

Functional Package Management with GNU Guix

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Good idea

- ▶ easy to install, upgrade, remove software
- ▶ dependency resolution
- ▶ centrally maintained repositories

Common problems

- ▶ outdated packages
- ▶ version conflicts
- ▶ changes affect all users
- ▶ potentially dangerous
- ▶ trust

Partial solutions

- ▶ **third-party repositories**
EPEL, PPAs, ...
- ▶ **manual compilation**
install to custom prefix, static linking
- ▶ **language-specific package systems**
gem, cabal, pip, cpan, npm ...
- ▶ **build your own system package**
RPM, deb, PKGBUILD, ...
- ▶ **meta package managers**
e.g. fpm generating RPM, deb, gem
- ▶ **giving up**
virtual machines, “app images”, snapshots

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Partial solutions

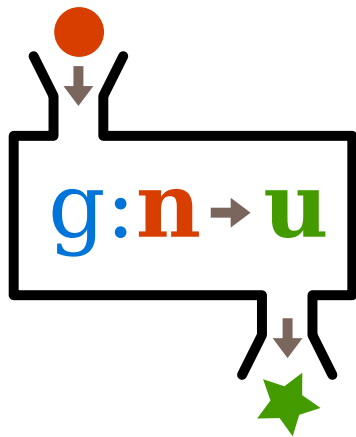
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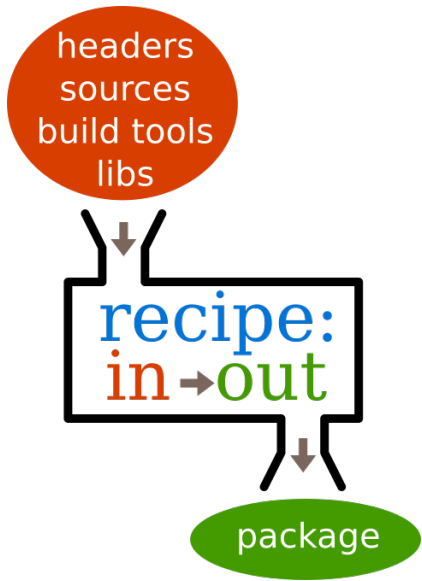
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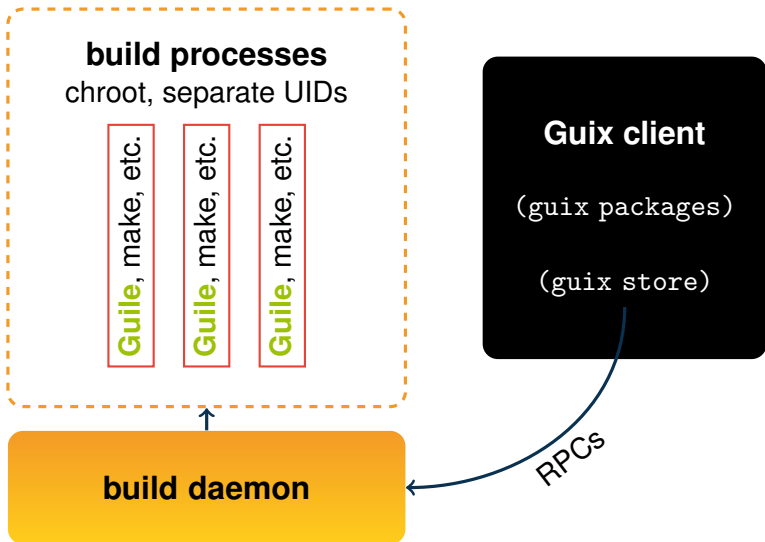
Guix





Functional package management

- ▶ no **global** values:
/bin, /usr/include, /usr/lib, ...
- ▶ **purity**:
only declared inputs are visible at build time
- ▶ **reproducible** results:
build outputs can be cached and substituted;
automatic deduplication!
- ▶ **immutable results** without **side effects**:
nothing outside of the cache and internal
state is modified



/home/rekado/.guix-profile

/var/guix/...

guix-profile

42

/gnu/store

hscq14x...-profile

bin

emacs

guile

rhrdst11m...-emacs-24.5

bin

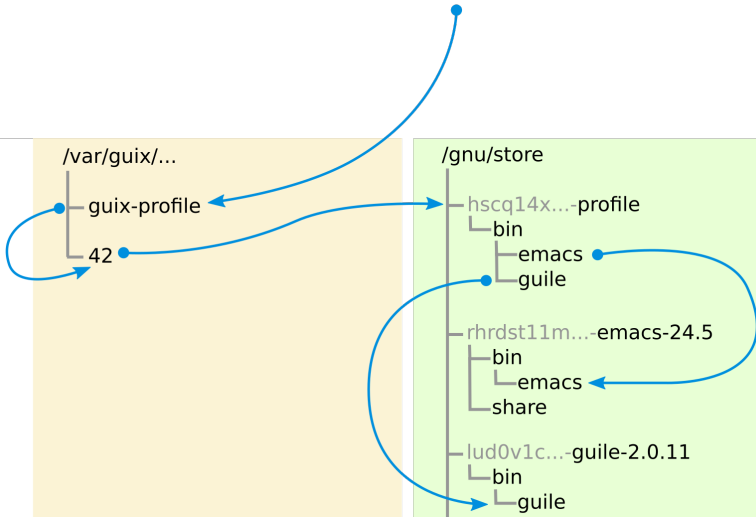
emacs

share

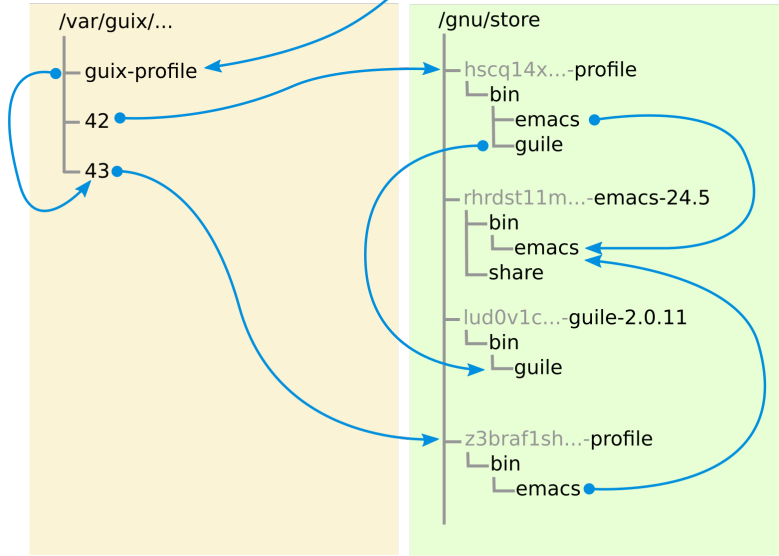
lud0v1c...-guile-2.0.11

bin

guile



/home/rekado/.guix-profile




```
(define hello
  (package
    (name "hello")
    (version "2.8")
    (source (origin
              (method url-fetch)
              (uri (string-append
                    "mirror://gnu/.../hello-" version
                    ".tar.gz"))
              (sha256 (base32 "0wqd...dz6")))))
  (build-system gnu-build-system)
  (synopsis "Hello, GNU world: An example GNU package")
  (description "Produce a friendly greeting.")
  (home-page "http://www.gnu.org/software/hello/")
  (license gpl3+)))
```

your help needed!

- ▶ version 0.8.2 is **out now**
- ▶ quickly growing collection of package recipes (1800+)
- ▶ **install the distribution**
- ▶ **use it**, report bugs, add packages
- ▶ share your **ideas!**



GuixSD



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<http://gnu.org/software/guix/>

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