

# Probando la Orange Pi

Un proyecto de BricoLabs

Sergio Alvariño [sergio.alvarino@vodafone.com](mailto:sergio.alvarino@vodafone.com)

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Probando la Orange Pi y aprendiendo a usarla.  
TRABAJO EN CURSO NO TERMINADO

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## 1 Empezar rápido desde linux

Para usar la Orange Pi Zero tendremos que crear imágenes arrancables en tarjetas micro SD.

### 1.1 Crear una SD arrancable

Dependiendo de donde conectemos la tarjeta tendremos que usar diferentes rutas. En el procedimiento descrito a continuación  $\{\text{card}\}$  será la ruta al dispositivo de la tarjeta y  $\{\text{p}\}$  la partición (si la hay).

Si la tarjeta se conecta via adaptador USB, linux la va a asociar a un dispositivo `/dev/sdx`, por ejemplo en mi portátil el disco duro es `/dev/sda` las distintas particiones serán `/dev/sda1`, `/dev/sda2`, etc.

Si conectamos una memoria con un adaptador USB linux la podría mapear en `/dev/sdb` por ejemplo.

Si la memoria se conecta mediante una ranura SD, linux la asociará a un dispositivo `/dev/mmcblk0` o `/dev/mmcblk1`, etc. etc. Dependerá de la ranura usada. Las particiones en este tipo de dispositivos tienen rutas como por ejemplo `/dev/mmcblk0p1`.

Los datos se pueden almacenar directamente en la memoria SD o en una partición creada en la memoria.

Resumiendo:

- `${card}` será `/dev/sdb` o `/dev/mmcblk0`
- `card{p}` será `/dev/sdb1` o `/dev/mmcblk0p1`

Antes de seguir adelante hay que estar completamente seguro del dispositivo asociado a nuestra memoria SD para no armar ningún estropicio.

Hay varias comprobaciones que se pueden hacer:

`dmesg | tail` nos permitirá echar un ojo a los últimos mensajes en el log del sistema. Si acabamos de insertar la memoria veremos el dispositivo usado.

`sudo fdisk -l` nos permite ver las particiones montadas en nuestro linux, por ejemplo con mi SD en la ranura SD de mi portátil la salida es (entre otras cosas, he obviado las particiones de los discos duros):

```
Disk /dev/mmcblk0: 7.4 GiB, 7948206080 bytes, 15523840 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x00000000
```

`cat /proc/partitions` también nos dará una lista de particiones, en mi portátil las que interesan son:

```
179      0    7761920 mmcblk0
179      1    7757824 mmcblk0p1
```

Descargamos la imagen de Jessie adaptada a la *Orange Pi Zero* desde la página <https://www.armbian.com/download/>

Descomprimos la imagen y la grabamos en la tarjeta SD con el comando:

```
sudo dd if=./Armbian_5.24_Orangepizero_Debian_jessie_3.4.113.img of=/dev/mmcblk0
```

Insertamos la tarjeta en la *Orange Pi* y le damos alimentación. El primer arranque llevará alrededor de tres minutos, y tras ese tiempo aun hará falta un minuto más para poder hacer login. Este retardo es debido a que el sistema intentará actualizar la lista de paquetes y creará un area de swap de emergencia en la SD, y además cambiará el tamaño de la partición que hemos creado para ocupar todo el espacio libre en la SD.

De momento solo la he arrancado y efectivamente las particiones han cambiado tras el arranque así que tiene buena pinta.

Volvemos a insertar la SD en la *Orange Pi* y la conectamos con un cable ethernet al router de casa. El Armbian viene configurado por defecto para obtener su IP desde un servidor DHCP.

Como mi cutre-router no me da información de las IP asignadas usamos *nmap*:

```
nmap -sP 192.168.0.0 /24
```

Con eso averiguamos la IP asignada a la *Orange Pi Zero* y ya podemos hacer login con:

```
ssh root@192.168.0.109
```

¡Y ya estamos!

Lo primero es poner al día el sistema:

```
apt-get update
```

```
apt-get upgrade
```

Si quieres puedes reconfigurar el *time zone*:

```
dpkg-reconfig tzdata
```

## 1.2 Conexión WIFI

Vamos a comprobar que todo va bien:

```
root@orangepizero:~# iwconfig
```

```
lo          no wireless extensions.
```

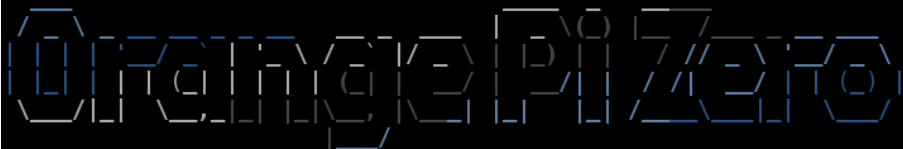
```
tunl0       no wireless extensions.
```

```
wlan0       IEEE 802.11bgn  ESSID:off/any
```

```
Mode:Managed  Access Point: Not-Associated  Tx-Power=20 dBm
```

```
Retry  long limit:7  RTS thr:off  Fragment thr:off
```

```
> ~/w/r/p/debianpostinstall on master x ssh root@192.168.0.109
The authenticity of host '192.168.0.109 (192.168.0.109)' can't be established.
ECDSA key fingerprint is 8a:22:e7:1c:d4:44:45:db:c0:90:4e:af:e9:d3:54:db.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.0.109' (ECDSA) to the list of known hosts.
root@192.168.0.109's password:
You are required to change your password immediately (root enforced)
```

A large, stylized logo for Armbian, featuring the word "Armbian" in a blue, outlined font where each letter is composed of geometric shapes like squares and circles.

```
Welcome to ARMBIAN Debian GNU/Linux 8 (jessie) 3.4.113-sun8i
System load:   0.16           Up time:       16 min
Memory usage:  17 % of 241Mb  IP:           192.168.0.109
CPU temp:      36°C
Usage of /:    14% of 7.2G
```

```
New to Armbian? Check the documentation first: docs.armbian.com

Changing password for root.
(current) UNIX password:
```

Figura 1: Primer login en *Orange Pi*

```
Encryption key:off
Power Management:on
```

```
eth0      no wireless extensions.
```

Todo tiene buena pinta, vamos a ver si detecta WIFIs:

```
root@orangezero:~# iwlist wlan0 scan |grep ESSID
        ESSID:"wificlientesR"
        ESSID:"casa_de_verano"
        ESSID:"MOVISTAR_BEEF"
        ESSID:"wificlientesR"
        ESSID:"R-wlan90"
        ESSID:"MOVISTAR_BAAF"
        ESSID:"ababab"
        ESSID:"WLAN 77"
        ESSID:"castillo"
        ESSID:"unaWifi"
        ESSID:""
        ESSID:"mikasa"
```

Para configurar el wifi echamos un ojo al fichero /etc/network/interfaces pero en ese mismo fichero encontramos el aviso:

```
# Armbian ships with network-manager installed by default. To save you time
# and hassles consider using 'sudo nmtui' instead of configuring Wi-Fi settings
# manually.
```

Así que basta con ejecutar `sudo nmtui` y ya podemos dar de alta nuestra wifi (yo la prefiero con IP estática).

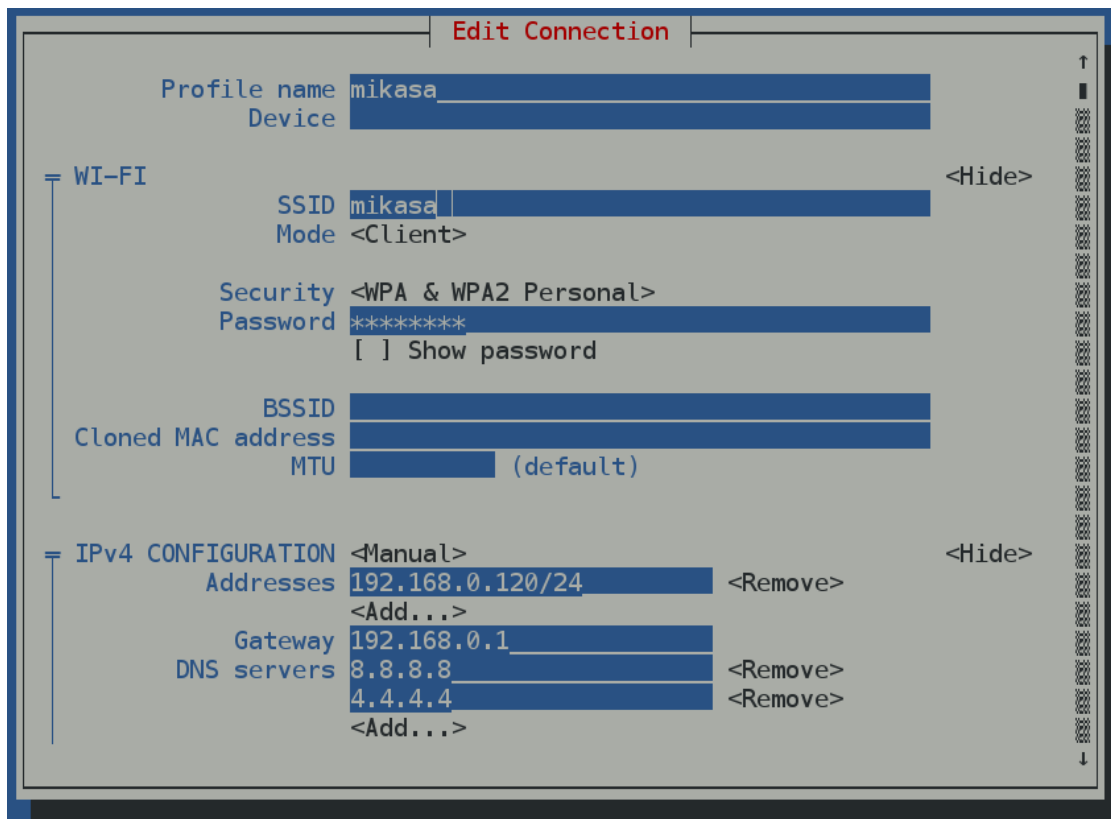


Figura 2: Configuración WIFI

Ejecutamos `ifconfig` y ya vemos nuestro nuevo interface configurado:

```
ifconfig
```

```
wlan0    Link encap:Ethernet  HWaddr a4:7c:f2:9a:97:7c
          inet addr:192.168.0.120  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::a67c:f2ff:fe9a:977c/64  Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
```

```
RX packets:2 errors:0 dropped:0 overruns:0 frame:0
TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:328 (328.0 B) TX bytes:852 (852.0 B)
```

## 2 Referencias

- [Página oficial](#)
- [Recursos oficiales](#) aquí hay imágenes y los esquemáticos
- [Tienda en Aliexpress](#)
- [http://linux-sunxi.org/Bootable\\_SD\\_card](http://linux-sunxi.org/Bootable_SD_card)
- <https://www.armbian.com/orange-pi-zero/>
- [https://docs.armbian.com/User-Guide\\_Getting-Started/](https://docs.armbian.com/User-Guide_Getting-Started/)
- [https://docs.armbian.com/Hardware\\_Allwinner/](https://docs.armbian.com/Hardware_Allwinner/)
- [GPIO](#) Una explicación de como acceder al gpio desde terminal
- [Info variada](#) Aquí tenemos el esquema de pines
- [GPIO desde el espacio de usuario](#)
- [sunxi-gpio](#)

## 3 META

Este documento está escrito en [Markdown-Pandoc](#). Pandoc es un sistema muy sencillo de documentación que permite generar múltiples formatos de salida.

Las fuentes del documento están en el directorio **doc/src** dentro del árbol de directorios del proyecto.

Los formatos de salida son el fichero **README.md** en formato *Markdown-Github* y los documentos que puedes encontrar en el directorio **doc/out** incluyendo un fichero en formato *pdf*.

Los documentos en los distintos formatos de salida se generan automáticamente sin mas que ejecutar:

```
$ cd doc
$ make
```

Otras opciones que soporta el **makefile** serían:

**reset** para regenerar todos los documentos de salida.

**clean** para borrar todos los fichero de salida

**pdf, latex, mediawiki, epub, odt, docx** genera el fichero de salida en el formato especificado: pdf, latex, etc. etc.

Ejemplos:

```
$ make reset
```

```
$ make odt
```

## 4 Requisitos

Necesitas tener instalaco **Pandoc**, hay [una pequeña introducción](#) en el el github de BricoLabs.

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