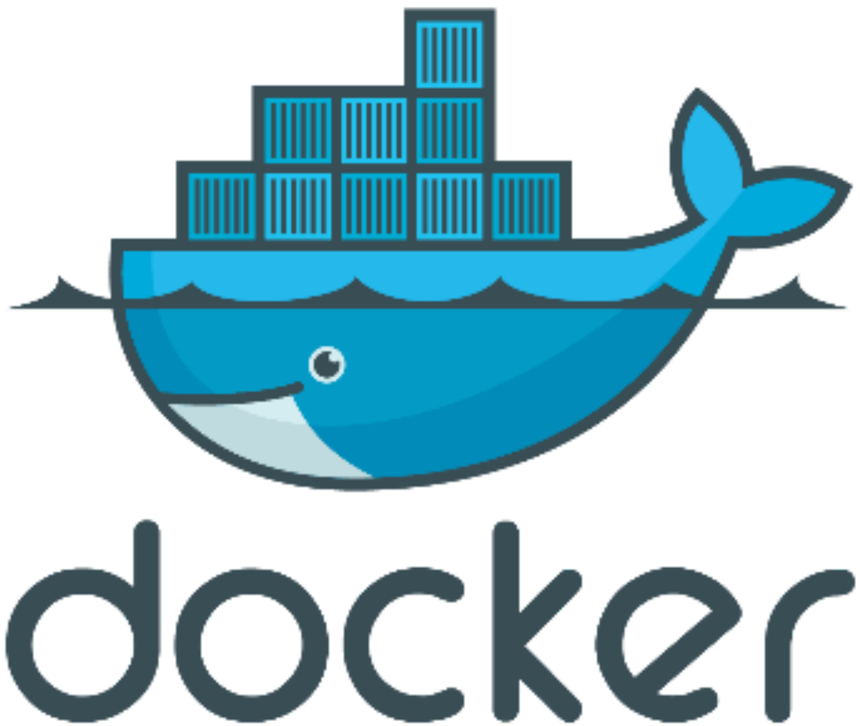

docker

+


Azure

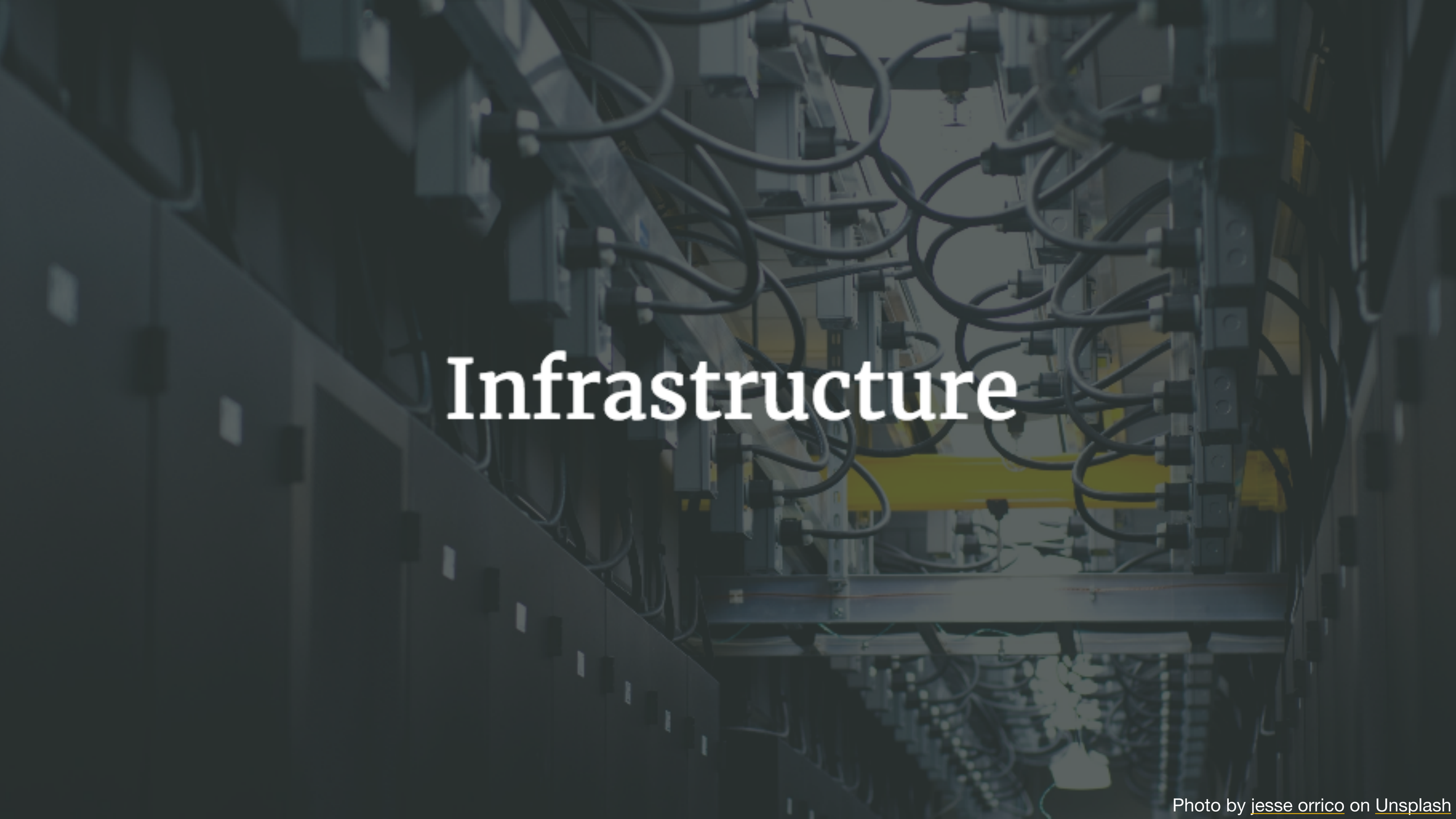
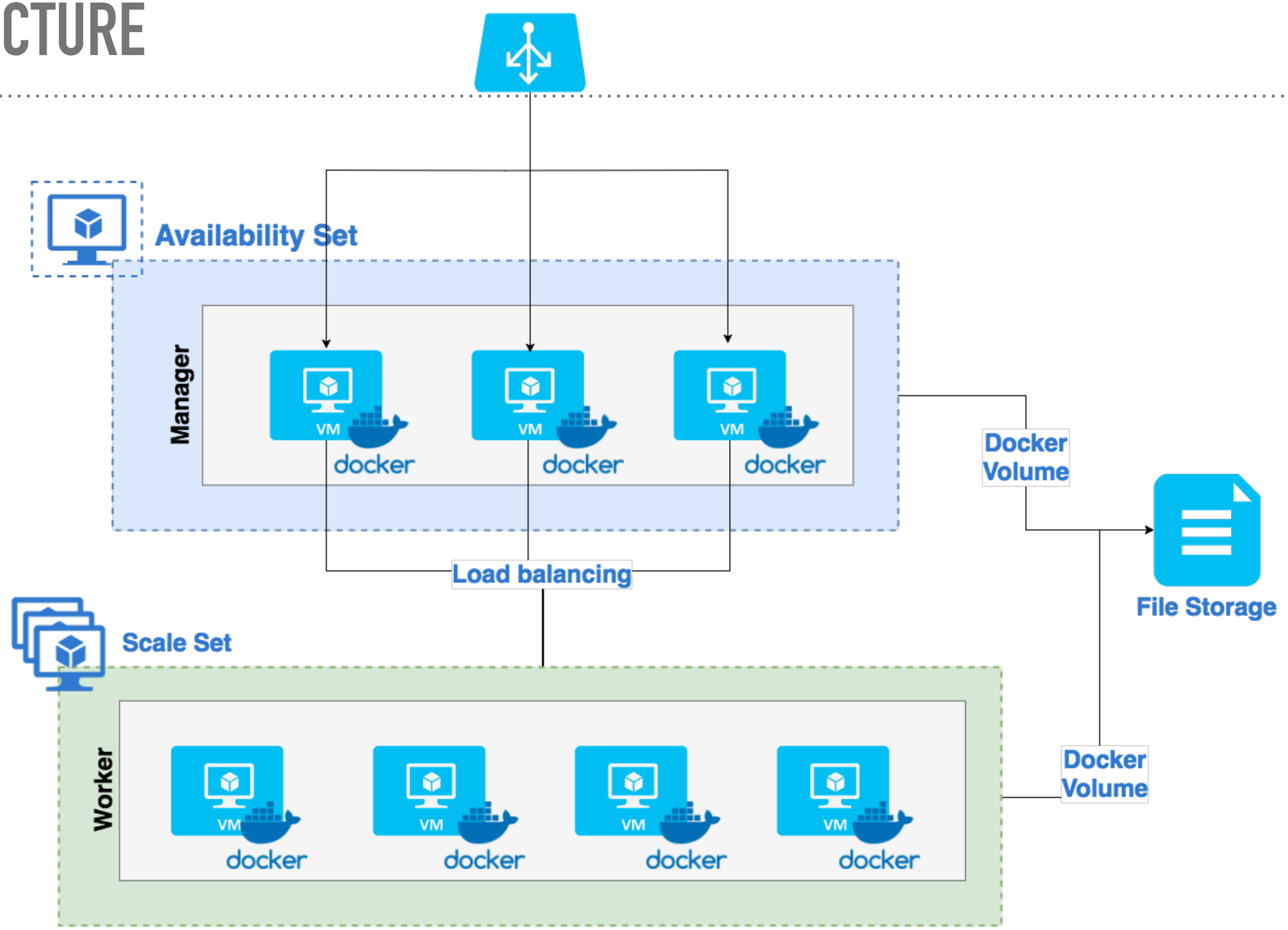


Photo by jesse orrico on Unsplash

INFRASTRUCTURE



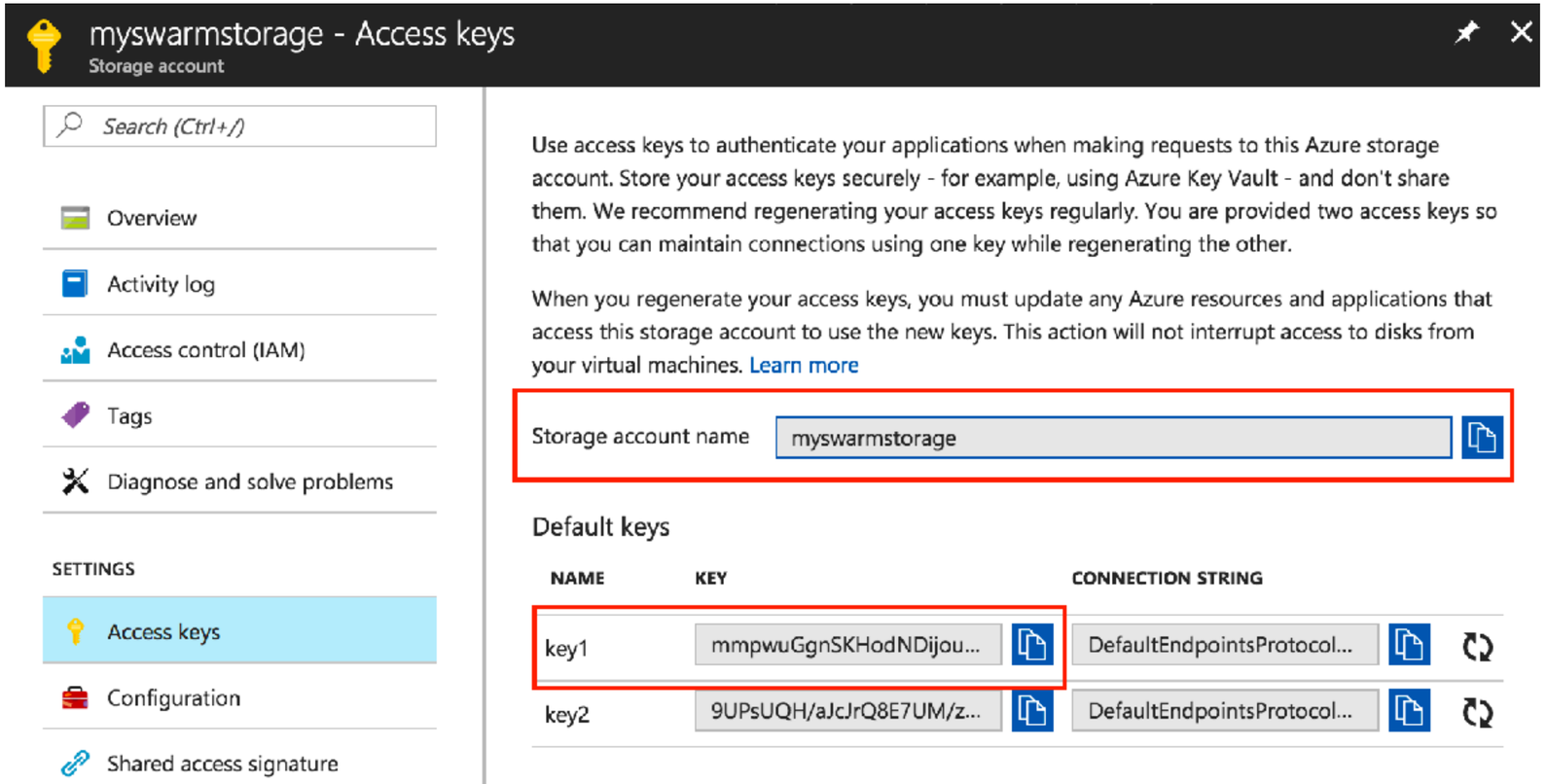

Docker Storage
Cloudstor
PSA
Photo by chuttersnap on Unsplash

WHAT IS CLOUDSTOR

- Cloudstor is a modern volume plugin built by Docker.
- It comes pre-installed and pre-configured in Docker Swarms deployed on Docker for Azure
- Docker swarm mode tasks and regular Docker containers can use a volume created with Cloudstor to mount a persistent data volume.
- Cloudstor relies on shared storage infrastructure provided by Azure
  - Specifically File Storage shares exposed over SMB
  - Direct attached storage, which is used to satisfy very low latency / high IOPS requirements, is not yet supported

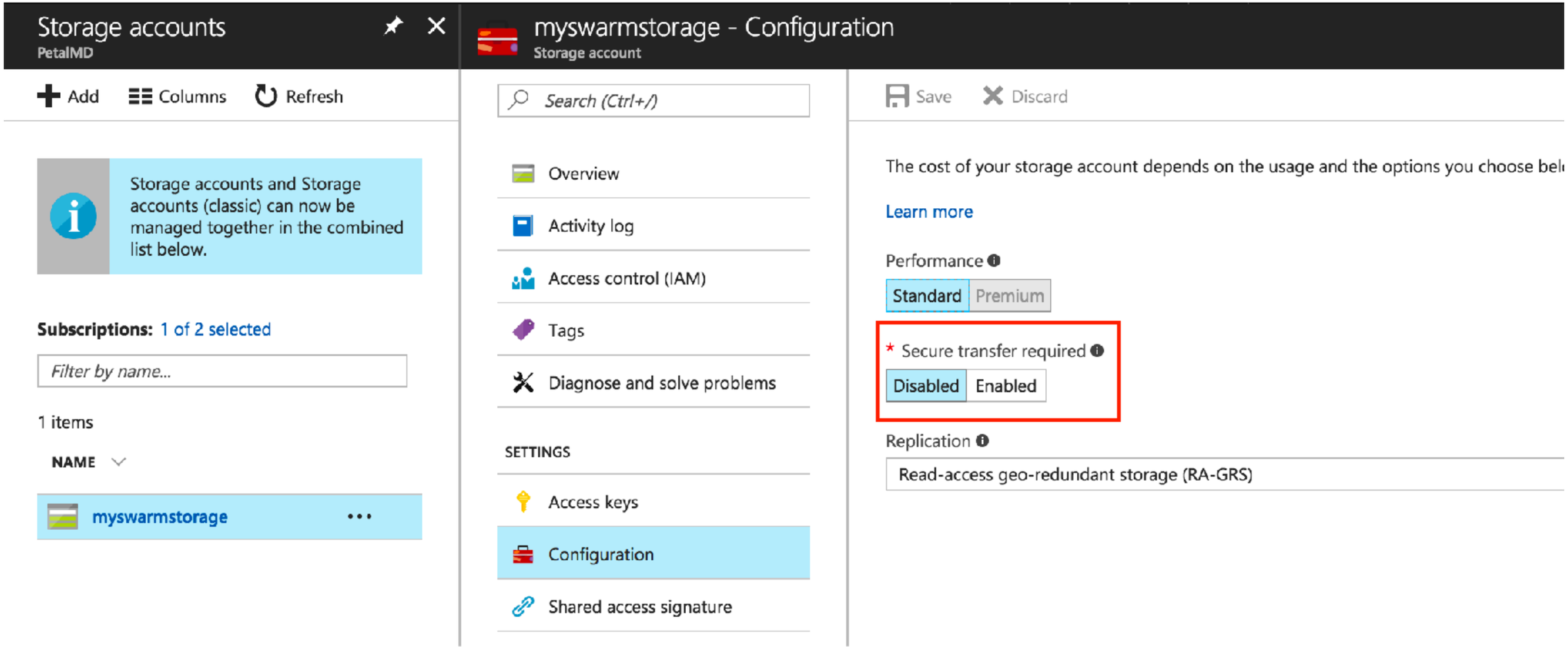
INSTALLING CLOUDSTOR

- If Cloudstor is not installed, you need to find the lastest version here: https://store.docker.com/community/images/docker4x/cloudstor/tags
- For configuring the plugin, you will need a Storage Account on Azure name and access key. You can find on your Storage Account > Access Keys page



INSTALLING CLOUDSTOR

- If you use Docker on Linux, the Account Storage should have Secure transfer required disabled, it's not supported by Linux for now.



INSTALLING CLOUDSTOR

- On each swarm node, install the plugin

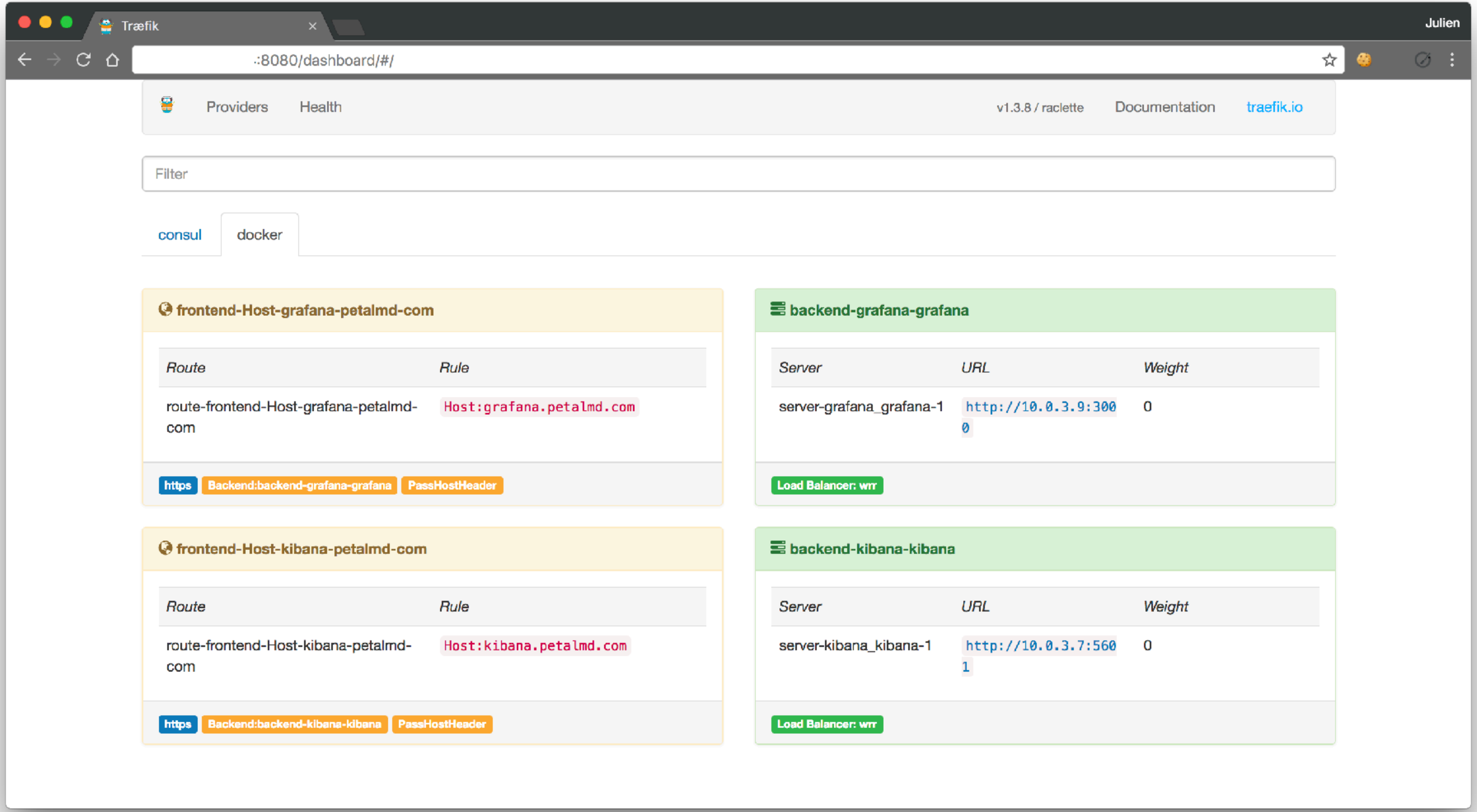
```
docker plugin install docker4x/cloudstor:17.05.0-ce-azure2 \
    --alias cloudstor:azure \
    CLOUD_PLATFORM=AZURE \
    AZURE_STORAGE_ACCOUNT_KEY="mmpwuGgnSKHodND...." \
    AZURE_STORAGE_ACCOUNT="myswarmstorage"

Plugin "docker4x/cloudstor:17.05.0-ce-azure2" is requesting the following privileges:
 - network: [host]
 - mount: [/dev]
 - allow-all-devices: [true]
services:
 - capabilities: [CAP_SYS_ADMIN CAP_DAC_OVERRIDE CAP_DAC_READ_SEARCH]
Do you grant the above permissions? [y/N] y
17.05.0-ce-azure2: Pulling from docker4x/cloudstor
1f90a29ccfcb: Verifying Checksum
1f90a29ccfcb: Download complete
Digest: sha256:aa2ae6026e8f5c84d3992e239ec7eec2c578090f10528a51bd8c311d5da48c7a
Status: Downloaded newer image for docker4x/cloudstor:17.05.0-ce-azure2
Installed plugin docker4x/cloudstor:17.05.0-ce-azure2
```

træfik

TRAEFIK

Træfik (pronounced like traffic) is a modern HTTP reverse proxy and load balancer made to deploy microservices with ease.

- Supports several backends (Docker, Kubernetes, Amazon ECS, and more)
- No dependency hell, single binary made with go
- Tiny official official docker image
- Hot-reloading of configuration. No need to restart the process
- Websocket, HTTP/2, GRPC ready
- Let’s Encrypt support (Automatic HTTPS with renewal)
- High Availability with cluster mode (beta)


Træfik
Julien
:8080/dashboard/#/
Providers
Health
v1.3.8 / raclette
Documentation
traefik.io
Filter
consul
docker
frontend-Host-grafana-petalmd-com
Route
Rule
route-frontend-Host-grafana-petalmd-com
Host:grafana.petalmd.com
https
Backend:backend-grafana-grafana
PassHostHeader
backend-grafana-grafana
Server
URL
Weight
server-grafana_grafana-1
http://10.0.3.9:3000
0
Load Balancer: wrr
frontend-Host-kibana-petalmd-com
Route
Rule
route-frontend-Host-kibana-petalmd-com
Host:kibana.petalmd.com
https
Backend:backend-kibana-kibana
PassHostHeader
backend-kibana-kibana
Server
URL
Weight
server-kibana_kibana-1
http://10.0.3.7:5601
0
Load Balancer: wrr

```
version: "3.2"
services:
  traefik:
    image: traefik
    command: --web --docker --docker.swarmode --docker.domain=petalmd.com --docker.watch
    volumes:
      - /var/run/docker.sock:/var/run/docker.sock
    networks:
      - webgateway
    ports:
      - target: 80
        published: 80
        mode: host
      - 8080:8080
    deploy:
      mode: global
      placement:
        constraints:
          - node.role == manager
networks:
  webgateway:
    driver: overlay
    external: true
```

```
services:
  traefik:
    command:
      - [...]
      - --entrypoints="Name:http Address::80 Redirect:https"
      - --entrypoints="Name:https Address::443 TLS"
      - --defaultEntrypoints=https
      - --acme
      - --acme.storage=/etc/traefik/acme/acme.json
      - --acme.entryPoint="https"
      - --acme.onHostRule=true
      - --acme.onDemand=false
      - --acme.email=me@example.com
```

```
    ports:
      [...]
      - target: 443
        published: 443
        mode: host
```

```
    volumes:
      - [...]
      - traefik-acme:/etc/traefik/acme


volumes:
  traefik-acme:
    driver: cloudstor:azure
    driver_opts:
      share: traefik-acme
      filemode: 0600
```

```
version: "3"
services:
  kibana:
    image: kibana:4.1
    environment:
      ELASTICSEARCH_URL: "http://x.x.x.x:9200"
    networks:
      - webgateway
    deploy:
      labels:
        - "traefik.port=5601"
        - "traefik.frontend.rule=Host:kibana.petalmd.com"
        - "traefik.frontend.auth.basic=user:$$apr1$$fsfds/X$$..."
      replicas: 1
      restart_policy:
        condition: on-failure

networks:
  webgateway:
    driver: overlay
    external: true
```

PROBLEMS WE HAD

- Azure will reboot your servers without notice
- Azure agent will make a lot of update and can restart your VMs
  - Some time all your agents on your managers will update in the same time
  - Bye bye cluster
- Egress connection have a hard *idle* timeout of 4 minutes
  - You need to transmit data
  - TCP Keepalived doesn’t work
- SMB and SQLite database doesn’t work well together
  - Can’t add mount flag

https://engineering.petalmd.com/building-a-docker-swarm-on-azure/