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)

CNR Warehouse - Mozilla

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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.

Metrics (3)

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

Marketing

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

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Any Questions?

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