OpenBSD Ports

Josh Grosse

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OpenBSD Ports
Integrating Third Party Applications

Josh Grosse

SEMIBUG

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Applications

- During installation:
  - The OpenBSD admin installs the kernel - the operating system hardware control program.
  - The admin also installs a collection of **Built-in Applications** and their supporting libraries.
- After installation:
  - The admin may install additional application packages.
  - These applications are not part of the OpenBSD Project – they are **Third Party Applications**.

Key

Packages are tarballs containing executable applications and installation requirements. Packages are built from *Ports*.

Packages

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A package tarball contains:

+CONTENTS Table of contents. The meta-data including checksums, dependency specifications, digital signature (if official), and special actions to take during installation.

+DESC A brief description of the application.

\<files\> The executable application and its supporting files.

+CONTENTS Example

```
@comment $OpenBSD: PLIST,v 1.9 2016/01/30 11:20:01 ajacoutot Exp $
@name codeblocks-16.01
@signer openbsd-60-pkg
@digital-signature signify:2016-07-07T21:21:18Z:RWQHIajRlT2mX/MZ/Yn3VCWYkM+...
@comment pkgpath=devel/codeblocks cdrom=yes ftp=yes
@arch amd64
+DESC
@sha SZ7vNORRw1iNnCtYW5mPX7r1oeWDdktFj1q9pdOI+ks=
@size 414
@depend archivers/bzip2:bzip2-*:bzip2-1.0.6p8
@depend converters/libiconv:libiconv-*:libiconv-1.14p3
@depend devel/desktop-file-utils:desktop-file-utils-*:desktop-file-utils-0.23
.
.
.
@wantlib ICE.10.0
@wantlib SDL.8.0
.
.
@cwd /usr/local
@bin bin/cb_console_runner
@sha 4uGF0pIqeUXXh0QewbQ30y1khC+/mxaKKbye45Nbgk4=
@size 7432
.
.
(6900+ lines deleted)
```

Packages are built from Ports

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The infrastructure is based on *make(1)*. Mandatory components:

Makefile	Build instructions
distinfo	Source code check sums
pkg/DESCR	Short description (becomes **+DESC**)
pkg/PLIST	Packing list (builds **+CONTENTS**)

Optional components:

pkg/README	OpenBSD-specific guidance
patches/*	OpenBSD-specific patches
pkg/*.rc	OpenBSD-specific *rc.d(8)* daemon control scripts
files/*	Other OpenBSD-specific files

Fact

Ports are not applications. They are scaffolding. They define how to fetch application source, build packages, and install.

Useful man pages

- Administrative tools are described in *pkg_add(1)*, *pkg_delete(1)*, and *pkg_info(1)*.
- Additional details on usage and structure are available from *packages(7)*, *packages(5)*, *pkg_create(1)* and *packages-specs(7)*.

OpenBSD Releases and Flavors

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Flavors:

-release Twice per year, never altered

-stable Tagged break/fix: published errata + additional patches

-current Development

- -release package sets are built for all supported architectures
- -stable Ports may be created to address CVEs
    - The OpenBSD Project does not build -stable packages
    - Users may build their own -stable packages, or obtain them from M:Tier (**https://stable.mtier.org**)
- New and updated Ports development takes place in -current

Port Development

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Both OpenBSD developers and users are active in ports development and port maintenance. Any user can become a port $MAINTAINER.

- Port development is conducted in -current
- Updates and new ports are submitted to the **ports@openbsd.org** mailing list for review and testing

Paying forward

Test reports are crucial to having the Project accept and commit both new and updated applications. Testing new and updated ports, and publishing the results is something OpenBSD -current users should do as time and interest allow. See the *Port Testing Guide* at: **http://www.openbsd.org/faq/ports/testing.html**

Acceptance

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Acceptance – and committed changes to the *Ports Tree* – requires the concurrence of two or more OpenBSD Project members.

- Please note:
    - Your first port submission will be criticized.
    - So will your twentieth.
    - The criticism is intended to be constructive and helpful.
    - Really.

Example application

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Gregor Best's "wireless" application for configuring NICs on a mobile BSD system.
https://github.com/farhaven/wireless

Makefile:

```
PROG=wireless
MAN =wireless.8
SRCS=wireless.c parse.y
BINDIR=/usr/local/bin

CFLAGS += -Wall -Werror -pedantic
CFLAGS += -std=c99
CFLAGS += -g -O0

all: $(PROG) README

README: $(MAN)
        mandoc -Tascii $(MAN) | perl -e 'while (<>) { s/.\x08//g; print }' > $@

.include <bsd.prog.mk>
```

I rely on the Porter's Handbook

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The Handbook enhances the *ports(7)* and *bsd.port.mk(5)* reference man pages.
Chapters:

- The OpenBSD Ports System
- OpenBSD Porting Guide
- Special Porting Topics
- Port Testing Guide (discussed previously)
- Differences from other BSD projects

The Porter's Handbook is part of the OpenBSD FAQ

http://www.openbsd.org/faq/ports/index.html

Creating the Port Structure

- I need 4 new files.
    - A port Makefile
    - A distinfo checksum file
    - A pkg/DESCR description file
    - A pkg/PLIST packing list

Ports are not applications

They are *scaffolding*. They define how to fetch source code, build packages, and all requirements for package installation. This meta-data is stored in a completely separate structure from the application: the *Ports Tree*: /usr/ports

Ports Tree

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- OpenBSD Ports use *Category/Name*.
- I have decided this application will be **net/wireless**.
- As this is a work-in-progress, I am using a special category for uncommitted ports, mystuff.
  - My port files are stored in */usr/ports/**mystuff**/net/wireless*.
  - If this becomes a committed port, it may become a leaf of the tree at */usr/ports/net/wireless*.

Recommended

Create new port Makefiles from
/usr/ports/infrastructure/templates/Makefile.template

Makefile — First Draft

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```
# $OpenBSD$
COMMENT =    automatically scan for and configure wireless networks
MAINTAINER = Josh Grosse <josh@j....

VERSION =    1
DISTNAME =   v$(VERSION)
PKGNAME =    wireless-$(VERSION)

GH_ACCOUNT = farhaven
GH_PROJECT = wireless
GH_TAGNAME = $(DISTNAME)

CATEGORIES = net

# BSD
PERMIT_PACKAGE_CDROM = Yes

.include <bsd.port.mk>
```

First test result - man page location problem

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```
$ make fake
===>   Checking files for wireless-1
'/usr/ports/distfiles/v1.tar.gz' is up to date.
>> (SHA256) v1.tar.gz: OK
===>   Extracting for wireless-1
===>   Patching for wireless-1
===>   Configuring for wireless-1
===>   Building for wireless-1
cc -O2 -pipe -Wall -Werror -pedantic -std=c99 -g -OO  ...
.
.
===>   Faking installation for wireless-1
install -d -m 755 /usr/ports/pobj/wireless-1/fake-amd64
install -c -S -s  -o root -g bin  -m 755 wireless /usr/ports/pobj/wireless-1/fake-amd64/usr/local/
     bin/wireless
.
.
install: /usr/ports/pobj/wireless-1/fake-amd64/usr/share/man/man8/wireless.8
No such file or directory
*** Error 1 in /usr/ports/pobj/wireless-1/wireless-1 (<bsd.man.mk>:35...
```

Makefile — Second Draft

```
# $OpenBSD$
COMMENT =     automatically scan for and configure wireless networks
MAINTAINER = Josh Grosse <josh@j....

VERSION =     1
DISTNAME =    v$(VERSION)
PKGNAME =     wireless-$(VERSION)

GH_ACCOUNT = farhaven
GH_PROJECT = wireless
GH_TAGNAME = $(DISTNAME)

CATEGORIES = net

# BSD
PERMIT_PACKAGE_CDROM = Yes

do-install:
                ${INSTALL_PROGRAM} ${WRKSRC}/wireless ${PREFIX}/bin
                ${INSTALL_MAN} ${WRKSRC}/wireless.8 ${PREFIX}/man/man8

.include <bsd.port.mk>
```

Second test result - WANTLIB required

```
$ make port-lib-depends-check
wireless-1(net/wireless):
Missing: c.88 (/usr/local/bin/wireless) (system lib)
WANTLIB += c
*** Error 1 in target 'port-lib-depends-check' (ignored)
$
```

Makefile — Third and perhaps final Draft

```
# $OpenBSD$
COMMENT =    automatically scan for and configure wireless networks
MAINTAINER = Josh Grosse <josh@j....

VERSION =    1
DISTNAME =   v$(VERSION)
PKGNAME =    wireless-$(VERSION)

GH_ACCOUNT = farhaven
GH_PROJECT = wireless
GH_TAGNAME = $(DISTNAME)

CATEGORIES = net

# BSD
PERMIT_PACKAGE_CDROM = Yes

WANTLIB = c

do-install:
            ${INSTALL_PROGRAM} ${WRKSRC}/wireless ${PREFIX}/bin
            ${INSTALL_MAN} ${WRKSRC}/wireless.8 ${PREFIX}/man/man8

.include <bsd.port.mk>
```

Automation

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- Targets for make(1):
    - **makesum** creates or updates the *distinfo* file.
    - **update-patches** creates or updates OpenBSD-specific patches.
    - **update-plist** creates or updates the *pkg/PLIST* file (or files, if there are subpackages)
    - **port-lib-depends-check** inspects library dependencies
- There is a *portcheck(1)* tool to inspect and validate the port, which will find errors or problems to be resolved even if the port builds and packages without failure.
- Maintainers may arrange for automated notification when their applications are updated. See http://portroach.openbsd.org/

Maintainership

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Maintainers must follow the ports@ mailing list, and be willing to provide services:

- Maintain a public Email address for support.
- Update ports as upstream applications are updated.
- Send OpenBSD-specific patches with general value to the upstream application owners for consideration

1. Gregor may prefer to be the maintainer of this example port, as it is his application.
2. If so, he would be both maintainer and upstream for this port.

Questions?

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