MONITORING DOCKER

USING PROMETHEUS AND GRAFANA

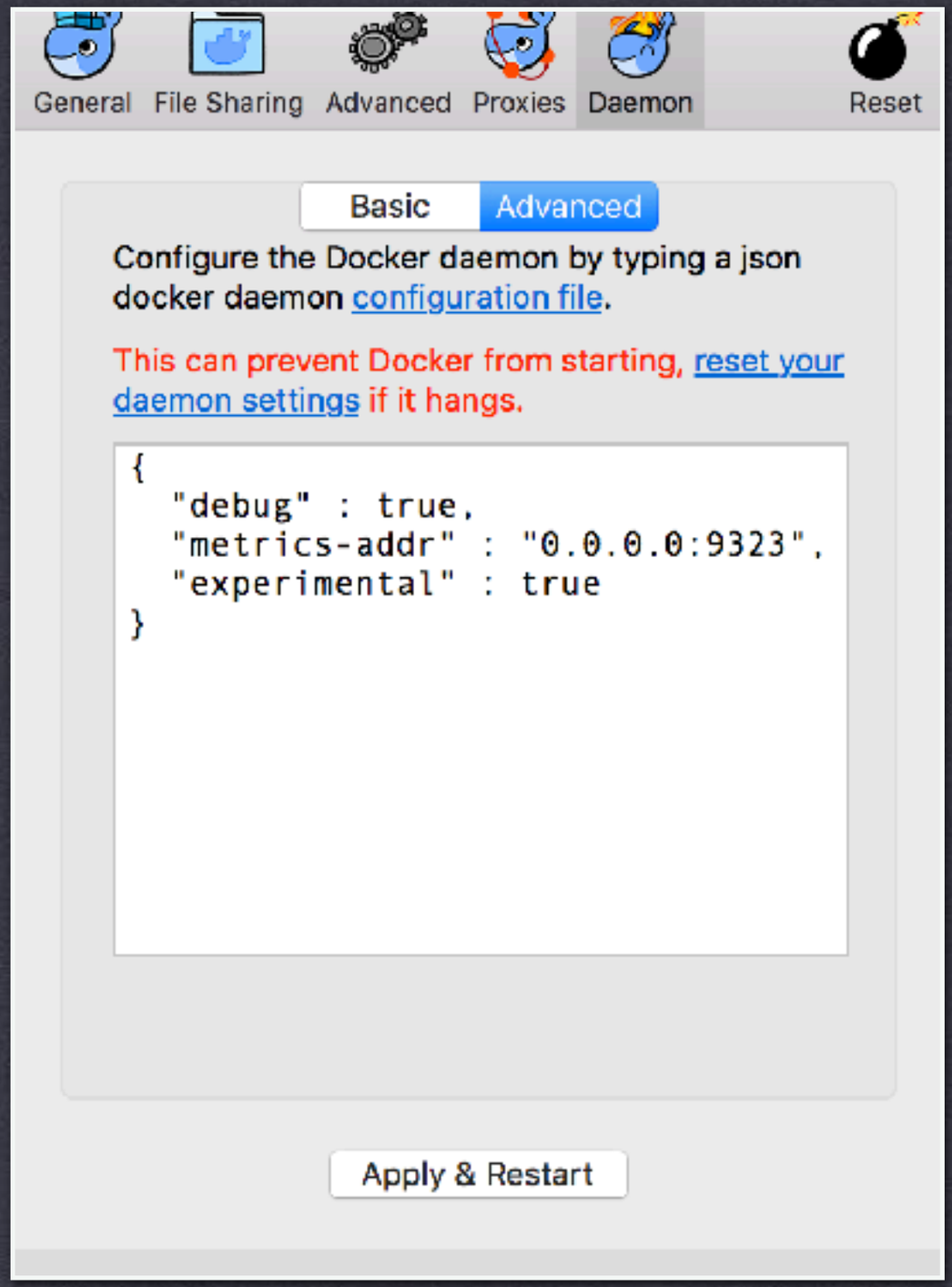
About me - Stefan Moises

- Software Engineer - PHP, JavaScript [NodeJS, Angular, VueJS], Java, Minecraft :)
- DevOps (Docker, Ansible, Gitlab CI, Graylog, …)
- @upsettweety
- http://www.rent-a-hero.de/wp/

1. BUILT-IN METRICS

MONITOR DOCKER ON WINDOWS OR MAC - HTTP://127.0.0.1:9323/METRICS

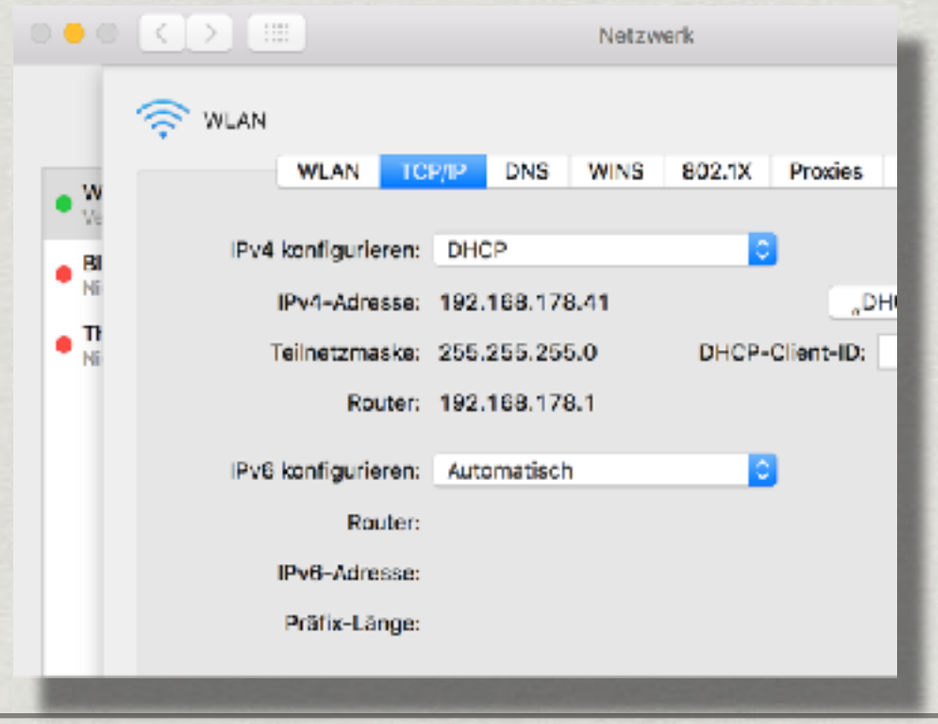
=> ADD „METRICS-ADDR“



https://www.brianchristner.io/how-to-monitor-docker-for-mac-windows/

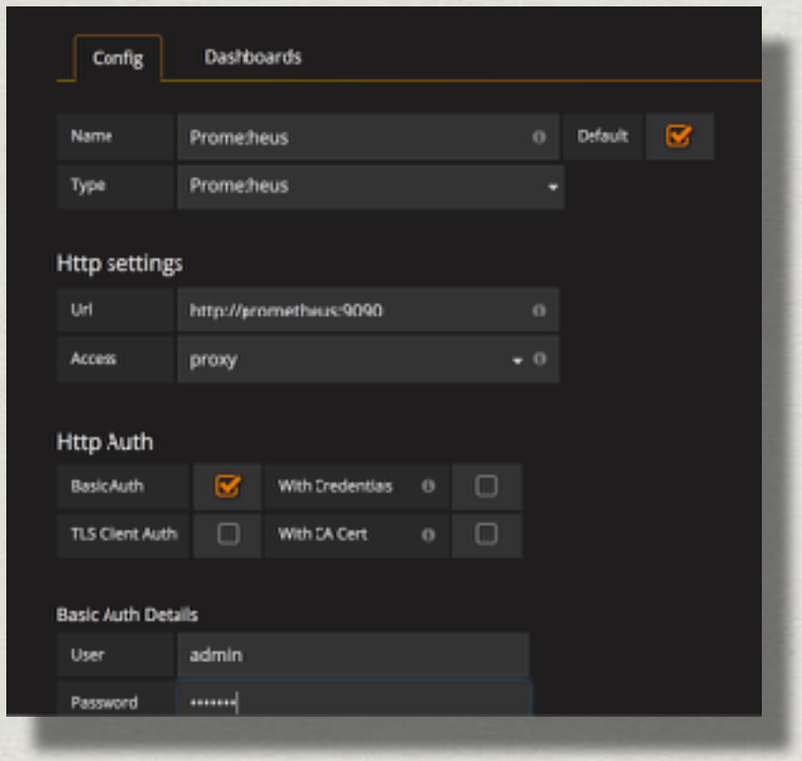
Set up Prometheus

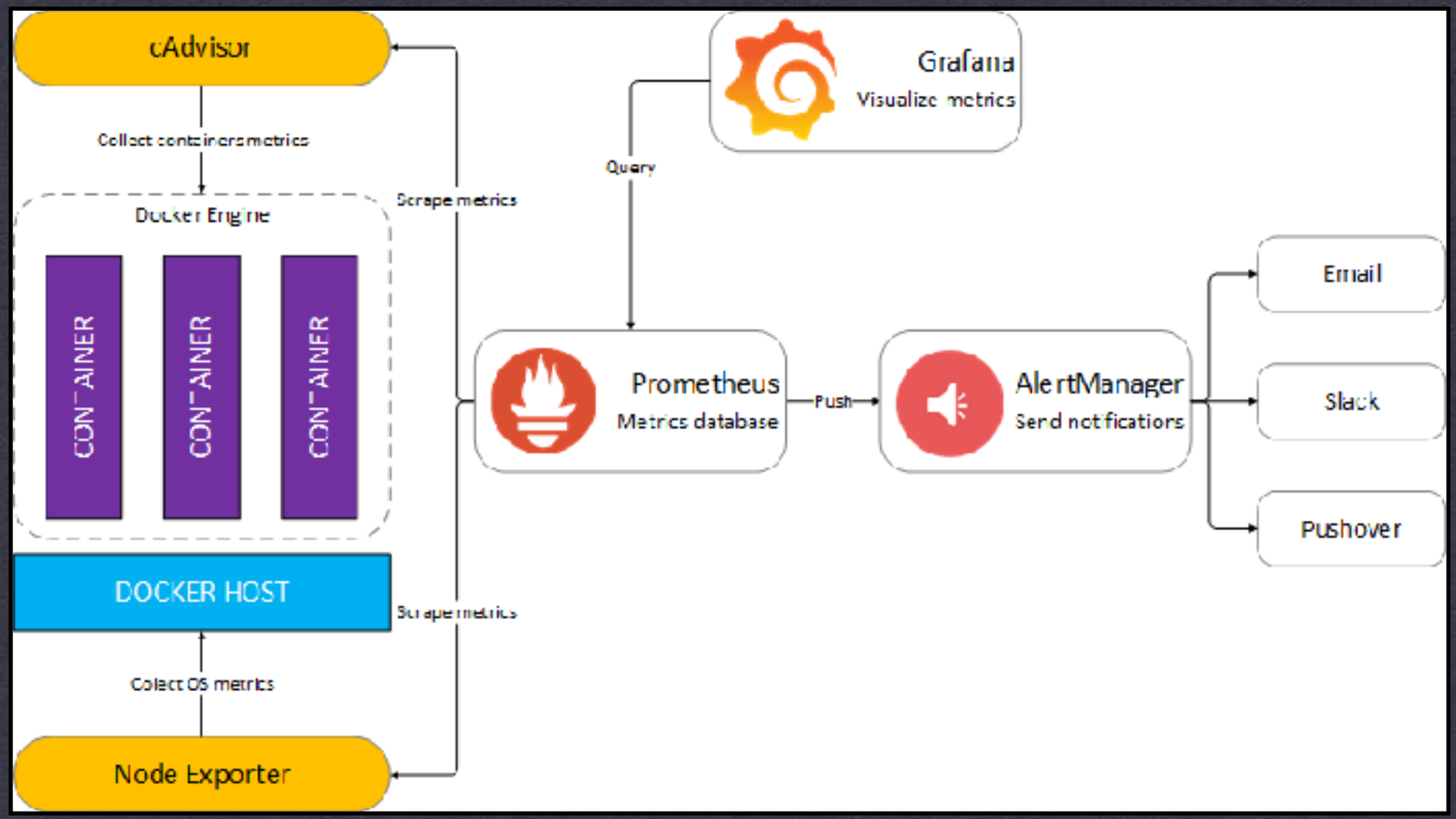
- git clone https://github.com/vegasbrianc/prometheus.git
- Edit the „*prometheus/prometheus.yml*“ file. Navigate to the end of the file and find the section name **static_configs**
- Edit the target string to the with the hostname or IP of the machine running Docker for Mac/Windows:
  - targets: [‚hostname-here:9323']
- Hostname?!
  ipconfig getifaddr en0
- *docker-compose up -d*



Set up Grafana

- open Grafana: http://0.0.0.0:3000 (username - admin, password - foobar)
- click „Add Data Source“
- http://prometheus:9090
- Save & Test
- Import Grafana-Dashboard „1229“, select the prometheus datasource
- Done!





2. DOCKPROM

COMBINING PROMETHEUS, GRAFANA, CADVISOR, NODEEXPORTER, CADDY AND ALERTMANAGER

„WTF?“

–anonymous

- **Prometheus** (metrics database) http://<host-ip>:9090
- **AlertManager** (alerts management) http://<host-ip>:9093
- **Grafana** (visualize metrics) http://<host-ip>:3000
- **NodeExporter** (host metrics collector)
- **cAdvisor** (containers metrics collector)
- **Caddy** (reverse proxy and basic auth provider for prometheus and alertmanager)

Hit the ground running

```
git clone https://github.com/stefanprodan/dockprom

cd dockprom

ADMIN_USER=admin ADMIN_PASSWORD=admin
docker-compose up -d
```

Same ol’ Grafana …

- http://localhost:3000/ (admin - admin)
- „Add Data Source“ - enter http://prometheus:9090, Access: proxy
- Import („Dashboards - Import“) Dashboard - Templates from the „grafana“ directory
- Docker Host, Docker Containers, Services (Logging Containers)

DEFINE ALERTS

Email, Slack, Hipchat, Web hooks, OpsGenie, PagerDuty, …

https://prometheus.io/docs/alerting/configuration/

Alerts configuration files

- Monitoring services alerts - *targets.rules*
- Docker Host alerts - *host.rules*
- Docker Containers alerts - *containers.rules*

- *Edit* „alertmanager/config.yml“ and change / add **receivers**
- *Reload configs:*

  curl -u admin:admin -X POST http://127.0.0.1:9090/-/reload

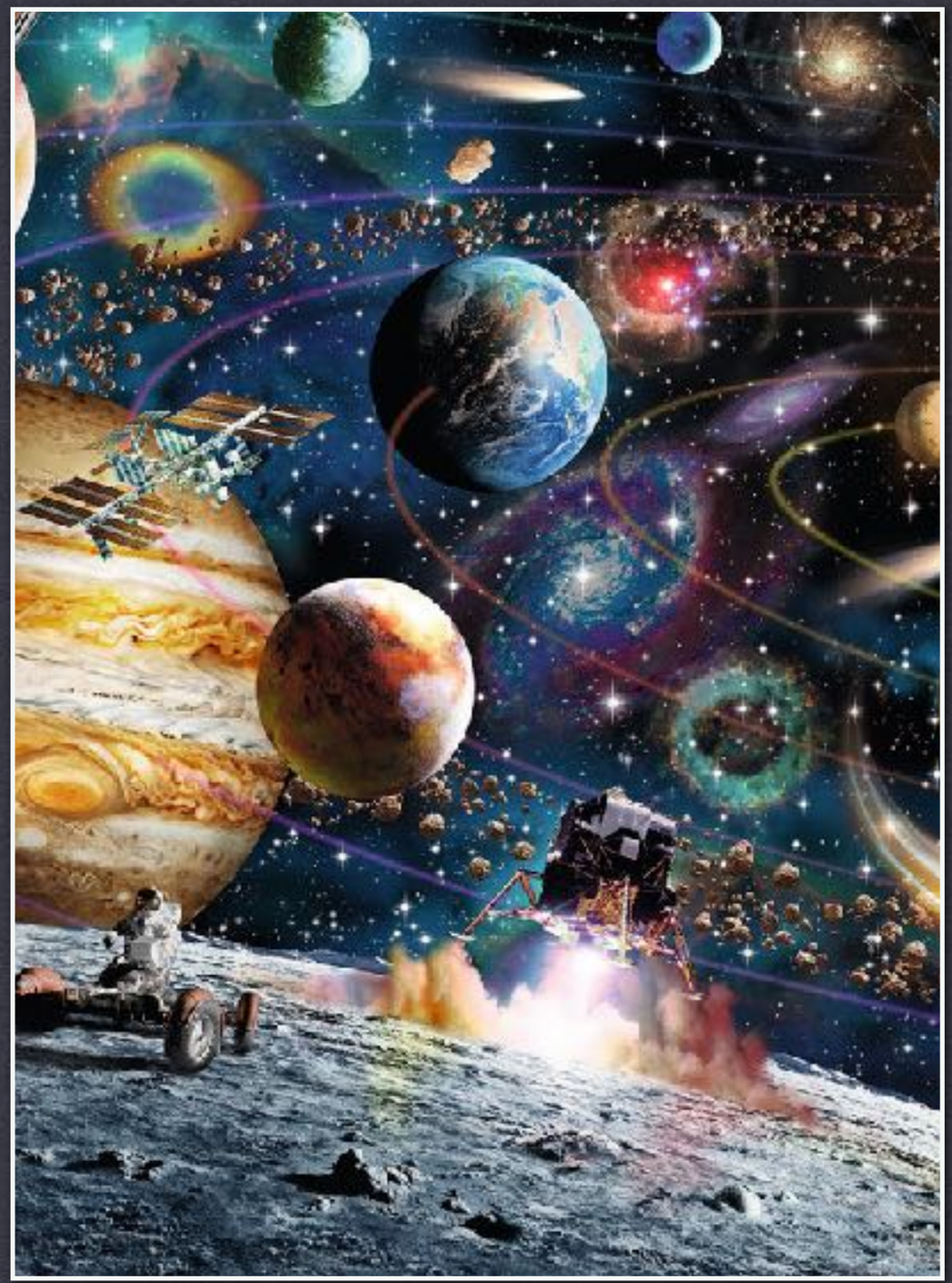
monitor_service_down (0 active)

nodejs_down (0 active)

```
ALERT nodejs_down
  IF absent(container_memory_usage_bytes{name="server_nodejs_1"})
  FOR 20s
  LABELS {severity="critical"}
  ANNOTATIONS {description="NodeJS container is down for more than 20 seconds.", summary="NodeJS down"}
```

MONITOR ...

OTHER ~~WORLDS~~ HOSTS?



Of course!

- simply deploy a **NodeExporter** and a **cAdvisor** container on each host (e.g. with the provided „docker-compose.exporters.yml“)

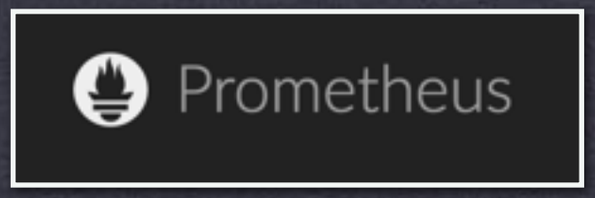
- point the Prometheus server to *scrape* those (via *„prometheus/prometheus.yml“*)!

```yaml
# A scrape configuration containing exactly one endpoint to scrape.
scrape_configs:
  - job_name: 'nodeexporter'
    scrape_interval: 5s
    static_configs:
      - targets: ['nodeexporter:9100']

  - job_name: 'cadvisor'
    scrape_interval: 5s
    static_configs:
      - targets: ['cadvisor:8080']
```

Links

- https://www.brianchristner.io/how-to-monitor-docker-for-mac-windows/
- https://github.com/stefanprodan/dockprom
- https://stefanprodan.com/2016/a-monitoring-solution-for-docker-hosts-containers-and-containerized-services/
- https://prometheus.io/
- http://grafana.org/
- https://github.com/google/cadvisor
- https://github.com/prometheus/node_exporter
- https://github.com/prometheus/alertmanager
- https://caddyserver.com/



THANK YOU

VERY MUCH :)