

pkgsrc

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Statement

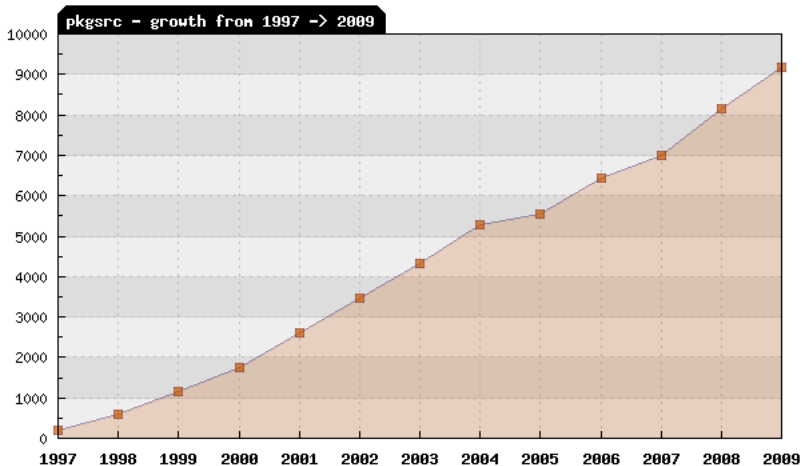
About pkgsrc:

The NetBSD Packages Collection (pkgsrc) is a framework for building third-party software on NetBSD and other UNIX-like systems, currently containing over 9000 packages. It is used to enable freely available software to be configured and built easily on supported platforms.

pkgsrc

- <http://www.pkgsrc.org/>
- Framework to build, install and manage software packages.
 - Source-based
 - Binary-packages can also be created and installed
 - Handles compile- and runtime-dependencies
- NetBSD and DragonFly BSD use pkgsrc as native package manager
- But is generally not bound to a specific operating system
- ~500 maintainers, ~80 core developers

Number Of Packages



Supported Operating Systems

- Net/Open/Free/DragonFly BSD
- Solaris
- Linux
- Darwin (Mac OS X)
- IRIX
- AIX
- Interix (MS Windows Services for Unix)
- Tru64
- HP-UX
- QNX
- (soon) Haiku

Releases

- pkgsrc is managed with CVS
- Development is done in HEAD
- About two weeks before the end of every quarter a freeze takes place
- At the end of a quarter a release named in the scheme YYYYQ[1234] gets published
- Current release is e.g. 2009Q4
- The release branch receives only critical updates like security fixes or point fixes for e.g. build failures

Terminology

- **pkgsrc** - The NetBSD Packages Collection (the package management system)
- **package** - A set of files and building instructions that describe what's necessary to build a certain piece of software using pkgsrc.
- **binary package** - A set of binaries built with pkgsrc from a distfile and stuffed together in a single .tgz file so it can be installed on machines of the same OS and machine architecture without the need to recompile.
- **distfile** - The file(s) that are provided by the author of the software to distribute her/his work. All the changes necessary to build on NetBSD are reflected in the corresponding package. Distfiles are usually fetched into /usr/pkgsrc/distfiles.
- **port** - In pkgsrc/NetBSD terminology, **port** refers to a different architecture; FreeBSD and OpenBSD refer to what we call a **package** with the word **port**.

Download

- Tarballs via FTP
 - `ftp://ftp.netbsd.org/pub/pkgsrc/current/pkgsrc.tar.gz`
- Checkout repository via CVS
 - `export CVS_RSH=ssh`
 - `cvs -d anoncvs@anoncvs.NetBSD.org:/cvsroot co pkgsrc`
- Lives typically in `/usr/pkgsrc`

Contents

```
$ cd /usr/pkgsrc
```

```
$ ls
```

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

Contents Of A Category

```
$ cd /usr/pkgsrc
$ ls shells
CVS                dash                osh                standalone-tcsh
Makefile           eltclsh            pdksh             static-ast-ksh
ast-ksh            es                 perlsh            static-tcsh
bash               esh                posh              tcsh
bash-completion   lshell            rc                xsh
bash2              mksh              rssh              zsh
bash2-doc          mudsh             scponly           zsh-current
bash3              nologinmsg       scsh
```

Contents Of A Package

```
$ cd /usr/pkgsrc/shells/bash
$ ls -R
.:
DESCR      Makefile  PLIST      distinfo  patches

./patches:
patch-aa  patch-af  patch-ag
```

Anatomy Of A Package

- **Makefile** - instructions on how to build the software
- **distinfo** - checksum of the distfiles
- **patches/*** - any patches that are necessary to make the software build
- **DESCR** - a description of the package
- **PLIST** - the list of files that are installed

Bootstrap 1/2

Required on all platforms, except Net/DragonFly BSD

```
# cd /usr/pkgsrc/bootstrap
# export CC=/usr/sfw/bin/gcc
# ./bootstrap

# /usr/pkg/sbin/pkg_info
bmake-20090909      Portable (autoconf) version of NetBSD 'make' utility
bootstrap-mk-files-20090807 *.mk files for the bootstrap bmake utility
install-sh-20070712 install script compatible with the BSD install program
nawk-20050424nb3   Brian Kernighan's pattern-directed scanning and processing language
nbsd-20040821nb1   NetBSD-current's sed(1)
pdksh-5.2.14nb4   Free clone of the AT&T Korn shell
pkg_install-20091009 Package management and administration tools for pkgsrc
```

With this minimal base-set of packages, other (binary compatible) machines can be binary-bootstrapped by transferring **/usr/pkg** and **/var/db/pkg** to them.

Bootstrap 2/2

The following set of packages will also be installed with the first compile of a package:

```
digest-20080510      Message digest wrapper utility
nbpatch-20091021     Patch files using diff output
pkg_install-info-4.5nb3 Standalone GNU info file installation utility
tnftp-20070806       The enhanced FTP client in NetBSD
```

I additionally recommend to install:

```
bsdtar-2.5.5         Fast multi-format tape archiver
pax-20080110         POSIX standard archiver with many extensions
```

Some Make-Targets

- fetch
- extract
- patch
- wrapper
- configure
- build
- install
- package
- clean
- clean-depends

Build Packages

for instance bash:

```
# cd /usr/pkgsrc/shells/bash
# (b)make install
# (b)make package
# (b)make clean clean-depends
```

Packages are installed into /usr/pkg per default.

Manage Packages

for instance lynx:

```
# pkg_add -v ftp://ftp.netbsd.org/pub/NetBSD/\
packages/1.6/m68k/All/lynx-2.8.4.0b19.tgz
# pkg_add /nfs/packages/lynx-2.8.4.0b19.tgz

# pkg_info lynx
lynx-2.8.4.0b19

# pkg_delete lynx-2.8.4.0b19
```

Displaying Options

```
$ cd /usr/pkgsrc/mail/postfix
```

```
$ (b)make show-options
```

```
Any of the following general options may be selected:
```

```
bdb      Enable Berkeley DB support.
ldap     Enable LDAP support.
mysql    Enable MySQL support.
mysql4
pcre     Enable Perl-compatible regular expressions.
pgsql    Enable PostgreSQL support.
sasldb   Enable SASL support.
sqlite   Enable SQLite support.
tls      Enable TLS support.
```

```
These options are enabled by default:
```

```
tls
```

```
These options are currently enabled:
```

```
pcre sasldb tls
```

```
You can select which build options to use by setting PKG_DEFAULT_OPTIONS
or PKG_OPTIONS.postfix.
```

Setting Options

- Options are set in **/usr/pkg/etc/mk.conf** or **/etc/mk.conf**.
- Options can be set globally or per package.

/etc/mk.conf

```
# directory for distfiles
DISTDIR = /nfs/pkgsrc/distfiles
# compiler and flags
CFLAGS+=-O2
CXXFLAGS+=-O2
CC=/usr/sfw/bin/gcc
CXX=/usr/sfw/bin/g++
# use our tar and pax
TOOLS_PLATFORM.pax?=/usr/pkg/bin/${NBPAK_PROGRAM_PREFIX}pax
TOOLS_PLATFORM.tar?=/usr/pkg/bin/${NBPAK_PROGRAM_PREFIX}tar
# accept some licenses
ACCEPTABLE_LICENSES+= vim-license
ACCEPTABLE_LICENSES+= postfix-license
# postfix with PCRE, SASL und TLS
PKG_OPTIONS.postfix = pcre sasl tls
# don't use/want X11, if possible
PKG_DEFAULT_OPTIONS = -x11
```

pkgin

Tool to manage binary packages and remote repositories, like apt-get or yum.

For example on Solaris/x86:

```
# Install pkg_* tools and the 'pkgin' package manager
$ pkgadd -d http://www.netbsd.org/~sketch/TNFPkgsrc-x86.pkg all

# Add tools to PATH
$ PATH=/opt/pkg/sbin:/opt/pkg/bin:$PATH

# Update package repository (akin to 'apt-get update')
$ pkgin up

# Search for a particular package (you can use regexp)
$ pkgin search ^ap.*python

# Install it
$ pkgin install ap22-py25-python

# Update all packages (akin to 'apt-get dist-upgrade')
$ pkgin full-upgrade

# How many packages are available?
$ pkgin avail | wc -l
4970
```

About joyent

Since 2004, Joyent has been delivering web application hosting Infrastructure as a Service - long before it was ever called Cloud Computing. Over the years, Joyent's infrastructure has been proven to be extremely stable, flexible and secure.

- Technology behind the scenes:
 - Solaris x86 (Nevada)
 - 100000+ zones
 - pkgsrc (with local modifications)
- git clone to own repository during quarterly freeze
- now pushing changes upstream

I did it my way...

My way to install and use software with pkgsrc on Solaris.
MUCOSUG meeting 17th March.

opensolaris

