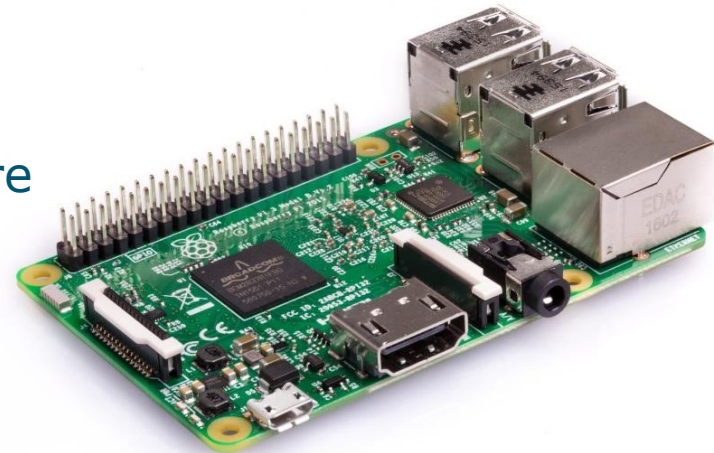


Raspberry: Installation Raspbian mit Node Red

Raspberry PI

- Single-Board Computer mit unerwartetem Erfolg
 - 2012: Veröffentlichung Version 1
 - 2018: 19 Mio. Stück verkauft, Mittlerweile Version 3
- Zahlreiche Add-On Platinen (Shields)
 - Z.B. Kamera, Kommunikation (z.B. LoRa, GPRS), GPS, Displays
- Viele Betriebssysteme
 - Z.B. Raspbian, Windows 10 IoT Core
- Unzählige Projekte



<https://www.raspberrypi.org/>

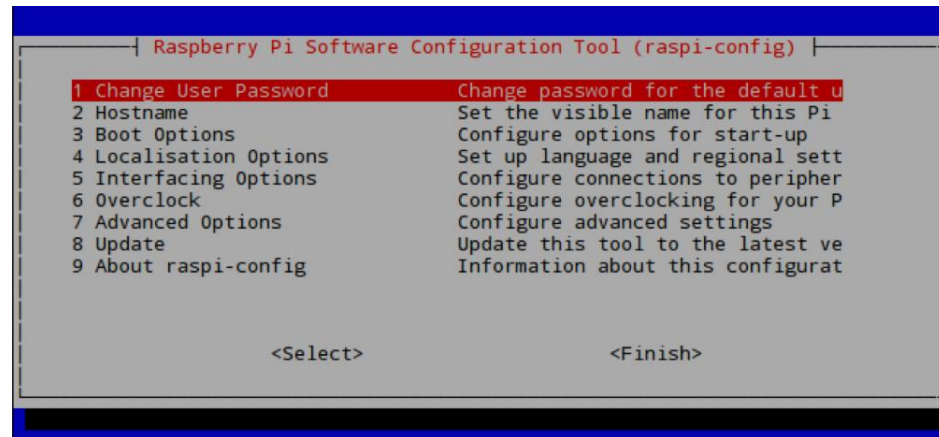
Raspberry PI Software Installation

- Installation Betriebssystem

- Download: https://downloads.raspberrypi.org/raspbian_latest
- SD-Karte: <https://www.raspberrypi.org/documentation/installation/installing-images/README.md>
- Raspberry mit Bildschirm und Tastatur oder per SSH nutzen
 - SSH von Beginn an nutzen: Dazu Datei "ssh" auf Boot Partition der SD-Karte erstellen (Unter Linux mit z.B. `touch ssh`)
 - SSH-Login: `ssh pi@IP-Adresse` (Default Passwort: raspberry)

- Konfiguration

- `sudo raspi-config`
- Passwort ändern
- Lokalisierung (WIFI)
- Interfacing
 - SSH (wenn nicht bereits oben)
 - I2C (z.B. für Sense HAT)
- Neustart
 - `sudo reboot`



Raspberry PI Software Installation

- Aktualisierung von Raspbian OS

- `sudo rpi-update`
- `sudo reboot -n`
- `sudo apt-get update`
- `sudo apt-get -y upgrade`
- `sudo apt-get -y autoremove`

```
Setting up raspberrypi-ui-mods (1.20170315) ...
Setting up raspi-config (20170307) ...
Processing triggers for libc-bin (2.19-18+deb8u7) ...
pi@raspberrypi:~$ sudo apt-get -y autoremove
Reading package lists... Done
Building dependency tree
Reading state information... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
pi@raspberrypi:~$ update-nodejs-and-nodered
```

```
This script will remove any pre-installed versions of node.js and Node-RED
and replace them with node.js 6.x LTS (boron) and the latest Node-RED from Npm.
To do this it runs commands as root - please satisfy yourself that this will
not damage your Pi, or otherwise compromise your configuration.
```

```
Doing this may also be 'a bad thing' if you have installed lots of extra nodes.
Especially if they have any native binary component. Some nodes in your
~/node-red directory will probably need to be re-installed afterwards. some
```

- Aktualisierung von Node.js

- `update-nodejs-and-nodered`
- `sudo setcap cap_net_raw+eip $(eval readlink -f `which node`)`

- Neustart

- `sudo reboot -n`

Raspberry PI Software Installation

- Node RED starten/stoppen
 - `node-red-start`
 - `node-red-stop`
- Node RED bei Boot starten aktivieren/deaktivieren
 - `sudo systemctl enable nodered.service`
 - `sudo systemctl disable nodered.service`
- Neue Node RED Module hinzufügen
 - `npm install crc`
 - `npm install mathjs`

Raspberry PI Software Installation

- WLAN einrichten (Editieren wpa_supplicant.conf)
 - `sudo vi /etc/wpa_supplicant/wpa_supplicant.conf`

```
network={  
    ssid="<wifi network name>"  
    psk="<wifi password>"  
}
```

- Oder besser Passwort verschlüsseln mit:
 - `wpa_passphrase "wifi network name" + Eingabe.`

```
network={  
    ssid="<wifi network name>"  
    #psk="<wifi password>" # LÖSCHEN  
    psk=131e1e221f6e06e3911a2d11ff2fac9182665c004de85300f9cac208a6a80531  
}
```

- Abschließend: `wpa_cli -i wlan0 reconfigure`