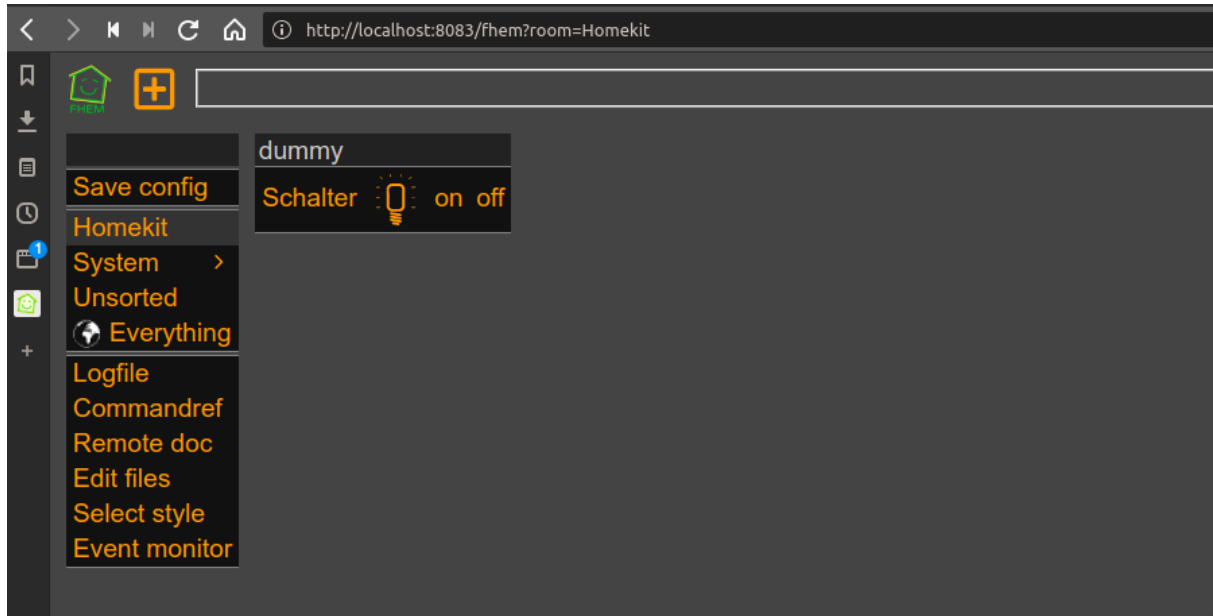

Home Automation Stack



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

- Mosquitto user-/groupid problem
- DBLog Integration
- Boot config Raspberrypi for Homematic modul

define myHmUART HMUARTLGGW /dev/ttyAMA0

Requirements

- docker
- docker-compose

Installation raspberrypi

Raspian Download

```
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 raspberrypi. 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 fhemdocker
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 '^['.
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

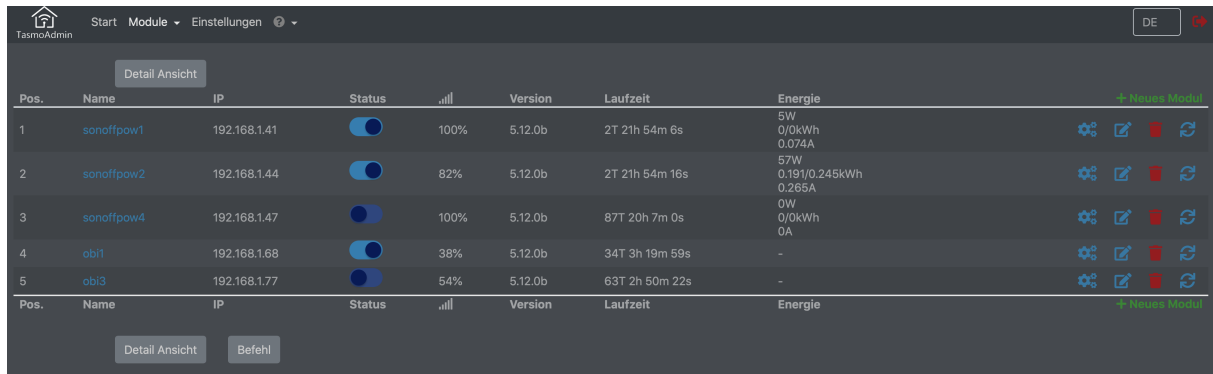
```
F?help F2Setup F3Search F4Filter F5Tree F6SortBy F7Vice F8Vice F9Kill F10Quit
ART, help me!
2020.02.07 20:15:43.152 3 : myHmUART: Unknown code A0C66847030575F00000000D026:::83:myHmUART, h
elp me!
2020.02.07 20:16:39.330 3 : myHmUART: Unknown code A0C2086702687CA000000003E64:::59:myHmUART, h
elp me!
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 status 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 for settings, a document for details, a red square for stop, and a circular arrow for 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		100%	5.12.0b	2T 21h 54m 6s	5W 0.0kWh 0.074A	
2	sonoffpow2	192.168.1.44		82%	5.12.0b	2T 21h 54m 16s	57W 0.191/0.245kWh 0.265A	
3	sonoffpow4	192.168.1.47		100%	5.12.0b	87T 20h 7m 0s	0W 0.0kWh 0A	
4	obi1	192.168.1.68		38%	5.12.0b	34T 3h 19m 59s	-	
5	obi3	192.168.1.77		54%	5.12.0b	63T 2h 50m 22s	-	

Abbildung 2: “tasmotaadmin”

http://localhost:8081

Tasmota Compiler

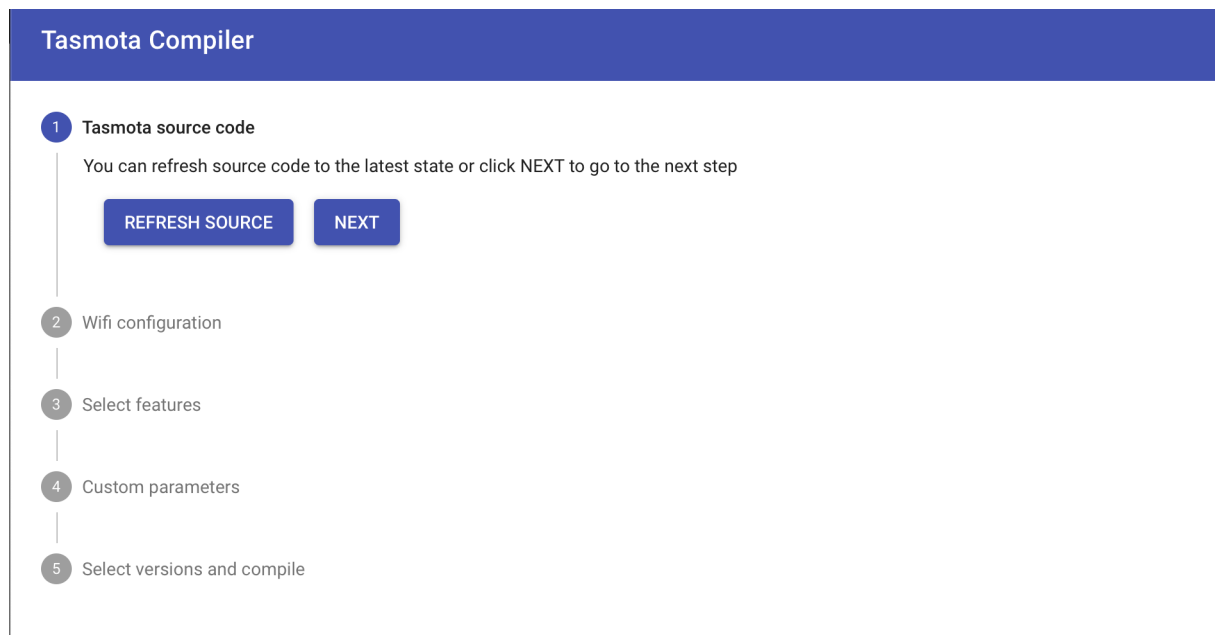


Abbildung 3: "tasmotacompiler"

<http://localhost:8082>

Homebridge

Default User: admin Default Passwort: admin

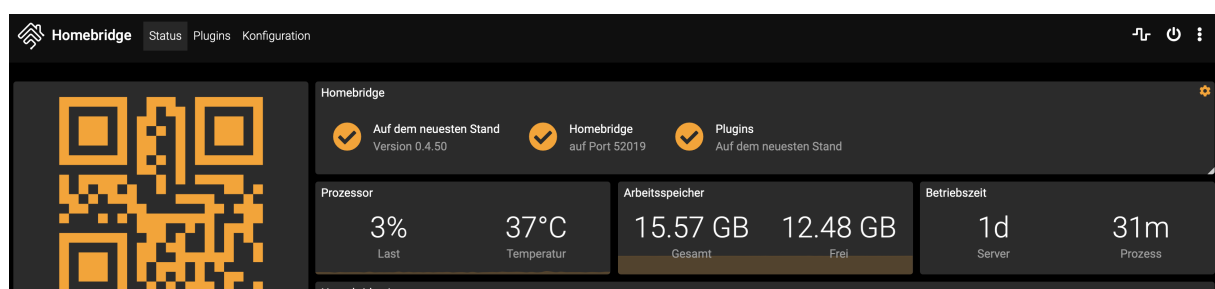


Abbildung 4: "homebridge"

<http://localhost:8080>

Portainer

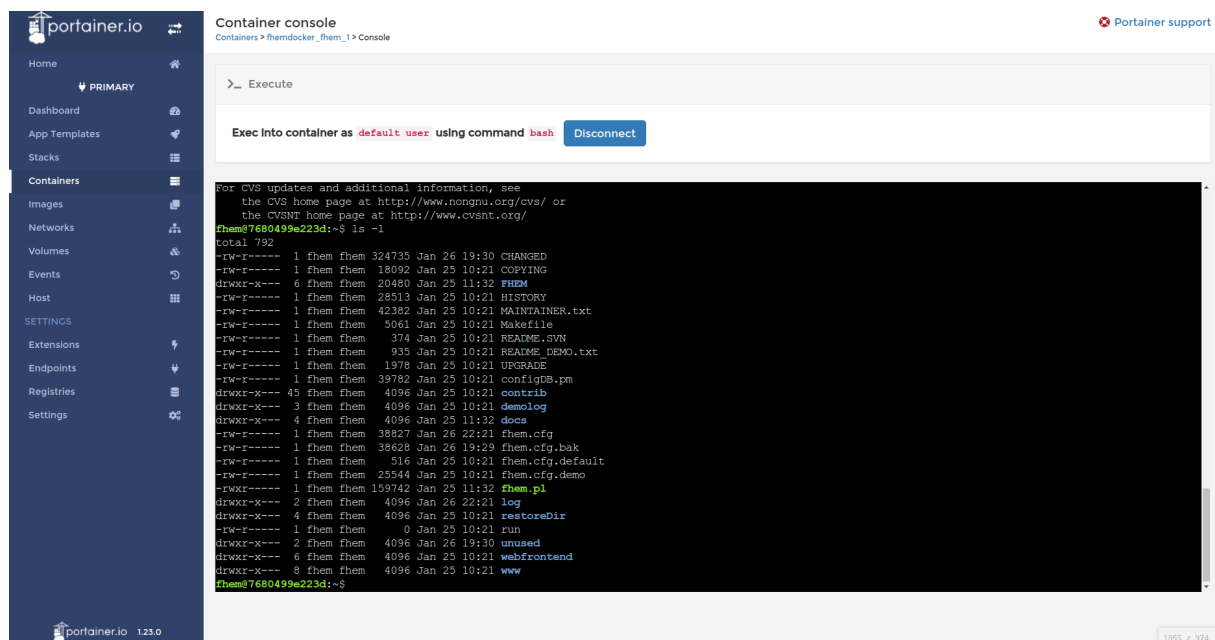


Abbildung 5: “portainer”

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.

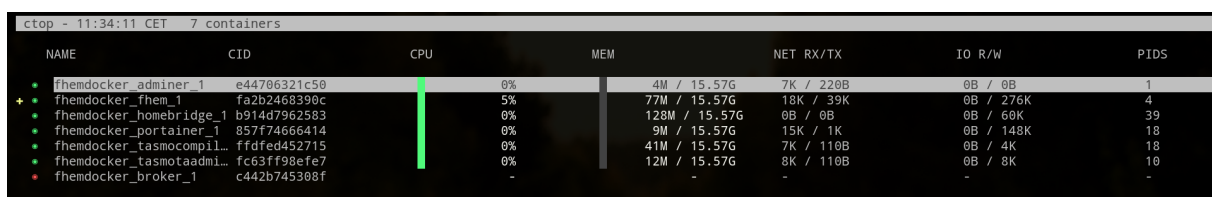
On Raspberry Pi 4 verify that file /boot/config.txt does NOT contain a line “enable_uart=0”. If the line exists remove or comment (#) this line.

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!