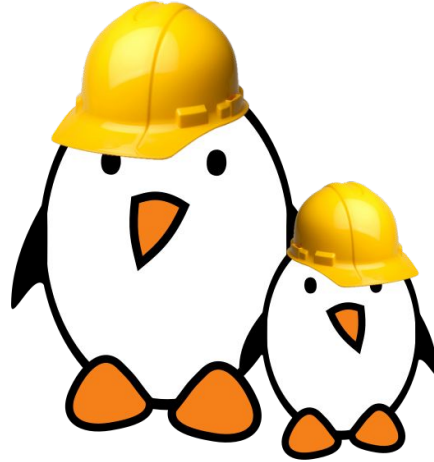# Buildroot workshop

Alexander Alemayhu
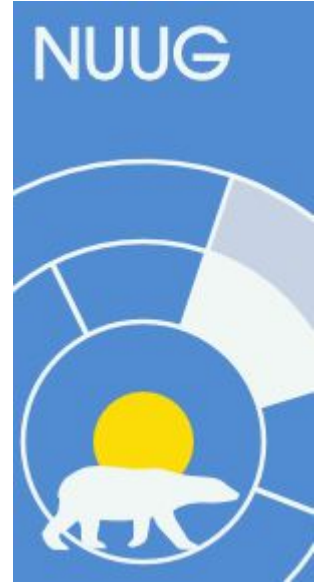
4096R/756753E5 <alexander@alemayhu.com>
8A90 6ED0 8C2E B23A 6645
57EA E984 F812 7567 53E5

NUUG - Norwegian UNIX User Group

- Non-profit foundation
- 300+ members
- Monthly meetings

Agenda

1. About Buildroot
2. Install Buildroot
3. QEMU Boot CD

Buildroot

- Makes embedded Linux easy.
- Uses same build system as Linux kernel.
- Gives you full control of your options.
- Small memory footprint possible.

Installing the dependencies

- Debian
- Fedora

Fedora dependencies - https://git.io/vykyL

```
dnf install -y @development-tools kernel-devel wget

dnf install -y which ncurses-devel gcc-c++ flex tar

dnf install -y perl-ExtUtils-MakeMaker findutils

dnf install -y bison cmake cpio python bc bzip2

dnf install -y libstdc++.i686 glibc-devel.i686

dnf install -y perl-Thread-Queue
```

Debian dependencies - https://git.io/vykyL

```
apt-get update

apt-get install -y wget build-essential unzip bc

apt-get install -y libncurses5-dev rsync cpio

apt-get install -y gcc-multilib python
```

Getting the source - https://git.io/vykyn

```
version=buildroot-2017.02.tar.gz

wget https://buildroot.org/downloads/$version

tar xvf $version
```

Building Buildroot - https://git.io/vykyS

```
make qemu_x86_64_defconfig

make menuconfig # modify config

make busybox-menuconfig # optional

make
```

Configure bootloader - https://git.io/vykS4

```
iso_dir=./output/build/rootfs.iso9660.tmp

cat > $iso_dir/isolinux/isolinux.cfg <<EOL
display boot.txt
default nuugOS
ui vesamenu.c32
menu BACKGROUND splash.png
label     nuugOS
    kernel /boot/bzImage
    INITRD root=/boot/initrd
EOL
```

Configure bootloader - https://git.io/vykS4

```
cat > $iso_dir/isolinux/boot.txt <<EOL
nuug workshop boot text
EOL
```

Add splash - https://git.io/vykS4

```
wget www.nuug.no/images/NUUG-logo-2-150x290.png

mv *.png $iso_dir/isolinux/splash.png
```

Boot ISO - https://git.io/vykSV

```
iso=output/images/rootfs.iso9660

qemu-system-x86_64 -boot d -cdrom $iso -m 128
```

Summary

Thanks for attending

References

- [Step by step installation guide](#)
- [Buildroot Workshop - LSM2012_BuildrootTutorial_Petazzoni.pdf](#)
- [Quick kernel hacking with QEMU + buildroot](#)
- [Buildroot x86 installer](#)
- [NUUG](#)