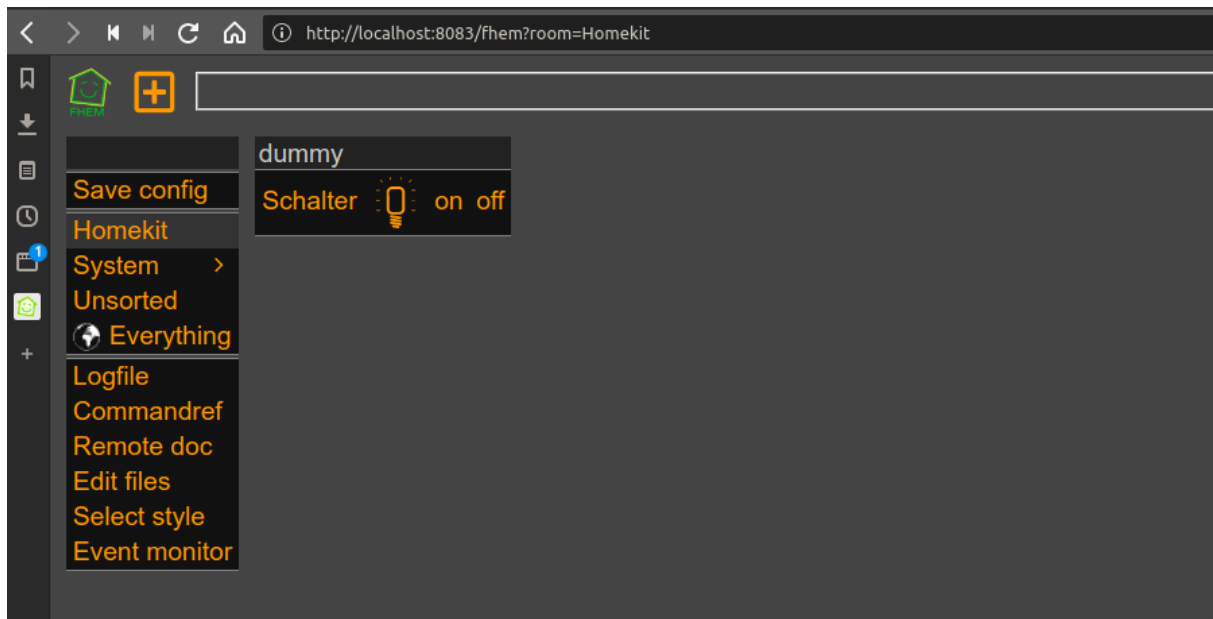


---

## Home Automation Stack



The stack contains everything to run FHEM on a Docker host. Mosquitto is used as message broker. SIRI functions are realized with the help of a homebridge container. The complete stack runs on x86 as well as arm architectures. It is very easy to clone its complete productive environment and has a simple way to build a test system.

### Todo

- DBLog Integration
- Boot config Raspberrypi for Homematic modul

define myHmUART HMUARTLGGW /dev/ttyAMA0

### Requirements

- docker
- docker-compose

### Installation raspberrypi

#### Raspian Download

Download the image of your choice: Raspian Download Unzip the image and install it with:

---

```
1  sudo dd bs=4M if=2019-09-26-raspbian-buster-full.img of=/dev/mmcblk0
   conv=fsync
2  sync
```

Eject the card and insert it again to mount the filesystems boot & rootfs. Touch a blank file ssh to enable

```
1  sudo touch /media/boot/ssh
2  sync
3  umount /media/boot
4  umount /media/rootfs
```

Eject the card and insert into your raspberry. After that power on the rpi and login with the known

```
1  ssh pi@raspberrypi4
```

```
1  pi@raspberrypi:~ $ passwd
2  Changing password for pi.
3  Current password:
4  New password:
5  Retype new password:
6  passwd: password updated successfully
7  pi@raspberrypi:~ $
```

### System Update

```
1  sudo apt-get update
2  sudo apt-get dist-upgrade
```

### Set timezone

```
1  sudo dpkg-reconfigure tzdata
```

### Raspberry Config

- 1) Expand the root filesystem (A1 / Advanced Options)
- 2) Update raspi-config

```
sudo raspi-config sudo reboot
```

### Intall additional packages

---

```
1 sudo apt-get install wget git apt-transport-https vim telnet zsh zsh-  
autosuggestions zsh-syntax-highlighting ntp ksh logwatch
```

### Configure ntpd daemon

```
1 sudo vi /etc/ntp.conf
```

```
1 server 192.168.1.1
```

### Install oh-my-zsh

```
1 sh -c "$(curl -fsSL https://raw.githubusercontent.com/ohmyzsh/ohmyzsh/master/  
tools/install.sh)"
```

### Install log2ram (/var/log 2 ram)

```
1 echo "deb http://packages.azlux.fr/debian/ buster main" | sudo tee /  
etc/apt/sources.list.d/azlux.list  
2 wget -qO - https://azlux.fr/repo.gpg.key | sudo apt-key add -  
3 apt update  
4 apt install log2ram
```

### Setup ssh key for user

```
1 ssh-keygen -t rsa -b 8192
```

### Install .ssh/config file to ignore strictHostKeyChecking

```
1 vi ~/.ssh/config  
2  
3 Host fhemlocalhost  
4 Hostname localhost  
5 Port 222  
6 User fhem  
7 StrictHostKeyChecking no  
8 UserKnownHostsFile=/dev/null
```

## Install docker & docker-compose

```
1 #curl -sSL https://get.docker.com | sh
2 #sudo systemctl enable docker
3 #sudo systemctl start docker
4 sudo apt-get install docker docker-compose
5 sudo usermod -aG docker pi
6 sudo reboot
```

## git repository export and start all container

```
1 cd
2 git clone https://github.com/stormmurdock/fhemdocker.git
3 cd fhemdoker
4 docker-compose up
```

## Access the application

### FHEM

#### FHEM tmux session inside the container

```
fhem
fhem@f708a9d03d01:~$ fhem
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^J'.
Inform on
update
Executing the update the background.
2020.02.07 20:18:06.686 1 : Downloading https://fhem.de/fhemupdate/controls_fhem.txt
2020.02.07 20:18:06.917 1 : RMDIR: ./restoreDir/update/2020-02-04
2020.02.07 20:18:07.151 1 : UPD FHEM/30_HUEBridge.pm
2020.02.07 20:18:07.212 1 : UPD FHEM/98_structure.pm
2020.02.07 20:18:07.341 1 : saving fhem.cfg
2020.02.07 20:18:07.344 1 : saving ./log/fhem.save
2020.02.07 20:18:07.351 1 : Calling /usr/bin/perl ./contrib/commandref_modular.pl, this may take
a while
2020.02.07 20:18:07.713 1 :
2020.02.07 20:18:07.714 1 : update finished, "shutdown restart" is needed to activate the change
s.
2020.02.07 20:18:07.714 1 :
2020.02.07 20:18:07.714 1 : fheminfo Statistics data sent to server. See Logfile (level 4) for d
etails.
Global global UPDATE
2020.02.07 20:18:17.680 3 : myHmUART: Unknown code A0FD686102E6B7A0000000A88AA0B0900:::84:myHmUA
RT, help me!
HmUARTLW myHmUART UNKNOWNCODE A0FD686102E6B7A0000000A88AA0B0900:::84:myHmUA
RT, help me!
```

```
1 [|||||] 20.3% Tasks: 38, 0 thr: 3 running
2 [|||||] 17.2% Load average: 0.61 0.72 0.69
3 [|||||] 30.1% Uptime: 1 day, 01:17:18
4 [|||||] 16.7%
Mem[|||||] 391M/2974M
Swap[|||||] 176.3M/100.0M
```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
18546	fhem	20	0	12354	7668	4072	R	8.7	0.8	0:00.13	/usr/bin/python3 /usr/bin/power
18545	fhem	20	0	11876	7148	3888	R	8.1	0.7	0:00.12	/usr/bin/python3 /usr/bin/power
11217	fhem	20	0	8152	2644	1872	S	2.0	0.3	0:02.44	tmux new-session ; send-keys jo
1	root	20	0	7620	2492	2232	S	1.3	0.2	1:11.34	/bin/bash /entry.sh start
15170	fhem	20	0	2852	1856	1552	S	0.7	0.2	0:00.60	htop
17561	fhem	20	0	2852	1840	1536	R	0.7	0.2	0:00.17	htop
3967	fhem	20	0	67764	58756	5408	S	0.7	5.9	0:20.85	perl fhem.pl fhem.cfg
17113	fhem	20	0	9908	3096	2356	S	0.7	0.3	0:00.09	sshd: them@pts/1
11268	fhem	20	0	2720	1800	1496	S	0.0	0.2	0:01.07	htop
3941	root	20	0	8880	2756	2632	S	0.0	0.3	0:00.00	/usr/sbin/sshd
4060	root	20	0	9908	5076	4336	S	0.0	0.5	0:00.03	sshd: them [priv]
4077	fhem	20	0	9908	3288	2548	S	0.0	0.3	0:00.02	sshd: them@pts/0
4087	fhem	20	0	2688	2124	1804	S	0.0	0.2	0:00.01	-bash
11252	fhem	20	0	2688	2176	1860	S	0.0	0.2	0:00.00	-bash
11254	fhem	20	0	2688	2168	1852	S	0.0	0.2	0:00.01	-bash
11257	fhem	20	0	2688	2128	1864	S	0.0	0.2	0:00.01	-bash
12270	fhem	20	0	2688	2172	1852	S	0.0	0.2	0:00.01	-bash
12784	fhem	20	0	2084	1476	1312	S	0.0	0.1	0:00.00	rwrap telnet localhost 7072

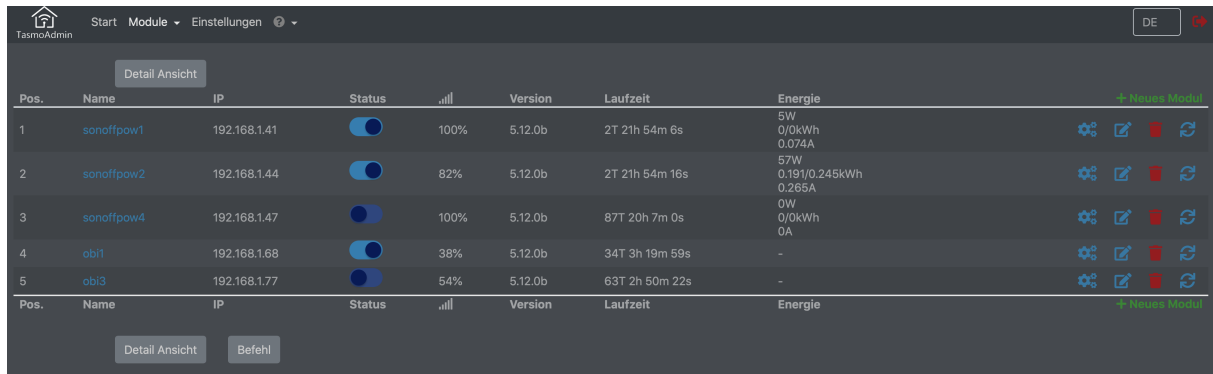
```
F?help F2Setup F3Search F4Filter F5Tree F6SortBy F7Vice F8Vice F9Kill F10Quit
ART, help me!
2020.02.07 20:15:43.152 3 : myHmUART: Unknown code A0C66847030575F00000000D026:::83:myHmUART, h
elp me!
2020.02.07 20:16:39.330 3 : myHmUART: Unknown code A0C2086702687CA000000003E64:::59:myHmUART, h
elp me!
2020.02.07 20:16:44.320 3 : myHmUART: Unknown code A0CA4865A358B95000000A0C527:::84:myHmUART, h
elp me!
2020.02.07 20:17:04.307 3 : myHmUART: Unknown code A0CA48470358B9500000000C527:::85:myHmUART, h
elp me!
2020.02.07 20:18:06.686 1 : Downloading https://fhem.de/fhemupdate/controls_fhem.txt
2020.02.07 20:18:06.917 1 : RMDIR: ./restoreDir/update/2020-02-04
2020.02.07 20:18:07.151 1 : UPD FHEM/30_HUEBridge.pm
2020.02.07 20:18:07.212 1 : UPD FHEM/98_structure.pm
2020.02.07 20:18:07.341 1 : saving fhem.cfg
2020.02.07 20:18:07.344 1 : saving ./log/fhem.save
2020.02.07 20:18:07.351 1 : Calling /usr/bin/perl ./contrib/commandref_modular.pl, this may tak
e a while
2020.02.07 20:18:07.713 1 :
2020.02.07 20:18:07.714 1 : update finished, "shutdown restart" is needed to activate the chang
es.
2020.02.07 20:18:08.472 1 : fheminfo Statistics data sent to server. See Logfile (level 4) for
details.
2020.02.07 20:18:17.680 3 : myHmUART: Unknown code A0FD686102E6B7A0000000A88AA0B0900:::84:myHmU
ART, help me!
```

Abbildung 1: "fhemt看mx"

http://localhost:80

## Container

### Tasmota Admin



The screenshot shows the Tasmota Admin web interface. At the top, there is a navigation bar with a home icon, the text 'TasmotaAdmin', and menu items: 'Start', 'Module', 'Einstellungen', and a user icon. On the right of the navigation bar, there is a language selector 'DE' and a red power icon. Below the navigation bar, there is a 'Detail Ansicht' button. The main content area displays a table of modules. The table has columns: Pos., Name, IP, Status, Signal strength, Version, Laufzeit, and Energie. There are five modules listed. Each module row has a set of icons on the right: a gear (settings), a pencil (edit), a red square (stop), and a circular arrow (refresh). Below the table, there are two buttons: 'Detail Ansicht' and 'Befehl'. At the bottom right of the table area, there is a green link '+ Neues Modul'.

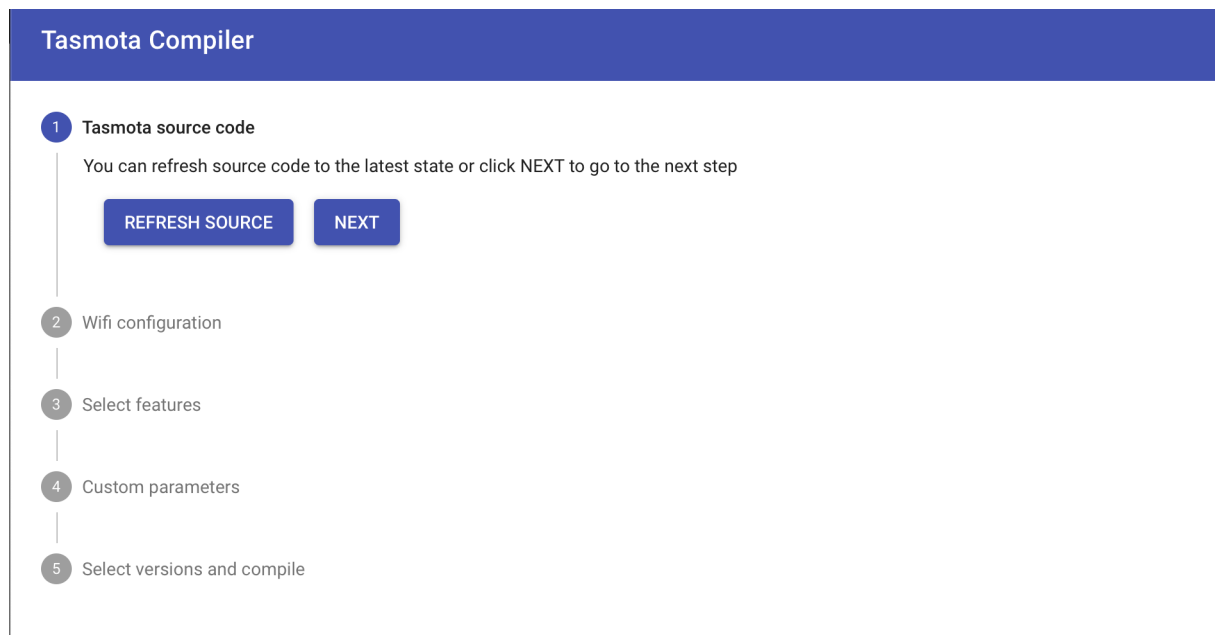
Pos.	Name	IP	Status	Signal	Version	Laufzeit	Energie	
1	sonoffpow1	192.168.1.41	On	100%	5.12.0b	2T 21h 54m 6s	5W 0.0kWh 0.074A	<a href="#">+</a> Neues Modul
2	sonoffpow2	192.168.1.44	On	82%	5.12.0b	2T 21h 54m 16s	57W 0.191/0.245kWh 0.265A	
3	sonoffpow4	192.168.1.47	On	100%	5.12.0b	87T 20h 7m 0s	0W 0.0kWh 0A	
4	obi1	192.168.1.68	On	38%	5.12.0b	34T 3h 19m 59s	-	
5	obi3	192.168.1.77	On	54%	5.12.0b	63T 2h 50m 22s	-	

Abbildung 2: “tasmotaadmin”

http://localhost:8081

---

## Tasmota Compiler

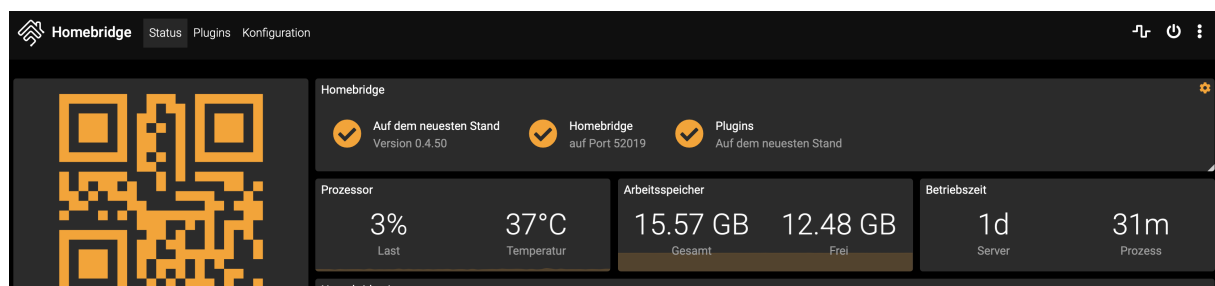


**Abbildung 3:** "tasmotacompiler"

<http://localhost:8082>

## Homebridge

Default User: admin Default Passwort: admin



**Abbildung 4:** "homebridge"

<http://localhost:8080>

## Portainer

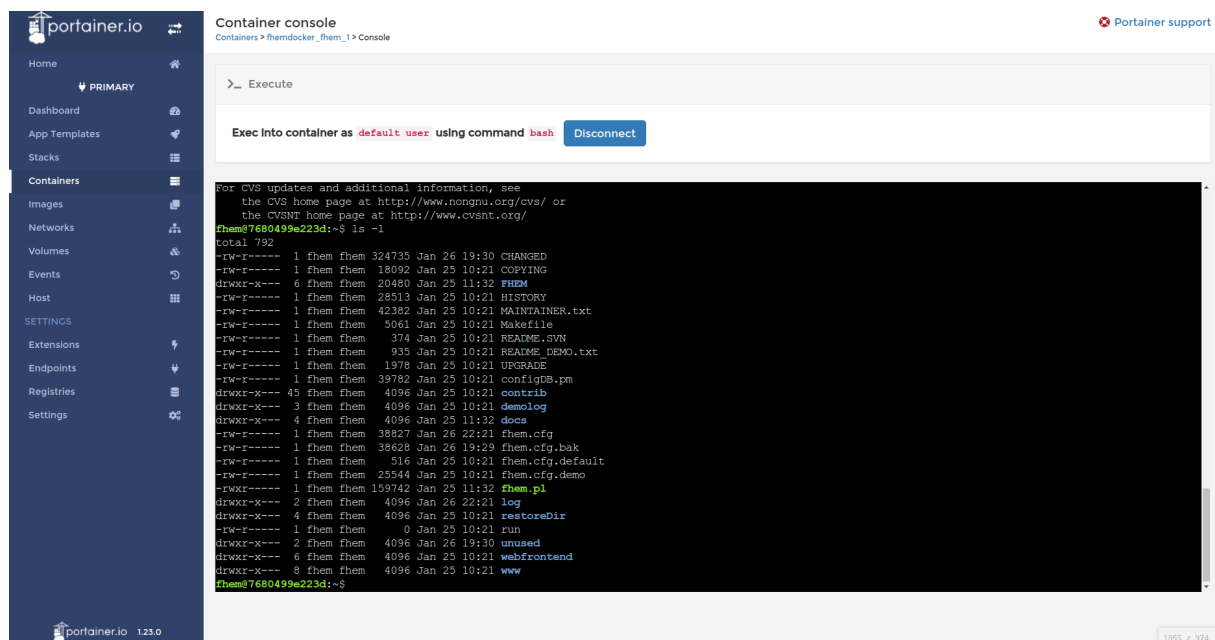


Abbildung 5: “portainer”

http://localhost:9000

## Deconz

deCONZ Image Container Integration

## Configuring Raspbian for RaspBee

Raspbian defaults Bluetooth to /dev/ttyAMA0 and configures a login shell over serial (tty). You must disable the tty login shell and enable the serial port hardware, and swap Bluetooth to /dev/S0, to allow RaspBee to work properly under Docker.

To disable the login shell over serial and enable the serial port hardware:

- 1) sudo raspi-config
- 2) Select Interfacing Options
- 3) Select Serial
- 4) “Would you like a login shell to be accessible over serial?” Select No
- 5) “Would you like the serial port hardware to be enabled?” Select Yes

- 
- 6) Exit raspi-config and reboot To swap Bluetooth to /dev/S0 (moving RaspBee to /dev/ttyAMA0), run the following command and then reboot:

```
echo 'dtoverlay=miniuart-bt' | sudo tee -a /boot/config.txt
```

This will exchange the UART and the Mini-UART so the Mini-UART is connected to the bluetooth and the UART to the GPIO pins.

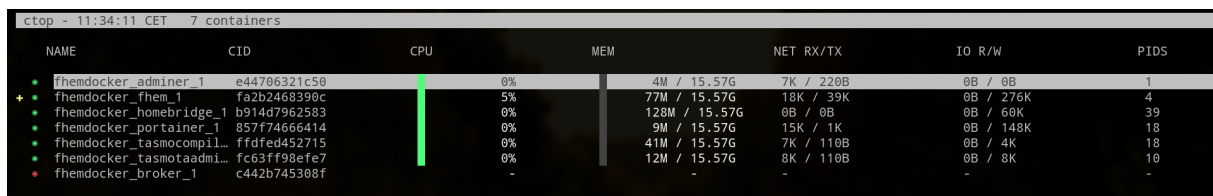
On Raspberry Pi 4 verify that file /boot/config.txt does NOT contain a line “enable\_uart=0”. If the line exists remove or comment (#) this line.

After running the above command and rebooting, RaspBee should be available at /dev/ttyAMA0.

## ctop

### Description

ctop is a commandline monitoring tool for linux containers



The screenshot shows the ctop interface with a title bar indicating 'ctop - 11:34:11 CET 7 containers'. Below the title bar is a table with columns: NAME, CID, CPU, MEM, NET RX/TX, IO R/W, and PIDS. The CPU column features a green vertical bar representing usage. The MEM column shows memory usage in MB and GB. The NET RX/TX column shows network traffic in KB and MB. The IO R/W column shows read and write operations in KB. The PIDS column shows the number of processes.

NAME	CID	CPU	MEM	NET RX/TX	IO R/W	PIDS
* fhemdocker_adminer_1	e44706321c50	0%	4M / 15.57G	7K / 220B	0B / 0B	1
* fhemdocker_fhem_1	fa2b2468390c	5%	77M / 15.57G	18K / 39K	0B / 276K	4
* fhemdocker_homebridge_1	b914d7962583	0%	128M / 15.57G	0B / 0B	0B / 60K	39
* fhemdocker_portainer_1	857f74666414	0%	9M / 15.57G	15K / 1K	0B / 148K	18
* fhemdocker_tasmocompil...	ffdfed452715	0%	41M / 15.57G	7K / 110B	0B / 4K	18
* fhemdocker_tasmotaadmi...	fc63ff98efe7	0%	12M / 15.57G	8K / 110B	0B / 8K	10
* fhemdocker_broker_1	c442b745308f	-	-	-	-	-

Abbildung 6: “ctop”

### Installation

ctop is available in AUR, so you can install it using AUR helpers, such as YaY, in Arch Linux and its variants such as Antergos and Manjaro Linux.

### Installation Linux

```
1 sudo wget https://github.com/bcicen/ctop/releases/download/v0.7.3/
   ctop-0.7.3-linux-amd64 -O /usr/local/bin/ctop
2 sudo chmod +x /usr/local/bin/ctop
```



---

```
1  sudo wget https://github.com/bcicen/ctop/releases/download/v0.7.3/
   ctop-0.7.3-linux-arm -O /usr/local/bin/ctop
2  sudo chmod +x /usr/local/bin/ctop
```

## **Contributing to fhemdoker**

Contributions are encouraged and welcome!