Monitoring: Prometheus + Grafana

Grafana

https://grafana.com/tutorials/install-grafana-on-raspberry-pi

```
wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add -
echo "deb https://packages.grafana.com/oss/deb stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
sudo apt-get update
sudo apt-get install -y grafana
sudo /bin/systemctl enable grafana-server
sudo /bin/systemctl start grafana-server
```

Prometheus

https://pimylifeup.com/raspberry-pi-prometheus

```
cd /opt
wget https://github.com/prometheus/prometheus/releases/download/v2.22.0/prometheus-2.22.0.linux-
armv7.tar.gz
tar xfz prometheus-2.22.0.linux-armv7.tar.gz
mv prometheus-2.22.0.linux-armv7/ prometheus/
rm prometheus-2.22.0.linux-armv7.tar.gz


chown -R root:root prometheus/
```

```
vim /etc/systemd/system/prometheus.service
```

```
[Unit]
Description=Prometheus Server
Documentation=https://prometheus.io/docs/introduction/overview/
After=network-online.target


[Service]
User=prometheus
Restart=on-failure
```

```
ExecStart=/opt/prometheus/prometheus --config.file=/opt/prometheus/prometheus.yml --
storage.tsdb.path=/opt/prometheus/data


[Install]
WantedBy=multi-user.target
```

```
systemctl daemon-reload
systemctl enable prometheus.service
systemctl restart prometheus.service
systemctl status prometheus.service
```

FabAccess Prometheus Exporter

```
apt install python3-pip


cd /opt/prometheus/
git clone https://gitlab.com/fabinfra/fabaccess/prometheus-exporter.git fabaccess-exporter --recursive
cd /opt/prometheus/fabaccess-exporter/
pip install -r requirements.txt
```

als Service

```
adduser --system prometheus
chown -R prometheus:root prometheus/
```

```
vim /etc/systemd/system/prometheus-fabaccess-exporter.service
```

```
[Unit]
Description=Prometheus FabAccess Exporter Service
After=network.target


[Service]
Type=simple
User=prometheus
Group=root
Environment="EXPORTER_PORT=9000"
Environment="BFFH_HOST=fabaccess.stadtfabrikanten.org"
Environment="BFFH_PORT=5961"
```

```
Environment="BFFH_USER=fabaccess-prometheus-exporter"

Environment="BFFH_PASSWORD=THEPASSWORD"

Environment="POLLING_INTERVAL_SECONDS=5"

WorkingDirectory=/opt/prometheus/fabaccess-exporter

ExecStart=/usr/bin/python3 main.py

Restart=always

RestartSec=5


[Install]

WantedBy=multi-user.target
```

mqtt-exporter

- https://github.com/kpetremann/mqtt-exporter
- TLS Support: https://github.com/kpetremann/mqtt-exporter/pull/52 (aktuell nicht verwendet, weil alles auf dem gleichen Host)

```
cd /opt/prometheus/
git clone https://github.com/kpetremann/mqtt-exporter.git
mv mqtt-exporter mqtt-exporter


cd  /opt/prometheus/mqtt-exporter/
pip install -r requirements/base.txt
```

Start manually (test)

```
MQTT_ADDRESS=127.0.0.1 MQTT_PORT=1883 MQTT_USERNAME=fablabc MQTT_PASSWORD=THEPASSWORD
PROMETHEUS_PORT=9001 python3 exporter.py
```

Als Service

```
vim /etc/systemd/system/prometheus-mqtt-exporter.service
```

```
[Unit]
Description=Prometheus MQTT Exporter
After=network-online.target

[Service]
User=prometheus
```

```
Restart=on-failure

Environment="MQTT_ADDRESS=127.0.0.1"

Environment="MQTT_PORT=1883"

#TLS config - needs merged PR https://github.com/kpetremann/mqtt-exporter/pull/52

#Environment="MQTT_ENABLE_TLS=True"

#Environment="MQTT_TLS_NO_VERIFY=False"

#Environment="MQTT_ADDRESS=fabaccess.fablabchemnitz.de"

#Environment="MQTT_PORT=8883"

Environment="MQTT_USERNAME=fablabc"

Environment="MQTT_PASSWORD=THE_PASSWORD"

Environment="PROMETHEUS_PORT=9001"

ExecStart=/usr/bin/python3 /opt/prometheus/mqtt-exporter/exporter.py


[Install]
WantedBy=multi-user.target
```

```
systemctl enable /etc/systemd/system/prometheus-mqtt-exporter.service
systemctl start /etc/systemd/system/prometheus-mqtt-exporter.service
journalctl -f -u prometheus-mqtt-exporter.service
```

```
PORT=9001 python3 exporter.py
INFO:mqtt-exporter:subscribing to "#"
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ty', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_if', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ofln', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_onln', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_state_0', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_state_1', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_0', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_1', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_2', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_3', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_4', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_5', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_6', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_7', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_8', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_9', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_10', labels=())
```

```
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_11', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_12', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_13', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_14', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_15', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_16', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_17', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_18', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_19', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_20', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_21', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_22', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_23', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_24', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_25', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_26', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_27', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_28', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_29', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_30', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_rl_31', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_0', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_1', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_2', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_3', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_4', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_5', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_6', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_7', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_8', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_9', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_10', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_11', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_12', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_13', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_14', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_15', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_16', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_17', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_18', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_19', labels=())
```

```
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_20', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_21', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_22', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_23', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_24', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_25', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_26', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_swc_27', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_0', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_1', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_2', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_3', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_4', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_5', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_6', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_7', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_8', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_9', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_10', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_11', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_12', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_13', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_14', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_15', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_16', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_17', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_18', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_19', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_20', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_21', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_22', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_23', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_24', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_25', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_26', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_27', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_28', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_29', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_30', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_btn_31', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_4', labels=())
```

```
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_11', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_13', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_17', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_20', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_30', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_68', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_73', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_82', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_114', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_so_117', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_lk', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_lt_st', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_bat', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_dslp', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ver', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Total', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Yesterday', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Today', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Power', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_ApparentPower',
labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_ReactivePower',
labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Factor', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Voltage', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_sn_ENERGY_Current', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_POWER', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_UptimeSec', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Heap', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Sleep', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_LoadAvg', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_MqttCount', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Wifi_AP', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Wifi_Channel', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Wifi_RSSI', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Wifi_Signal', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_Wifi_LinkCount', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Total', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Yesterday', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Today', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Period', labels=())
```

```
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Power', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_ApparentPower', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_ReactivePower', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Factor', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Voltage', labels=())
INFO:mqtt-exporter:creating prometheus metric: PromMetricId(name='mqtt_ENERGY_Current', labels=())
```