devsetup

local development environment for any platform
Agenda

1. pkgsrc
2. Bootstrapping
3. Changes made
   - Configuration files
   - Services
4. devsetup
   - Perks & Challenges
   - Availability
5. Conclusion
pkgsrc

The Universal Packaging System
NetBSD Today

- Operating System based on 4.3BSD
- Ported on 16 CPU types
- Base system as sets
- Packages from pkgsrc
- Development with CVS
• Official source of packages for NetBSD
• Available for other Operating Systems:
  • Linux, FreeBSD, OpenBSD, DragonflyBSD, Solaris, macOS, Windows, IRIX, Minix, HP-UX, Haiku, AIX, QNX…
• Like NetBSD, developed with CVS
adam Updated Misc/py-immutables, devel/py-jupyter_client 1623e0a 16 hours ago 364,031 commits

- archivers: bump PKGREVISION for flac lib bump 3 days ago
- audio: vorbis-tools: don't nest .a-files; ld(1) from latest xcode chokes on it 16 hours ago
- benchmarks: benchmarks/hyperfine: update to 1.15.0 6 days ago
- biology: Bump all dependent packages of wayland (belatedly) last month
- bootstrap: macOS: Support MACOSX_DEPLOYMENT_TARGET. 2 days ago
- cad: *: bump PKGREVISION for flac lib bump 3 days ago
- chat: *: bump PKGREVISION for flac lib bump 3 days ago
- comms: *: bump PKGREVISION for flac lib bump 3 days ago
- converters: py-fastbencode: updated to 0.0.12 19 hours ago
- cross: xtensa-esp32-elf-binutils: needs bison 22 days ago
- databases: py-peewee: updated to 3.15.2 2 days ago
- devel: py-jupyter_client: updated to 7.3.5 16 hours ago

About

Automatic conversion of the NetBSD pkgs.src CVS module, use with care

www.pkgs.org

Readme

236 stars
27 watching
136 forks

Releases

No releases published

Packages

No packages published

Contributors 40
Getting Started: pkgsrc

$ git clone --branch pkgsrc-2022Q2 git@github.com:NetBSD/pkgsrc.git
Cloning into 'pkgsrc'...
remote: Enumerating objects: 3811539, done.
remote: Counting objects: 100% (18911/18911), done.
remote: Compressing objects: 100% (7960/7960), done.
Receiving objects: 100% (3811539/3811539), 948.14 MiB | 9.99 MiB/s, done.
Resolving deltas: 100% (2234251/2234251), done.
Updating files: 100% (110300/110300), done.
$ cd pkgsrc
$ ls -F
Getting Started: pkgsrc

$ ls -F
Makefile        converters/     games/        misc/           security/
README.md       cross/          geography/    mk/             shells/
_NetBSD-pkgdb*  databases/     graphics/     multimedia/     sysutils/
archivers/      devel/          ham/          net/            templates/
audio/          distfiles/      inputmethod/  news/          textproc/
benchmarks/     doc/            lang/         packages/       time/
biology/        editors/        licenses/     parallel/       wm/
bootstrap/      emulators/      mail/         pkglocate*     www/
cad/            filesystems/    math/         pkgtools/       x11/
chat/           finance/        mbone/        print/
comms/          fonts/          meta-pkgs/    regress/
Getting Started: pkgsrc

$ ls -F
Makefile README.md
_archivers/
_cross/
_converter/
_databases/
_devel/
_distfiles/
_doc/
_emulators/
_filesystems/
_finance/
_fonts/
_games/
_geography/
_ham/
_inputmethod/
_lang/
_licenses/
_mail/
_math/
_mbone/
_meta-pkgs/
_mercury/
_misc/
_mk/
_multimedia/
_net/
_news/
_packages/
_parallel/
_pkgtools/
_pkglocate* 
_pkgtools/
_print/
_regress/
_security/
_shells/
_sysutils/
_templates/
_textproc/
_time/
_wm/
_www/
_x11/
Getting Started: pkgsrc

$ ls -F
Makefile        converters/  games/       misc/       security/
README.md        cross/       geography/   mk/         shells/
_NetBSD-pkgdb*   databases/   graphics/    multimedia/  sysutils/
archivers/       devel/       ham/        net/        templates/
audio/           distfiles/   inputmethod/ packages/    textproc/
benchmarks/      doc/         lang/       news/       time/
biology/         editors/     licenses/   parallel/   wm/
bootstrap/       emulators/   mail/       pkglocate*  www/
cad/             filesystems/  math/       pkgtools/   x11/
chat/            finance/     mbone/      print/      regress/
comms/           fonts/       meta-pkgs/
pkgsrc
======

[pkgsrc](https://pkgsrc.org) is a framework for building software for a variety of UNIX-like systems.

It produces binary packages, which can be managed with tools such as [pkgin](http://pkgin.net/). pkgsrc is highly configurable, supporting building packages for an arbitrary installation prefix (the default is `/usr/pkg`), allowing multiple branches to coexist on one machine, a build options framework, and a compiler transformation framework, among other advanced features. Unprivileged use and installation is also supported.

pkgsrc is the default package manager for [NetBSD](https://www.NetBSD.org/) and [SmartOS](https://www.joyent.com/smartos). It's also supported as a first-class option in [OmniOS CE](https://omniosce.org/) and [Oasis Linux](https://github.com/oasislinux/oasis).

Bootstrapping
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pkgsrc
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Bootstrapping
-------------
To use pkgsrc on operating systems other than NetBSD, you first need to bootstrap:

```
  cd pkgsrc/bootstrap
  ./bootstrap
```

Note that this is only for the most simple case, using pkgsrc's defaults. Please consult `bootstrap/README` and `bootstrap/README.OS` for detailed information about bootstrapping.

**Building packages**

```
  cd pkgsrc/category/package-name
  $PREFIX/bin/bmake install
```

Where `$PREFIX` is where you've chosen to install packages (typically `/usr/pkg`)

On NetBSD, `bmake` is simply the built-in `make` tool.
To use pkgsrc on operating systems other than NetBSD, you first need to bootstrap:

```
    cd pkgsrc/bootstrap
    ./bootstrap
```

Note that this is only for the most simple case, using pkgsrc's defaults.

Please consult `bootstrap/README` and `bootstrap/README.OS` for detailed information about bootstrapping.

**Building packages**

```
    cd pkgsrc/category/package-name
    $PREFIX/bin/bmake install
```

Where `$PREFIX` is where you've chosen to install packages (typically `/usr/pkg`)  

On NetBSD, `bmake` is simply the built-in `make` tool.
Can we bootstrap on any Operating System without privileges?

Making no assumptions
Bootstrapping pkgsrc

$ ls -F
Makefile        converters/     games/        misc/        security/
README.md       cross/          geography/    mk/          shells/
_NetBSD-pkgdb*  databases/      graphics/     multimedia/  sysutils/
archivers/      devel/          ham/          net/          templates/
audio/          distfiles/      inputmethod/  news/         textproc/
benchmarks/     doc/            lang/         packages/     time/
biology/        editors/        licenses/     parallel/     wm/
bootstrap/      emulators/      mail/         pkglocate*   www/
cad/            filesystems/    math/         pkgtools/     x11/
chat/           finance/        mbone/        print/        regress/
comms/          fonts/          meta-pkgs/    textproc/
Bootstrapping pkgsrc

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Makefile      converters/     games/      misc/     security/
README.md     cross/         geography/  mk/       shells/
_NetBSD-pkgdb* databases/    graphics/   multimedia/
archivers/    devel/         ham/       net/       sysutils/
advisors/     distfiles/     inputmethod/  news/     templates/
benchmarks/   doc/           lang/      packages/  textproc/
bioinformatics/ editors/      licenses/   parallel/   time/
bootstrap/    emulators/     mail/      pkglocate*  wwww/
cad/          filesystems/   math/      pkgtools/   x11/
chat/         finance/       mbone/     print/
comms/        fonts/         meta-pkgs/  regress/
Bootstrapping pkgsrc

$ cd bootstrap
$ ls -F
README README.IRIX README.OpenBSD
README.AIX README.Interix README.OpenServer5
README.Bitrig README.Linux README.Solaris
README.Cygwin README.MidnightBSD README.UnixWare
README.FreeBSD README.Minix3 README.macOS
README.GNUkFreeBSD README.MirBSD bootstrap*
README.HPUX README.NetBSD cleanup*
README.Haiku README.OSF1 testbootstrap*
Bootstrapping pkgsrc

```
$ cd bootstrap
$ ls -F

<table>
<thead>
<tr>
<th>README</th>
<th>README.IRIX</th>
<th>README.OpenBSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>README.AIX</td>
<td>README.Interix</td>
<td>README.OpenServer5</td>
</tr>
<tr>
<td>README.Bitrig</td>
<td>README.Linux</td>
<td>README.Solaris</td>
</tr>
<tr>
<td>README.Cygwin</td>
<td>README.MidnightBSD</td>
<td>README.UnixWare</td>
</tr>
<tr>
<td>README.FreeBSD</td>
<td>README.Minix3</td>
<td>README.macOS</td>
</tr>
<tr>
<td>README.GNUkFreeBSD</td>
<td>README.MirBSD</td>
<td>bootstrap*</td>
</tr>
<tr>
<td>README.HPUX</td>
<td>README.NetBSD</td>
<td>cleanup*</td>
</tr>
<tr>
<td>README.Haiku</td>
<td>README.OSF1</td>
<td>testbootstrap*</td>
</tr>
</tbody>
</table>
```
Bootstrapping pkgsrc

$ cd bootstrap
$ ls -F

README              README.IRIX                    README.OpenBSD
README.AIX          README.Interix                  README.OpenServer5
README.Bitrig       README.Linux                    README.Solaris
README.Cygwin       README.MidnightBSD              README.UnixWare
README.FreeBSD      README.Minix3                   README.macOS
README.GNUkFreeBSD  README.MirBSD                   bootstrap*
README.HPUX         README.NetBSD                   cleanup*
README.Haiku        README.OSF1                    testbootstrap*

$ vim README
To try to get pkgsrc working on your system, please try the following as root:

```bash
# ./bootstrap
    [ --workdir <workdir> ]
    [ --prefix <prefix> ]
    [ --pkgdbdir <pkgdbdir> ]
    [ --sysconfdir <sysconfdir> ]
    [ --varbase <varbase> ]
    [ --ignore-user-check ]
    [ --preserve-path ]
    [ --help ]
```

The defaults for the arguments are as follows:

- `--prefix` /usr/pkg
- `--pkgdbdir` /usr/pkg/pkgdb
- `--sysconfdir` /usr/pkg/etc
- `--varbase` /var
- `--workdir` work
To try to get pkgsrc working on your system, please try the following as root:

# ./bootstrap
  [ --workdir <workdir> ]
  [ --prefix <prefix> ]
  [ --pkgdbdir <pkgdbdir> ]
  [ --sysconfdir <sysconfdir> ]
  [ --varbase <varbase> ]
  [ --ignore-user-check ]
  [ --preserve-path ]
  [ --help ]

The defaults for the arguments are as follows:

  --prefix       /usr/pkg
  --pkgdbdir     /usr/pkg/pkgdb
  --sysconfdir   /usr/pkg/etc
  --varbase      /var
  --workdir      work
Bootstrapping pkgsrc

$ ./bootstrap --help
===> bootstrap command: ./bootstrap --help
Usage: ./bootstrap
[ --abi [32|64] ]
[ --binary-kit <tarball> ]
[ --compiler <compiler> ]
[ --cwrappers <auto|yes|no> ]
[ --full ]
[ --gzip-binary-kit <tarball> ]
[ --help ]
[ --machine-arch <arch> ]
[ --make-jobs <num> ]
[ --mk-fragment <mk.conf> ]
[ --pkgdbdir <pkgdbdir> ]
[ --pkginfodir <pkginfodir> ]
[ --pkgmandir <pkgmandir> ]
[ --prefer-pkgsrc <list|yes|no> ]
[ --prefer-native <list|yes|no> ]
[ --prefix <prefix> ]
[ --preserve-path ]
[ --quiet ]
[ --sysconfbase <sysconfbase> ]
[ --sysconfdir <sysconfdir> ]
[ --unprivileged | --ignore-user-check ]
[ --varbase <varbase> ]
[ --workdir <workdir> ]
Bootstrapping pkgsrc

$ ./bootstrap --help

===> bootstrap command: ./bootstrap --help

Usage: ./bootstrap

[ --abi [32|64] ]
[ --binary-kit <tarball> ]
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[ --prefer-pkgsrc <list|yes|no> ]
[ --prefer-native <list|yes|no> ]
[ --prefix <prefix> ]
[ --preserve-path ]
[ --quiet ]
[ --sysconfbase <sysconfbase> ]
[ --sysconfdir <sysconfdir> ]
[ --unprivileged | --ignore-user-check ]
[ --varbase <varbase> ]
[ --workdir <workdir> ]
Bootstrapping pkgsrc

$ ./bootstrap --make-jobs 8 --prefix ~/opt/pkgsrc-eurobsdcon --unprivileged
====> bootstrap command: ./bootstrap --make-jobs 8 --prefix /Users/mimimimimi/opt/pkgsrc-eurobsdcon --unprivileged
[...]
===========================================================================
Please remember to add /Users/mimimimimi/opt/pkgsrc-eurobsdcon/bin to your PATH environment variable and /Users/mimimimimi/opt/pkgsrc-eurobsdcon/man to your MANPATH environment variable, if necessary.

An example mk.conf file with the settings you provided to "bootstrap" has been created for you. It can be found in:

/Users/mimimimimi/opt/pkgsrc-eurobsdcon/etc/mk.conf

You can find extensive documentation of the NetBSD Packages Collection in /Users/mimimimimi/Projects/EdgeBSD/pkgsrc/doc/pkgsrc.txt.

Thank you for using pkgsrc!

==========================================================================
Implementation details

Looking at the code
Unprivileged

What does it imply?
$ vim ./mk/unprivileged.mk

# $NetBSD: unprivileged.mk,v 1.23 2019/09/02 02:23:02 rillig Exp $
#
# This file collects definitions that are useful when using pkgsrc as an
# unprivileged (non-root) user. It is included automatically by the
# pkgsrc infrastructure.
#
# User-settable variables:
#
# UNPRIVILEGED
#   Whether to build packages as unprivileged user.
#   Default: (undefined)
#   Possible: yes no
#
# UNPRIVILEGED_USER
#   The user name (or numeric uid) that will be used to install
#   files.
#   Default: The user building the package
#
# UNPRIVILEGED_GROUP
#   The group name (or numeric gid) that will be used to install
#   files.
#   Default: The primary group of the user building the package
User variables: (for etc/mk.conf)

- UNPRIVILEGED: yes/no
- UNPRIVILEGED_USER: $(id -u)
- UNPRIVILEGED_GROUP: $(id -g)
- UNPRIVILEGED_GROUPS: $(groups)
Unprivileged: Additional Variables

Package variables:
- PKG_USERS_VARS
- PKG_GROUPS_VARS

Restrict which users and groups can be created
$ vim ./mk/unprivileged.mk

.if !empty(_UNPRIVILEGED:Munprivileged)
# As a regular user, creation of other users and groups won't work, so
# disable this step by default.
PKG_CREATE_USERGROUP= NO

# Override commands that won't work as a regular user.
TOOLS_PLATFORM.chgrp= ${TRUE} chgrp
TOOLS_PLATFORM.chown= ${TRUE} chown
SU_CMD= ${SH} -c

# Do not attempt to modify /etc/shells as a regular user.
PKG_REGISTER_SHELLS= NO
.endif
Unprivileged: Running Services

$ cat pkgtools/rc.subr/DESCR
Portable implementation of the NetBSD rc.d subsystem.

This package allows you to use rc.subr-style rc scripts (such as those included in pkgsrc) on other operating systems.
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Portable implementation of the NetBSD rc.d subsystem.

This package allows you to use rc.subr-style rc scripts (such as those included in pkgsrc) on other operating systems.
Unprivileged: Running Services

```
$ ~/opt/pkgsrc-2021Q4/bin/bmake install clean
ERROR: This package is only available for these platforms: Darwin-** FreeBSD-
[0-4].** Interix-** IRIX-** Linux-** OpenBSD-** QNX-** SunOS-**.
ERROR: This package is not available in unprivileged mode.
ERROR: This package has set PKG_SKIP_REASON:
ERROR: rc.subr-20181226 is not available for NetBSD-9.3_STABLE-x86_64
*** Error code 1
```
$ ~/opt/pkgsrc-2022Q2/bin/bmake install clean
ERROR: This package is only available for these platforms: Darwin-*** FreeBSD-
[0-4].*** Interix-** IRIX-** Linux-** OpenBSD-** QNX-** SunOS-**.
ERROR: This package is not available in unprivileged mode.
ERROR: This package has set PKG_SKIP_REASON:
ERROR: rc.subr-20181226 is not available for NetBSD-9.3-amd64
*** Error code 1
Challenge on our hands
Changes

Could we fix this?
Changes: pkgtools/rc.subr

@@ -10,27 +10,34 @@ COMMENT= Portable NetBSD rc.subr implementation for pkgsrc
LICENSE= original-bsd

ONLY_FOR_PLATFORM= Darwin-*** FreeBSD-[0-4].*** Interix-*** IRIX-***
-ONLY_FOR_PLATFORM+= Linux-*** OpenBSD-*** QNX-*** SunOS-***
+ONLY_FOR_PLATFORM+= Linux-*** NetBSD-*** OpenBSD-*** QNX-*** SunOS-***

NO_BUILD= yes
NO_CONFIGURE= yes
-NOT_FOR_UNPRIVILEGED= yes

CHECK_FILES_SUPPORTED= no
+BUILD_DEFS+= SYSCONFBASE
BUILD_DEFS+= RCD_SCRIPTS_DIR
Changes: pkgtools/rc.subr

@@ -10,27 +10,34 @@
COMMENT=            Portable NetBSD rc.subr implementation for pkgsrc
LICENSE=               original-bsd

ONLY_FOR_PLATFORM=     Darwin-** FreeBSD-[0-4].*** Interix-*** IRIX-***
-ONLY_FOR_PLATFORM+=   Linux-*** OpenBSD-*** QNX-*** SunOS-***
+ONLY_FOR_PLATFORM+=   Linux-*** NetBSD-*** OpenBSD-*** QNX-*** SunOS-***

NO_BUILD=              yes
NO_CONFIGURE=          yes
-NOT_FOR_UNPRIVILEGED=  yes

CHECK_FILES_SUPPORTED= no
+BUILD_DEFS+=           SYSCONFBASE
BUILD_DEFS+=           RCD_SCRIPTS_DIR
Changes: pkgtools/rc.subr

- Imported `load_rc_config_var()` from NetBSD:

```
+#
+# load_rc_config_var cmd var
+#   Read the rc.conf(5) var for cmd and set in the
+#   current shell, using load_rc_config in a subshell to prevent
+#   unwanted side effects from other variable assignments.
+#
```

- We can now read `/etc/rc.conf` in `pkgsrc`
Changes: the SYSCONFBASE Variable

• Points to configuration files from the system (as opposed to PKG_SYSCONFBASE)
• Typically set to /etc, but different in unprivileged mode
• Allow etc/rc.subr to be sourced where it is
• Important for RC scripts
Changes: bootstrap

--- a/bootstrap/bootstrap
+++ b/bootstrap/bootstrap
@@ -74,6 +74,7 @@
    usage="Usage: $0 "'
    [ --prefix <prefix> ]
    [ --preserve-path ]
    [ --quiet ]
+    [ --sysconfbase <sysconfbase> ]
    [ --sysconfdir <sysconfdir> ]
    [ --unprivileged | --ignore-user-check ]
    [ --varbase <varbase> ]
@@ -1087,6 +1095,9 @@
    fi
    # save environment in example mk.conf
    echo "PKG_DBDIR= $pkgdbdir" >> ${TARGET_MKCONF}
    echo "LOCALBASE= $prefix" >> ${TARGET_MKCONF}
+    if [ "${sysconfbase}" != "/etc" ]; then
+        echo "SYSCONFBASE= $sysconfbase" >> ${TARGET_MKCONF}
+    fi
    echo "VARBASE= $varbase" >> ${TARGET_MKCONF}
    if [ "${sysconfdir}" != "${prefix}/etc" ]; then
        echo "PKG_SYSCONFBASE= $sysconfdir" >> ${TARGET_MKCONF}
        if [ "${sysconfdir}" != "${prefix}/etc" ]; then
            echo "PKG_SYSCONFBASE= $sysconfdir" >> ${TARGET_MKCONF}
@@ -489,6 +489,12 @@ PKG_RESUME_TRANSFERS?= NO
    # Possible: yes or no.
    # Default: no.

+SYSCONFBASE?= /etc
+    +# This is the config directory under which system configuration files are
+    +# expected.
+    +# Possible: any path you like
+    +# Default: /etc
+    
+    PKG_SYSCONFBASE?= ${PREFIX}/etc
    # This is the main config directory under which all package configuration
    # files should be found.
Changes: RC Scripts

--- a/www/php-fpm/files/php_fpm.sh
+++ b/www/php-fpm/files/php_fpm.sh
@@ -1,11 +1,11 @@
  #!/@RCD_SCRIPTS_SHELL@
  #
- # $NetBSD: php_fpm.sh,v 1.1.1.1 2012/02/22 10:43:42 fhajny Exp $
-#
-#
- # PROVIDE: php_fpm
- # REQUIRE: DAEMON
-
- . /etc/rc.subr
+ . @SYSCONFBASE@/rc.subr

 name="php_fpm"
 rcvar=${name}
Changes: RC Scripts

--- a/www/php-fpm/files/php_fpm.sh
+++ b/www/php-fpm/files/php_fpm.sh
@@ -1,11 +1,11 @@
 #!@RCD SCRIPTS SHELL@
 #
-# $NetBSD: php_fpm.sh,v 1.1.1.1 2012/02/22 10:43:42 fhajny Exp $
 #
-# PROVIDE: php_fpm
+ # REQUIRE: DAEMON

-. /etc/rc.subr
+. @SYSCONFBASE@/rc.subr

    name="php_fpm"
    rcvar=${name}
Changes: RC Scripts

Done:
• chat/ircd-hybrid
• chat/prosody
• finance/bitcoin
• geography/gpsd
• mail/fetchmail
• mail/postfix
• multimedia/mediatomb
• net/beanstalkd
• net/fwknop

• print/cups-base
• print/py-octoprint
• security/cyrus-saslauthd
• sysutils/dbus
• www/apache
• www/gitea
• www/nginx{,-devel}
• www/php-fpm
• www/privoxy

TODO: everything else
Portable environment
Unprivileged local services
New use case for pkgsrc
devsetup

Local development environment
$ git clone https://github.com/khorben/devsetup.git
Cloning into 'devsetup'...
remote: Enumerating objects: 128, done.
remote: Counting objects: 100% (128/128), done.
remote: Compressing objects: 100% (73/73), done.
remote: Total 128 (delta 73), reused 104 (delta 49), pack-reused 0
Receiving objects: 100% (128/128), 90.29 KiB | 1.39 MiB/s, done.
Resolving deltas: 100% (73/73), done.
$ cd devsetup
$ ls -F
COPYING  README.md  devsetup* repositories/
Getting Started

$ git clone https://github.com/khorben/devsetup.git
Cloning into 'devsetup'...
remote: Enumerating objects: 128, done.
remote: Counting objects: 100% (128/128), done.
remote: Compressing objects: 100% (73/73), done.
remote: Total 128 (delta 73), reused 104 (delta 49), pack-reused 0
Receiving objects: 100% (128/128), 90.29 KiB | 1.39 MiB/s, done.
Resolving deltas: 100% (73/73), done.
$ cd devsetup
$ ls -F
COPYING  README.md  devsetup*  repositories/
$ vim README.md

# Development environment

## Getting started

The `devsetup` script contains everything required.

### Bootstrapping

Bootstrapping and managing the environment can be done entirely with `devsetup`.

Everything is built from source, and the resulting environment should be consistent regardless of the host platform, including when deploying in staging or production.

This is thanks to pkgsrc (https://pkgsrc.org, https://www.netbsd.org/docs/pkgsrc/), the packaging system for NetBSD, which is portable and should work equally well on all *BSDs, Linux, Windows, Illumos, and more.

Basically, to get started, simply run:

```
$ ./devsetup init
```
# Development environment

## Getting started

The `devsetup` script contains everything required.

### Bootstrapping

Bootstrapping and managing the environment can be done entirely with `devsetup`. Everything is built from source, and the resulting environment should be consistent regardless of the host platform, including when deploying in staging or production.

This is thanks to pkgsrc (https://pkgsrc.org, https://www.netbsd.org/docs/pkgsrc/), the packaging system for NetBSD, which is portable and should work equally well on all *BSDs, Linux, Windows, Illumos, and more.

Basically, to get started, simply run:
```
$ ./devsetup init
```

$ vim devsetup

26 #variables
27 #executables
28 BMAKE="cat"
29 CAT="cat"
30 CHMOD="chmod"
31 DEBUG="_debug"
32 ECHO="/bin/echo"
33 GIT_CHECKOUT="git checkout"
34 GIT_FETCH="git fetch"
35 GIT_MERGE="git merge"
36 GIT_SUBMODULE="git submodule"
37 GREP="grep"
38 INSTALL="install"
39 MKDIR="mkdir"
40 PKG_DELETE=
41 PSQL=
42 RM="/bin/rm -f"
43 SLAPADD=
44 SLAPPASSWD=
$ vim devsetup

```bash
#variables
#executables
BMAKE=
CAT="cat"
CHMOD="chmod"
DEBUG="debug"
ECHO="/bin/echo"
GIT_CHECKOUT="git checkout"
GIT_FETCH="git fetch"
GIT_MERGE="git merge"
GIT_SUBMODULE="git submodule"
GREP="grep"
INSTALL="install"
MKDIR="mkdir"
PKG_DELETE=
PSQL=
RM="/bin/rm -f"
SLAPADD=
SLAPPASSWD=
```
$ vim devsetup

```bash
#settings

FASTCGI_ADDRESS="127.0.0.1"
FASTCGI_PORT=9000
GROUP="${USER}"

# case $(${SUNAME}) in
   Darwin)
      GROUP="staff"
;#
esac

LDAP_ADMIN_PASSWORD="ldapseed${HOME}padding"
LDAP_ADMIN_USERNAME="admin"
PACKAGE_DEPENDENCIES="archivers/bzip2
converters/libiconv
www/py-gunicorn"
PKGSRC_REPOSITORY_BRANCH="pkgsrc-2022Q2"
PKGSRC_REPOSITORY_REMOTE="https://git.edgebsd.org/EdgeBSD/pkgs src.git"
POSTGRESQL_ADMIN_DATABASE="template1"
POSTGRESQL_ADMIN_PASSWORD="psqlseed${HOME}padding"
SERVICES="doxocat
nginx
pgsql
php_fpm

sasauthd -a ldap
sladp -4 -h ldap://$LDAP_ADDRESS:$LDAP_PORT/
```
#settings

```
FASTCGI_ADDRESS="127.0.0.1"
FASTCGI_PORT=9000
GROUP="admin"
GROUP="staff"

case $UNAME in
  Darwin)
    GROUP="staff"
  ;;
  esac

LDAP_ADMIN_PASSWORD="ldapseed${HOME}padding"
LDAP_ADMIN_USERNAME="admin"

PACKAGE_DEPENDENCIES="archivers/bzip2
converters/libiconv
www/py-gunicorn"

PKGSRC_REPOSITORY_BRANCH="pkgsrc-2022Q2"
PKGSRC_REPOSITORY_REMOTE="https://git.edgebsd.org/EdgeBSD/pkgsrc.git"

POSTGRESQL_ADMIN_DATABASE="template1"
POSTGRESQL_ADMIN_PASSWORD="psqlseed${HOME}padding"

SERVICES="dovecot
nginx
pgsql
php_fpm
saslauthd       -a ldap
slapd   -4 -h ldap://$LDAP_ADDRESS:$LDAP_PORT/"
```

vim devsetup
EdgeBSD

- Fork of NetBSD by Yours Truly in August 2013
- Really, NetBSD with Git
- Also uses pkgsrc
$ vim devsetup

118  #load local settings
119  [ -f "$/HOME/.config/$PROGNAME.conf" ] &&
120  . "$/HOME/.config/$PROGNAME.conf"
121
122  #setting-dependent
123  [ -n "$PKGSRC_PREFIX" ] || PKGSRC_PREFIX="$/HOME/opt/

$PKGSRC_REPOSITORY_BRANCH"
124  [ -n "$BMAKE" ] || BMAKE="$/PKGSRC_PREFIX/bin/bmake"
125  [ -n "$HTTP_ADDRESS" ] || HTTP_ADDRESS="$/DEFAULT_ADDRESS"
126  [ -n "$IMAP_ADDRESS" ] || IMAP_ADDRESS="$/DEFAULT_ADDRESS"
127  [ -n "$LDAP_ADDRESS" ] || LDAP_ADDRESS="$/DEFAULT_ADDRESS"
128  [ -n "$PKG_DELETE" ] || PKG_DELETE="$/PKGSRC_PREFIX/sbin/pkg_delete"
129  [ -n "$PKGSRC_SYSCONFDIR" ] || PKGSRC_SYSCONFDIR="$/PKGSRC_PREFIX/etc"
130  [ -n "$POSTGRESQL_DATADIR" ] || POSTGRESQL_DATADIR="$/PKGSRC_PREFIX/pgsql/data"
131  [ -n "$PSQL" ] || PSQL="$/PKGSRC_PREFIX/bin/psql"
132  [ -n "$SLAPADD" ] || SLAPADD="$/PKGSRC_PREFIX/sbin/slapadd"
133  [ -n "$SLAPPASSWD" ] || SLAPPASSWD="$/PKGSRC_PREFIX/sbin/slappasswd"
$ vim devsetup

#load local settings
[ -f "/home/.config/$PROGNAME.conf" ] &&
. "/home/.config/$PROGNAME.conf"

#setting-dependent

[ -n "$PKGSRC_PREFIX" ] || PKGSRC_PREFIX="/home/opt/

$PKGSRC_REPOSITORY_BRANCH"

[ -n "$BMAKE" ] || BMAKE="$PKGSRC_PREFIX/bin/bmake"

[ -n "$HTTP_ADDRESS" ] || HTTP_ADDRESS="$DEFAULT_ADDRESS"

[ -n "$IMAP_ADDRESS" ] || IMAP_ADDRESS="$DEFAULT_ADDRESS"

[ -n "$LDAP_ADDRESS" ] || LDAP_ADDRESS="$DEFAULT_ADDRESS"

[ -n "$PKG_DELETE" ] || PKG_DELETE="$PKGSRC_PREFIX/sbin/pkg_delete"

[ -n "$PKGSRC_SYSCONFDIR" ] || PKGSRC_SYSCONFDIR="$PKGSRC_PREFIX/etc"

[ -n "$POSTGRESQL_DATADIR" ] || POSTGRESQL_DATADIR="$PKGSRC_PREFIX/pgsql/data"

[ -n "$PSQL" ] || PSQL="$PKGSRC_PREFIX/bin/psql"

[ -n "$SLAPADD" ] || SLAPADD="$PKGSRC_PREFIX/sbin/slapadd"

[ -n "$SLAPPASSWD" ] || SLAPPASSWD="$PKGSRC_PREFIX/sbin/slappasswd"
$ vim devsetup

145 #devsetup
146 _devsetup()
147 {
148     if [ $# -lt 1 ]; then
149         _usage "Command not specified"
150         return $?
151     fi
152     command="$1"
153     shift
154
155     case "$command" in
156         clean|configure|environment|init|install|restart|start|status|stop|update|uninstall)
157             "_devsetup_command_$command" "$@"
158             ;;
159         *)
160             _usage "$command: Command not supported"
161             return $?;
162     esac
163 }

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$ vim devsetup

```bash
145 #devsetup
146 _devsetup()
147 {
148     if [ $# -lt 1 ]; then
149         _usage "Command not specified"
150         return $?
151     fi
152     command="$1"
153     shift
154     case "$command" in
155         [...]
156             clean|configure|environment|init|install|restart|start|status|
157             stop|update|uninstall)
158             "_devsetup_command_$command" "@$"
159             ;;
160             *)
161             _usage "$command: Command not supported"
162             return $?
163         esac
164     esac
165 }
```
$ vim devsetup

6141 #usage
6142 _usage()
6143 {
6144     [ $# -ge 1 ] && _error "@@"
6145     echo "Usage: $PROGNAME clean|init|environment [-qv]" 1>&2
6146     echo " $PROGNAME install|configure|update|uninstall [-qv][package...]]" 1>&2
6147     echo " $PROGNAME start|stop|status|restart [-qv][service...]" 1>&2
6148     echo 1>&2
6149     echo "$PROGNAME clean [-qv]" 1>&2
6150     echo " Removes the temporary files resulting from compilation." 1>&2
6151     echo 1>&2
6152     echo "$PROGNAME init [-qv]" 1>&2
6153     echo " Clones the package repositories and installs the default packages." 1>&2
6154     echo 1>&2
6155     echo "$PROGNAME environment [-qv]" 1>&2
6156     echo " Outputs variables needing to be updated to help work with $PROGNAME." 1>&2
6157     echo 1>&2
6158     echo "$PROGNAME install|configure|update|uninstall [-qv][package...]]" 1>&2
6159     echo " Installs, configures, updates, or uninstalls specific packages, or the list of" 1>&2
6160     echo " default packages." 1>&2
6161     echo 1>&2
6162     echo "$PROGNAME start|stop|status|restart [-qv][service...]" 1>&2
6163     echo " Starts, stops, checks, or restarts specific services, or the list of default" 1>&2
6164     echo " services." 1>&2
6165     return 1
6166 }
6167 
6177 #main
6178 _devsetup "$@"
```
$ vim devsetup

6141 #usage
6142 _usage()
6143 {
6144     [ $# -ge 1 ] && _error "@"
6145     echo "Usage: $PROGNAME clean|init|environment [-qv]" 1>&2
6146     echo " $PROGNAME install|configure|update|uninstall [-qv][package...]" 1>&2
6147     echo " $PROGNAME start|stop|status|restart [-qv][service...]" 1>&2
6148     echo 1>&2
6149     echo "$PROGNAME clean [-qv]" 1>&2
6150     echo " Removes the temporary files resulting from compilation." 1>&2
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6152     echo "$PROGNAME init [-qv]" 1>&2
6153     echo " Clones the package repositories and installs the default packages." 1>&2
6154     echo 1>&2
6155     echo "$PROGNAME environment [-qv]" 1>&2
6156     echo " Outputs variables needing to be updated to help work with $PROGNAME." 1>&2
6157     echo 1>&2
6158     echo "$PROGNAME install|configure|update|uninstall [-qv][package...]" 1>&2
6159     echo " Installs, configures, updates, or uninstalls specific packages, or the list of" 1>&2
6160     echo " default packages." 1>&2
6161     echo 1>&2
6162     echo "$PROGNAME start|stop|status|restart [-qv][service...]" 1>&2
6163     echo " Starts, stops, checks, or restarts specific services, or the list of default" 1>&2
6164     echo " services." 1>&2
6165     return 1
6166 }
6167 #main
6168 _devsetup "$@"
```
$ ./devsetup
DEVSETUP: Command not specified
Usage: devsetup clean|init|environment [-qv]
    devsetup install|configure|update|uninstall [-qv][package...]
    devsetup start|stop|status|restart [-qv][service...]

devsetup clean [-qv]
    Removes the temporary files resulting from compilation.

devsetup init [-qv]
    Clones the package repositories and installs the default packages.

devsetup environment [-qv]
    Outputs variables needing to be updated to help work with devsetup.

devsetup install|configure|update|uninstall [-qv][package...]
    Installs, configures, updates, or uninstalls specific packages, or the list of
default packages.

devsetup start|stop|status|restart [-qv][service...]
    Starts, stops, checks, or restarts specific services, or the list of default
services.
Usage Screen

$ ./devsetup
devsetup: Command not specified
Usage: devsetup clean|init|environment [-qv]
        devsetup install|configure|update|uninstall [-qv][package...]
        devsetup start|stop|status|restart [-qv][service...]

devsetup clean [-qv]
    Removes the temporary files resulting from compilation.

devsetup init [-qv]
    Clones the package repositories and installs the default packages.

devsetup environment [-qv]
    Outputs variables needing to be updated to help work with devsetup.

devsetup install|configure|update|uninstall [-qv][package...]
    Installs, configures, updates, or uninstalls specific packages, or the list of
default packages.

devsetup start|stop|status|restart [-qv][service...]
    Starts, stops, checks, or restarts specific services, or the list of default
services.
pkgsrc, simplified

Local development environment
Perks

Is this awesome or what?
$ ./devsetup environment

$ ./devsetup environment
export GOPATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/gopkg
export MANPATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/man
export PATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/sbin:/Users/mimimimimi/opt/pkgsrc-2022Q2/bin:/usr/local/bin:/usr/bin:/bin:/usr/sbin:/sbin:/opt/X11/bin:/usr/local/MacGPG2/bin:/Library/Apple/usr/bin
alias devsetup="/Users/mimimimimi/devsetup/./devsetup"

• Provides **every package from pkgsrc**
• Managed through a **single script**
• Stable **releases every 3 months**
• Actively maintained for **security fixes**
• Supports **every major and most niche platforms**
$ ./devsetup environment

$ ./devsetup environment
export GOPATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/gopkg
export MANPATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/man
export PATH=/Users/mimimimimi/opt/pkgsrc-2022Q2/sbin:/Users/mimimimimi/opt/pkgsrc-2022Q2/bin:/usr/local/bin:/usr/bin:/usr/sbin:/sbin:/opt/X11/bin:/usr/local/MacGPG2/bin:/Library/Apple/usr/bin
alias devsetup="/Users/mimimimimi/devsetup/./devsetup"

- Provides every package from pkgsrc
- Managed through a single script
- Stable releases every 3 months
- Actively maintained for security fixes
- Supports every major and most niche platforms
Cross Platform Development

- Devsetup provides a **local development environment**: Go, Lua, Node.js, Python, PHP, Ruby...
- Devsetup **runs local services** by default: OpenLDAP, Dovecot + Roundcube, PostgreSQL...
- Deploys **consistent software versions** across most systems
Pkgsrc Does Not Need Privileges

- pkgsrc offers an “unprivileged” mode
- devsetup uses it by default:
  - Does not need administrative rights
  - Can be installed and used by regular users
$ audit-packages

$ ~/opt/pkgsrc-2022Q2/sbin/pkg_admin fetch-pkg-vulnerabilities
$ ~/opt/pkgsrc-2022Q2/sbin/audit-packages
Package exiv2-0.27.5 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-18774
Package exiv2-0.27.5 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-18773
Package exiv2-0.27.5 has a buffer-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-18771
Package sqlite3-3.38.5 has an array-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-35737
Package graphviz-2.50.0nb5 has a null-pointer-dereference vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2018-10196
Package graphviz-2.50.0nb5 has a stack-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2019-9904
Package graphviz-2.50.0nb5 has a null-pointer-dereference vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2019-11023
Package python27-2.7.18nb8 has reached end-of-life (eol), see http://cdn.NetBSD.org/pub/NetBSD/packages/vulns/eol-packages
Package libheif-1.12.0nb1 has a heap-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-23109
Package libproxy-0.4.15nb1 has a buffer-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-26154
Package py39-flask-caching-1.10.1 has an arbitrary-code-execution vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2021-33026
Package py39-py-1.11.0 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-29651
Package gcc7-7.5.0nb5 has a sensitive-information-disclosure vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2018-12886
Package gcc7-7.5.0nb5 has an insufficiently-random-numbers vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2019-15847
Package libesmtp-1.0.6nb5 has a stack-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2019-19977
Package openssl-1.1.1p has a weak-encryption vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-2097
Package ncurses-6.3 has an out-of-bounds-read vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-29458
$ audit-packages

$ ~/opt/pkgsrc-2022Q2/sbin/pkg_admin fetch-pkg-vulnerabilities
$ ~/opt/pkgsrc-2022Q2/sbin/audit-packages
Package exiv2-0.27.5 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-18774
Package exiv2-0.27.5 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-18773
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Package sqlite3-3.38.5 has a array-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-35737
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Package py39-py-1.11.0 has a denial-of-service vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2020-29651
Package gcc7-7.5.0nb5 has a sensitive-information-disclosure vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2018-12886
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Package libesmtp-1.0.6nb5 has a stack-overflow vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2019-19977
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Package ncurses-6.3 has an out-of-bounds-read vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-29458
devsetup

Administration interfaces

- phpldapadmin
- phpLDAPDir
- webmail

Documentation

Local documentation

- Cyrus SASL
- DB4
- Gtk-Doc books
- jadedoc
- libxml2 (tutorial)
- libxslt2 (tutorial, tutorial 2)
- Manual pages for end-users:
  - Commands
  - Files
- Mutt
- openjade
- OpenLDAP
- OpenSP
- PDB
- PDB2
- PostgreSQL
- tiff

Online references

- pkgsrc: [homepage, guide, packages]
- nginx: [homepage]
Known Issues

Perspectives for improvement
Challenges

It would be too easy
Of course pkgsrc itself is not source only.

devsetup does not know about binary packages.

...You can create and install your own (if compatible).
Possible Evolution

Ideas for devsetup to be more useful:
• Support for more services?
• Integration into pkgsrc?
• Improve the documentation?
• Implement a web interface?
• Provide binary packages?
• Can it support Cloud technologies?
Any suggestions?

But first...
Availabilty

Where to find every piece
The Important Links

NetBSD:
• https://www.netbsd.org
• https://github.com/NetBSD

pkgsrc:
• https://www.pkgsrc.org
• https://www.pkgsrc.se (package browser)

EdgeBSD:
• https://www.edgebsd.org
• https://git.edgebsd.org
devsetup:
• https://github.com/khorben/devsetup
Final Words

devsetup
Conclusion

What will you do with it?
Summary: devsetup

Enjoy most of pkgsrc:
• Access to thousands of packages
• Regular releases with security updates

Simplify and extend possibilities:
• Configure and run services without privileges
• Consistent development environment across platforms
Up to you now

Thank you for listening!
Thank You!

Pierre Pronchery

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- @khorben on Twitter
- https://github.com/khorben/devsetup