 5000/240 nu?
[21:32]-(mathew (*iv))-(:@netbsd.se (*nprt))-(:@1.4.6.9)-
@netbsd.se>
```



CI

Ch

10

La



xterm

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>

[ariana]:~>uname -a

NetBSD ariana 8.0\_BETA NetBSD 8.0\_BETA (GENERIC\_USB.201709060310Z) pmax

[ariana]:~>dmesg | grep usb

usb0 at slhci0: USB revision 1.1

uhub0 at usb0: ScanLogic/Cypress (0x4ce) SL811HS/T root hub (0000), class 9/0, r  
ev 1.00/1.00, addr 1

[ariana]:~>dmesg | grep []

# LLVM/Clang 5.0 intree

- Maintained by Joerg
- Still optional, off by default
- Regular amd64 testing with pkgsrc bulk builds
- Particularly good at finding compiler regressions

# LLVM/Clang 5.0 intree

- Kamil has been working for TNF
  - lldb and debugging infrastructure
  - Upstreaming sanitizer support
    - asan, ubsan working
    - tsan, and msan



# sys\_info

```
[15:40:15] ogc@netbsd-002 ~ [10249] > sys_info
awk-20121220
bind-9.10.5pl2
bozohttpd-20170201
bzip2-1.0.6
calendar-20160601
dhcpcd-7.0.0-rc1
ftp-20110904
g++-5.4.0
gcc-5.4.0
grep-2.5.1arib1
gzip-20170803
libc-12.208
libcurses-7.1
libdm-3.4
libm-0.12
libresolv-3.0
libssh-30.0
libstdc++-7.4
libterminfo-1.0
libutil-7.24
libX11-7.0
libXaw7-10.0
libXfont-3.0
libXft-3.0
libXrandr-3.2
libXt-7.0
NetBSD-8.99.1
netpgp-3.99.17
netpgpverify-20170201
ntp-4.2.8pl10
openssh-7.5
opensshd-7.5
openssl-1.0.2k
pkg_install-20170419
sh-20160401
sqlite3-3.17.0
sys_info-20170823
tcsh-6.19.00
tzdata-2017b
unbound-1.5.9
userland-NetBSD-8.99.1/amd64
xz-5.2.1
yacc-1.9
[15:40:19] ogc@netbsd-002 ~ [10250] > |
```

# Networking

- No BBR or RACK for TCP congestion
- bouyer's sockcan implementation
- dhcpcd's home



# Cross-building since 2002

- build.sh
  - cross-OS building, AND cross-arch building
- distrib/utils/embedded/mkimage
- pkgsrc/sysutils/{mklivecd,mkmemstick}
- All the u-boot packages

# Board of directors

- reed
- riasradh
- cryo
- wiz
- mlelstv
- khorben
- mef

# Core team

- agc
- christos
- chuq
- martin
- matt
- mrg
- yamt

# GSoC projects

- LFS - maya
- pkgsrc debug libs - leot
- porting anita to evbarm, pmax, hpcmips & amiga - utkarsh

# Dtrace support

- Added syscall support [christos 20150307]
- Added lockstat support [christos 20150308]
- Toolkit scripts from sevan
- About to be brought up to date

# NVME support - nonaka, jdolock

NVME(4) Device Drivers Manual NVME(4)

## NAME

**nvme** -- Non-Volatile Memory Host Controller Interface

## SYNOPSIS

**nvme\*** at pci? dev ? function ?

## DESCRIPTION

The **nvme** driver provides support for NVMe, or NVM Express, storage controllers conforming to the Non-Volatile Memory Host Controller Interface specification. Controllers complying to specification version 1.1 and 1.2 are known to work. Other versions should work too for normal operation with the exception of some pass-through commands.

The driver supports the following features:

- \* controller and namespace configuration and management using **nvmectl(8)**
- \* highly parallel I/O using per-CPU I/O queues
- \* PCI MSI/MSI-X attachment, and INTx for legacy systems

# NCQ support - jdoloecek

## Initial ahci(4) NCQ support on jdolecek-ncq branch, test/review wanted

- To: Tech-kern <tech-kern%netbsd.org@localhost>
- Subject: Initial ahci(4) NCQ support on jdolecek-ncq branch, test/review wanted
- From: Jaromír Doleček <jaromir.dolecek%gmail.com@localhost>
- Date: Thu, 20 Apr 2017 00:25:47 +0200

Hi,

I've committed the initial NCQ support, it's available at jdolecek-ncq branch (branch only over sys). It works under Parallels for now, and is ready for brave adventurers. There is sys/dev/ata/TODO.ncq which you might want to check, also.

If people want to try it out and give feedback, I'd really appreciate it.

- Now in HEAD



# IJ src repo



## IJ-NetBSD

IJ's NetBSD Repository

Repositories 2

People 0

Type: All ▾

Language: All ▾

### netbsd-src

automatically converted from anoncvs.NetBSD.org every two hours on weekdays (HEAD). On weekend, sync branches.

★ 77    🍴 60    Updated an hour ago



### cvs2git

from cvs to git script

● Perl    ★ 1    🍴 5    Updated on Feb 8, 2015



#### Top languages

● Perl

#### People

0 >

This organization has no public members. You must be a member to see who's a part of this organization.



# NetBSD git mirror

 **The NetBSD Foundation**

Repositories 5

People 11

Type: All

Language: All

**pkgsrc-wip**  
Work-In-progress packages for pkgsrc, the portable package system from NetBSD [mirror]  
● Makefile ★ 22 🗄 17 Updated an hour ago



**src**  
Automatic conversion of the NetBSD src CVS module, use with care  
★ 55 🗄 10 Updated 2 hours ago



**pkgsrc**  
Automatic conversion of the NetBSD pkgsrc CVS module, use with care  
● Makefile ★ 30 🗄 15 Updated 3 hours ago



**xsrc**  
Automatic conversion of the NetBSD xsrc CVS module, use with care  
● C ★ 7 🗄 1 Updated 7 days ago



**libcddb**  
Portable release of the NetBSD cddb database  
Updated on Feb 10, 2015



Top languages  
● Makefile ● C

People 11  


# NetBSD hg mirror

Atlassian, Inc. [US] | <https://bitbucket.org/netbsd/>

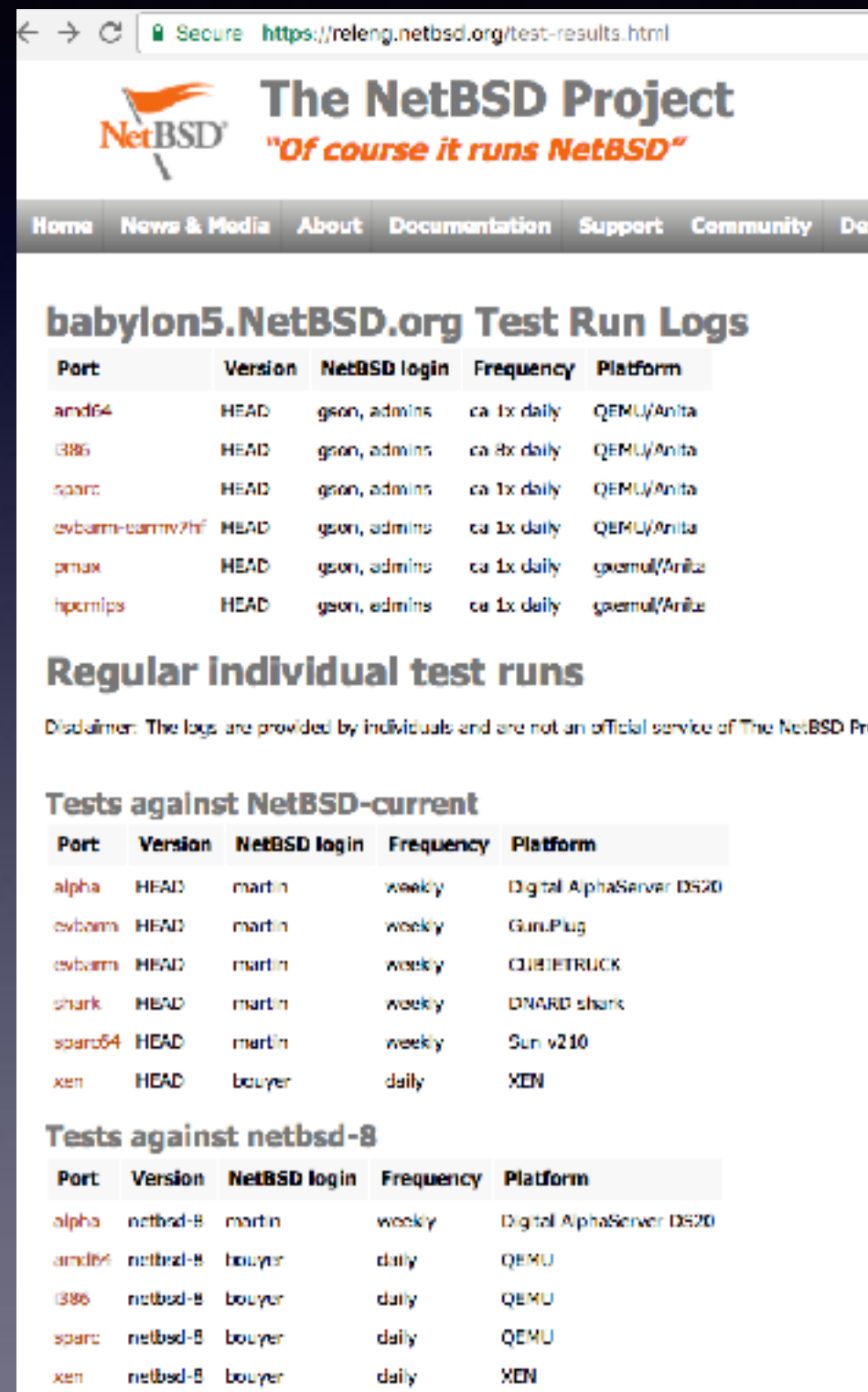
NetBSD

Repositories

Find repositories

| Repository                                                                                 | Project                      | Last updated |
|--------------------------------------------------------------------------------------------|------------------------------|--------------|
|  src    | <a href="#">repositories</a> | an hour ago  |
|  pkgsrc | <a href="#">repositories</a> | 2 hours ago  |
|  xsrc   | <a href="#">repositories</a> | 2017-09-12   |

# Continuous Testing - anita



The screenshot shows the 'babylon5.NetBSD.org Test Run Logs' page. It features a navigation bar with links to Home, News & Media, About, Documentation, Support, Community, and Dev. The main content area displays two tables of test run logs. The first table, 'Regular Individual test runs', lists tests against 'NetBSD-current' with columns for Port, Version, NetBSD login, Frequency, and Platform. The second table, 'Tests against netbsd-8', lists tests against 'netbsd-8' with the same columns. A disclaimer at the bottom states: 'Disclaimer: The logs are provided by individuals and are not an official service of The NetBSD Project.'

**The NetBSD Project**  
"Of course it runs NetBSD"

Home News & Media About Documentation Support Community Dev

## babylon5.NetBSD.org Test Run Logs

| Port            | Version | NetBSD login | Frequency   | Platform   |
|-----------------|---------|--------------|-------------|------------|
| amd64           | HEAD    | gson, admins | ca 1x daily | QEMU/Anita |
| i386            | HEAD    | gson, admins | ca 8x daily | QEMU/Anita |
| sparc           | HEAD    | gson, admins | ca 1x daily | QEMU/Anita |
| evbarm-earmv7hf | HEAD    | gson, admins | ca 1x daily | QEMU/Anita |
| pnmax           | HEAD    | gson, admins | ca 1x daily | qemu/Anita |
| hpcomps         | HEAD    | gson, admins | ca 1x daily | qemu/Anita |

## Regular Individual test runs

Disclaimer: The logs are provided by individuals and are not an official service of The NetBSD Project.

## Tests against NetBSD-current

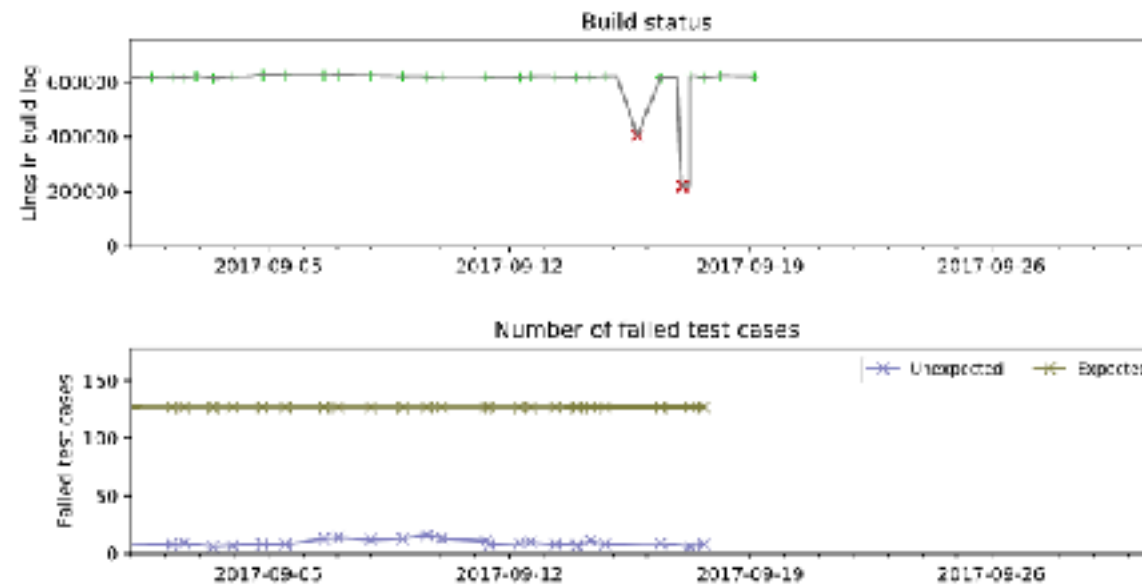
| Port    | Version | NetBSD login | Frequency | Platform                 |
|---------|---------|--------------|-----------|--------------------------|
| alpha   | HEAD    | martin       | weekly    | Digital AlphaServer DS20 |
| evbarm  | HEAD    | martin       | weekly    | GnuPlug                  |
| evbarm  | HEAD    | martin       | weekly    | CLIBETRUCK               |
| shark   | HEAD    | martin       | weekly    | DNARD shark              |
| sparc64 | HEAD    | martin       | weekly    | Sun v210                 |
| xen     | HEAD    | bouyer       | daily     | XEN                      |

## Tests against netbsd-8

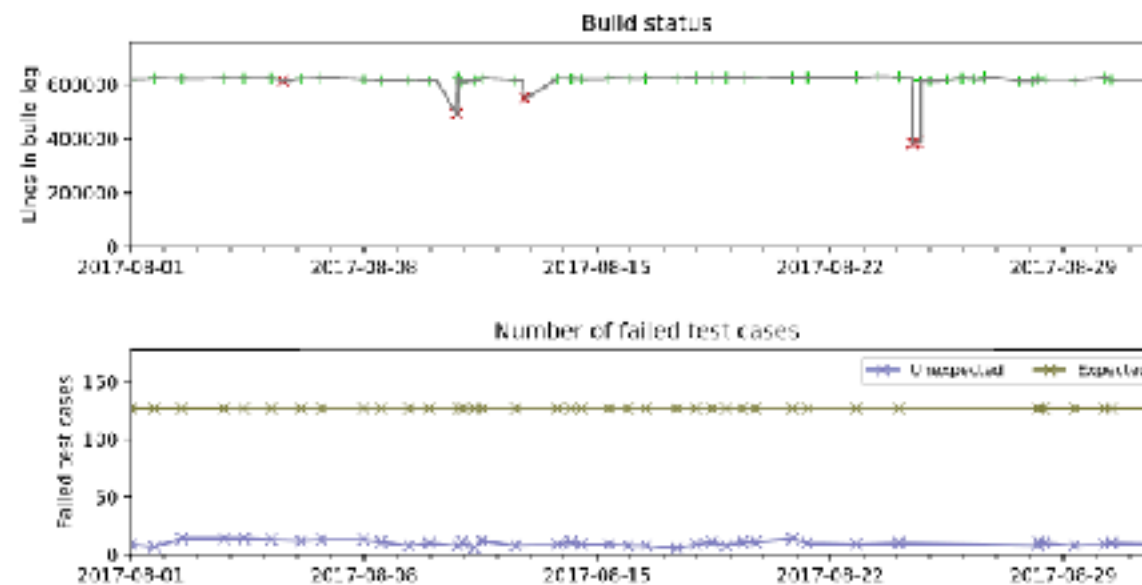
| Port  | Version  | NetBSD login | Frequency | Platform                 |
|-------|----------|--------------|-----------|--------------------------|
| alpha | netbsd-8 | martin       | weekly    | Digital AlphaServer DS20 |
| amd64 | netbsd-8 | bouyer       | daily     | QEMU                     |
| i386  | netbsd-8 | bouyer       | daily     | QEMU                     |
| sparc | netbsd-8 | bouyer       | daily     | QEMU                     |
| xen   | netbsd-8 | bouyer       | daily     | XEN                      |

# Anita results graphed

September 2017 [\[details\]](#)



August 2017 [\[details\]](#)



# Reproducible Builds

- See Christos's talk at EuroBSDcon
- Way more complex than I expected
- First BSD to complete Debian run
- First “big unix” to complete Debian run
- Minix uses NetBSD user land and build system

# Kernel ASLR

- Maxv's pre-kern
- Randomised location for kernel
- SMAP/SMEP implementation

# Updates

- ZFS update to FreeBSD/OpenZFS level
- Dtrace update to FreeBSD/OpenDtrace level
- Both in review, hitting current RSN



# CDN working well

- Fastly very kindly run our CDN
- Very useful if machines out for power work



# Flattened Dev Tree

- `sys/arch/arm/fdt/`
- `sys/arch/evbarm/fdt/`
- `sys/dev/fdt/`
- `sys/external/bsd/libfdt`

# Everything else

- ptrace(2) fixes from kamil
- nat's new sound driver, bta2dpd(8)
- msaitoh's updates for ixg(4) and ixv(4)
- alnsn's addition of AES-XTS to cgd(4)

# Everything else

- jmcneill's new SDMMC driver
- maxv's amd64/i386 overhaul
- xen kernel modules (maxv)
- flxd's getrealloc/setrealloc changes to scsictl(8)

# Everything else

- lua now at 5.3.4 in kernel
- secmodel\_sandbox - <https://www.bsdcn.org/2017/schedule/track/Security/835.en.html>
- ext4fs - jdolock's extents, dir\_nlink and gdt\_csum/uninit\_bg support
- flxd's Turbochannel USB/GPIO option

# Everything else

- ozaki-r MPSAFE network changes
- nick-nhusb merge - some USB3 support
- GPT support, including booting
- PCI support for DNARD/Shark

# Everything else

- vioscsi - christos/jdolecek
- Google compute engine - bsiegert
- nouveau - riasradh
- MPSAFE Id driver - mlelstv

# Everything else

- ip6addrctl - from FreeBSD
- christos's blacklistd
- USER\_LDT on amd64
- maxv's security work



NetBSD and pkgsrc BSDtw 2017