GNU Guix is 4 years old!

Ludovic Courtès

GNU Hackers Meeting, Rennes, August 2016
The rise and fall of distros.
“Debian and other distributions are going to be that thing you run docker on, little more.”

— Jos Poortvliet, ownCloud developer

http://lwn.net/Articles/670566/
It’s also that thing you run inside Docker!
main griefs:

➢ distros are inflexible
➢ distros “lag behind”
➢ developers have to “chase distros”
Application-level package managers

- Anaconda - a package manager for Python
- Assembly - a partially compiled code library for use in Common Language Infrastructure (CLI) deployment, versioning and security.
- Biicode - a file-focused dependency manager for C/C++ languages and platforms (PC, Raspberry Pi, Arduino).
- Bower - a package manager for the web.
- UPT - a fork of Bower that aims to be a universal package manager, for multiple environments and unlimited kind of package
- Cabal - a programming library and package manager for Haskell
- Cargo - a package manager for Rust (programming language)
- CocoaPods - Dependency Manager for Objective-C and RubyMotion projects
- Composer - Dependency Manager for PHP
- CPAN - a programming library and package manager for Perl
- CRAN - a programming library and package manager for R
- CTAN - a package manager for TeX
- DUB - a package manager for D
As of npm@2.6.1, the npm update will only inspect top-level packages. Prior versions of npm would also recursively inspect all dependencies. To get the old behavior, use npm --depth 9999 update, but be warned that simultaneous asynchronous update of all packages, including npm itself and packages that npm depends on, often causes problems up to and including the uninstallation of npm itself.

To restore a missing npm, use the command:

```bash
curl -L https://npmjs.com/install.sh | sh
```
#!/bin/bash

pip install "$1" &
easy_install "$1" &
brew install "$1" &
npm install "$1" &
yum install "$1" & dnf install "$1" &
docker run "$1" &
pkg install "$1" &
apt-get install "$1" &
sudo apt-get install "$1" &
steamcmd +app_update "$1" validate &
git clone https://github.com/"$1"/"$1" &
cd "$1"; ./configure; make; make install &
curl "$1" | bash &
Giving up?
Giving up?

→ “app bundles”
FROM php:5.6-apache

RUN apt-get update && apt-get install -y bzip2
    libcurl4-openssl-dev
    libfreetype6-dev
    libicu-dev
    libjpeg-dev
    libmcrypt-dev
    libpng12-dev
    libpq-dev
    libxml2-dev
    && rm -rf /var/lib/apt/lists/*
ADD file:e5a3d20748c5d3dd5fa11542dfe4ef8b72a0bb78ce09f6da 125 mb
CMD "/bin/bash"
  0 bytes

RUN apt-get update && apt-get install -y --no-install-recommends ca-certificates curl wget && rm -rf
  44 mb

RUN apt-get update && apt-get install -y --no-install-recommends bzr git mercurial openssh-client subversion procmail
  123 mb

RUN apt-get update && apt-get install -y --no-install-recommends moqui-core

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... still too low-level
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Maybe what we need is an app store that feels like apt, yum & co.?
TECHNOLOGY LAB — Adios apt and yum? Ubuntu’s snap apps are coming to distros everywhere

More secure replacement for debs coming to Fedora, Arch, Debian, and more.

JON BRODKIN - 6/14/2016, 7:00 PM
“This is, to put it diplomatically, a heaping pile of steaming bullshit [...] served by the Canonical press department.”

— Adam Williamson (Red Hat, Fedora)
“This is, to put it diplomatically, a heaping pile of steaming bullshit [...] served by the Canonical press department.”

“There is in fact another system with very similar goals, which is now called **Flatpak** [...]”

— Adam Williamson (Red Hat, Fedora)

https://www.happyassassin.net/
THE FUTURE OF APPLICATION DISTRIBUTION

The days of chasing multiple Linux distributions are over. Standalone apps for Linux are here!

FIND OUT HOW
“app bundles” are headed wrong

- difficulty to compose software packages
- no “big picture” integration work
- where’s the Corresponding Source?
- “app” model/free software commons mismatch
Guix

1. transactional package manager
2. software environment manager
3. APIs & tools to customize environments
4. packaging tools
$ guix package -i gcc-toolchain coreutils sed grep
...

$ eval 'guix package --search-paths'
...

$ guix package --manifest=my-software.scm
...
Want to get started hacking on GIMP?
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A simple matter of installing the deps, right?
$ guix environment --container gimp
...

$ guix environment --container gimp \ 
   --ad-hoc git autoconf automake gdb
...

Creating package variants at the command line
$ guix package -i emacs \ 
    --with-source=./emacs-25.1rc0.tar.gz
...

$ guix package -i emacs \\
    --with-source=./emacs-25.1rc0.tar.gz
...

$ guix package -i git \\
    --with-input=openssl=libressl
...
Your personal packages or variants in

GUIX_PACKAGE_PATH!
Security updates “grafted” onto available binaries
GuixSD: declarative OS config
Linux-libre
Linux-libre

initial RAM disk
Linux-libre

initial RAM disk

PID 1: GNU Shepherd services...
Linux-libre

initial RAM disk

PID 1: GNU Shepherd
  services...

Guile

Guile
Linux-libre

initial RAM disk

PID 1: GNU Shepherd services...

applications
Status.
4 years!

- Aug. 2012 — GNU Hackers Meeting, Düsseldorf
- Nov. 2012 — dubbed GNU
- Jan. 2013 — 0.1
- ...
- July 2014 — 0.7, installable operating system
- ...
- Nov. 2015 — 0.9.0, new service framework, etc.
- Jan. 2016 — successful fundraiser for new build farm
- Mar. 2016 — 0.10.0, grafts, GNOME
- Aug. 2016 — 0.11.0, system tests, more services
growth!

- 3,800+ packages
- 4 architectures
- binaries at https://hydra.gnu.org
- ≈500 new packages per release
Activity

30 Day Summary  

411 Commits
30 Contributors
  including 5 new contributors

12 Month Summary  

5607 Commits
  Up +1303 (30%) from previous 12 months

96 Contributors
  Up +49 (104%) from previous 12 months
Contributors per Month
Scaling up.
importers & updaters

- guix import
  - 8.5 importers: GNU, Nix, PyPI, CPAN, CRAN, Hackage, ELPA, Gem, npm (GSoC 2016)

- guix refresh
  - 11 updaters: GNU, GNOME, KDE, Xorg, ELPA, CRAN, Bioconductor, Hackage, PyPI, Gem, GitHub

- guix lint -c cve (vulnerabilities)
contributions

- **documented processes**, code of conduct
- **consensus-based** decision making
- **tools**: `guix lint` (12 checkers!), `guix build --rounds=2`, etc.
- good **reviews & mentoring**
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- 50+ emails per day, **hard to track patches**
  - Patchwork? QEMU's patches? suggestions?
maintainership, responsibilities

- **Ricardo Wurmus** co-maintainer since July!
- currently $\approx 3$ build farm sysadmins
  - ... but heading towards distributed sysadmin!
  - run GuixSD everywhere, version-control that
  - eventually: `guix deploy`
build farm & funding

- hardware donated by FSF, TUM, GNU Spain, individuals
- 2 Novena boards (ARMv7) donated by Bunnie
- raised $8,000+ in January 2016
- 5,000 EUR donated by Igalia
- “Guix Europe” NPO created in France in 2016
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Thank You! :-)
Libreboot inside! No ME™!
What’s left before 1.0?
getting to 1.0

- guix pull & authenticated checkouts
- performance & usability improvements
- **GuixSD**
  - encrypted root file system
  - LVM support
  - more system services
  - fix bugs and glitches!
- self-hosted infra: guix publish and Cuirass
install the distribution
use it, report bugs, add packages
help with the infrastructure + admin
donate hardware/money
share your ideas!

your help needed!