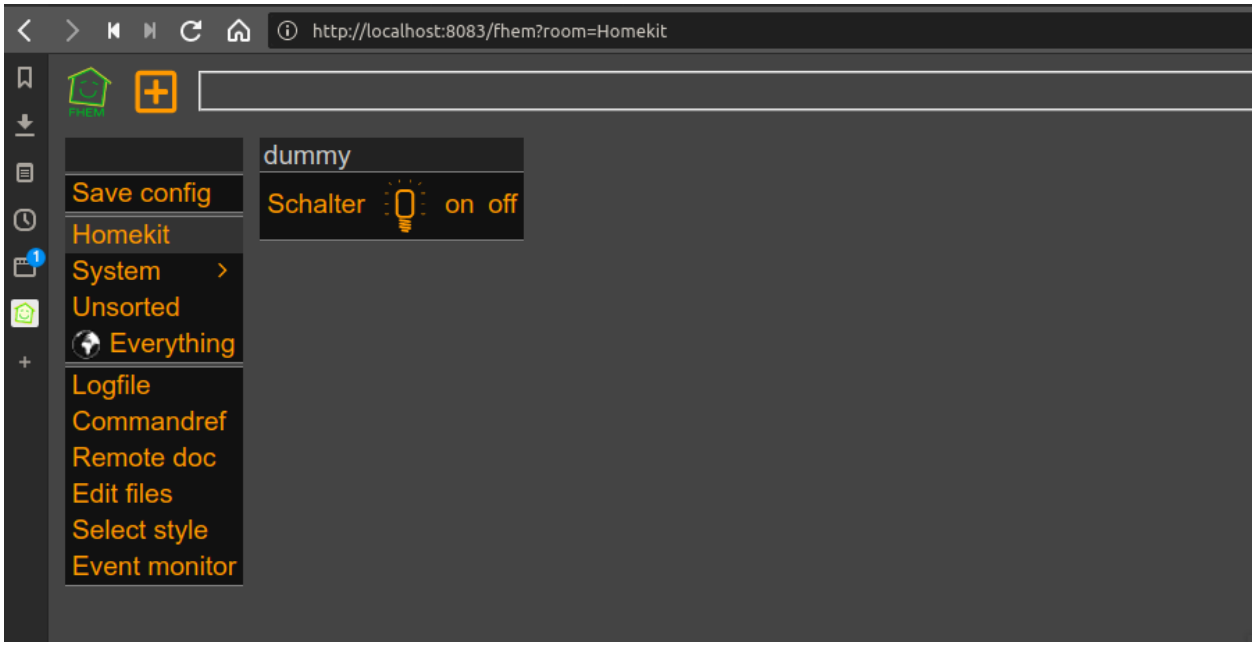
Home Automation Stack



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.

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- ☐ Mosquitto user-/groupid problem
- ☐ Grafana integration

Requirements

- docker
- docker-compose

Installation raspberrypi

Raspian Download

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

```
sudo dd bs=4M if=2021-10-30-raspios-bullseye-armhf-lite.img of=/dev/mmc
sync
```

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

```
sudo touch /media/boot/ssh
sync
umount /media/boot
umount /medua/rootfs
```

Eject the card and insert into your raspberrpi. After that power on the rpi and login with the known user **pi** and password **raspberry**.

```
ssh pi@raspberrypi4
```

Change your password with the command

```
pi@raspberrypi:~ $ passwd
Changing password for pi.
Current password:
New password:
Retype new password:
passwd: password updated successfully
pi@raspberrypi:~ $
```

System Update

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

Set timezone

```
sudo dpkg-reconfigure tzdata
```

Raspberry Config

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

   sudo raspi-config sudo reboot

Disable swap

```
sudo dphys-swapfile swapoff && \
sudo dphys-swapfile uninstall && \
sudo systemctl disable dphys-swapfile
```

Install additional packages

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

Configure ntpd daemon

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

Disable all pool server and add your local time server

```
server 192.168.1.1
```

Install oh-my-zsh

```
sh -c "$(curl -fsSL https://raw.github.com/ohmyzsh/ohmyzsh/master/tools
```

Install log2ram (/var/log 2 ram)

github page log2ram

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

Setup ssh key for user

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

Install docker & docker-compose

After installation put your user pi into the docker group.

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

git repository export and start all container

Note: Please run the startup.sh script after cloning.

```
cd
git clone https://github.com/stormmurdoc/fhemdocker.git
cd fhemdocker
./startup.sh
```

Access the application

FHEM

FHEM tmux session inside the container

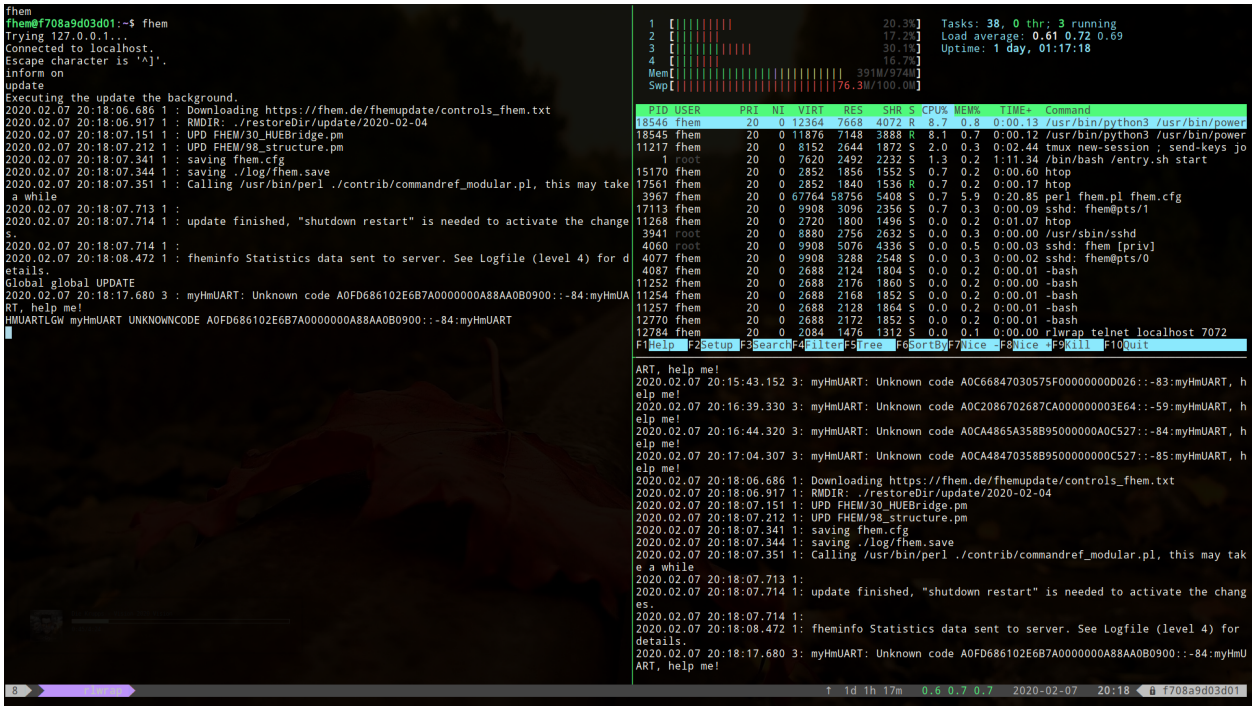

Abbildung 1: “fhemtmux”

http://localhost:80

influxdb

Further details about the influxdb module can be found here. FHEM Wiki influxdb

Container

Tasmota Admin

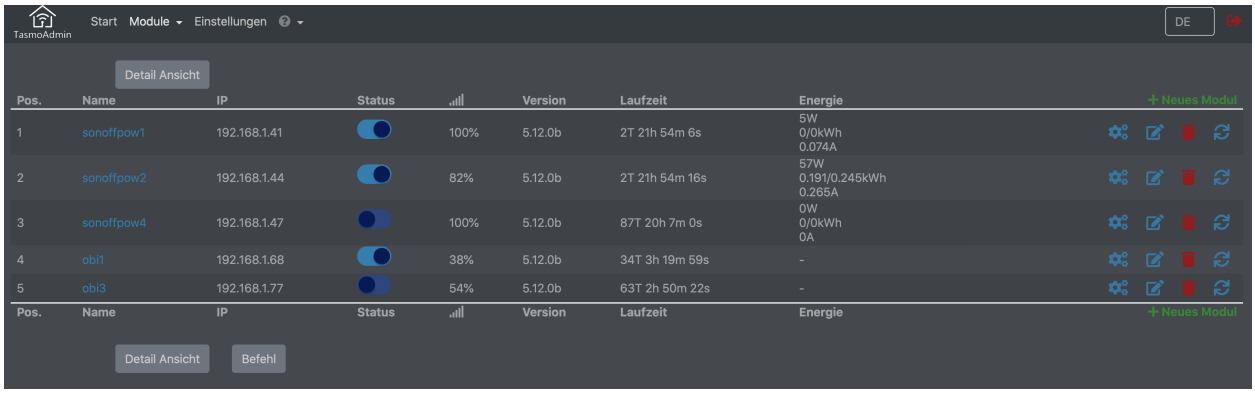

Abbildung 2: “tasmotaadmin”

http://localhost:8081

Tasmota Compiler

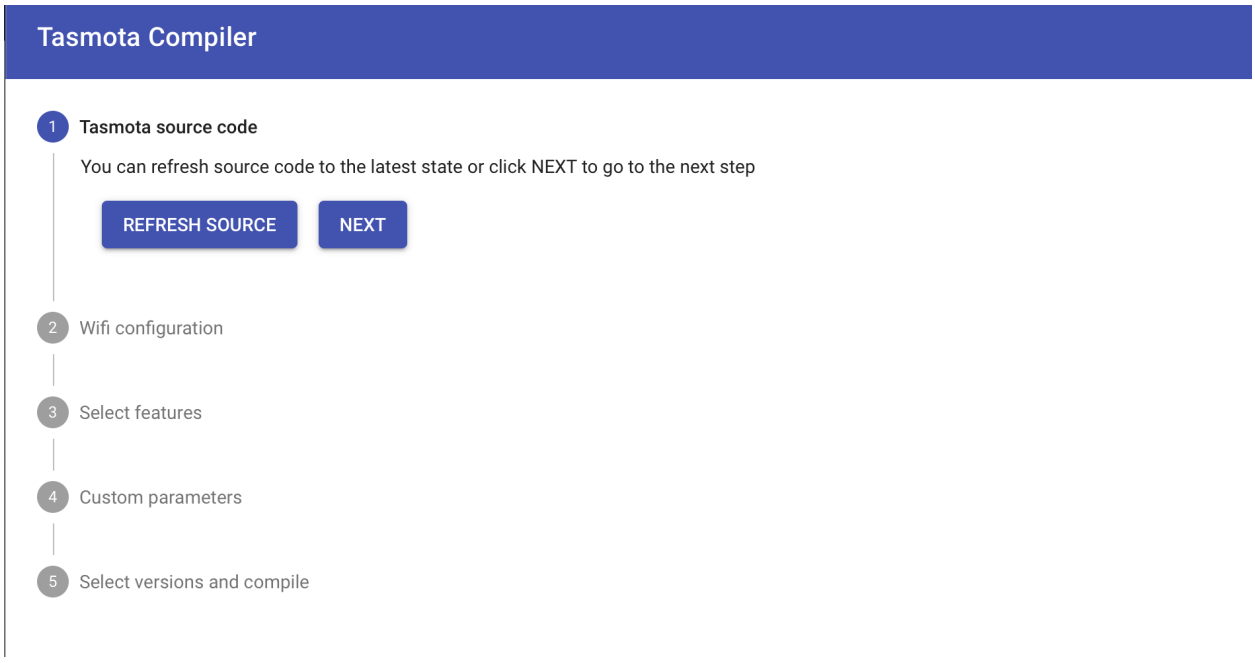

Abbildung 3: “tasmotacompiler”

http://localhost:8082

Homebridge

Default User: admin Default Passwort: admin

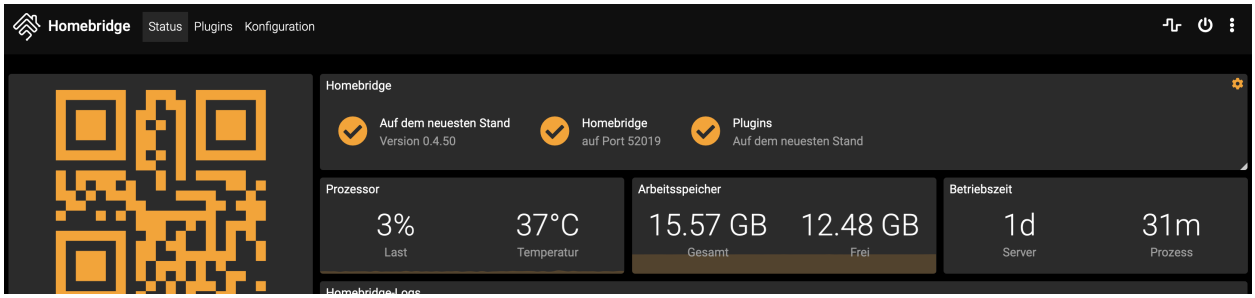

Abbildung 4: “homebridge”

http://localhost:8080

Portainer

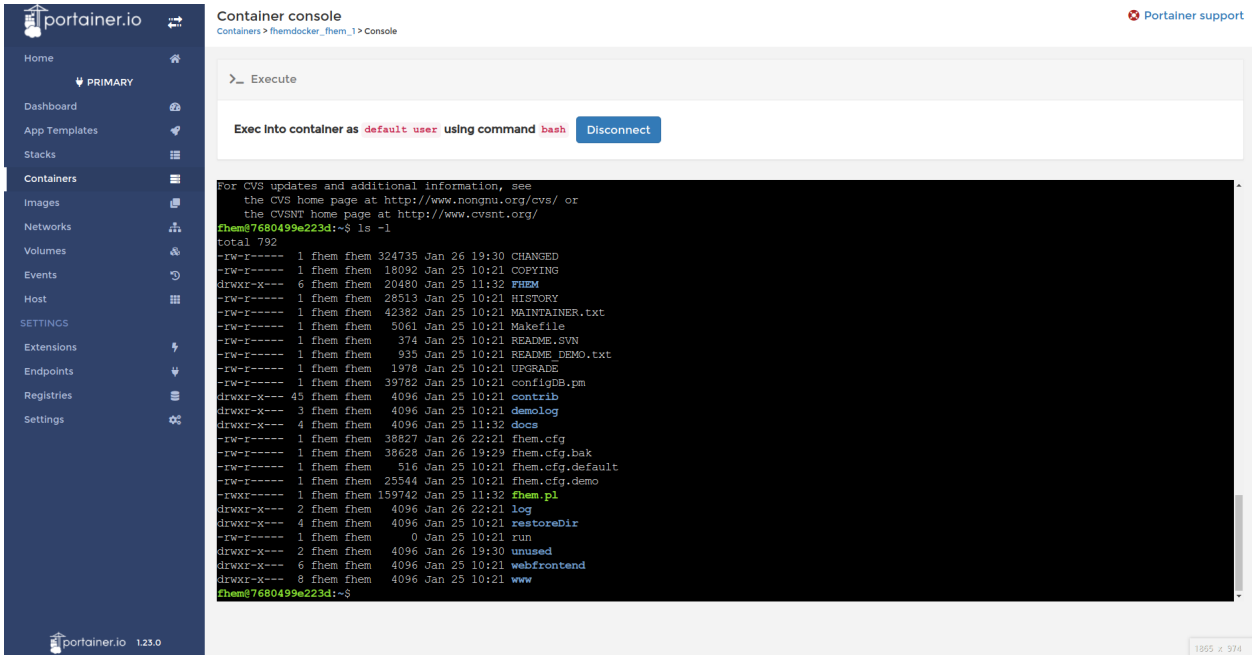

Abbildung 5: “portainer”

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.

Watchtower

This container automatically update all running container within a given time interval.

https://containrrr.github.io/watchtower/

ctop

Description

ctop is a commandline monitoring tool for linux containers

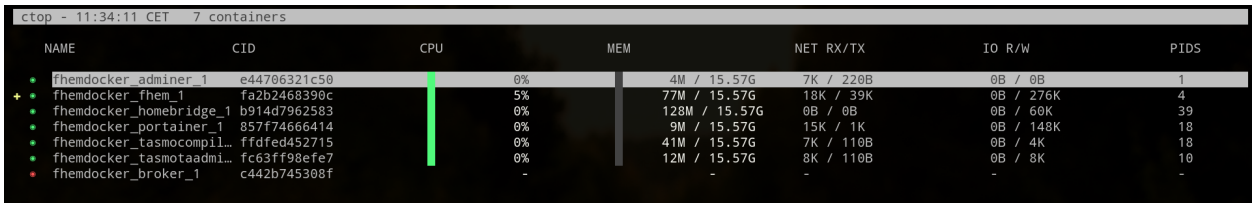

Abbildung 6: “ctop”

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

x86 Platform

```
  sudo wget https://github.com/bcicen/ctop/releases/download/v0.7.5/ctop-
0.7.5-linux-amd64 -O /usr/local/bin/ctop
  sudo chmod +x /usr/local/bin/ctop
```

arm Platform

```
  sudo wget https://github.com/bcicen/ctop/releases/download/v0.7.5/ctop-
0.7.5-linux-arm -O /usr/local/bin/ctop
  sudo chmod +x /usr/local/bin/ctop
```

Known Issues

FHEM website not reachable

“Error nginx”

If you’re not able to login. Please check the permissons of the .htpasswd file in

```
./fhemdocker/reverseproxy/config/.htpasswd
```

Set the right to 644 with

```
chmod 644 ./fhemdocker/reverseproxy/config/.htpasswd
```

Accessing the docker container via remote

If you want to commit a FHEM command via the local telnet daemon you can use the script fcmd.sh. Note: Please change the hostname accordingly.

```
Username: pi
Hostname: raspberrypi4 (replace it with your hostname)

fcmd.sh <FHEM Command>
```

Contributing to fhemdocker

Contributions are encouraged and welcome!