Poudrière

Efficient package building

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poudri...GNI?: [pu.dʁi.jeʁ]

gandi.net

- Package building system
- Port tester
- Quality insurance on packages
- Package repository generator
- System stress tool

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History

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- 2010-07: Initial work
- 2011: Start to be known and used in the french community
- 2012-01-31: 1.0 - enter the ports tree
- 2012-04-08: 1.2 - limit network on fetch phase
- 2012-05-15: 1.3 - pbi support, attract interest of bdrewery@
- 2012-08-28: 2.0 - parallel build, ugly html UI (bapt as a designer)
- 2012-10-15: 2.2 - Removal of pbi support, support for "sets"
- 2013-05-20: 3.0 - ZFS optional, full tmpfs support, nice and reactive web UI (bdrewery designer)
- 2013-07: Used in the FreeBSD cluster
- 2013-09-22: 3.0.3 - support staging, initial qemu support
- 2014-12-04: 3.1.0 - Yet a better web UI

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Design

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- Simple
  - Easy to setup:
    - only depend on base (by default)
    - one simple configuration file
    - few command to prepare the resources
  - Easy to use
    - One single command
    - Simple subcommands
- Resource efficient
  - parallel build: by default 1 core == 1 package building
  - low overhead (resources should be dedicated to build sources not for poudriere itself)
- Safe and contained
  - all builds in clean jail(8)
  - only access network during fetch phase
  - build as regular user

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Design

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Subcommands:

- bulk: Generate packages for given ports
- jail: Manage the jails used by poudriere
- ports: Create, update or delete the portstrees

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Poudrière: jails

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Creating a jail

```
poudriere jail -c -j 102 -v 10.2-RELEASE
```

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Updating a jail

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Poudrière: ports

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- Saving workdir after failure
- Autodetection of rebuild

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Poudrière: bulk

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Building packages:

```
poudriere bulk -j 102 -f listofpackages.txt
```

Building packages with Q/A:

```
poudriere bulk -j 102 -t -f listofpackages.txt
```

Building all ports

```
poudriere bulk -j 102 -a
```

Building all ports with a special "set"

```
poudriere bulk -z test1 -j 102 -a
```

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Poudrière: a stress tool

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In FreeBSD:

- ZFS deadlocks
- tmpfs deadlocks
- nullfs deadlocks
- tons of fixes in sh(1) in particular regarding job control
- highlight contentions

In Dragonfly:

- Used as a benchmark tool in 2013
- Lots of performance improvement between December 26, 2012 and March 15, 2013 (released in 3.4)
- Lots of scalability improvements on large multi-core
- Lots of panics fixed

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Poudrière: Dragonfly improvements

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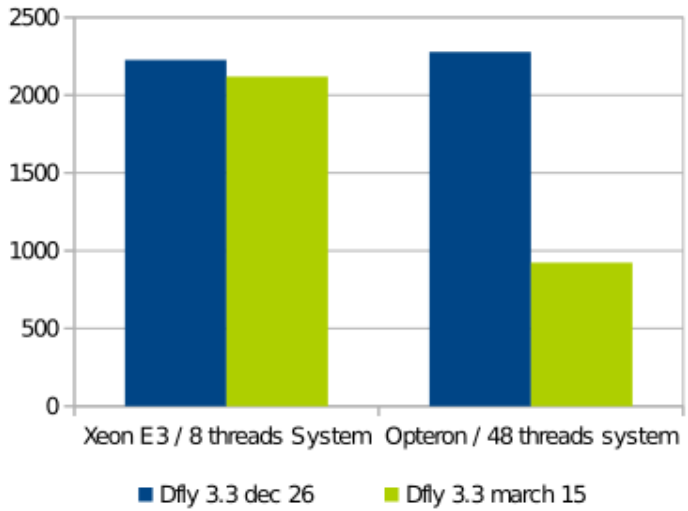
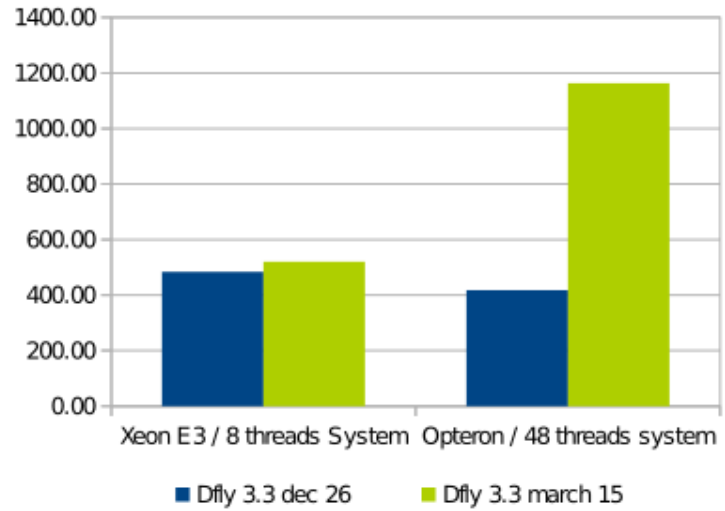
Build time in minutes



Number of packages per hours



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Poudrière: under the hood

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  - avoid subshells as much as possible
  - parallelize as many things as possible
  - reuse resources as much as possible

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- Lots of care made on efficiency:
  - avoid subshells as much as possible
  - parallelize as many things as possible
  - reuse resources as much as possible
- Use filesystem as a Key/Value DB (on tmpfs for speed)

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Poudrière: truss -fc

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syscall	seconds	calls	errors
fcntl	0.000012803	1	0
fork	0.000131565	1	0
getegid	0.000011390	1	0
geteuid	0.000023009	2	0
getgid	0.000011620	1	0
getpid	0.000011494	1	0
getppid	0.000011767	1	0
getuid	0.000011717	1	0
[...]			
mmap	0.000370901	22	0
open	0.000182884	6	0
openat	0.000122017	6	0
close	0.000213574	14	0
fstat	0.000233375	11	0
lstat	0.000166041	6	1
write	0.000021875	1	0
access	0.000048576	3	0
sigaction	0.000112313	6	0
sigprocmask	0.000173640	10	0
__getcwd	0.000079150	1	0
pipe	0.000017026	1	0
munmap	0.000115129	8	0
read	0.001368036	12	0
wait4	0.000079314	1	0
sysarch	0.000012172	1	0
	0.003621732	124	2

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Poudrière: examples

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```
#!/bin/sh
testfct() {
        echo yes
}

test=$(testfct)
echo $test
```

```
#!/bin/sh
testfct() {
        setvar "$1" "yes"
        # or more posix eval $1="yes"
}

testfct test
echo $test
```

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Poudrière: know your tools

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- abuse xargs!
- learn awk! stop the "| grep | sed | grep | cut" (proper string matching)
- learn sed! stop the "| sed | sed | sed"
- sh(1) can play with file descriptors (only 10 on POSIX shells)
- set -e !

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Poudrière: image (soon)

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- Associate jails, packages and overlays
- Able to generates usable images:
  - Isos: with or without mfsroot
  - Usb disk: with or without mfsroot
  - GPT base firmwares (NanoBSD-like)
  - plain mfsroot
  - rawdisk (VMs)
- Reusing code/ideas from NanoBSD/Crochet

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Poudrière: links

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- https://github.com/freebsd/poudriere/
- https://github.com/freebsd/poudriere/wiki
- https://www.freebsd.org/doc/handbook/ports-poudriere.html
- https://www.freebsd.org/doc/en/books/porters-handbook/testing-poudriere.html

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Questions?

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Thanks

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