Building a Linux Kernel from Source

Why

https://kernelnewbies.org/KernelBuild
https://phoenixnap.com/kb/build-linux-kernel

- New hardware
  I needed a patch
- Custom configuration
- Just for the experience

Getting the code

https://kernel.org

- kernel.org source package for current kernel
  then tar -xJf linux-VERSION.tar.xz
- git (Only if really needed, downloads a lot!)
  git clone git://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git
- Source package from distribution.
  apt-get source linux-image-VERSION
- Needed packages
  sudo apt-get install git fakeroot build-essential ncurses-dev xz-utils libssl-dev bc flex libelf-dev bison

Configure (Create .config file) Lots of ways to do this.

https://renenyffenegger.ch/notes/Linux/kernel/compilation/make

- Maybe start with your current kernel configuration (/boot/config-VERSION)
- make menuconfig

Compiling

- make [all] (make -jN)
- show stoppers:
  - <stdin>:1:10:fatal error: libelf.h: No such file or directory
    compilation terminated.

    sudo install libelf-dev
  - ERROR - No rule to make target 'debian/canonical-certs.pem'
    (Dependant on configuration.)

    scripts/config --disable SYSTEM_TRUSTED_KEYS
    scripts/config --disable SYSTEM_REVOCATION_KEYS

This takes a couple of hours on my laptop.

Installing

- sudo make **INSTALL_MOD_STRIP=1** modules_install

  (sudo rm -r /lib/modules/VERSION)

- sudo make headers_install

- sudo make_install

  OR

- sudo apt install debhelper
  make bindeb-pkg

  Builds four .deb packages: linux-headers-VERSION.deb,linux-imageVERSION.deb, linux-imageVERSION-dbg.deb, linux-libc-dev_VERSION.deb

  Takes awhile to build the packages.

  sudo dpkg -i linux-image-VERSION.deb

Reboot!

- Make sure you can get a GRUB menu before rebooting!
- uname -r