a gentle intro to functional package management with GNU Guix
Package managers are really useful.
Package managers are really useful.

But they can be so frustrating!
Version conflicts
Old software
Suspenseful upgrades
The only way is forward
Changes affect all users
Trust?
No package management
You are on your own.

External repos
EPEL, PPAs, AUR... more conflicts, more to trust

Application-specific packaging
gem, cabal, pip, cpan, npm:
more packages, less management

Build your own system package
Relocatable rpm, deb, PKGBUILD, ...

Meta package managers
Generate system packages with e.g. fpm

Giving up
Packaging is hard, let’s take snapshots.
Functional packaging

headers
sources
build tools
libraries
...

\( f(x) \)

cabba9e-\texttt{emacs}-24.5/
  | - bin
  |   | Emacs
  | - lib
  |   | ...

Functional packaging

Same inputs?  
Same output!

Different inputs?  
Different outputs.

cabba9e-emacs-24.5/
  bin
  Emacs
  lib
  ...

dedbeef-emacs-24.5/
  bin
  Emacs
  lib
  ...

Different inputs?  
Different outputs.
GNU Guix

Guix client
(guix packages)
(guix store)

RPCs

Build daemon

Isolated build processes
chroot with declared inputs

Store
(define glpk
 (package
  (name "glpk")
  (version "4.57")
  (source
   (origin
    (method url-fetch)
    (uri (string-append "mirror://gnu/glpk/glpk-
        version ".tar.gz")))
    (sha256 (base32 "0p17jj1ixd2...")))
  (build-system gnu-build-system)
  (inputs
""("gmp",gmp"))
  (arguments
""(#:configure-flags "(--with-gmp")"))
  (home-page "http://www.gnu.org/software/glpk/")
  (synopsis "GNU Linear Programming Kit")
  (description
""GLPK is a C library for solving large-scale linear
programming (LP), mixed integer programming (MIP), and
other related problems ...")
  (license gpl3+)))
Learn more!

#guix on irc.freenode.net
http://gnu.org/s/guix

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