

OpenWrt build and flash

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Plan

- Short overview about build system
- Start building your system (It takes)
 - Includes toolchain build (takes some time)
- Modifications to build

- OpenWrt is a Linux operating system targeting embedded devices

Build system setup

- Install needed packages from distribution
 - `https://openwrt.org/docs/guide-developer/toolchain/install-buildsystem`
- Toolchain is build by OpenWrt

Debian / Ubuntu packages

```
apt update
```

```
apt install build-essential gawk gcc-multilib \  
flex git gettext libncurses5-dev libssl-dev \  
python3-distutils zlib1g-dev
```

git clone

- `git clone git://git.openwrt.org/openwrt/openwrt.git`
- Branches:
 - `git checkout master`
 - `git checkout openwrt-22.03`

Configure

- make menuconfig
- Branches:
 - Target System
 - Subtarget
 - Target Profile

Boot Process

- boot ROM (located inside a ROM on the SoC)
 - SoC vendor specific
 - loads SLB from flash
- Bootloader (e.g. U-Boot)
 - DDR initialization
 - loads operating system
 - from flash
 - from network
 - from USB
- Operating system
 - loads all driver
 - load root file system
 - starts init process

UART access

screen

```
screen /dev/ttyUSB0 115200
```

dialout group

```
sudo adduser $USER dialout
```