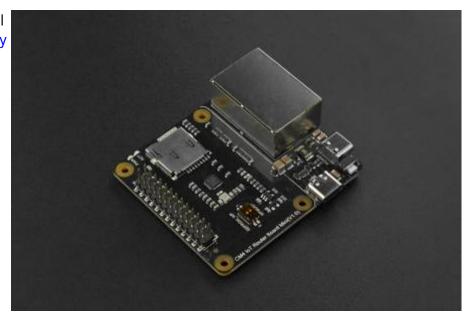
Install IPFire on a Raspberry Pi CM4 on DFRobot Carrier Board over Serial Console

This tutorial covers how to install a IPFire Firewall on to a Raspberry Pi Compute Module 4 that is carried on DFRobot's Router Carrier Board Mini using a **serial console**.



Disclaimer: all provided links in this article aren't sponsored!

Tutorial tested against a Raspberry Pi Compute Module 4 (4GB, rev. 1.2) and IPFire Core Update 179. During the setup a second Raspberry Pi 4 with local attached keyboard and monitor was used.

- → IPFire's wiki can be found here.
- → And the DFRobot's wiki here.

Preparation / Requirements

- SD-Card (32 GB) + SD-Card-Reader
- Raspberry Pi Compute Module 4 (4GB RAM recommended)
- Jumper Wires (Female to Female)
- Official Raspberry Pi USB-C Powersupply (CM4 requires 5V **3A**!)
- Configured and running Raspberry Pi (either with SSH-access or working display output)

Depending on your Setup:

- HDMI-Cable
- Keyboard

Download and flash the Image to the SD-Card

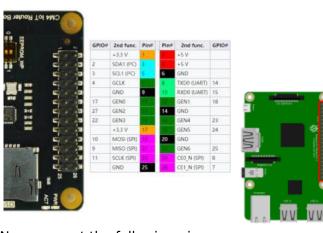
Download the aarch64 Flash Image from IPFire's webpage: ipfire.org/download. Then flash the Image on another computer to the SD-Card. Therefore you can use Win32DiskImager (Windows), the official Raspberry Pi Imager (Linux, Windows and MacOS) or BalenaEtcher (Web, Linux and Windows).

- The compressed IMG is required, the ISO image will not work!
- If experiencing boot issues when using newer hardware revisions have a look at the official IPFire wiki: wiki.ipfire.org!

Before ejecting the SD-Card perform the following changes:

- → Enable the serial console: add (if not present) enable uart=1 to config.txt.
- → Check if SERIAL-CONSOLE in uENV.txt is SERIAL-CONSOLE=ON.

Connect both Pi's with jumper cables



Now connect the f your carrier board second Pi's GPIO with three jumper wires (female to female):

SO (SPI)	25	73	GEN6	25	28	
LK (SPI)	25	24	CEO_N (SPI)	8	-	
4D	25	26	CE1_N (SPI)	7	100	etina" E
					ì	WV
		_	pins and y		-	
.,i+b	\ +h	ro	^			

3.3V PWR	1		2	5V PWR
GPI02 (SDA1 , I2C)	3		4	5V PWR
GPI03 (SCL1 , I2C)	5		6	GND
GPIO4 (GPIO_GCLK)	7		8	(UART_TXD0) GPIO14
GND	9		10	(UART_RXD0) GPIO15
GPIO17 (GPIO_GEN0)	11	•	12	(GPIO_GEN1) GPIO18
GPIO27 (GPIO_GEN2)	13		14	GND
GPIO22 (GPIO_GEN3)	15	•	16	(GPIO_GEN4) GPIO23
3.3V PWR	17	•	18	(GPIO_GEN5) GPIO24
GPI010 (SPI0_MOSI)	19		20	GND
GPIO9 (SPI0_MISO)	21		22	(GPIO_GEN6) GPIO25
GPIO11 (SPIOCLK)	23		24	(SPI_CEO_N) GPIO8
GND	25		26	(SPI_CE1_N) GPIO7
ID_SD (I2C EEPROM)	[27]		28	ID_SC (I2C EEPROM)
GPIO5	29		30	GND
GPIO6	31		32	GPIO12
GPI013	33		34	GND
GPIO19	35		36	GPIO16
GPIO26	37		38	GPIO20
GND	39		40	GPIO21

Carrier Board (CM4)	2nd Raspberry Pi	Use
6	6	Ground
10	8	Receive and send
8	10	Send and receive

When connected properly you can power up the carrier board.

(It is recommended to first power up the second Pi and start the serial console before powering up the carrier board.)

Images sourced from siocours.lycees.nouvelle-aquitaine.pro and wiki.dfrobot.com - CM4 DFRobot Carrier Board

Open serial console using screen

Before you can open a serial connection: serial console must also be enabled on the Pi from which you wish to connect. Therefore check if your /boot/config.txt contains enable_uart=1. If not, add it at top (!) and reboot.

When using a Raspberry Pi 4B also add the following lines to your config.txt to get a human-readable console:

```
dtoverlay=pi3-disable-bt
dtoverlay=pi3-miniuart-bt
```

Then you can execute the follwing command from the second Pi to connect to your serial console. It doens't matter if you're using an attached keyboard and monitor or a SSH-connection.

```
screen /dev/ttyS0 115200
```

→ you might install screen befire by running the following command:

```
sudo apt install screen
```

Finally perform the setup of IPFire as usual!

With Ctrl+A and D you can quit the screen-session.

Resources used: cyberciti.biz - linux serial console, scribles.net - uart communitation between to Raspberry Pis and wiki.ipfire.org - Raspberry Pi 4 Model B

From:

http://fixes.brecht-schule.hamburg/ - Fixes | Public BIT Wiki

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http://fixes.brecht-schule.hamburg/raspberry-pi/ipfire-on-rpicm4?rev=1702766185

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