Using Packages

Or how I learned to stop worrying and love the .deb

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AA4HS

Getting Started

- apt install gqrx-sdr
- apt install gnuradio-dev

   will pull in ~470 packages to meet all dependencies

So – what's in there...

- A handy receiver GUI application gqrx
- GNU Radio and volk
- Hardware support:

  airspy, bladerf, hackrf, rtl-sdr, uhd

  (and more thanks to Osmocom)

OOT Development

- Needs some more dev tools:

  apt install build-essential cmake

  ninja-build

- ...and some libfoo-dev and libbar-dev for your module using foo and bar features

- libvolk1-bin libfftw3-bin

Packages are great, but:

- They are old and not the version I need.
- They are not built with the right options
- They won't install on my system
- The software I need is not packaged
- Packages and Distributions are a barrier between developers and users

What is packaged?

- For my OS instance (using apt)

  apt-cache search <keyword>

- For applications, look to AppStream

  (the AppStream future is a work-in-progress)

Quick fixes are not so hard

- Use the source

  apt source <some package>

- Edit the source, say to add your USB device ids, add your own feature

- Build locally

  debuild -us -uc

- Deploy locally

  dpkg –install <your debs>

Roll your own

- Doing your own packaging is really not so hard.

  Lots of tools, instruction, and examples

- Doing your own package repository is really not so hard.

  Lots of tools, instruction, and examples

  - Helps form a team with shared experience

Barrier or Opportunity

- Distributions come with Overhead

  but they are a focal point for review of license, code, and suitability. Derivatives depend upon these features.

- Policy – we don't need no stinkin' policy

  but it is often the thing that allows us to work together with fewer conflicts

- Developers are best to support users directly

  Distributions have teams of translators, security bug fixers, build systems, debugging tools, QA and monitoring, larger lifecycle support.

Debian the Distribution

- A Community around Free Software

- Has sub-distributions:
  - Unstable – new bits
  - Testing – bits are not immediately buggy
  - Stable – release for widespread use

- Has many derivative distributions

  best to get it right in Debian

Interacting with Debian

- Debian has a bug tracking system
- Unpackaged software has special bugs:

  RFP: Request for Package

  ITP: Intent to Package

- Debian has web based tracking tools
- Email – mailing lists, irc

Debian Source and Binary distribution

- Install binary software without compiling on target machine

- Lots of tooling at the package level

- It's really all about the source
  - Source to end users
  - Source for review and audit
  - Source for derivation and improvements

GNU Radio and Debian

- An natural fit, we value Free Software

- Most of the ecosystem is licensed to uphold the Debian Free Software Guildelines (DFSG).

- If you contribute to GNU Radio, expect to find yourself to be contributing to Debian.

Credit where credit is due

- Copyright your work
- License your work
- State the Above clearly
  - Credit others whose work you derived
  - Comply with the licenses of others work
- We all would not be here except for authors specifically licensing code to allow sharing.

Release clearly

- Early and often is fine
- Debian, other distributions, and archivists love tarballs on a public site

  But will settle for git release tags.
- Extra points for cryptographic hashsums for integrity and cryptographic signatures for verifiable attributions

CMake GNUInstallDirs

include(GNUInstallDirs)

- Adds additional control variables useful in the install step.

  CMAKE_INSTALL_LIBDIR, CMAKE_INSTALL_*

- GNU Coding Standards

- Multi-Arch Support

- Debian tools do the right things

Man pages

- Debian is old school.

  Policy tells us to document applications in */usr/bin* with unix man pages

- But yeah, keep doing Doxygen and keep trying to do better modern documentation practices.

- It turns out, work done in documentation often leads to successful outcomes.

The Package Maintainer's point of view

- https://qa.debian.org/developer.php?login=bottoms&comaint=yes

- https://qa.debian.org/developer.php?login=aeb&comaint=yes

- If this is an eye chart, you should follow the links…

  Info of versions, automatic testing, notice of new upstream releases.

  Links to bug reports.

- http://tracker.debian.org/

Questions?

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