

FreeBSD: packaging base

A rainbow bikeshed

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Packaging base?

Do not split

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Allow minimal installation

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No toolchain

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No sendmail

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I want debug files

Let's try to paint it rainbow

FreeBSD FreeBSD-base FreeBSD-kernel FreeBSD-docs

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runtime separated from development files

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runtime separated from development files

FreeBSD-docs (does not concern manpages)

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FreeBSD-docs (does not concern manpages)

-debug packages

- ▶ Binary upgrade of the system
 - ▶ For RELEASE (like freebsd-update)
 - ▶ For STABLE
 - ▶ For CURRENT
- ▶ Allow users to do fine grain installations (no toolchain, no sendmail, etc.)
- ▶ Allow developers to provide packages for users to test
- ▶ Fine grain merging of configuration files
- ▶ Being able to upgrade the loader and its configurations!

- ▶ Integrated into the build system

```
| $ make packages
```

- ▶ Buildable as regular user

- ▶ Reproducible

```
| $ make repackages
```

- ▶ Automatic version bump on the right packages when patching a release

```
| $ make rerelease
```

- ▶ Automatically handling configuration files (merging)

- ▶ Cross installable

- ▶ CURRENT: 12.s<date>
- ▶ STABLE: After 11.0-RELEASE and before 11.1-RELEASE:
11.1.s<date>
- ▶ RELEASE:
 - ▶ ALPHA: 11.0.aX
 - ▶ BETA: 11.0.bX
 - ▶ RC: 11.0.pX (not r to not confuse with "release")
 - ▶ RELEASE: 11.0
 - ▶ Security fix: 11.0_1

- ▶ Handling file flags immutable (added in pkg 1.5)
- ▶ Ability to handle configuration files and merge them (added in pkg 1.5)
 - ▶ new keyword @config
 - ▶ 3 way merge code from the fossil VCS
- ▶ Better support for cross installation:
 - ▶ pkg -r <rootdir> (added in pkg 1.5)
 - ▶ scripts PKG_ROOTDIR (added in pkg 1.5)

- ▶ Reuse the `-DNO_ROOT` mechanism
- ▶ Add tags to the generated mtree to determine packages content
- ▶ Automatic plist generation
- ▶ Packages metadata
 - ▶ UCL manifest
 - ▶ `release/packages/*.ucl`
- ▶ New targets:
 - ▶ `stageworld`
 - ▶ `stagekernel`
 - ▶ `packages`

- ▶ Tags (automatic via `bsd.*.mk`):
 - ▶ `package=runtime`
 - ▶ `development`
 - ▶ `config` (not automatic)
- ▶ Overwriting (cherrypicking files for a new package)

```
PROG= bhyve  
PACKAGE= bhyve  
  
MAN= bhyve.8  
  
[...]
```

▶ `mtree(8)`: In `stdout`:

```
==> share/examples (install)
.:      user (0, 1001, not modified: Operation not permitted)
lib32:  user (0, 1001, not modified: Operation not permitted)
lib32/dtrace:
        user (0, 1001, not modified: Operation not permitted)
lib32/i18n:
        user (0, 1001, not modified: Operation not permitted)
```

▶ `chflags(1)` vs modes:

```
chflags: /usr/obj/home/bapt/dev/src-trees/release-pkg/stage/usr/bin/chpass
         : Operation not permitted
chflags: /usr/obj/home/bapt/dev/src-trees/release-pkg/stage/usr/bin/passwd
         : Operation not permitted
```

▶ Installation not using `install(1)`

- ▶ `bsd.tests.mk/bsd.progs.mk` installing files multiple times -
BLOCKER

```
==> Creating FreeBSD-runtime-11.0.s20150612175342
pkg: duplicate file listing: /usr/tests/lib/libc/db/db_test, ignoring
pkg: duplicate file listing: /usr/tests/lib/libc/gen/posix_spawn/h_nonexec
    , ignoring
pkg: duplicate file listing: /usr/tests/lib/libc/gen/posix_spawn/h_zero,
    ignoring
pkg: duplicate file listing: /usr/tests/lib/libc/gen/posix_spawn/h_nonexec
    , ignoring
```

- ▶ etc configuration files
 - ▶ generates the db files
 - ▶ not installed at installworld time

▶ Upgrading the system:

```
| $ pkg upgrade
```

▶ Creating a FreeBSD disk:

```
| $ mkdir newimage  
| $ pkg -r newimage install FreeBSD  
| $ makefs -B little FreeBSD.img newimage
```

▶ Creating an armv6 disk image on an amd64 host:

```
| $ mkdir armv6image  
| $ pkg -r armv6image -o "ABI=FreeBSD:11:armv6" install FreeBSD-minimal  
| $ makefs -B little FreeBSD.img armv6newimage
```

▶ Upgrading and armv6 image on an amd64 host:

```
| $ pkg -r armv6image upgrade
```

Questions?

Thanks