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EuroBSDcon Vienna - 17/09/2022

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

pkgsrc

- 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

Search or jump to...   /   Pull requests   Issues   Marketplace   Explore

NetBSD / pkgsrc   Public

Edit Pins   Watch 27   Fork 136   Star 236

<> Code   Issues 5   Pull requests 1   Actions   Projects   Security   Insights

trunk   160 branches   0 tags   Go to file   Add file   Code

adam Updated misc/py-immutables, devel/py-jupyter_client   f5e23ca 16 hours ago   364,031 commits

archivers	*: bump PKGREVISION for flac shlib 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 shlib bump	3 days ago
chat	*: bump PKGREVISION for flac shlib bump	3 days ago
comms	*: bump PKGREVISION for flac shlib 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 pkgsrc CVS module, use with care

🔗 www.pkgsrc.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/
```

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README.md         cross/           geography/       mk/              shells/
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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

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Makefile          converters/     games/          misc/           security/
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_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/
$ vim README.md
```

$ vim ./README.md

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

$ vim ./README.md

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Bootstrapping

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and [Oasis Linux](https://github.com/oasislinux/oasis).


Bootstrapping
-------------
```

$ vim ./README.md

```
------------

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.
```

$ vim ./README.md

```
------------

To use pkgsrc on operating systems other than NetBSD, you first need to
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        cd pkgsrc/bootstrap
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Where `$PREFIX` is where you've chosen to install packages
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On NetBSD, `bmake` is simply the built-in `make` tool.
```

Can we bootstrap on any Operating System without privileges?

Making no assumptions

Bootstrap

How to use pkgsrc everywhere

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/
comms/            fonts/           meta-pkgs/       regress/
```

Bootstrapping pkgsrc

```
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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/
```

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
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
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
```

$ vim ./bootstrap/README

```
$NetBSD: README,v 1.34 2022/06/01 12:48:09 gdt Exp $

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
```

$ vim ./bootstrap/README

```
$NetBSD: README,v 1.34 2022/06/01 12:48:09 gdt Exp $

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] ]
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     [ --compiler <compiler> ]
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     [ --full ]
     [ --gzip-binary-kit <tarball> ]
     [ --help ]
     [ --machine-arch <arch> ]
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     [ --pkgdbdir <pkgdbdir> ]
     [ --pkginfodir <pkginfodir> ]
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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
```

Unprivileged: Additional Variables

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.
```

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.
```

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
```

Unprivileged: Running Services

```
$ ~/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
```
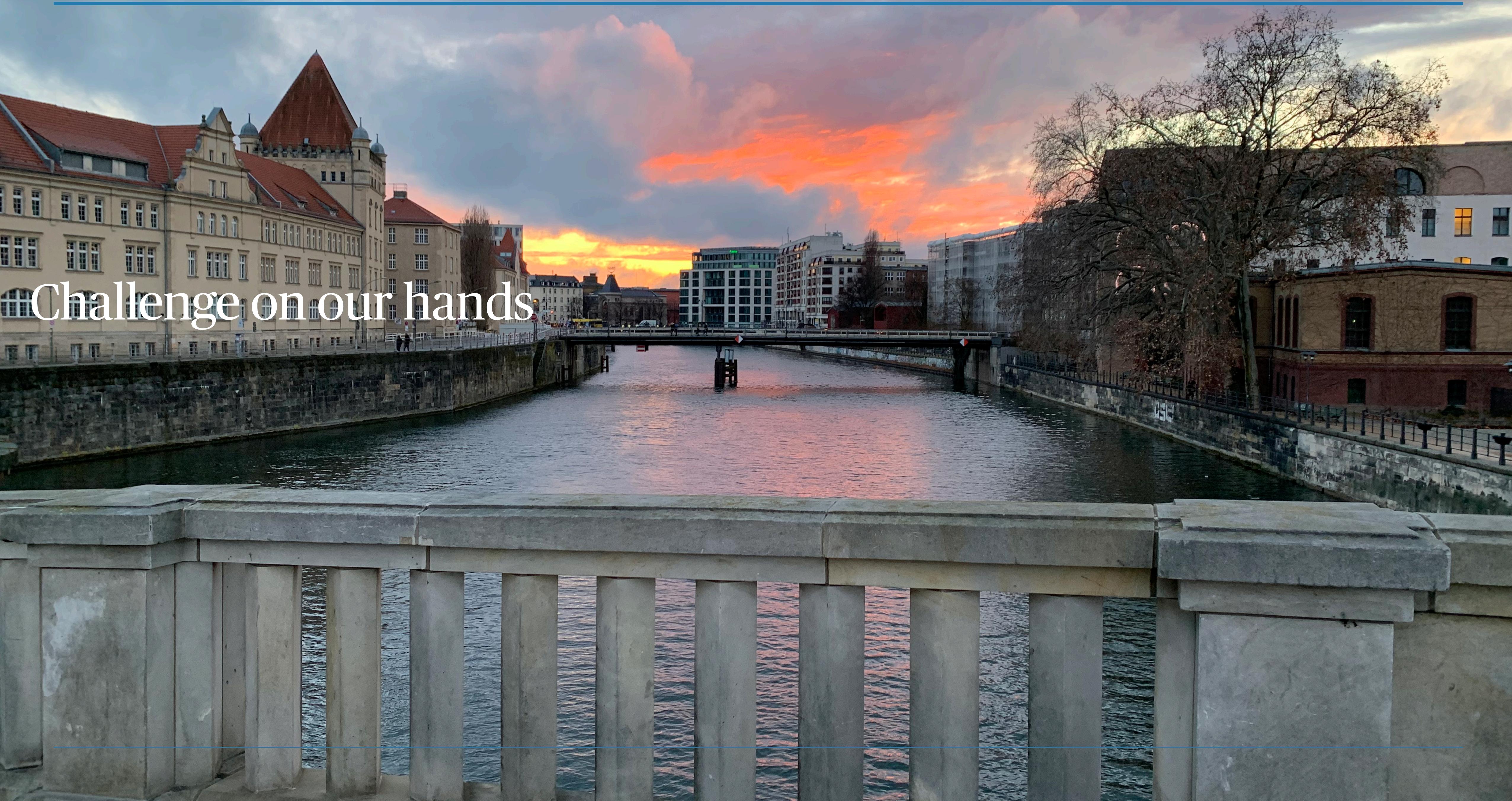
Challenge on our hands

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}
```

Changes: mk.conf

```
@@ -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 $
+# $NetBSD: php_fpm.sh,v 1.2 2021/08/29 17:49:44 khorben 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 $
+# $NetBSD: php_fpm.sh,v 1.2 2021/08/29 17:49:44 khorben 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

Search or jump to...

Pulls   Issues   Marketplace   Explore

khorben / devsetup   Public

Pin   Unwatch 1   Fork 0   Star 5

<> Code   Issues   Pull requests   Actions   Projects   Wiki   Security   Insights   Settings

master

Go to file   Add file   Code

khorben devsetup: actually configure PHP-FPM ...   on 14 Jul   43

repositories	Update pkgsrc to the latest pkgsrc-2022Q2	2 months ago
.gitmodules	Only allow the administrator to use phpLDAPa…	5 months ago
COPYING	Import licensing information	5 months ago
README.md	Use the Git submodule for pkgsrc	5 months ago
devsetup	devsetup: actually configure PHP-FPM	2 months ago

README.md

About

Local development environment based on pkgsrc

📖 Readme

⚖ BSD-2-Clause license

☆ 5 stars

👁 1 watching

⑂ 0 forks

Releases

🏷 1 tags

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/
```

Getting Started

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Cloning into 'devsetup'...
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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.
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$ cd devsetup
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COPYING  README.md  devsetup* repositories/
```

$ vim README.md

```
 1  # Development environment
 2
 3  ## Getting started
 4
 5  The `devsetup` script contains everything required.
 6
 7  ### Bootstrapping
 8
 9  Bootstrapping and managing the environment can be done entirely with `devsetup`.
10  Everything is built from source, and the resulting environment should be
11  consistent regardless of the host platform, including when deploying in staging
12  or production.
13
14  This is thanks to pkgsrc (https://pkgsrc.org,
15  https://www.netbsd.org/docs/pkgsrc/), the packaging system for NetBSD, which is
16  portable and should work equally well on all \*BSDs, Linux, Windows, Illumos,
17  and more.
18
19  Basically, to get started, simply run:
20
21  ```shell-session
22  $ ./devsetup init
23  ```
```

README.md

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17 and more.
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19 Basically, to get started, simply run:
20
21 ```shell-session
22 $ ./devsetup init
23 ```
```

$ vim devsetup

```
26 #variables
27 #executables
28 BMAKE=
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

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42 RM="/bin/rm -f"
43 SLAPADD=
44 SLAPPASSWD=
```

$ vim devsetup

```
 45 #settings
 49 FASTCGI_ADDRESS="127.0.0.1"
 50 FASTCGI_PORT=9000
 51 GROUP="$USER"
 52 case $($UNAME) in
 53         Darwin)
 54                 GROUP="staff"
 55                 ;;
 56 esac
 62 LDAP_ADMIN_PASSWORD="ldapseed${HOME}padding"
 63 LDAP_ADMIN_USERNAME="admin"
 68 PACKAGE_DEPENDENCIES="archivers/bzip2
 69 converters/libiconv
 98 www/py-gunicorn"
100 PKGSRC_REPOSITORY_BRANCH="pkgsrc-2022Q2"
101 PKGSRC_REPOSITORY_REMOTE="https://git.edgebsd.org/EdgeBSD/pkgsrc.git"
105 POSTGRESQL_ADMIN_DATABASE="template1"
106 POSTGRESQL_ADMIN_PASSWORD="psqlseed${HOME}padding"
110 SERVICES="dovecot
111 nginx
112 pgsql
113 php_fpm
114 saslauthd        -a ldap
115 slapd    -4 -h ldap://$LDAP_ADDRESS:$LDAP_PORT/"
```

$ vim devsetup

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```

EdgeBSD
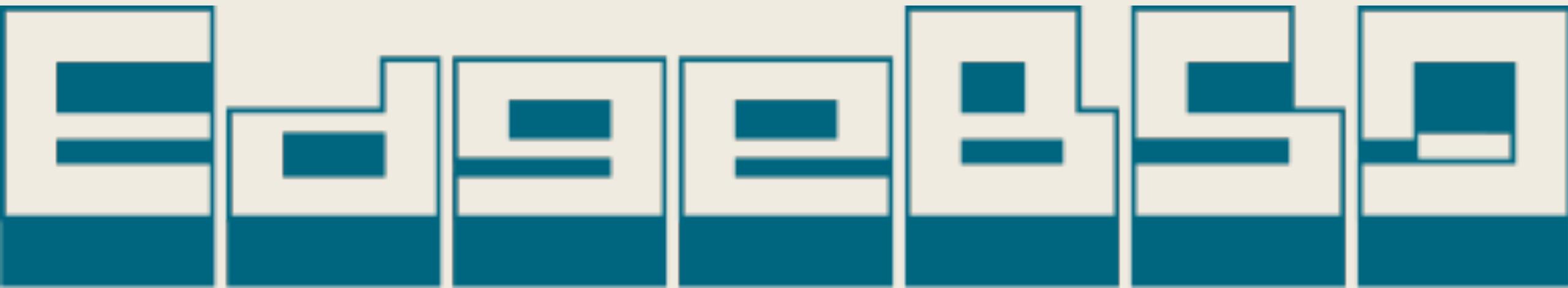
- Fork of NetBSD by Yours Truly in August 2013

- 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

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118 #load local settings
119 [ -f "$HOME/.config/$PROGNAME.conf" ] &&
120       . "$HOME/.config/$PROGNAME.conf"
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129 [ -n "$PKGSRC_SYSCONFDIR" ]            || PKGSRC_SYSCONFDIR="$PKGSRC_PREFIX/etc"
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133 [ -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
[…]             clean|configure|environment|init|install|restart|start|status|
stop|update|uninstall)
167                         "_devsetup_command_$command" "$@"
168                         ;;
169                 *)
170                         _usage "$command: Command not supported"
171                         return $?
172         esac
173 }
```

$ vim devsetup

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146 _devsetup()
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148         if [ $# -lt 1 ]; then
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171                         return $?
172         esac
173 }
```

$ 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 "$PROGNAME start|stop|status|restart [-qv][service...]" 1>&2
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6164         echo "  services." 1>&2
6165         return 1
6166 }
6176
6177 #main
6178 _devsetup "$@"
```

$ vim devsetup

```
6141 #usage
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6176

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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...]
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Usage Screen

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$ ./devsetup
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  Removes the temporary files resulting from compilation.

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devsetup install|configure|update|uninstall [-qv][package...]
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  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:/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**

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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 a 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 a 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 a 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 a out-of-bounds-read vulnerability, see https://nvd.nist.gov/vuln/detail/CVE-2022-29458
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$ audit-packages

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$ ~/opt/pkgsrc-2022Q2/sbin/pkg_admin fetch-pkg-vulnerabilities
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```

devsetup

Administration interfaces

- phpldapadmin
- phppgadmin
- 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
- pcre
- pcre2
- PostgreSQL
- tiff

Online references

- pkgsrc: homepage, guide, packages
- nginx: homepage

Known Issues

Perspectives for improvement

Challenges

It would be too easy

I Can Haz Packages ...Not

- 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...

COMING
SOON...

Availability

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@edgebsd.org
- pierre@defora.net
- @khorben on Twitter
- https://github.com/khorben/devsetup