pkgsrc - Roadmap
A guide to the future of the world's best packaging system
Brought to you by
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Positioning

- Where are we now?
- Where do we want to go?
- Where are we going despite where we want to go?
- How are we going to get there?
Other packaging systems

- LindowsOS
- RedHat
- SuSE
- Debian/Fink
- FreeBSD ports
- OpenBSD ports
- NetBSD pkgsrc
- OpenPackages
- OpenPKG
What can we learn from them?

- Lots
LindowsOS (now Linspire)

CNR warehouse
- nice web-based front-end
- click and drool
- Some cost $$$ (StarOffice 7, for example)
- 1858 packages (as of 26th April 2004)
RedHat

RPMs
- ubiquitous in the Linux world
- package interchange mechanism of choice
- can do digital signatures
- no real cohesion to the system?
SuSE

- our Linux library/utility system of choice
- fighting it out with RedHat right now
- SuSE 9.1 latest version
- Support for GNOME, KDE available on website
  - SuSE 9.0
  - SuSE 8.2
  - SuSE 8.1
- perhaps we should look at the meta-package level, rather than individual packages?
Debian/Fink

- split primarily into stable, testing and unstable
- within that, there are contrib, non-free, non-US/Main, non-US/non-free
- multi-platform
- if we could ever work out what these categories are above, it may be good to think along these lines
- 9168 packages in -stable (as of 26th April 2004)
FreeBSD ports

- where we started from
- we have added some things since then
- they have added some things since then
- 10703 ports (as of 26th April 2004)
OpenBSD ports

- they have had a number of attempts at a ports collection
- this is their third attempt
- some interesting features
  - FAKE i.e. staged installs
  - flavours/flavors
- rewritten pkg_install tools in Perl
- 2588 packages (as best I can tell, as of 17th April 2004)
OpenPackages

- Chris Coleman’s attempt to unify the BSD ports/packages collections
- 1 port (zsh)
- Well-meaning, but failed to gain acceptance from interested parties first
- Not maintained any more
OpenPKG

- Cable & Wireless sponsored cross-platform package collection
- 2.0 is latest version (February 2004)
- RPM-based
- more than 700 packages (as of February 2004)
pkgsrc

- derived 7 years ago from FreeBSD ports collection
- ported to Solaris and Linux in 1999
- a generic bootstrap added in 2002
- 4619 packages (as of 26th April 2004)
- audit-packages
- wildcard version numbers
- "make update" and "make replace"
- buildlink
- package views
Competitive Analysis

- It is quite ironic that the majority of Linux packaging systems are focussed on a binary package unit.
- FreeBSD and Debian would seem to be the most (popular, volume, useful) packaging systems out there.
- Some newer packaging systems on the meta-package level are much easier to use than individual component ones.
  - "I use gnome 2.4" versus "I use gtk2-2.4.0nb1 and glib2-2.4.0nb2"
- How well do the individual components work with each other?
- Size isn’t everything.
Competitive Analysis (2)

- pkgsrc is well-placed
- pkgsrc is unsung
- pkgsrc is the "technical user’s" choice?
  - every NetBSD developer I know uses pkgsrc
  - I continue to be surprised by people using pkgsrc on every platform imaginable
- pkgsrc needs package views
- Can we do a determined sweep of FreeBSD’s ports to see what we can use?
- Our volunteers work very hard, often for no praise or thanks
Where are we now?

People mostly use the number of packages as a guide to how good a packaging system is

- FreeBSD 10703 ports
- Debian 9168 stable packages
- NetBSD 4619 packages
Other metrics

I believe there are other metrics for how good we are:

- Portability
- Infrastructure support features
- Vendor support
- THEN
- Number of packages
Metrics

Portability - using one packaging system is too much for some people. Using two, one at work, one at home, is way too much.
Metrics (2)

Infrastructure support features
- package views (more than one version of a package installed at any one time),
- digests and inventories,
- xpkgwedge,
- building related packages only where necessary.
Vendor Support

- Sun
- Bluewall Linux distribution
- Puget Sound Linux distribution
Metrics (4)

Popularity/Number of packages
- all the good ones are here, anyway
- 4619 packages
- 60+ pkgsrc developers
- vendors picking up pkgsrc
Where do we want to go?

1. Best packaging system
Where do we want to go?

1. Best packaging system
2. Best packaging system
Where do we want to go?

1. Best packaging system
2. Best packaging system
3. Best packaging system
Where do we want to go?

1. Best packaging system
2. Best packaging system
3. Best packaging system
4. barring none
To a certain extent, we don’t market ourselves as well as we could/should.
Things to do before June

- finish off buildlink3 integration
  - snj, jlam and wiz need (a) thanks, (b) chocolate, and (c) help
- move to using xpkgwedge as default
- start pkgviews integration
  - minskim is doing good work
- dynamic PLISTs (*)
- branch pkgsrc-2004Q2
- self-hosting pkgsrc
- "hearts and minds" campaign within NetBSD (*)
Things to do before June (2)

- netbsd-update
- more platforms (Tru64, the Hurd, ...)
  - keep bsd.pkg.mk generic
  - no "if ${OPSYS} == ..." in bsd.pkg.mk
- digitally-signed packages
  - BSD-licensed gpg clone
  - build on openssl functionality?
Other things to do short term

- fix up pkgsrc release engineering
- start deploying pkgviews
- encourage talks at conferences (difficult)
- encourage others to deploy pkgviews
- more work on cross-building packages
- better pkg_install tools
Medium term (up to and including pkgsrc-2004Q3 and Q4)

- finish converting all packages to package views
- add cross-building packages support to the tree
Long term

- world domination
Moving swiftly on...
Other packaging systems
What do others have that we should have?

- OpenBSD’s FAKE
- OpenBSD’s flavours
- FreeBSD’s `pkg_create` to generate a binary package from an installed package
- Debian’s "recommended" packages
What have I tried?

- staged installs
  - three types of staging
    - Debian-style DESTDIR
    - buildlink3-style wrappers around install
    - games with PREFIX in install stage of bsd.pkg.mk
  - seb and I took a week over this
    - after 7 days, 70 packages had been converted
    - that did NOT include perl5
  - results still in ftp.netbsd.org:~agc/staged-install-*
What have I tried? (2)

- rewriting pkg_install tools
  - 5th attempt is going well
  - has been given to a number of developers (not just pkgsrc developers)
  - libtar incorporated
What have I tried? (3)

- replacing the TAILQ functionality in pkg_install with dynamic arrays
  - no speed up (or slow down)
What have I tried? (4)

- removing db functionality from pkg_install
  - fragile
  - we have questions which relate to a corrupted db file
  - latest pkg_install rewrite removes the need for this
What have I tried? (5)

- before package views
  - culmination of a number of years of work
  - modified shell to trap calls to install in `${PREFIX}`
    - doesn’t catch everything
    - better to make small wrapper scripts for install, mkdir etc
  - union mounts
    - not portable across operating systems
  - still relatively cumbersome
  - only one (conflicting) package installed at a time
What have I tried? (6)

- digital signature and binary package addition
  - create a config file which specifies a wildcard for the trust
  - not particularly happy with this option, since it would be better to use fingerprints, rather than email addresses
  - open to abuse and misuse
Other things

- Developer meta-packages
  - same kind of things as the kernel config files
  - it would be great to have these
  - if they become out of date, we will delete them
  - foster a sense of belonging
Other things (2)

- package survey results
  - again, in a file on ftp.netbsd.org:~agc/
  - if anyone would like to analyse this file, it would be good
Other things (3)

- encourage more input from the user base
  - not just NetBSD
  - Solaris, Linux and other operating systems need a cohesive packaging system
Other things (4)

Package location and indexing

- a searchable interface on a website which will allow people to search for packages (preferably using a fuzzy search)

- a one-click "install-me" interface from that
  - it would be nice if digital signatures were involved here
Other things (5)

Binary packages and digital signatures

- someone to take digital signatures and binary packages and run with it
- create a new type of "signed package" (no detached signature)
- need to have a config file for list of addresses/signatures that are trusted
Other things (6)

Netbsd-update

- this is Windows Update functionality
  - for NetBSD
  - for other systems
- works for NetBSD’s system
- uses binary packages and digital signatures
- not trying to take the place of system packages
- come to Usenix to hear more
Where are we going despite where we want to go?

- More reliance on binary packages
- More reliance on digital signatures
How are we going to get there?

- This conference
- Hardwork of pkgsrc developers
- Setting goals
  - 4 pkgsrc releases in a year is a high aim
  - on track, and successful so far
More specifically

- Improve the pkg_install tools
- Staged installs - come with package views
- Dynamic PLISTs - come with package views
- A complete sweep of FreeBSD’s ports tree, to find the good maintained packages we could use
- Infrastructure regression tests
And

- A NetBSD developer to take over ownership of pkgsrc-changes and packages mailing lists
- A specific expression of licence and copyright for the files in pkgsrc (and pkgsrc-wip?)
Not forgetting...

There are a number of smaller jobs which we can all do:

- attack some of the PR backlog
- make new packages and submit them, to pkgsrc-wip or netbsd.org
- look at marketing ourselves better
- set up a mirror site for distfiles
- look at how we could do a web-based certificate-based binary package download (binary packages are coming, make no mistake)
- bulk builds on unusual architectures or operating systems, maybe help out with cross-building work
And also...

- someone to clean out the 7-3 years of back distfile arrears on ftp.netbsd.org
- more help with the buildlink3 work
- more help with the package views work
- someone to act as the voice of reason on tech-pkg@netbsd.org
- act as sponsors for new pkgsrc developers
- port pkgsrc to new platforms
- write a BSD-licensed gpg clone
Where would we be without...

- looking at other packaging systems on a regular basis to see if there’s anything we could do
- submitting papers to conferences (where we hope the organisers don’t just dismiss it as just another packaging system)
- organise the next pkgsrc conference in 2004/2005?
- people to act as port-masters for the various different platforms we support in pkgsrc
- a pkgsrc security-officer (others have been very good with this up until now, but we’re a volunteer project, and strength in depth would be good)
- look at adding sub-categories to pkgsrc
Or...

- an attempt to migrate `@exec` and `@unexec` to `INSTALL` and `DEINSTALL` files
- keep the new `pkgsrc` developers coming
- help Krister with the cross-building work
  - it can be used for much more than cross-building
- someone to eat some of this chocolate
- a dedicated on-line chat room just for `pkgsrc` and `pkgsrc-wip` (in addition to the ones we all use and love right now)
- any jobs relating to packaging systems should be sent to `tech-pkg@netbsd.org` (although I’d advise people not to hold their breath on this)
Air your (package) views
The End

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Any Questions?

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