New2Linux: Getting the software you want installed

April 1, 2021

John Nash
for
Virtual Meeting of Linux-Ottawa

Focus: Packages and Managers

- Linux distros use **packages** to install software.
- To keep the ensemble of software packages "sane" (working sensibly together) there is usually a **package manager**
- Packages are available from network-based **repositories** or "repos"
- But there is always software NOT available in the distro repositories. How do we get and install it?

Packages

- Package = file containing the software in an appropriate form for our distro along with scripts and tools to install it correctly and describe dependencies (other software needed to run the package)
- Some examples:
  - .deb for Debian (Ubuntu, Mint, ...)
  - .rpm for Redhat (??Manjaro, SUSE, ...)
  - Arch packages under *pacman* manager

CAUTION!

- Package(s) may need to be selected for
  - Processor: ARM, i386, AMD64
  - Compatibility with version of distro
  - Compatibility with other software, e.g., Python 2.7 vs Python 3 infrastructure
  - Available devices: file systems, cameras, scanners, printers, networks, etc.

Package installers

- Tools to install a single package

  dpkg -i asoftwarepkg.deb

  GUI is gdebi package installer

  Note: in Mint this is NOT in menu, but from file managers Right Click, “Open With”

- Allow us to download and install packages NOT necessarily from our distro’s collection
- In consequence, may give some troubles
- Should try to install dependencies, but ...

Package managers

- Handle package installation AND updating and coordination
- Often linked to “watcher” apps that inform us when updates are needed (“updaters”)
- Examples:
  - Debian/Ubuntu/Mint: apt (CLI), synaptic (GUI)
  - Redhat etc: yum (CLI)
  - Arch: pacman (CLI)

Functions of package manager

- Designate sources of packages
  - Which repos
  - Possibly which repo addresses when mirrored
  - Special sources
- Allow for “available packages” list to be **updated**
- Allow for current installed packages to be **upgraded**

How? (Mint example)

- Update: CLI -- sudo apt update

  GUI – Administration/Update Manager (*refresh*)

- Upgrade: CLI -- sudo apt upgrade

  GUI – Administration/Update Manager (*install updates*)

- New package: CLI – sudo apt install pkgname

  GUI – Administration/Synaptic Package Manager

  - *Choose pkg and set to install / install packages*
  - Alternative is “Software Manager”

Software NOT in repo

- Have to find software by “search” e.g., Google or recommendation in forum or mailing list or ...
- Individual packages: make sure it is correct type (e.g., .deb vs .rpm) and suitability (processor, version, etc.), then download and install
- May be available for our distro in a special repository e.g., PPA – Personal Package Archive
    - Can add these to our “available” repos
- Or in other special repos e.g., backports, CRAN (for R)
- May be available for a *different* package manager.

Other package managers

- Distro repository packages often need to point to specific resources (libraries etc.), so need to be tailored to the distro
- Cross-distro packages would be “nice”
  - Snap
  - Flatpak
  - Appimage
  - ?? others

Other package managers 2

- Canonical **snap** (from 2014 onward)
  - Intended as cross-distro form, but *systemd* needed
  - Promoted as allowing faster deployment of new s/w
  - Mint took snaps OUT of default installation due to concerns that Canonical was making .deb packages essentially point to a snap and thereby NOT use the installed infrastructure.
  - Possibility that snaps run better in Ubuntu
  - Discussion and debate?

Other package managers 3

- **Flatpak** (2015 on)
  - Similar idea, but not sponsored by a distro
- **Appimage** (2004 as **klik**, 2011 as **PortableLinuxApps**, 2013 as Appimage)

ISSUES:

- Behaviour not necessarily consistent across platforms
- Slooooooowwww and bulky?

Tarballs -- tar.gz files

- Download
- Extract
- Look for *install.sh*, *configure*, *README* and follow instructions
- Generally: ./configure

  make

  sudo make install
- But – almost always some glitches

Extras

- Alien – convert packages to our distro's variety
- Zero install – another attempt at universality
- **Emerging** gentoo pkgs
- WINE and friends
  - An important topic for another day?
- **Anbox** -- allows Android packages to be used