

***Poudriere:
The future of Package Building***

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<http://people.freebsd.org/~bdrewery/poudriere-0515.pdf>



Overview

- ⇒ What is it
- ⇒ Sandboxing
- ⇒ Incremental support
- ⇒ Setup+Usage
- ⇒ Performance
- ⇒ Upcoming release overview
- ⇒ Future



Present situation

- ⇒ Portbuild
 - No experts
 - Setup is complex
 - Architecture is complex
 - Frequent random hard-to-debug problems
- ⇒ Portbuild2?



What is Poudriere?

- ⇒ BSD License
- ⇒ New system written from the ground up
 - <https://fossil.etoilebsd.net/poudriere/doc/trunk/doc/design.mkd>
- ⇒ Single-system
- ⇒ Builds packages in sandboxed local jails
- ⇒ Incremental and full clean build support
- ⇒ Can build *pkg_install* and *pkgng* packages
- ⇒ Port testing
 - *plist* (*testport* or *bulk -t*)
 - Interactive runtime (*testport -i*)
- ⇒ Very simple to setup and use
- ⇒ Builds in Parallel
- ⇒ No external dependencies.
 - Mostly POSIX sh and some C helpers
- ⇒ No database



Sandbox

- ⇒ On startup, creates a read-only reference jail
- ⇒ For every CPU clone a jail (*zfs clone / cp*)
- ⇒ Each jail is rolled back to the reference jail before build
- ⇒ Each jail *kill -9*'d after build
- ⇒ Builds only have network access in 'fetch' phase
- ⇒ During build, dependencies are installed from packages built in previous builds
- ⇒ Only sees the distfiles it advertises it needs in `/usr/ports/distfiles`



Incremental builds

- ⇒ Delete existing package if:
 - New version of port
 - New version of a dependency
 - Handles missed shlib portrevision chases
 - New options selected for port
 - New dependencies for port [experimental]
 - Handles changed defaults such as PERL_VERSION
- ⇒ Missing existing package: Queue for build



Setup and Usage

➔ Setup

```
# make -C /usr/ports/ports-mgmt/poudriere install clean
```

```
# poudriere ports -c
```

```
# poudriere jail -c -j 91amd64 -v 9.1-RELEASE -a amd64
```

```
# poudriere jail -c -j 91i386 -v 9.1-RELEASE -a i386
```

```
# echo "WITH_PKGNG=yes" >
```

```
/usr/local/etc/poudriere.d/pkgng-make.conf
```

➔ Usage

```
# poudriere ports -u
```

```
# poudriere bulk -j 91amd64 -z pkgng origins.list
```

```
# poudriere bulk -j 91amd64 origins.list
```

```
# poudriere testport -j 91amd64 -o www/apache22
```



Performance

- ⇒ Very little overhead
- ⇒ lock-free
- ⇒ Children use FIFOs to tell master when done working
- ⇒ Can build all 24k ports in ~30 hours on 24CPU / 96gb machine in 100% *tmpfs*
- ⇒ Builds dependencies in high demand first to avoid cases of not using all builders in parallel as earlier versions were prone to



New release 3.0

- ⇒ ZFS is now optional
- ⇒ Supports 100% in-memory builds via *tmpfs*
- ⇒ New AJAX web interface
 - No CGI/php (security)
- ⇒ Performance improvements
- ⇒ Able to run multiple concurrent builds for same jail
- ⇒ Queue/Daemon
- ⇒ Pre-"build" phase filesystem checks
- ⇒ Improved depends/fetch handling
- ⇒ Runaway handling
- ⇒ Faster INDEX build
- ⇒ Build hooks
- ⇒ All logs are kept, named by timestamps
- ⇒ Build-time tracking



Poudriere bulk results

Page will auto refresh every 10 seconds.

- Jail: 83i386
- Ports tree: default
- Set Name: -test
- Queue: 9 / 23
- Nb ports built: 0
- Nb ports failed: 2
- Nb ports ignored: 0
- Nb ports skipped: 7

Successful ports

Port	Origin	status
qt4-gui-4.8.4	x11-toolkits/qt4-gui	logfile

Failed ports

Port	Origin	status	phase
kdehier4-1.0.11	misc/kdehier4	logfile	install
opencv-core-2.3.1_6	graphics/opencv-core	logfile	build

Ignored ports

Port	Origin	status	reason
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Skipped ports

Port	Origin	reason
kde4-icons-oxygen-4.9.5	x11-themes/kde4-icons-oxygen	depends failed: kdehier4-1.0.11
kde4-shared-mime-info-1.2	misc/kde4-shared-mime-info	depends failed: kdehier4-1.0.11
kdelibs-4.9.5	x11/kdelibs4	depends failed: kdehier4-1.0.11
phonon-4.6.0_1	multimedia/phonon	depends failed: kdehier4-1.0.11
qt4-designer-4.8.4	devel/qt4-designer	depends failed: kdehier4-1.0.11
ffmpeg-0.7.13_6,1	multimedia/ffmpeg	depends failed: opencv-core-2.3.1_6
kdelibs-4.9.5	x11/kdelibs4	depends failed: opencv-core-2.3.1_6
strigi-0.7.7_5	deskutils/strigi	depends failed: opencv-core-2.3.1_6



Jail: 91i386-exp-ccache
 Set: ccache
 Ptname: exp
 Build: 2013-05-10_13:14:02

Total 15672
 Built 620
 Failed 46
 Skipped 555
 Ignored 92
 To build 14349

Show Builders Built Failed Skipped Ignored

Builders

Failed ports

Id	Origin	Status	Package	Origin	Phase	Log
main		crashed	mf-2.1.1e_2	java/jmf	fetch	logfile
01	www/wml	build	courier-authlib-base-0.65.0	security/courier-authlib-base	patch	logfile
02	editors/openoffice-3	build	gnat-2010	lang/gnat	build	logfile
03	math/octave-forge-base	run-depends	go-1.0.3_1,1	lang/go	build	logfile
04	devel/hypersrc	build	ja-mozc-server-1.10.1390.102_2	japanese/mozc-server	build	logfile
05	astro/merkaartor	build	ja-mozc-tool-1.10.1390.102_2	japanese/mozc-tool	build	logfile
06	benchmarks/tsung	build	emacs-21.3_16	editors/emacs21	build	logfile
07	sysutils/luckybackup	build	linux-sun-jdk-7.21	java/linux-sun-jdk17	fetch	logfile
08		idle	qt-mysql-plugin-3.3.8_10	databases/qt-mysql-plugin	build	logfile
09	multimedia/handbrake	build	gnulib-20120404	devel/gnulib	build	logfile
10	sysutils/fusefs-encfs	checksum	remmina-plugin-rdp-0.9.2_1	net/remmina-plugin-rdp	lib-depends	logfile
11	devel/codeblocks	build	monodevelop-3.0.2_1	devel/monodevelop	build	logfile
12	www/chromium	build	firebird-client-2.0.7	databases/firebird20-client	build	logfile
13	deskutils/kdepim4	build	tex-formats-20120701	print/tex-formats	install	logfile
14	games/freeciv-nox11	configure	tex-xmiltex-1.9	print/tex-xmiltex	install	logfile
15	science/InsightToolkit	build	yodl-3.00.0_1	textproc/yodl	build	logfile
16	dns/curvedns	configure	p5-Goo-Canvas-0.06_2	devel/p5-Goo-Canvas	configure	logfile
17	finance/sql-ledger	install	py27-whisper-0.9.10	databases/py-whisper	checksum	logfile
18	math/dynare	build-depends	copper-1.6	lang/copper	build	logfile
19	editors/libreoffice	build	xxe-eval-5.4.0	editors/xxe	fetch	logfile
20	devel/p5-Parse-CPAN-Packages-Fast	checksum	tel-memchan-2.3	devel/tel-memchan	build	logfile
21	deskutils/osmo	build	linux-ut-436_4,1	games/linux-ut	install	logfile
22	games/sdl_jewels	build-depends	freedink-dfarc-3.2.1_4	games/freedink-dfarc	configure	logfile
23	games/tbe	build	mlton-20070826_10	lang/mlton	build	logfile
24	devel/bouml	build	smlnj-110.0.7_3	lang/sml-nj	build	logfile
			rubygem-io-like-0.3.0.20130301	devel/rubygem-io-like	build	logfile
			libmapi-0.9_5	mail/libmapi	build	logfile
			fife-0.3.4	games/py-fife	build	logfile
			bogofilter-1.2.3	mail/bogofilter	configure	logfile
			firebird-client-2.1.5_1	databases/firebird21-client	build	logfile
			mpg123-el-1.5.2	audio/mpg123-el	extract	logfile

```
====>> [09] Finished build of textproc/sk-mythes: Success
====>> [21] Finished build of audio/gmpc-discogs: Success
====>> [09] Starting build of lang/cint
====>> [21] Starting build of www/p5-CGI-Minimal
====>> [06] Finished build of textproc/nux: Success
====>> [16] Finished build of multimedia/linux_dvbwrapper-kmod: Success
====>> [06] Starting build of devel/php5-sysvshm
====>> [16] Starting build of dns/curvedns
====>> [23] Finished build of security/openscep: Success
====>> [10] Finished build of sysutils/htop: Success
====>> [23] Starting build of graphics/p5-Image-MetaData-GQview
====>> [10] Starting build of mail/claws-mail-pdf_viewer
====>> [21] Finished build of www/p5-CGI-Minimal: Success
====>> [21] Starting build of x11-fm/rodent
```

```
load: 29.48 cmd: perl5.14.2 83081 [running] 35.41r 31.69u 0.98s 97% 89500k
sleep: about 0 second(s) left out of the original 2
```

```
[91i386-exp-ccache] [parallel_build:] [01259/15672] Built: 562 Failed: 53 Ignored: 89 Skipped: 555
```

```
[01]: games/glest configure (00:00:38)
[02]: editors/openoffice-3 build (01:05:42)
[03]: math/octave build (01:19:52)
[04]: biology/seqan build (00:24:38)
[05]: astro/merkaartor build (00:06:37)
[06]: devel/php5-sysvshm build-depends (00:00:17)
[07]: devel/crossvc build (00:07:23)
[08]: audio/mixxx build (00:26:56)
[09]: lang/cint build (00:00:25)
[10]: mail/claws-mail-pdf_viewer extract (00:00:08)
[11]: devel/codeblocks build (00:02:55)
[12]: www/chromium build (01:12:45)
[13]: deskutils/kdepim4 build (01:12:01)
[14]: databases/flamerobin build (00:07:51)
[15]: science/InsightToolkit build (00:23:23)
[16]: dns/curvedns configure (00:00:16)
[17]: graphics/kiconedit build (00:03:21)
[18]: x11-themes/gnome-icons-elementary install (00:01:06)
[19]: editors/libreoffice build (01:19:47)
[20]: graphics/blender lib-depends (00:00:30)
[21]: x11-fm/rodent starting (00:00:02)
[22]: deskutils/growl-for-linux build (00:02:06)
[23]: graphics/p5-Image-MetaData-GQview extract-depends (00:00:09)
[24]: devel/bouml build (00:15:00)
```

```
====>> Logs: /zpoudriere/data/logs/bulk/91i386-exp-ccache/2013-05-10_13:14:02
```

```
====>> WWW: http:// /bulk/91i386-exp-ccache/2013-05-10_13:14:02
```

```
====>> [23] Finished build of graphics/p5-Image-MetaData-GQview: Success
```

Future

- ⇒ Expanded Queue/Daemon support
 - queue -j all
- ⇒ Stats command
- ⇒ Summary web page
- ⇒ Pre-build IGNORE handling
- ⇒ Speedup sanity checks by limiting scope
- ⇒ TEST_DEPENDS / 'make test'
- ⇒ “Flavours”
- ⇒ Package seeding
- ⇒ Optional read-only base
- ⇒ exp-run mode?
 - bulk -tTCN
- ⇒ C?
- ⇒ Distributed?
- ⇒ Unionfs
- ⇒ Atomic package repository updates



Portmgr plans

- ⇒ Build packages
- ⇒ exp-runs



Questions?

#poudriere on freenode
<https://fossil.etoilebsd.net/poudriere>

