

SNA Lab 5 - Kernel Building & Boot-loader

This lab is ideally done on a dedicated machine, VirtualBox or any environment where you can troubleshoot your system with access to console and possibly boot it with a rescue system. As you might experience some difficulties esp. with the second task, it is NOT recommended to use your production and daily system for those experimentations

Build a new kernel (7 points + 1 bonus)

- Grab the latest stable release available from kernel.org
- Grab some patch e.g. (*exempli gratia*) support for Reiser4 and apply it
- What **make** targets are interesting to you and why?¹
- Use your distribution's **.config** as a starting point and the **olddefconfig** target. *Bonus: use Slackware-current's or another distros' config as a starting point, even on CentOS or Ubuntu*

Make sure those options are enabled either built-in or as module

```
CONFIG_BTRFS_FS
CONFIG_GFS2_FS
CONFIG_JFS_FS
CONFIG_XFS_FS
CONFIG_BRIDGE
CONFIG_VLAN_8021Q
CONFIG_IKCONFIG
CONFIG_IKCONFIG_PROC
CONFIG_NFS_V4_1
CONFIG_NFS_V4_2
CONFIG_NFS_V4_1_MIGRATION
CONFIG_NFSD
CONFIG_NFSD_V3
CONFIG_NFSD_V4
CONFIG_CIFS
CONFIG_UFS_FS
CONFIG_UFS_FS_WRITE
```

- Also enable your patched feature and show how you did it
- How many cores do you have available? Build the kernel with `—jCORES+1`, deploy it and install its afferent modules

Enable it at boot time (3 points + 2 bonus)

- In what booting mode is your computer, BIOS/CSM or EFI? How did you find out? What boot-loader are you currently using? Eventually add your new kernel in the boot-menu
- *Bonus x2: —or— switch to another boot-loader, and according to your booting mode, BIOS/CSM vs EFI. Which one did you choose? What problems are you facing? Your system does not boot anymore? You messed up? Show the errors and how far you went*
- Check that you're now running the newly built kernel
- Validate the features you added e.g. as for Reiser4, `dd if =/dev/zero of=fakedisk . sparse bs=1M count=0 seek=1000` will emulate a one gigabyte disk as *thin provisioning*, similarly to what the QCOW2 format allows.

¹<https://www.kernel.org/doc/makehelp.txt>