

**pkg\_select: so many packages,  
so few columns**

**pkgsrcCon 2006**

# Introduction

**pkg\_select** is a tool to navigate pkgsrc

- pkg\_select
  - is coded in C
  - follows */usr/share/misc/style* specifications
  - has no other packages dependencies
  - is linked only to curses(3) and libc

*/usr/pkg/bin/pkg\_select:*

*-lcurses.6 => /usr/lib/libcurses.so.6*

*-lc.12 => /usr/lib/libc.so.12*

# What is pkg\_select

- frontend to the pkgsrc packaging system.
- simple curses interface
- fetch pkgsrc if not present in the system
  - from a local directory
  - from CVS
  - from ftp
- upgrade pkgsrc from CVS
- browse pkgsrc hierarchy
  - from a local pkgsrc
  - from a distant ftp pkgsrc repository
  - from a local binary repository
- browse pkg\_dbdir and show installed packages
- gather various informations about packages
- build, install, upgrade a source package
- install a binary package

## How does pkg\_select work: starting it up

At startup, if it has been called without any special flags, pkg\_select will check if a pkgsrc hierarchy is available at :

- . *`${PKGSRCDIR}`* or
- . a path specified by *`-b`*, or
- . *`/usr/pkgsrc`* by default.

# No pkgsrc present

```
[ No pkgsrc ]
```

```
pkgsrc was not found in /tmp/inexistant, download it ? [Y/n]
```

# Fetching

If not present, it will ask you to download pkgsrc (pkgsrc.c)

- from a ftp mirror list
- from a CVS mirror list
- from a local copy by specifying a directory

```
[ Download method ] _____  
Download method: (f)tp / (c)vs / (d)irectory cp ?
```

# "Classic" local pkgsrc mode

- reads the directory containing pkgsrc using scandir(3) (parsedirs.c)
- reads every category Makefile and prints them associated with the COMMENT variable (makefile.c)

From the browsing interface the following actions may be done :

- Update pkgsrc by CVS (pkgsrc.c)
- Find one or more packages (parsedirs.c) and browse the result just as if you were browsing pkgsrc

continues next slide...

# Screenshot: Local pkgsrc mode

```
[ /usr/pkgsrc ]
[ XII ] no comment.
[ archivers ] Archivers
[ audio ] Audio tools
[ benchmarks ] Benchmarking tools
[ biology ] Software for the biological sciences
[ cad ] CAD tools
[ chat ] Communication programs
[ comms ] Communication utilities
[ converters ] Document format and character code converters
[ crosspkgtool... ] Tools for cross-building pkgsrc
[ databases ] Databases
[ devel ] Development utilities
[ editors ] Editors
[ emulators ] Emulators for other operating systems
[ finance ] Monetary, financial and related applications
[ fonts ] Fonts
[ games ] Games
[ geography ] Software for geographical-related uses

[ret] enter      [/] search      [n] next        [o] other cmds
[<-] back       [q] quit       [f] pkgfind    [I] installed packages
```



# "Classic" local pkgsrc mode

- Browse installed packages (via `pkg_dbdir`), same as above
- Tag / Untag one or more packages for mass-installation process (`install_many.c`)
- enter preferences menu (`prefs.c`)

# Installed Packages

[ installed packages ]

```
[ 6tunnel      *] v4/v6 protocol translation
[ GConf2      *] Configuration database system used by GNOME (v2)
[ ImageMagick *] Package for display and interactive manipulation ..
[ MesaLib     *] Graphics library similar to SGI's OpenGL
[ ORBit       *] High-performance CORBA ORB with support for the C..
[ ORBit2      *] High-performance CORBA ORB with C language suppor..
[ Xcomposite  *] Xcomposite extension (library)
[ Xfixes      *] X Fixes extension of X RandR
[ Xft2        *] Library for configuring and customizing font acce..
[ Xrandr      *] X RandR extension (Library)
[ Xrender     *] Client library for the X Rendering Extension prot..
[ a2ps        *] Formats an ascii file for printing on a postscrip..
[ aalib       *] ASCII Art library
[ aalib-x11   *] ASCII Art library with X11 support
[ amule       *] Another Emule P2P client
[ apcupsd     *] UPS power management for APCC Products
[ aspell      *] Spell checker with good multi-language support
[ asterisk    *] The Asterisk Software PBX
```

```
[ret] enter      [/] search      [n] next        [o] other cmds
[<-] back       [q] quit        [f] pkgfind     [L] installed packages
```

# "Classic" local pkgsrc mode

```
[ /usr/pkgsrc/archivers/gcpio ]
```

```
Package administration and informations
```

```
distname: cpio-2.6
```

```
installed: none
```

```
homepage: http://www.gnu.org/software/cpio/cpio.html
```

```
maintainer: pkgsrc-users@NetBSD.org
```

```
comment: GNU copy-in/out (cpio) with remote magnetic tape (rmt) support
```

```
[m] show package description
```

```
[p] view package files list
```

```
[e] show package dependancies
```

```
[i] build and install package
```

```
[u] build and upgrade package
```

```
[b] install binary package
```

```
[d] de-install package
```

```
[<-] back [q] quit
```

When a DESCR file is present, pkg\_select enters a package administration and information mode (*pkg\_info.c*)

# "Classic" local pkgsrc mode

Information is gathered from package **Makefile**

- Package description and file list are read from **DESCR** and **PLIST**.
- Package dependencies calculated via ***make show-var VARNAME=DEPENDS***
- Enables browse dependencies just like in pkgsrc
- Build and install executes: ***make install clean***
- Build and upgrade executes: ***make update clean***
- Install binary package
- Deinstall a package

# pkgsrc-over-ftp mode

When started with the `-l` flag, `pkg_select` enters the "live pkgsrc" mode (`live.c`).

Using `pkg_select` this way:

- you don't have to have a local pkgsrc hierarchy
- connects to a ftp pkgsrc mirror
- behaves just as it was browsing a local repository,
- uses slightly modified versions of `pkg_install`'s `ftpio.c` functions (`ftpio.c`).

# pkgsrc-over-ftp mode

[ Choose mirror ]

```
[ Master ] ftp://ftp.NetBSD.org/pub/NetBSD
[ Australia ] ftp://ftp.au.NetBSD.org/pub/NetBSD
[ Australia ] ftp://ftp2.au.NetBSD.org/pub/NetBSD
[ Austria ] ftp://ftp.at.NetBSD.org/pub/NetBSD
[ Austria ] ftp://ftp.enemy.org/pub/NetBSD
[ Belgium ] ftp://ftp.be.NetBSD.org/pub/NetBSD
[ Brazil ] ftp://ftp.br.NetBSD.org/pub/NetBSD
[ China ] ftp://ftp.cn.NetBSD.org/pub/NetBSD
[ China ] ftp://ftp.tsinghua.edu.cn/pub/NetBSD
[ Denmark ] ftp://ftp.dk.NetBSD.org/pub/NetBSD
[ Estonia ] ftp://ftp.ee.NetBSD.org/pub/NetBSD
[ Finland ] ftp://ftp.fi.NetBSD.org/pub/NetBSD
[ France ] ftp://ftp2.fr.NetBSD.org/pub/NetBSD
[ France ] ftp://ftp.bsdf.fr.org/pub/NetBSD
[ Germany ] ftp://ftp.de.NetBSD.org/pub/NetBSD
[ Germany ] ftp://ftp2.de.NetBSD.org/pub/NetBSD
[ Germany ] ftp://ftp3.de.NetBSD.org/pub/NetBSD
[ Germany ] ftp://ftp4.de.NetBSD.org/pub/NetBSD
[ Germany ] ftp://ftp.join.uni-erlangen.de/pub/NetBSD
[ Germany ] ftp://ftp.netbsd.org/pub/NetBSD
```

[ ftp://ftp2.fr.NetBSD.org/pub/NetBSD/NetBSD-current/pkgsrc ]

```
[ archivers ] Archivers
[ audio ] Audio tools
[ benchmarks ] Benchmarking tools
[ biology ] Software for the biological sciences
[ cad ] CAD tools
[ chat ] Communication programs
[ comms ] Communication utilities
[ converters ] Document format and character code converters
[ cross ] Cross-platform development utilities
[ crosspkgtool... ] Tools for cross-building pkgsrc
[ databases ] Databases
[ devel ] Development utilities
[ editors ] Editors
[ emulators ] Emulators for other operating systems
[ finance ] Monetary, financial and related applications
[ fonts ] Fonts
[ games ] Games
[ geography ] Software for geographical-related uses
```

```
[ret] enter      [/] search      [n] next        [o] other cmds
[<-] back       [q] quit        [f] pkgfind     [I] installed packages
```

# pkgsrc-over-ftp mode

As reading remote Makefiles can take lot of time if you are browsing through a slow link

the -m flag will prevent pkg\_select to read them.

In this mode:

only categories and package names are shown.

This can also be set by the *live\_ftp\_read\_makefiles* configuration variable.

# pkgsrc-over-ftp mode

[ ftp://ftp2.fr.NetBSD.org/pub/NetBSD/NetBSD-current/pkgsrc/fonts ]

```
[ XFree86-font... ] no comment.  
[ XFree86-font... ] no comment.  
[ XFree86-font... ] no comment.  
[ XFree86-font... ] no comment.  
[ XFree86-font... ] no comment.  
[ XFree86-font... ] no comment.  
[ Xft2          *] no comment.  
[ Xg            ] no comment.  
[ acroread-chs... ] no comment.  
[ acroread-cht... ] no comment.  
[ acroread-fo... ] no comment.  
[ acroread-jpn... ] no comment.  
[ acroread-kor... ] no comment.  
[ acroread5-ch... ] no comment.  
[ acroread5-ch... ] no comment.  
[ acroread5-fo... ] no comment.  
[ acroread5-jp... ] no comment.
```

[ret] enter      [/] search      [n] next      [o] other cmds  
[<-] back        [q] quit        [f] pkgfind    [I] installed packages



# pkgsrc-over-ftp mode

```
[ ftp://ftp2.fr.NetBSD.org/pub/NetBSD/NetBSD-current/pkgsrc/fonts/Xft2 ]
```

```
Package administration and informations
```

```
distname: libXft-2.1.7
```

```
installed: 2.1.7
```

```
homepage: http://fontconfig.org/
```

```
maintainer: pkgsrc-users@NetBSD.org
```

```
comment: Library for configuring and customizing font access
```

- [i]** show package description
- [p]** view package files list
- [b]** install binary package
- [d]** de-install package

```
[<-] back [q] quit
```

As in classic operation mode, when a DESCR file is found, pkg\_select shows the package administration / information screen. In live-ftp mode, fewer informations are shown, and only binary installation can be done (i.e. no build).

# local binary repository mode

A feature that could be used as a post-installation process so binary packages installation is possible without local pkgsrc hierarchy

Available at the pkg\_select CVS repository:

*:pserver:anoncvs@gcu.info:/cvs*

- If *PACKAGES* points to a directory containing binary packages:
- pkg\_select will build a virtual pkgsrc hierarchy
  - pkg\_select creates package category directory, package directory, Makefile, DESCR and PLIST
  - This virtual hierarchy is then used as a classic pkgsrc, with fewer informations and only binary installation.

# local binary repository mode

```
(imil@home)
[~/src/pkg_select] cat /tmp/pkgsrc/system/base/Makefile
```

```
DISTNAME=      base
COMMENT=       Base binary distribution
VIRTUAL_MAKEFILE=  yes
SYSTEM_PKG=    yes
```

```
(imil@home)
[~/src/pkg_select] cat /tmp/pkgsrc/graphics/3DKit/Makefile
```

```
DISTNAME=      3DKit-0.3.1r2nb9
COMMENT=       Objective-C 3D graphics foundation class library
VIRTUAL_MAKEFILE=  yes
```

```
(imil@home)
[~/src/pkg_select] []
```

```
ArX-1.0.20nb5.tgz
BSDSUM
BasiliskII-1.0.20051122nb1.tgz
BitTornado-0.3.15.tgz
BitTornado-gui-0.3.15.tgz
CDDDB-1.12nb2.tgz
CKSUM
CRWInfo-0.2.tgz
CSP-0.32.tgz
Canna-3.6pl4.tgz
Canna-canuum-3.6pl4.tgz
Canna-dict-3.6pl4.tgz
Canna-lib-3.6pl4.tgz
Canna-server-3.6pl4nb1.tgz
Cenon-3.67nb2.tgz
Cg-compiler-1.3beta2nb1.tgz
Cheetah-0.9.18nb2.tgz
Chinput-3.0nb3.tgz
Coin-2.4.4nb1.tgz
CriticalMass-0.9.10nb3.tgz
Cygne-SDL-0.1nb4.tgz
DatLib-2.15nb1.tgz
SYSVSUM
base.tgz
comp.tgz
etc.tgz
games.tgz
kern-GENERIC.MP.tgz
kern-GENERIC.MPACPI.tgz
kern-GENERIC.tgz
kern-GENERIC_DIAGNOSTIC.tgz
kern-GENERIC_LAPTOP.tgz
kern-GENERIC_PS2TINY.tgz
kern-GENERIC_TINY.tgz
kern-XEN0.tgz
kern-XENU.tgz
man.tgz
misc.tgz
text.tgz
xbase.tgz
xcomp.tgz
xetc.tgz
xfont.tgz
xserver.tgz
```

```
(imil@home)
[~/src/pkg_select] PACKAGES=/home/imil/nfs/packages ./pkg_select[]
```

```
[ /tmp ]
[ base ] Base binary distribution
[ comp ] Compiler tools distribution
[ etc ] System configuration files
[ games ] Games and their manual pages
[ man ] Manual pages
[ misc ] Miscellaneous
[ text ] Text processing tools
[ xbase ] Base X11 distribution
[ xcomp ] X11 include files and static X11 lib
[ xetc ] X11 configuratoin files
[ xfont ] X11 fonts
[ xserver ] X servers and manual pages
```

```
[ret] enter    [/] search    [m] menu      [o] other cmds
[<-] back     [q] quit      [f] pkgfind   [l] installed packages
```

# Upcoming plans

- Known bugs
  - local cp is reported to fail sometimes plus print garbage
  - system binaries installation seems to be leaked
  - packages Makefile with lots of inclusions seem to lead to SIGSEGV
- install\_many.c needs work, at last on presentation
- Give local cp availability to extract pkgsrc from compressed archive
- Add an interface to modify mk.conf, probably using packages options
- Rewrite configuration file screen / handling (ugly by now)
- pkg\_select has been tested under NetBSD/x86, FreeBSD/x86 and DragonFly/x86, many more platforms must be tested.
- Hubert requested a more "friendly" menu-driven interface, from which you could go to the browsing screen, something ala pine may be nice.

# Finale

Thanks to the GCU <http://gcu-squad.org>

Thanks to the NetBSD project

Questions ?