Ecole d'ingénieurs et d'architectes de Fribourg
Hochschule für Technik und Architektur Freiburg

3 Kernel configuration

Hes·so FRIBOURG FREIBURG
Haute Ecole Spécialisée de Suisse occidentale
Fachhochschule Westschweiz

Question 1: Configure a secure kernel

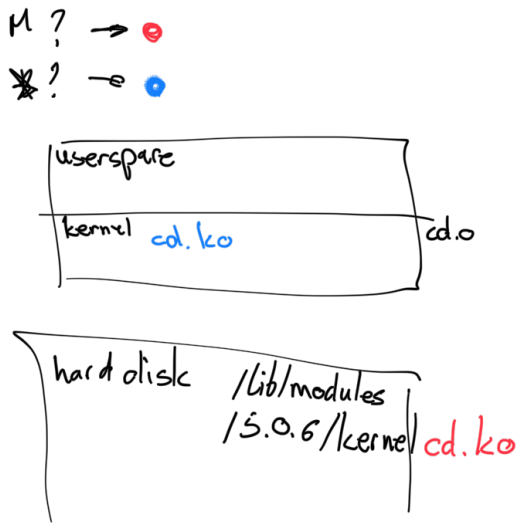
- ✓ Configure a secure kernel ←
- ✓ Deactivate some kernel options which are not used on nanoPi (example: CD-ROM)

- ✓ For a next laboratory: Activate: General setup → Initial RAM File system and RAM Disk (Initramfs/initrd) support)

- ✓ Compile, install and test the modifications (if it is possible)

less .config → outputbuild/linux ...

/CD_ROM



Question 2: Improve kernel security during the startup

In order to improve security, it is required to initialize kernel parameters during the nanopi startup:

1. Initialize /etc/sysctl.conf
2. Write an initial script /etc/init.d/S00KernelParameter which contains the command: sysctl –p (this command reads /etc/sysctl.conf and configure kernel parameters). As example see a script in this directory /etc/init.d/
3. In order to include these two files to buildroot, use rootfs_overlay possibility and add automatically these two files to rootfs.

(Optional) Question 3: CONFIG_FORTIFY_SOURCE option

Sometimes, it is requested to find code inside kernel sources.

Kernel option `str/mem function (CONFIG_FORTIFY_SOURCE)` detects overflows of buffers in common string and memory functions

1. Find inside kernel sources which file implements this option (you can use grep command) and what are the main differences between the standard `str/mem` functions and those using `CONFIG_FORTIFY_SOURCE`

p33