# Deploying BananaPis-R2

## Preparation

To communicate with a laptop to a BananaPi-R2 the laptop needs an Ethernet port, and a cable needs to be connected between the BananaPi-R2 and the laptop’s Ethernet port.

1. The laptop will need to have the IP address 192.168.2.10 and the BananaPi address is 192.168.2.2 or 192.168.2.1

Graphical user interface

Description automatically generated

1. Connect the Ethernet cable to the First LAN port on the left (not the Wan port). The blue circle.

A picture containing text, electronics

Description automatically generated

1. Use PuTTY to connect to the BananaPi-R2, using SSH 192.168.2.2 port 22.

Graphical user interface, application

Description automatically generated

This is the SD card slot:

A picture containing text, file

Description automatically generated

# Creating a Linux image of the BananaPi-R2 eMMC in a USB disk

1. Get a 32Gbytes USB disk (I think 16Gbytes should also do, as any USB disk with higher capacity than 32Gbytes) and place the USBdisk in the slot of the BananaPi-R2.

There is a small slot on the right side of the box, the bright pins in the USBdisk should face up. It's a spring, insert until it clicks and then just let go. To remove press until clicks and it just comes out.

1. Execute the command:

"**lsblk**"

NAME         MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT

**sda 8:0 1 29.8G 0 disk**

mmcblk1      179:8    0  7.3G  0 disk

├─mmcblk1p1  179:9    0  256M  0 part /boot

└─mmcblk1p2  179:10   0    7G  0 part /

mmcblk1boot0 179:16   0    4M  1 disk

mmcblk1boot1 179:24   0    4M  1 disk

mmcblk1rpmb  179:32   0  512K  0 disk

Identify the USBdisk, in this case because it's a 32Gbytes USBdisk it's **mmcblk0** since the SIZE around 30G.

**ATTENTION**: selecting the wrong device may destroy the Linux installation in the BananaPi-R2.

1. Format the USBdisk by executing

"**mkfs -V /dev/sda**"

mkfs from util-linux 2.31.1

mkfs.ext2 /dev/sda

mke2fs 1.44.1 (24-Mar-2018)

/dev/sda contains a ext2 file system

created on Sun Apr 24 13:52:44 2022

Proceed anyway? (y,N) y

Creating filesystem with 7815168 4k blocks and 1954064 inodes

Filesystem UUID: 9e659f91-208c-4b18-b4fc-ba3222260d23

Superblock backups stored on blocks:

32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,

4096000

Allocating group tables: done

Writing inode tables: done

Writing superblocks and filesystem accounting information: done

1. Mount the USBdisk by executing (if USBdisk is in use, use USBdisk1 instead)

"**mkdir /mnt/USBdisk**"

"**mount /dev/sda /mnt/USBdisk**".

1. Copy the eMMC to the USBdisk by executing

"**dd if=/dev/mmcblk1 bs=4096 | pv | dd of=/mnt/USBdisk/eMMC.img bs=4096**"

...

2.54GiB 0:07:28 [5.79MiB/s] [ <=> ]

...

1908736+0 records in

1908736+0 records out

7818182656 bytes (7.8 GB, 7.3 GiB) copied, 785.35 s, 10.0 MB/s

This should take around 15 minutes.

1. Verify that a file called eMMC.img is now present in the USBdisk by executing:

"**ls -al /mnt/USBdisk**"

total 7642436

drwxr-xr-x 3 root root       4096 Nov 22 16:28 .

drwxr-xr-x 3 root root       4096 Nov 22 15:55 ..

**-rw-r--r-- 1 root root 7818182656 Nov 22 16:56 eMMC.img     <<----**

drwx------ 2 root root      16384 Nov 22 16:02 lost+found

1. Unmount the USBdisk by executing

"**umount /mnt/USBdisk**"

"**rmdir /mnt/USBdisk**"

1. You can now remove the USBdisk from the slot.

The digest of the commands for the USBdisk as **mmcblk0**.

**lsblk**

**------------------------------ Check that the USBdisk is mmcblk0**

**mkfs -V /dev/mmcblk0**

**mkdir /mnt/USBdisk**

**mount /dev/mmcblk0 /mnt/USBdisk**

**dd if=/dev/mmcblk1 bs=4096 | pv | dd of=/mnt/USBdisk/eMMC.img bs=4096**

**ls -al /mnt/USBdisk**

**------------------------------ Check that the eMMC.img file is present**

**umount /mnt/USBdisk**

**rmdir /mnt/USBdisk**

# Deploying a Linux image from a USBdisk to the BananaPi-R2 eMMC

1. Execute the command

"**lsblk**"

NAME         MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT

**sda 8:0 1 29.8G 0 disk <<----**

mmcblk1      179:8    0  7.3G  0 disk

├─mmcblk1p1  179:9    0  256M  0 part /boot

└─mmcblk1p2  179:10   0    7G  0 part /

mmcblk1boot0 179:16   0    4M  1 disk

mmcblk1boot1 179:24   0    4M  1 disk

mmcblk1rpmb  179:32   0  512K  0 disk

Identify the USBdisk, in this case because it's a 32Gbytes USBdisk it's **sda** since the SIZE is around 30G.

**ATTENTION**: selecting the wrong device may destroy the Linux installation in the BananaPi-R2.

1. Mount the USBdisk by executing

"**mkdir /mnt/USBdisk**"

"**mount /dev/sda /mnt/USBdisk**".

1. Copy the USBdisk to the eMMC by executing

"**dd if=/mnt/USBdisk/eMMC.img bs=4096 | pv | dd of=/dev/mmcblk1 bs=4096**"

...

4.66GiB 0:13:57 [3.51MiB/s] [ <=> ]

...

1908736+0 records in

1908736+0 records out

7818182656 bytes (7.8 GB, 7.3 GiB) copied, 335.598 s, 23.3 MB/s

This should take around 5 minutes.

1. Unmount the USBdisk by executing

"**umount /mnt/USBdisk**"

"**rmdir /mnt/USBdisk**"

1. You can now remove the USBdisk from the slot.

The digest of the commands for the USBdisk as **mmcblk1**.

**mkdir /mnt/USBdisk**

**------------------------------ Check that the USBdisk is mmcblk0**

**mount /dev/sda /mnt/USBdisk**

**dd if=/mnt/USBdisk/eMMC.img bs=4096 | pv | dd of=/dev/mmcblk1 bs=4096**

**umount /mnt/USBdisk**

**rmdir /mnt/USBdisk**