

Barebox

alternative to uboot as bootloader, supports ethernet/tftp-boot (wan-port only due to missing switch driver)

Doc: <https://www.barebox.org/doc/latest/>

Git: <https://git.pengutronix.de/cgit/barebox/>

Bootlin: <https://elixir.bootlin.com/barebox/latest/source>

Mailinglist archive: <https://lore.barebox.org/barebox/>

build

```
sudo apt install lzop
cp rk3568_bl31_v1.24.elf firmware/rk3568-bl31.bin
cp rk3568_ddr_1560MHz_v1.11.bin arch/arm/boards/rockchip-rk3568-evb/sdram-init.bin
cp rk3568_ddr_1560MHz_v1.11.bin arch/arm/boards/pine64-quartz64/sdram-init.bin
ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu- make rockchip_v8_defconfig
ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu- make menuconfig
ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu- make
```

```
#flash to sdcard
dd if=barebox-rk3568-bpi-r2pro.img of=/dev/sdx bs=1024 seek=32
```

```
#flash to emmc from running system:
dd if=barebox-rk3568-bpi-r2pro.img of=/dev/mmcblk1 bs=1024 seek=32
```

<https://github.com/frank-w/barebox-r2pro>

testing barebox

if barebox is already flashed it can chainload another one to avoid flashing it for testing

```
bootm /mnt/tftp/barebox-rk3568-bpi-r2pro.img
```

booting the barebox.bin in root failed on my board, but flashimage (images/barebox-rk3568-evb.img) works

```
ERROR: Unknown OS filetype (try -f)
handler failed with: Invalid argument
```

[documentation](#) says uboot can load it too (documentation needs to be changed, but patches posted). So i tested it with vendors uboot (2017.09)...

barebox can be chainloaded in uboot this way:

```
=> fatload mmc 1:2 ${kernel_addr_r} barebox-dt-2nd.img
=> fatload mmc 1:2 ${fdt_addr_r} rk3568-bpi-r2-pro.dtb
=> booti ${kernel_addr_r} - ${fdt_addr_r}
```

using images/barebox-dt-2nd.img and arch/arm/dts/rk3568-bpi-r2-pro.dtb

I've noticed that network does not work if barebox is chainloaded. Network works if barebox is flashed.

booting kernel

bootloader (blspec)

```
boot -m sd.1
```

list all conf files in folder loader/entries on mmcblk0p2. Barebox starts counting partitions from 0, linux from 1

example of a conf for this menu

```
# cat /mnt/loader/entries/linux-gz.conf
title          Linux GZip
version 5.16
options earlycon=uart8250,mmio32,0xfe660000 console=ttyS2,1500000n8
linux          /extlinux/Image_5.16.gz
devicetree     /extlinux/dtb_5.16
initrd         /rootfs.cpio.lz4
```

manual

```
mount -a
ls /mnt/sd.1/extlinux/

bootm -o /mnt/sd.1/extlinux/dtb_5.16 /mnt/sd.1/extlinux/Image_5.16.gz

global.bootm.oftree=/mnt/sd.1/extlinux/dtb_5.16
global.bootm.image=/mnt/sd.1/extlinux/Image_5.16.gz
global.bootm.initrd=/mnt/sd.1/rootfs.cpio.lz4
global linux.bootargs.rootfs="root=/dev/mmcblk0p3"
bootm
```

tftp

Tftp not yet working in v1.0, i have added network changes which are working in linux, but get no traffic on eth1.

by default it uses these filenames (defaultenv/defaultenv-2-base/boot/net):

- kernel (\${global.user}-linux-\${global.hostname}):
 - my barebox: none-linux-bpi-r2pro
 - upstream: none-linux-rk3568-evb
- fdt (\${global.user}-oftree-\${global.hostname}):
 - my barebox: none-oftree-bpi-r2pro
 - upstream: none-oftree-rk3568-evb
- initrd (\${global.user}-initramfs-\${global.hostname}):
 - my barebox: none-initramfs-bpi-r2pro
 - upstream: none-initramfs-rk3568-evb

booted by default (issue dhcp and uses gateway as tftp-server) or run (here with additional bootargs like earlycon,fbcon).

```
global linux.bootargs.debug="earlycon=uart8250,mmio32,0xfe660000
earlyprintk"
#global linux.bootargs.video="video=1920x1080-32"
#global linux.bootargs.console="console=tty1 fbcon=map:0 drm.debug=0x7
console=ttyS2,1500000n8"
boot net
```

another filenames can be used if defining the bootm-variables with tftp-filesystem (here with different fdt)

```
imgdir=/mnt/tftp
global.bootm.image=$imgdir/none-linux-bpi-r2pro
global.bootm.oftree=$imgdir/none-oftree-bpi-r2pro-dsa
#global.bootm.initrd=$imgdir/none-initramfs-bpi-r2pro
global linux.bootargs.rootfs="root=/dev/mmcblk0p3"
#echo $global.linux.bootargs.debug
#global.linux.bootargs.debug="earlycon=uart8250,mmio32,0xfe660000
earlyprintk"
#echo $global.linux.bootargs.video
bootm
```

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