

docker

Verlauf

1. Geschichte
2. Funktionsweise
3. Installation (auf den Raspi)
4. Fazit
5. Quellenverzeichnis

1. Geschichte

- 2008: LXC wird veröffentlicht
- 2008: Docker Inc. wird gegründet
- 2013: Docker wird veröffentlicht

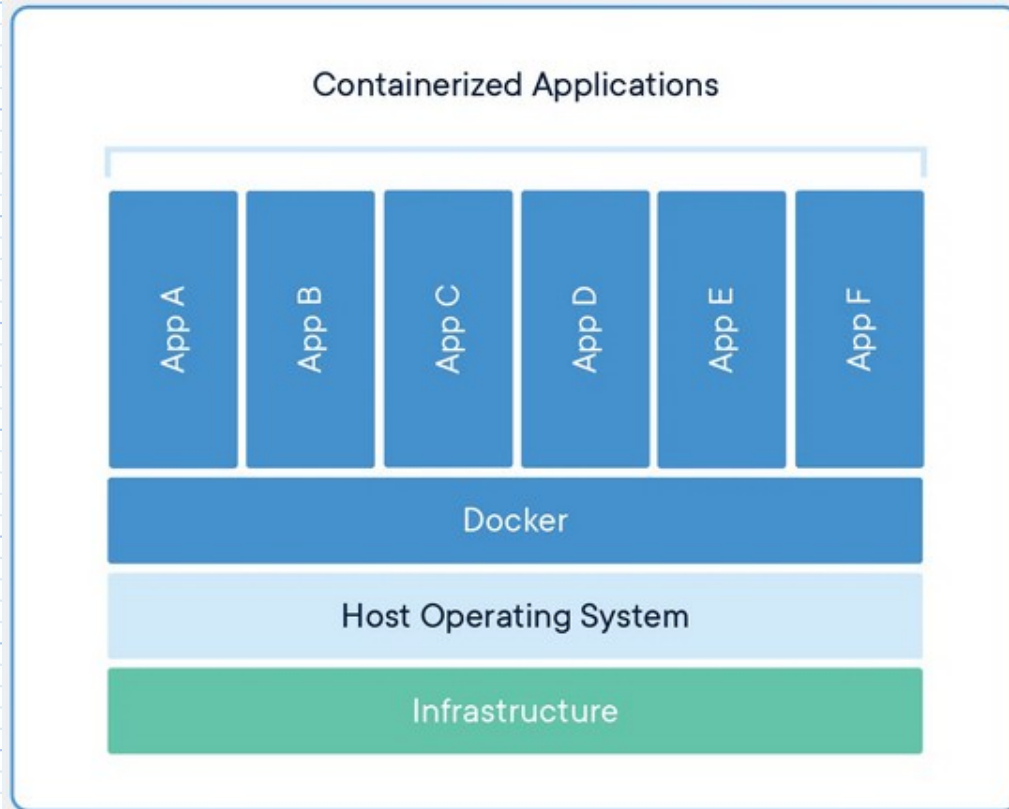
2. Funktionsweise

2.1 Wieso Docker benutzen?

- Unterstützt viele Plattformen
- Kostenlos für persönliches Benutzen
- (Teilweise) open-source
- Eher für Software-Entwickler gedacht

2. Funktionsweise

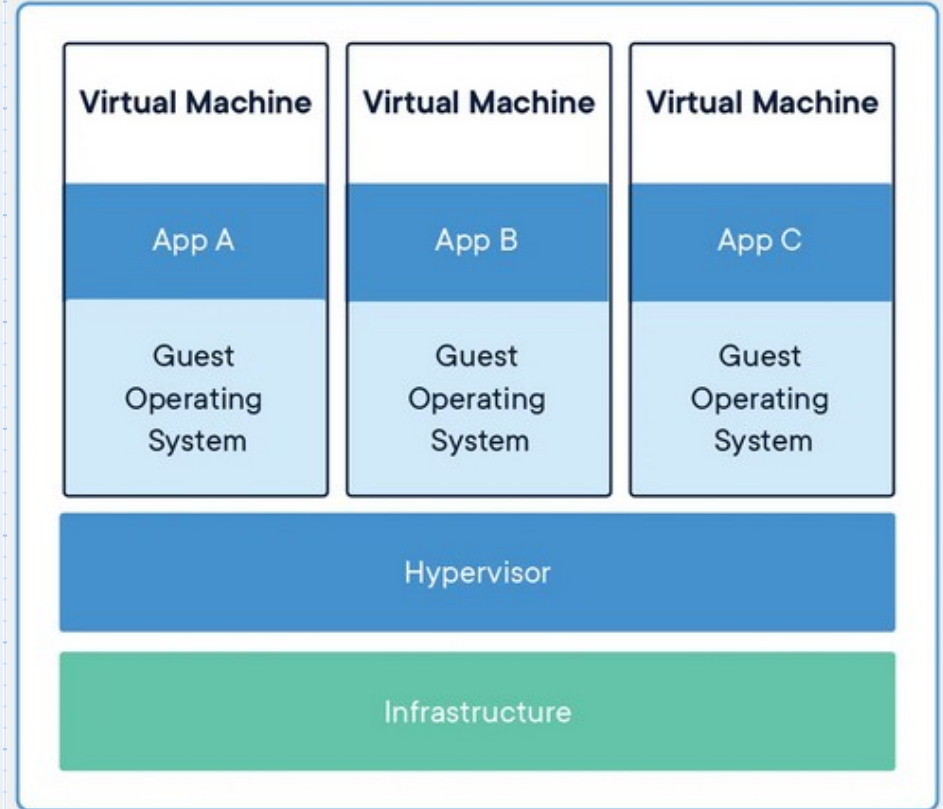
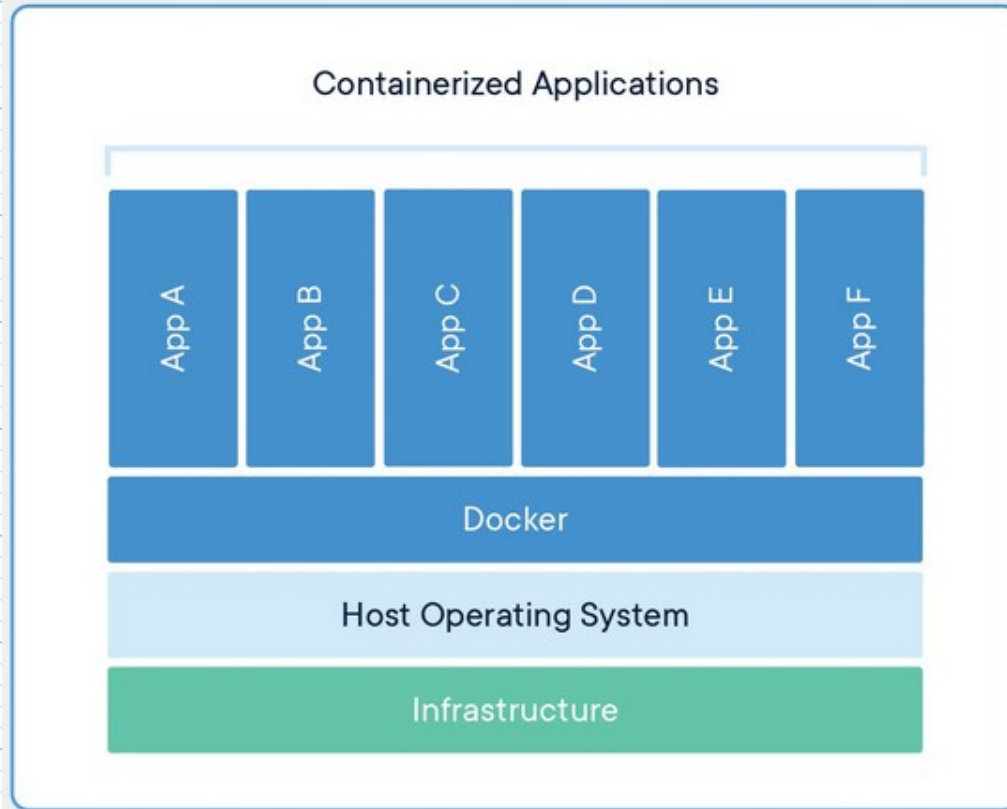
2.2 Containers



- Container als Programme
- „Alles in einen“
- Unabhängig voneinander
- Leicht zum Laufen zu bringen

2. Funktionsweise

2.3 Docker vs. Virtual Machine



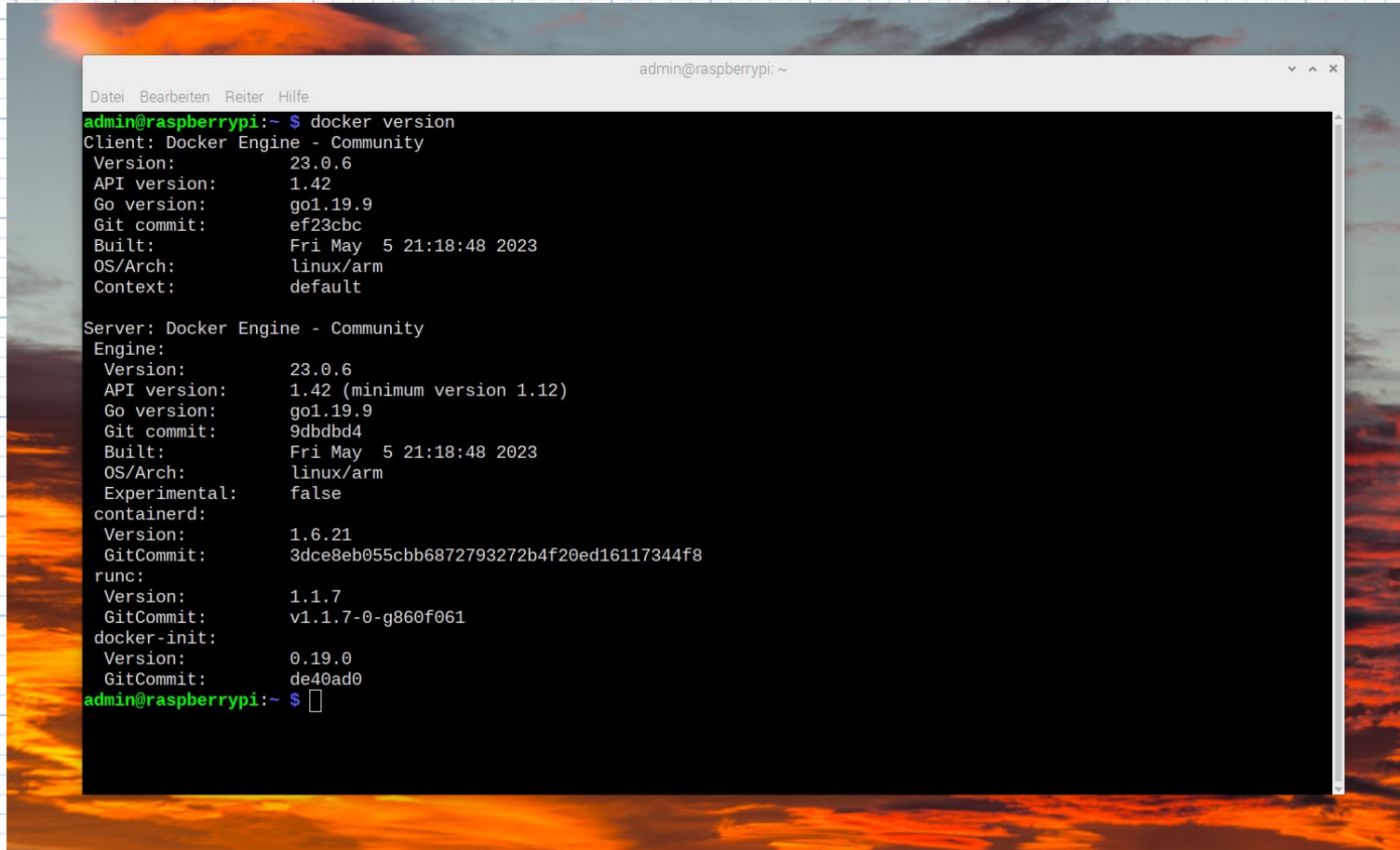
3. Installation (auf den Raspi)

3.1 Docker herunterladen

- > `sudo apt update && upgrade -y`
- > `sudo reboot`
- > `curl -sSL https://get.docker.com | sh`
- Docker ist jetzt heruntergeladen

3. Installation (auf den Raspi)

3.1 Docker herunterladen

A terminal window titled 'admin@raspberrypi: ~' is shown against a background of a sunset over a body of water. The terminal displays the output of the 'docker version' command. The output is divided into two sections: 'Client: Docker Engine - Community' and 'Server: Docker Engine - Community'. The client section lists version 23.0.6, API version 1.42, Go version go1.19.9, Git commit ef23cbc, and build date Fri May 5 21:18:48 2023. The server section lists version 23.0.6, API version 1.42 (minimum version 1.12), Go version go1.19.9, Git commit 9dbdbd4, and build date Fri May 5 21:18:48 2023. Below the server section, the 'containerd', 'runc', and 'docker-init' components are listed with their respective versions and Git commits. The terminal ends with a prompt 'admin@raspberrypi:~ \$' and a cursor.

```
admin@raspberrypi:~ $ docker version
Client: Docker Engine - Community
Version:           23.0.6
API version:       1.42
Go version:        go1.19.9
Git commit:        ef23cbc
Built:             Fri May 5 21:18:48 2023
OS/Arch:           linux/arm
Context:           default

Server: Docker Engine - Community
Engine:
Version:           23.0.6
API version:       1.42 (minimum version 1.12)
Go version:        go1.19.9
Git commit:        9dbdbd4
Built:             Fri May 5 21:18:48 2023
OS/Arch:           linux/arm
Experimental:     false
containerd:
Version:           1.6.21
GitCommit:         3dce8eb055cbb6872793272b4f20ed16117344f8
runc:
Version:           1.1.7
GitCommit:         v1.1.7-0-g860f061
docker-init:
Version:           0.19.0
GitCommit:         de40ad0
admin@raspberrypi:~ $
```


3. Installation (auf den Raspi)

3.2 Erster Container: portainer

The screenshot displays the Portainer web interface in a Chromium browser window. The browser's address bar shows the URL `https://localhost:9443/#/2/docker/dashboard`. The interface features a dark blue sidebar on the left with navigation options: Home, local (selected), Dashboard, App Templates, Stacks, Containers, Images, Networks, Volumes, Events, and Host. Below these are Settings, Users, Environments, Registries, and Authentication logs. The main content area is titled "Environment summary" and "Dashboard". It includes an "Environment info" section with a table of details:

Environment	local 4 4 GB - Standalone 23.0.6
URL	/var/run/docker.sock
GPU	none
Tags	-

Below the info section are six summary cards:

- 2 Stacks
- 3 Containers (2 running, 0 stopped; 0 healthy, 0 unhealthy)
- 3 Images (798.3 MB)
- 1 Volume
- 7 Networks
- 0 GPUs

The footer of the interface shows "portainer.io Community Edition 2.16.2 Upgrade".

3. Installation (auf den Raspi)

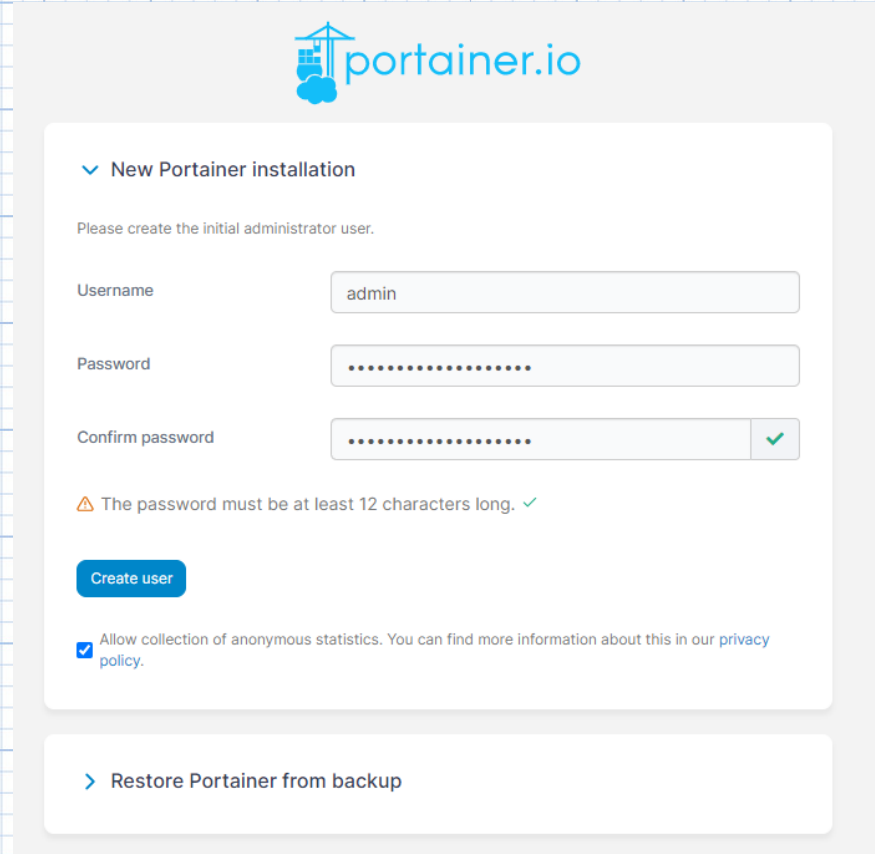
3.2 Erster Container: portainer

- hub.docker.com
- Suche: portainer
- Anleitung zur Installation:
 - > `docker volume create portainer_data`
 - > `docker run -d -p 8000:8000 -p 9443:9443 --name portainer --restart=always -v /var/run/docker.sock:/var/run/docker.sock -v portainer_data:/data portainer/portainer-ce:latest`

3. Installation (auf den Raspi)

3.2 Erster Container: portainer

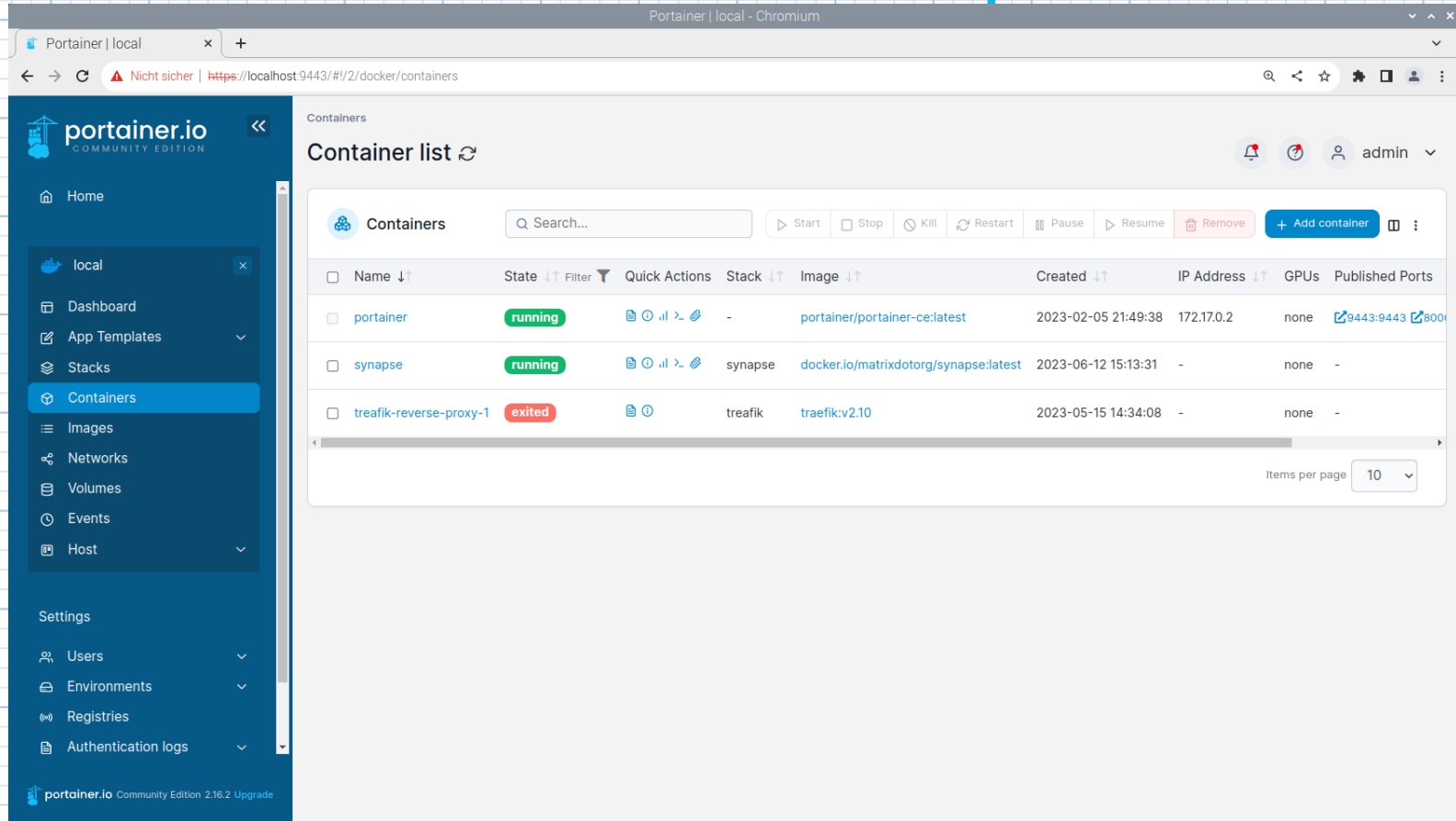
- Webseite:
<https://localhost:9443/>
- Name und Passwort einstellen



The screenshot shows the Portainer.io web interface for creating a new installation. At the top right is the Portainer logo and the text 'portainer.io'. Below it, a section titled 'New Portainer installation' contains the instruction 'Please create the initial administrator user.' There are three input fields: 'Username' with the value 'admin', 'Password' with masked characters, and 'Confirm password' with masked characters and a green checkmark on the right. Below the fields is a warning message: '⚠ The password must be at least 12 characters long. ✓'. A blue 'Create user' button is positioned below the warning. At the bottom of the form, there is a checked checkbox for 'Allow collection of anonymous statistics. You can find more information about this in our privacy policy.' Below the main form is a separate button labeled '> Restore Portainer from backup'.

3. Installation (auf den Raspi)

3.2 Erster Container: portainer



The screenshot displays the Portainer web interface in a Chromium browser window. The browser's address bar shows the URL `https://localhost:9443/#/2/docker/containers`. The interface features a dark blue sidebar on the left with the Portainer logo and navigation options: Home, local (selected), Dashboard, App Templates, Stacks, Containers (highlighted), Images, Networks, Volumes, Events, and Host. Below these are Settings options: Users, Environments, Registries, and Authentication logs. The main content area is titled "Containers" and "Container list". It includes a search bar, a "Containers" label, and a set of control buttons: Start, Stop, Kill, Restart, Pause, Resume, Remove, and Add container. A table lists the containers with columns for Name, State, Quick Actions, Stack, Image, Created, IP Address, GPUs, and Published Ports. The table contains three entries: "portainer" (running), "synapse" (running), and "traefik-reverse-proxy-1" (exited). At the bottom right of the table, there is a "Items per page" dropdown set to 10.

Name ↓	State ↑↓ Filter ▼	Quick Actions	Stack ↑↓	Image ↓↑	Created ↑↓	IP Address ↑↓	GPUs	Published Ports
portainer	running		-	portainer/portainer-ce:latest	2023-02-05 21:49:38	172.17.0.2	none	9443:9443 8000
synapse	running		synapse	docker.io/matrixdotorg/synapse:latest	2023-06-12 15:13:31	-	none	-
traefik-reverse-proxy-1	exited		traefik	traefik:v2.10	2023-05-15 14:34:08	-	none	-

3. Installation (auf den Raspi)

3.3 Auswahl weiterer Container

- Web-Server: nginx
- Reverse Proxy: traefik
- Matrix-Server: Synapse
- Docker in Docker

4. Fazit

Fragen?

5. Quellenverzeichnis

<https://stackoverflow.com/questions/16047306/how-is-docker-different-from-a-virtual-machine>

[https://en.wikipedia.org/wiki/Docker_\(software\)](https://en.wikipedia.org/wiki/Docker_(software))

<https://docs.docker.com/engine/faq/>

<https://www.docker.com/resources/what-container/>

<https://confluence.infn.it/download/attachments/89820915/Docker%20101.pptx?api=v2>

<https://www.ycombinator.com/topcompanies/valuation/exits>

<https://en.wikipedia.org/wiki/LXC>

<https://www.youtube.com/watch?v=rOTqprHv1YE>

<https://www.youtube.com/watch?v=pg19Z8LL06w>

<https://docs.docker.com/get-started/overview/>

<https://raspberrypi.com/docker-on-raspberry-pi/>

<https://hub.docker.com/search?q=portainer>

<https://docs.portainer.io/start/install-ce/server/docker/linux>

<https://docs.portainer.io/start/install-ce/server/setup>

https://hub.docker.com/_/docker

https://en.wikipedia.org/wiki/Docker,_Inc.