

# Software

## first steps

download Operation System: [Google Drive](#) or [dev.banana-pi.org.cn](http://dev.banana-pi.org.cn)

copy Image to SD-Card (Linux):

```
dd if=path/to/image.img of=/dev/sdx bs=1M
```

## Debian

first boot (do this using [Debug-UART](#))

**login:** root **password:** bananapi

## System-Update & Clock-Settings

```
apt-get update && apt-get upgrade  
echo "bpi-r2">/etc/hostname  
dpkg-reconfigure tzdata
```

some changes to environment (to make persistent: echo "...">~/bashrc)

```
#fix for nano issues on debug-console  
if [[ "$(tty)" =~ "ttyS" ]]; then export TERM=vt100;fi  
#prompt with time  
export PS1='[\A] \u@\h:\W# '  
#easier access to GPIO by $GPIO  
export GPIO=/sys/devices/platform/1000b000.pinctrl/mt_gpio
```

## Network-Configuration

[Network-configuration](#)

### temporary

```
#4.4.70:  
ifconfig eth0 192.168.0.10/24  
route add default gw 192.168.0.5  
echo "nameserver 192.168.0.5" > /etc/resolv.conf
```

```
#4.14:
#ifconfig eth0 up
ip link set eth0 up
#ifconfig lan0 192.168.0.10/24
ip addr add 192.168.0.10/24 dev lan0
#ifconfig lan0 up
ip link set lan0 up
#route add default gw 192.168.0.5
ip route add 0.0.0.0/0 via 192.168.0.5
echo "nameserver 192.168.0.5" > /etc/resolv.conf
```

### fixed (also after reboot)

4.4.70:

```
nano /etc/network/interfaces
```

```
auto eth0
  iface eth0 inet static
  hwaddress ether 08:00:00:00:00:01
  address 192.168.0.10
  netmask 255.255.255.0
  gateway 192.168.0.5

auto eth1
  iface eth1 inet static
```

4.14:

```
auto eth0
iface eth0 inet manual
  pre-up ip link set $IFACE up
  post-down ip link set $IFACE down

auto lan0
iface lan0 inet static
  hwaddress ether 08:00:00:00:00:00 # if you want to set MAC manually
  address 192.168.0.10
  netmask 255.255.255.0
  gateway 192.168.0.5
  pre-up ip link set $IFACE up
  post-down ip link set $IFACE down

auto lan1
iface lan1 inet static
  hwaddress ether 08:00:00:00:00:01 # if you want to set MAC manually
  address 192.168.1.10
  netmask 255.255.255.0
  pre-up ip link set $IFACE up
```

```
post-down ip link set $IFACE down

auto lan2
iface lan2 inet static
    hwaddress ether 08:00:00:00:00:02 # if you want to set MAC manually
    #...

auto lan3
iface lan3 inet static
    hwaddress ether 08:00:00:00:00:03 # if you want to set MAC manually
    #...

auto wan
iface wan inet static
    hwaddress ether 09:00:00:00:00:01 # if you want to set MAC manually
    #...
```

in debian 9 hwaddress does not work, here you can set the MAC this way:

```
iface lan0 inet static
    address 192.168.0.10
    netmask 255.255.255.0
    gateway 192.168.0.5
# pre-up ip link set $IFACE up
pre-up ip link set $IFACE address 02:01:02:03:04:08 up
post-down ip link set $IFACE down
```

UDEV-way from [here](#)

```
$ cat /etc/udev/rules.d/00-static-mac-address.rules
ACTION=="add", SUBSYSTEM=="net", KERNELS=="1b100000.ethernet",
RUN+="/sbin/ip link set dev %k address ae:fc:de:ad:be:ef"
```

## DHCP

```
allow-hotplug lan3
iface lan3 inet dhcp
```

## bridge (4.14)

 untested 

```
apt-get install bridge-utils
```

```
brctl addbr br0
brctl addif br0 lan1 lan2 lan3 #bridging lan1-lan3 (keep lan0 separately)
```

```
root@bpi-r2:~# brctl show br0
```

bridge name	bridge id	STP enabled	interfaces
br0	8000.6acba7512bc1	no	lan1 lan2 lan3

/etc/network/interfaces:

```
iface br0 inet static
    address 192.168.40.1
    netmask 255.255.255.0
    bridge_ports lan1 lan2
    bridge_fd 5
    bridge_stp no
```

**vlan**

4.14:

/etc/network/interfaces:

```
auto lan3
iface lan3 inet manual

auto lan3.60
iface lan3.60 inet static
    address 192.168.60.10
    netmask 255.255.255.0
# gateway 192.168.0.5
pre-up ip link set $IFACE address 02:01:02:03:04:03 up #setting mac does
not work currently
```

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