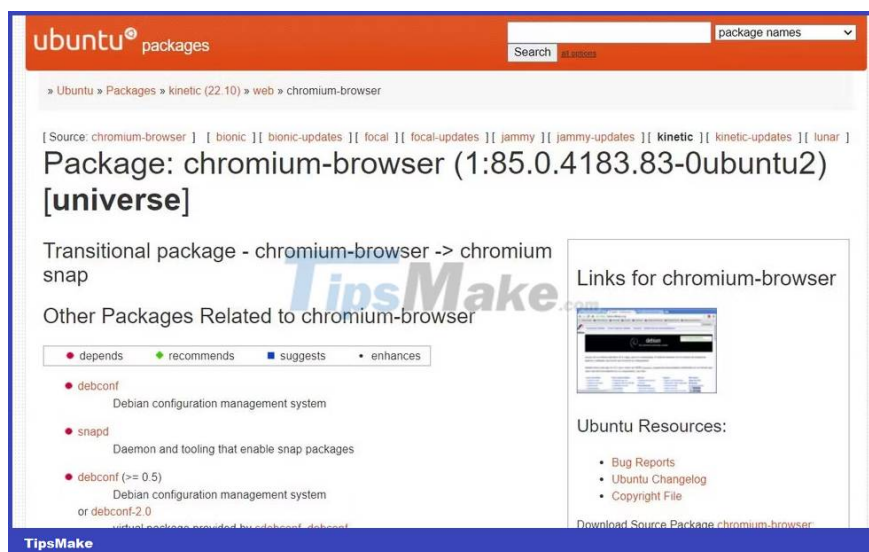


# What is a package dependency in Linux?

You may have heard about package dependencies in Linux and wondered what they are. Dependencies may seem confusing, but there are tools in Linux to make sure every program you install has all the necessary components.

Let's learn about Linux dependencies and their impact on Linux package management.

## Linux programs are created from building blocks of software



Linux dependencies are simply things a program needs to run. This is because Linux developers tend to write programs in a modular way, similar to the 'Unix philosophy' of building programs from smaller components.

Dependency are usually shared libraries. They can be for things like accessing databases, using network protocols, or drawing graphical elements on the screen. While proprietary programs also use shared libraries, that's easier to do in the Linux world because they're also often open source.

Dependency can also be complete program. A common pattern in the Linux world is to build a GUI user interface for an existing command line program.

Using shared libraries makes development easier because developers don't have to come up with new ways to do things every time they want to create a new application.

# How Package Managers Make Linux Software Installation Easier

You can download the source code from the open source program's website and try to compile it yourself, but you'll often see something missing. This is because these projects don't include any dependencies with their program, assuming you have them installed or are willing to do so.

This worked well in the early days of Unix, running on mini PCs and mainframes with dedicated admin teams, but as Linux started to gain popularity on PCs, the old way was hard to manage for those who didn't. Single user may not have much Unix experience.

Linux distributions are starting to include package management tools that keep track of dependencies, download them over the Internet, and install and update them when a new version is available.

Flatpak and Snap are the latest efforts to manage dependencies by making them available through an application. This way, dependencies and applications can be better synchronized. Developers have more control over how the app will behave when it gets to users.

## How to view package dependencies on Linux

The Linux distro package sites can show any package dependency. You can also see what dependencies a package has using the package manager.

On Debian or Ubuntu, use APT:

```
apt show [packagename]
```

```
david@debian:~$ apt show firefox-esr
Package: firefox-esr
Version: 102.8.0esr-1
Priority: optional
Section: web
Maintainer: Maintainers of Mozilla-related packages <team+pkg-mozilla@tracker.debian.org>
Installed-Size: 222 MB
Provides: gnome-www-browser, www-browser
Depends: libasound2 (>= 1.0.16), libatk1.0-0 (>= 1.12.4), libc6 (>= 2.36), libcairo-gobject2 (>= 1.10.0), libcairo2 (>= 1.10.0), libdbus-1-3 (>= 1.9.14), libdbus-glib-1-2 (>= 0.78), libevent-2.1-7 (>= 2.1.8-stable), libffi8 (>= 3.4), libfontconfig1 (>= 2.12.6), libfreetype6 (>= 2.10.1), libgcc-s1 (>= 4.0), libgdk-pixbuf-2.0-0 (>= 2.22.0), libglib2.0-0 (>= 2.37.3), libgtk-3-0 (>= 3.13.7), libnspr4 (>= 2.4.32-), libnss3 (>= 2:3.79.1-), libpango-1.0-0 (>= 1.14.0), libstdc++6 (>= 12), libvpx7 (>= 1.12.0), libx11-6, libx11-xcb1 (>= 2:1.8.3), libxcb-shm0, libxcb1, libxcomposite1 (>= 1:0.4.5), libxdamage1 (>= 1:1.1), libxext6, libxfixes3, libxrandr2 (>= 2:1.4.0), libxtst6, zlib1g (>= 1:1.2.11.dfsg), fontconfig, procps, debianutils (>= 1.16)
Recommends: libavcodec59 | libavcodec-extra59 | libavcodec58 | libavcodec-extra58 | libavcodec57 | libavcodec-extra57 | libavcodec56 | libavcodec-extra56 | libavcodec55 | libavcodec-extra55 | libavcodec54 | libavcodec-extra54 | libavcodec53 | libavcodec-extra53
Suggests: fonts-stix | otf-stix, fonts-lmodern, libgssapi-krb5-2 | libkrb53, libcanberra0, pulseaudio
Breaks: xul-ext-torbutton
Tag: implemented-in::c++, interface::graphical, interface::x11, network::client, privacy::non-free-addons, privacy::non-free-service, protocol::ftp, protocol::http, role::program, scope::application, suite::mozilla, toolkit::gtk, use::browsing, web::browser, works-with-format::html, x11::application
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```

On Arch, use pacman with the **-Si option**. The **Depends on** section will display the dependencies.

```
pacman -Si [packagename]
```

```
Applications | bin - Thunar | Xfce Terminal
Terminal - david@archlinux-
File Edit View bin-Thunar Help
Terminal - david@archlinux-
I'll say it again for the logic impaired.
-- Hairy Hall
david@archlinux ~$ pacman -Si chromium
Repository      : extra
Name            : chromium
Version        : 110.0.5481.177-1
Description    : A web browser built for speed, simplicity, and security
Architecture   : x86_64
URL            : https://www.chromium.org/Home
Licenses       : BSD
Groups         : None
Provides       : None
Depends On     : gtk3 nss alsa-lib xdg-utils libxss libcups libcrypt
                fft-liberation systemd dbus libpulse polkit libva
                libffi desktop-file-utils hicolor-icon-theme fontconfig
                woff2 som brotli libjpeg icu david flac snappy
                libxml2 ffmpeg libwebp minizip opus harfbuzz re2
                isonccp libxslt libpng freetype2
Optional Deps  : pipewire webRTC desktop-sharing under Wayland
                kdeplasma-addons support for native displays in Plasma
                qt5-base: enable Qt5 with --enable-features=AllowGpu
                org.freedesktop.secrets: password storage backend on GNOME
                Xfce
                kwallet: support for storing passwords in KWallet on Plasma
Conflicts With : None
Replaces       : None
Download Size  : 88.53 MiB
Installed Size : 277.24 MiB
Packager       : Evangelos Foutras <efoutrai@archlinux.org>
Build Date    : Wed 22 Feb 2023 12:53:15 PM PST
Validated By   : MD5 Sum SHA-256 Sum Signature
david@archlinux ~$
```

On Red Hat-based Linux distributions, use DNF:

```
dnf deplist [packagename]
```

```
[dmlony@DESKTOP-EPK4HED ~]$ dnf deplist chromium
Extra Packages for Enterprise Linux 8 - x86_64          42 kB/s | 26 kB  00:00
Extra Packages for Enterprise Linux 8 - x86_64          4.2 MB/s | 14 MB  00:03
Oracle Linux 8 BasE05 Latest (x86_64)                 14 kB/s | 2.6 kB  00:00
Oracle Linux 8 Application Stream (x86_64)             38 kB/s | 3.9 kB  00:00
Latest Unbreakable Enterprise Kernel Release 6 for Oracle Linux 8 (x86_64) 28 kB/s | 3.8 kB  00:00
package: chromium-110.0.5481.177-1.el8.x86_64
dependency: /bin/bash
provider: bash-4.4.20-4.el8_6.x86_64
dependency: /bin/sh
provider: bash-4.4.20-4.el8_6.x86_64
dependency: /usr/sbin/restorecon
provider: policycoreutils-2.9-20.0.1.el8.x86_64
dependency: /usr/sbin/semanage
provider: policycoreutils-python-utils-2.9-20.0.1.el8.noarch
dependency: chromium-common(x86-64) = 110.0.5481.177-1.el8
provider: chromium-common-110.0.5481.177-1.el8.x86_64
dependency: ld-linux-x86-64.so.2()(64bit)
provider: glibc-2.28-211.0.1.el8.x86_64
dependency: ld-linux-x86-64.so.2(GLIBC_2.2.5)(64bit)
provider: glibc-2.28-211.0.1.el8.x86_64
dependency: ld-linux-x86-64.so.2(GLIBC_2.3)(64bit)
provider: glibc-2.28-211.0.1.el8.x86_64
dependency: libFLAC.so.8()(64bit)
provider: flac-libs-1.3.2-9.el8.x86_64
dependency: libQt5Core.so.5()(64bit)
provider: qt5-qtbase-5.15.3-1.el8.x86_64
dependency: libQt5Core.so.5(Qt_5)(64bit)
provider: qt5-qtbase-5.15.3-1.el8.x86_64
```

Dependency is not so mysterious on Linux. They show how Linux programs are built from smaller components. The package manager makes software installation easier by keeping track of packages.

It is also possible to see what dependencies the package has. They are also why you should update your package manager when installing new programs.

You finished reading the article "**What is a package dependency in Linux?**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.