GDG

Deploying a real service to Dokku and monitoring it with Prometheus/Grafana

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Google Developers

http://bit.ly/fribourg-linux-seminar-dokku-plus-monitoring

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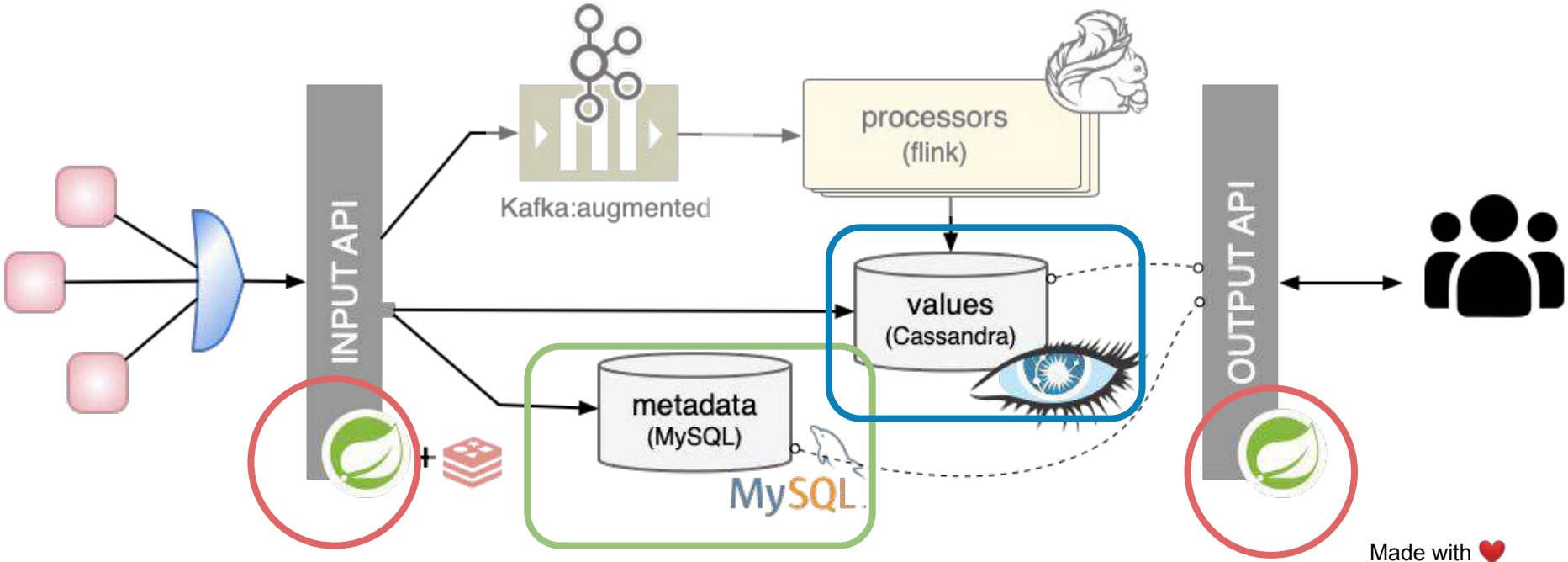
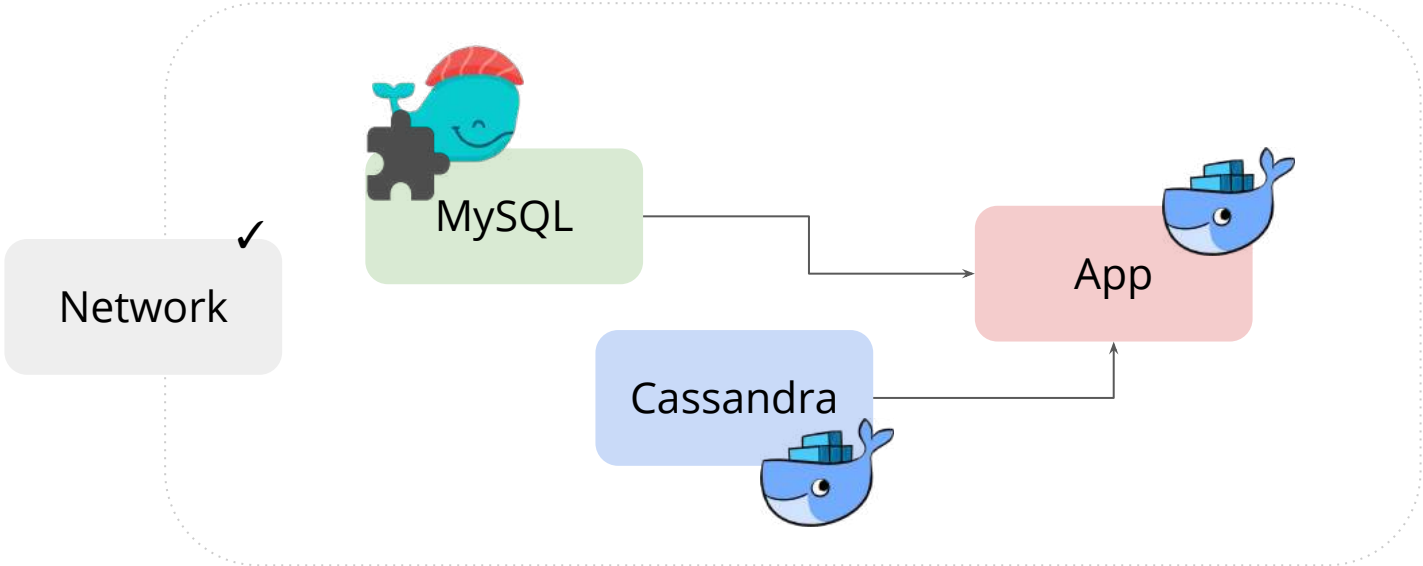
Deploying a real application to Dokku

BBData API



Made with ❤ at HEIA-FR HTA-FR

Dokku install plan



MySQL ↦ Dokku Plugin

dokku:mysql supports upgrade, backup (AWS, etc.), and much more

```
# Install plugin
sudo dokku plugin:install https://github.com/dokku/dokku-mysql.git mysql
# Create some db
dokku mysql:create mydb --image-version 8.0.14 \
      --password "strong" --root-password "even-stronger"

# Initialise db with scripts
cat db-structure.sql | dokku mysql:import mydb
cat db-data.sql | dokku mysql:import mydb

# Link database to an app
dokku mysql:link mydb myapp -a "MY_DATABASE"
```

In Container app

```
MY_DATABASE_URL="mysql://[...]"
```

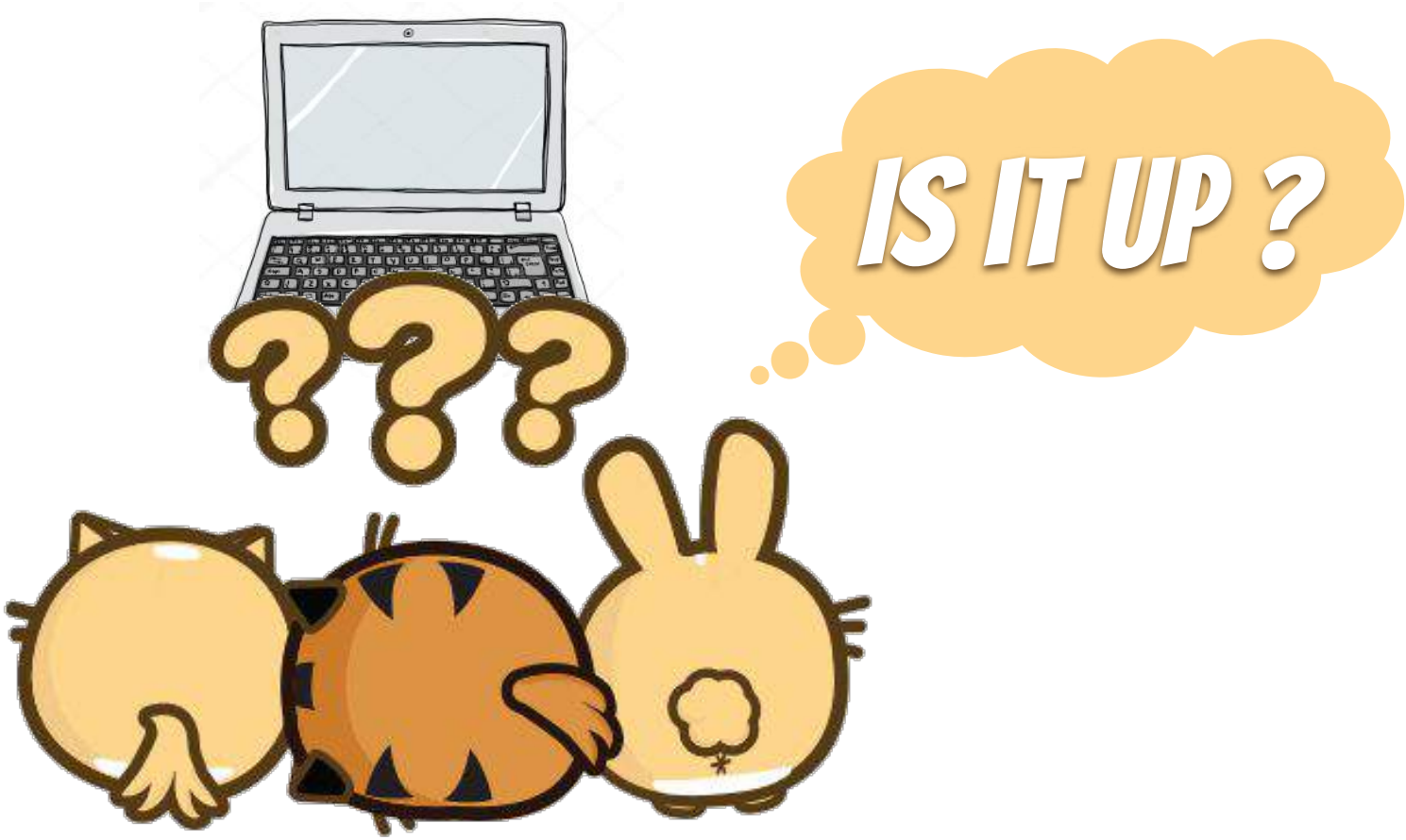
Cassandra / BBData ↦ Dockerfile

dokku

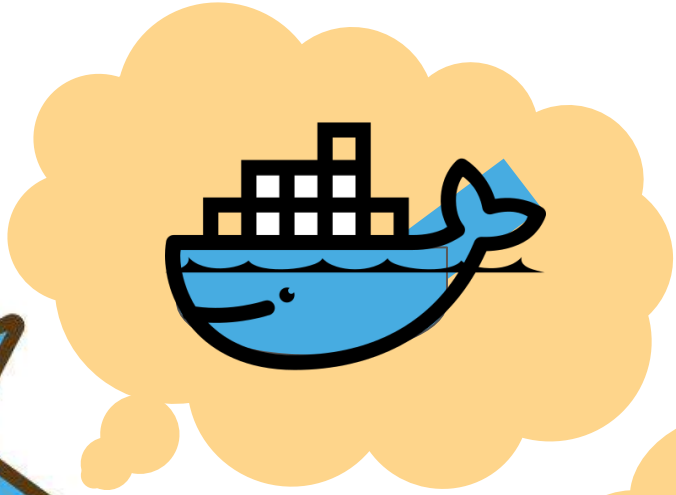
```
# Create app and attach to network
dokku apps:create $APP
dokku network:set $APP attach-post-create $NETWORK

# Mount volumes
dokku storage:mount $APP \
 /var/lib/dokku/data/storage/$APP:/container/path

# Set config
dokku config:set $APP ENV_X=value ENV_Y='${value}'
```

local

```
# In a repository with a Dockerfile
git remote add dokku "dokku@$DOKKU_HOST:$APP"
git push dokku master:master
```


IS IT UP ?

So... easy ?



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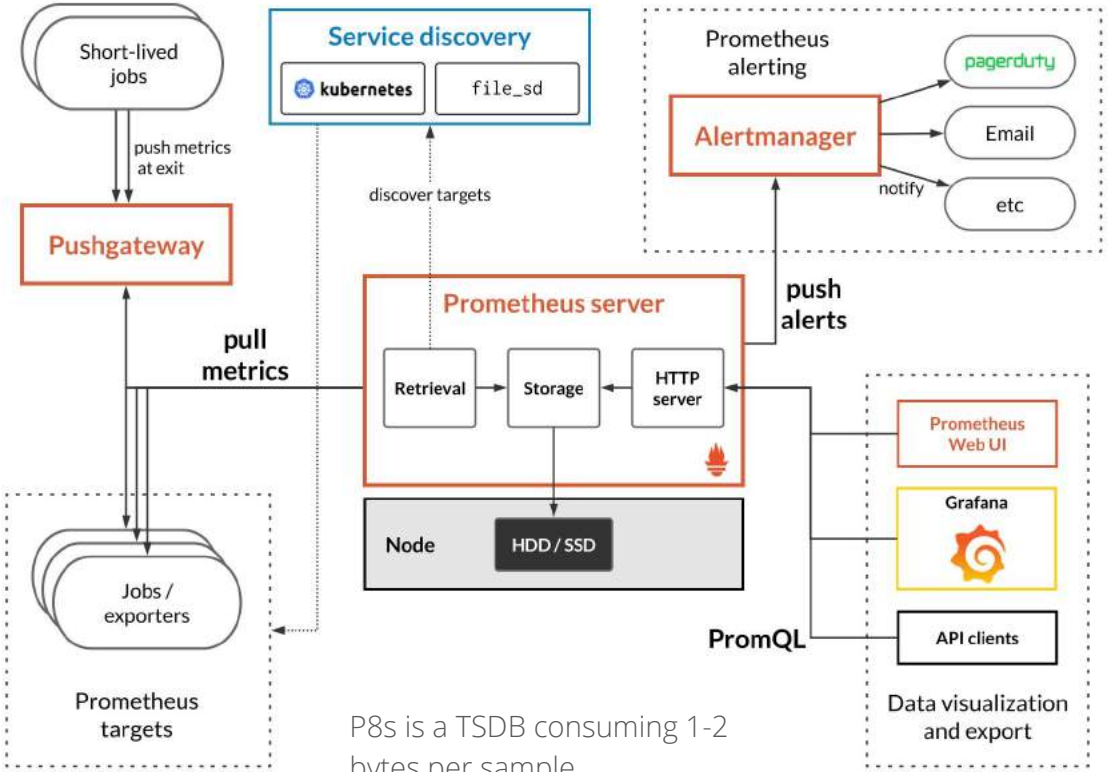
Monitoring with

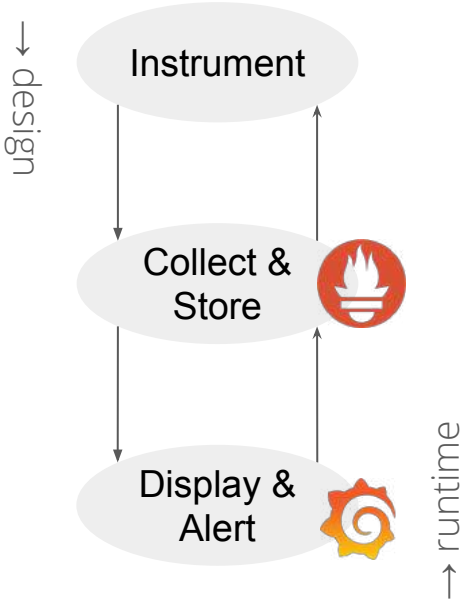
Prometheus + Grafana

Prometheus ecosystem



P8s is a TSDB consuming 1-2 bytes per sample.

Simpler than it looks



Setup BBData Monitoring

Targets

✓ BBData: SpringBoot

✓ Cassandra: JMX Exporter

New images

→ prom/prometheus:v2.25.0

→ grafana/grafana:7.4.2

```
# config mounted in /etc/prometheus/prometheus.yml

global:
 scrape_interval: 15s

scrape_configs:
 - job_name: 'prometheus'
   static_configs:
     - targets: ['127.0.0.1:9090']

 - job_name: 'bbdata-api'
   metrics_path: '/prometheus'
   static_configs:
     - targets: ['bbdata:8111']

 - job_name: 'cassandra'
   static_configs:
     - targets: ['cassandra:7070']
```

Prometheus metrics

metric = timestamp + name + value + dimension(s)

```
2020-04-03T20:00:00Z
http_requests_total{code=200, instance=api-1,path=/foo}  1001
http_requests_total{code=404, instance=api-1,path=/bar}  1
http_requests_total{code=200, instance=api-2,path=/foo}  983
http_requests_total{code=404, instance=api-2,path=/bar}  10
```

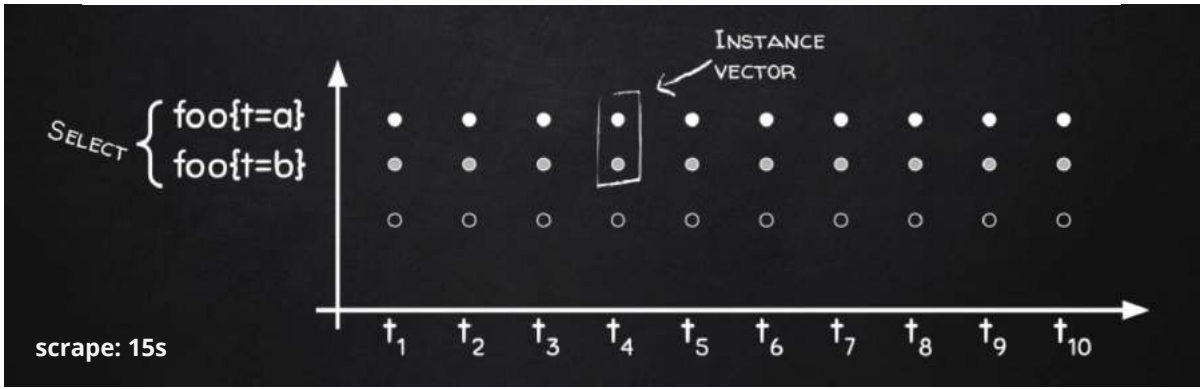
a gauge goes up and down

a counter goes up and only care about *deltas*

PromQL: instant vector & instant query

Instant vectors = data @ time, queries with optional aggregation over labels

```
GET /api/v1/query?time=t4&query=foo
```



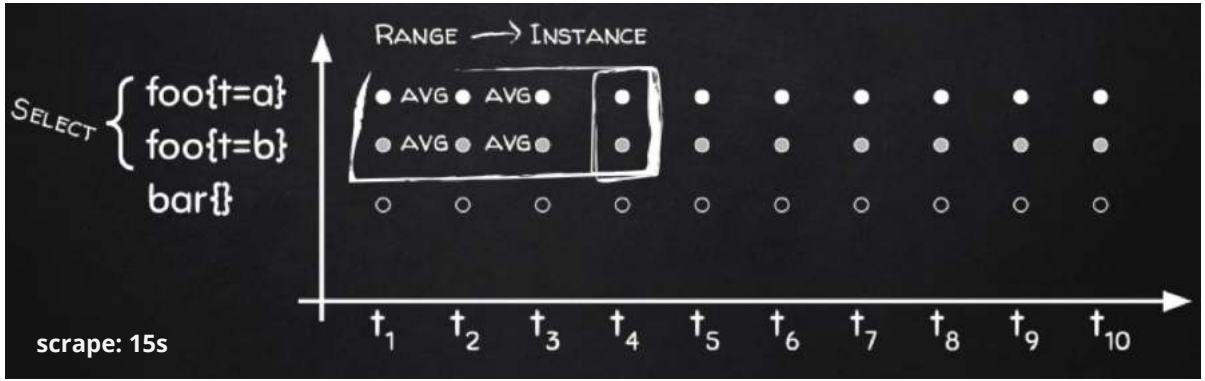
aggregate

```
GET /api/v1/query?time=t4&query=sum(foo)
```

PromQL: range vector & instant query

Range vectors = data @ [time interval]

```
GET /api/v1/query?time=t4&query=foo[1m]
```



to instant

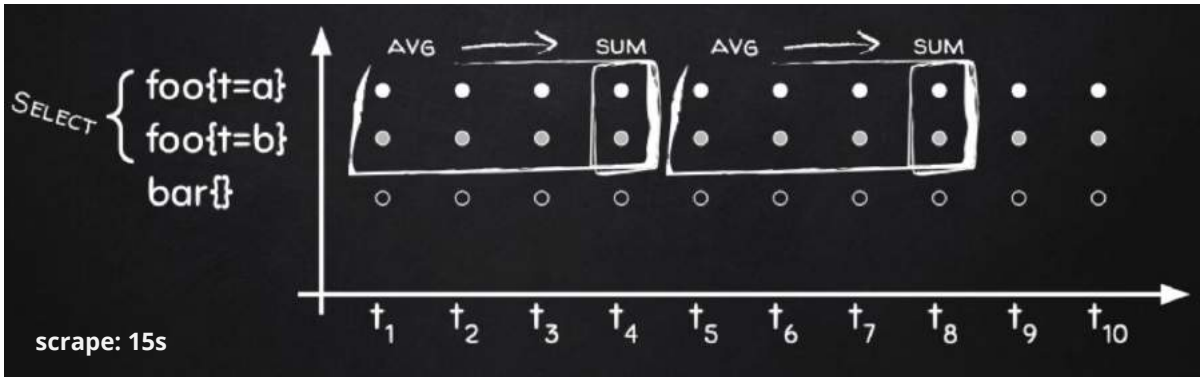
```
GET /api/v1/query?time=t4&query=avg_over_time(foo[1m])
GET /api/v1/query?time=t4&query=sum(avg_over_time(foo[1m]))
```

PromQL: range query

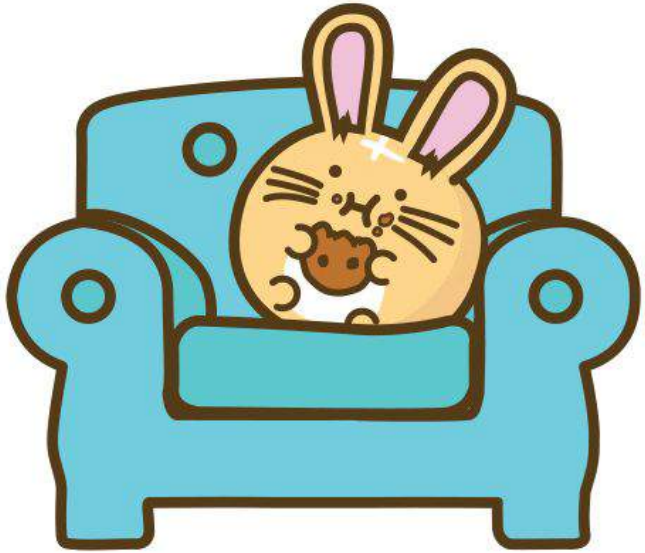
Range queries = repeat instant query at every step between [time interval]

```
GET /api/v1/query_range?start=t1&end=t8&step=60
    &query=sum(avg_over_time(foo[1m]))
```

rinse and repeat



LIVE DEMO



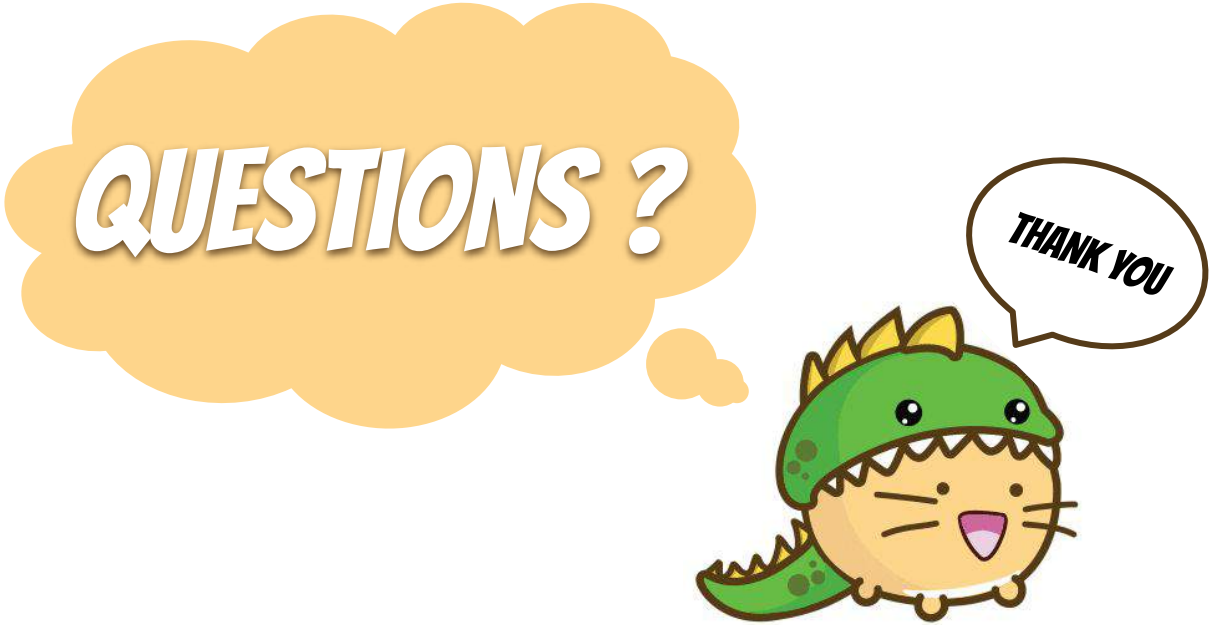
(Re)sources

BBData API: https://github.com/big-building-data/bbdata-api

Prometheus & Monitoring series by Zaar Hai:

1. (YouTube) Dip into Prometheus [slides]
2. (YouTube) Deep into Prometheus [slides]
3. (Medium) Making peace with Prometheus rate

Fuzzballs illustrations: https://fuzzballs.co/



Slides: http://bit.ly/fribourg-linux-seminar-dokku-plus-monitoring

Code: https://github.com/derlin/20th-linux-seminar-dokku-monitoring