

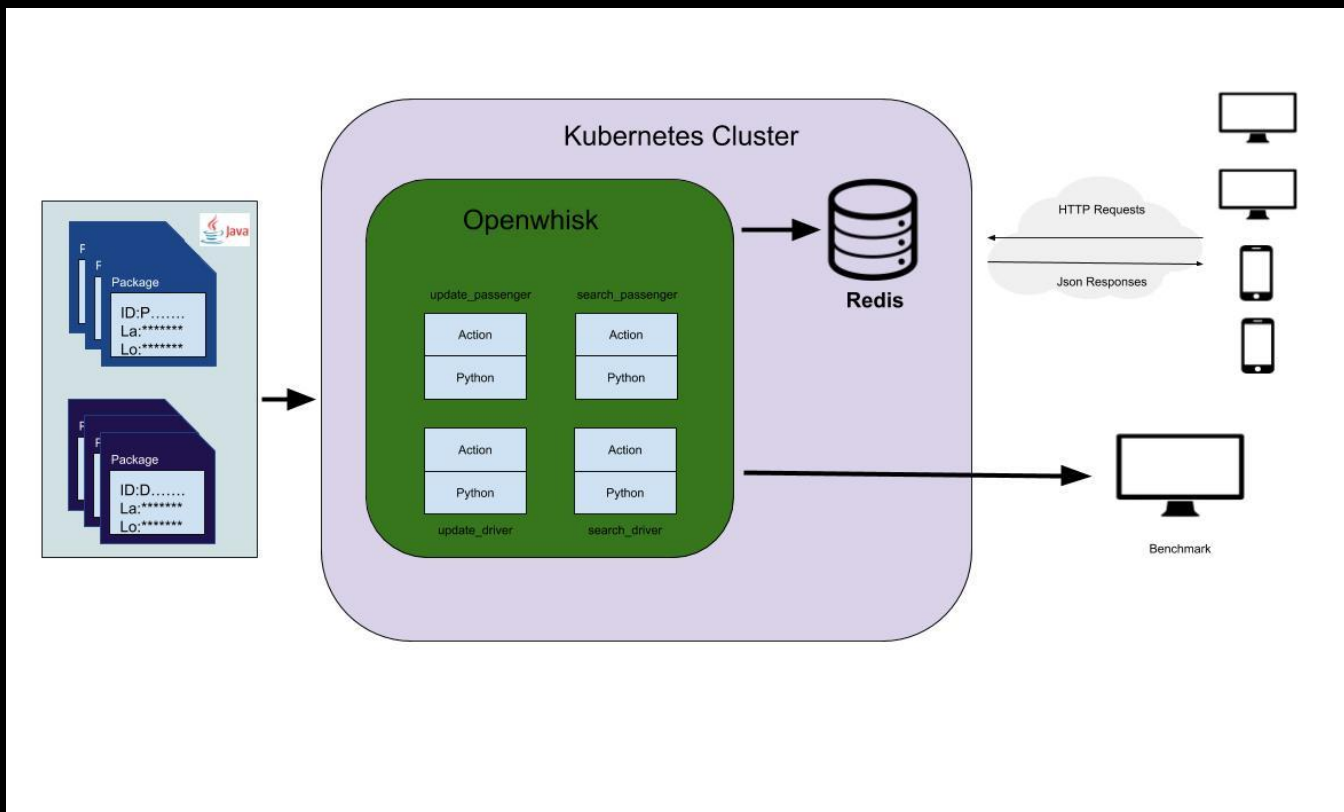
# Function as a Service

Sprint 3

# Once again: who we are

- Who we are: Function as a Service!
- What we are working on: Taxi - Passenger system
- What we use: Openwhisk, Kubernetes

# Recall: System Diagram



# Current Work

- Deployment
  - Deploy OpenWhisk on Google Cloud Platform
- Simulation
  - Improvement of simulating data
  - Visualization
- Analysis
  - Implement metric visualization

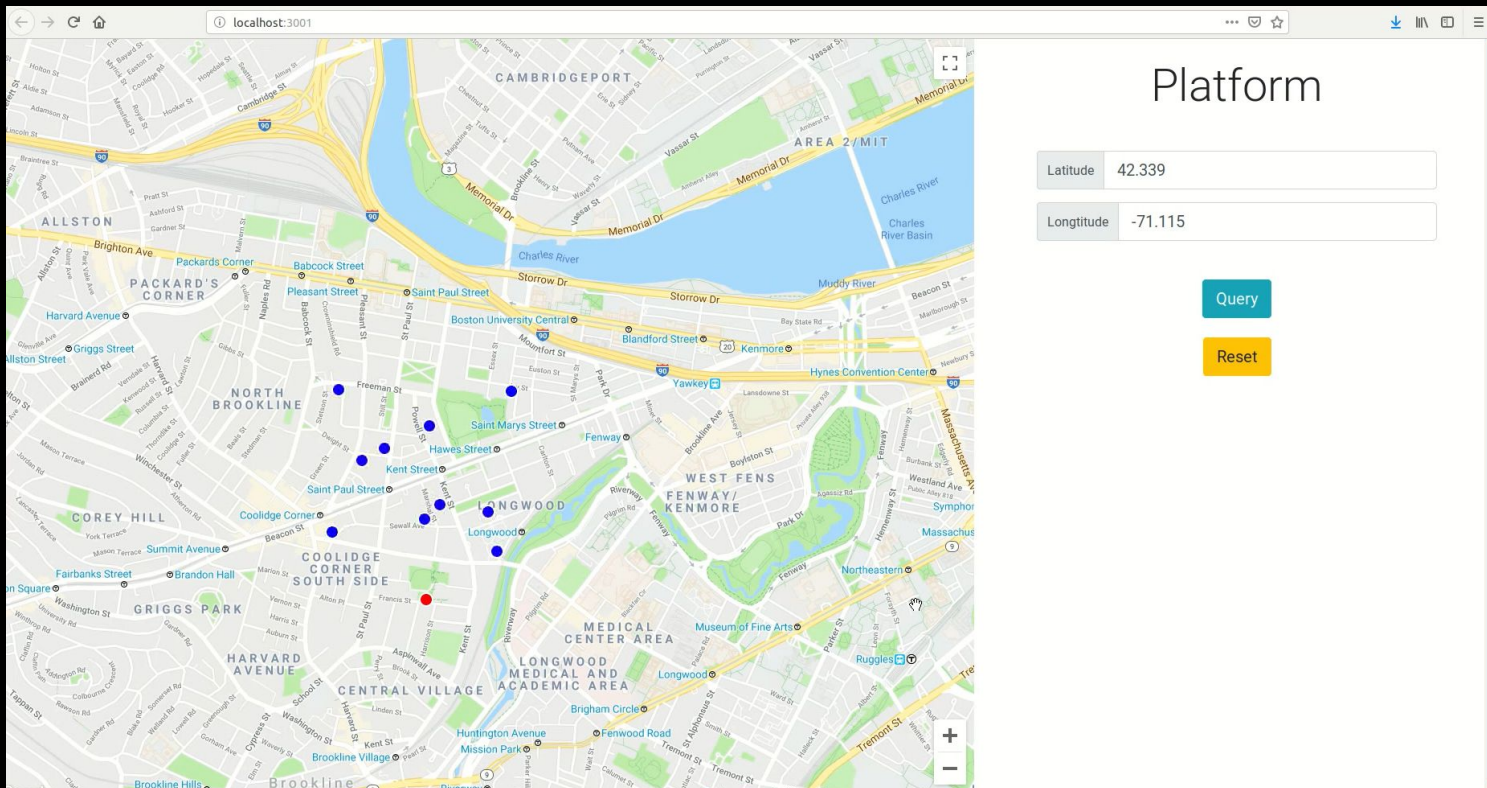
# Simulation: Recall

- Users (passengers and drivers) send their locations continuously
- Server synchronizes the information at database (Redis)
- Location Info:
  - ID: Unique ID for every user, first letter to distinguish between passengers and drivers
  - Latitude
  - Longitude

# Simulation: Improvement

- Movement of passengers and drivers
  - Random location -> Continuous location
  - Different moving parameters for drivers and passengers
    - Passenger: 0.9m/s
    - Driver: 10m/s
- Basic pairing function
  - More parameters
    - State
    - Destination
    - Assigned passenger/driver

# Simulation Visualization(React + Redux)



# Metrics Visualization

## OpenWhisk Metrics Support

- System metrics
- User metrics

## Example of Configuration:

```
metrics_kamon: true
metrics_kamon_tags: false
metrics_kamon_statsd_host: '192.168.99.100'
metrics_kamon_statsd_port: '8125'
metrics_log: true
```



# Metrics Visualization

## StatsD-prometheus-exporter:

Convert the statsd format data to prometheus data for the Prometheus backend services.

## Prometheus:

Prometheus is an open-source systems monitoring and alerting toolkit originally built at SoundCloud.

## Prometheus feature:

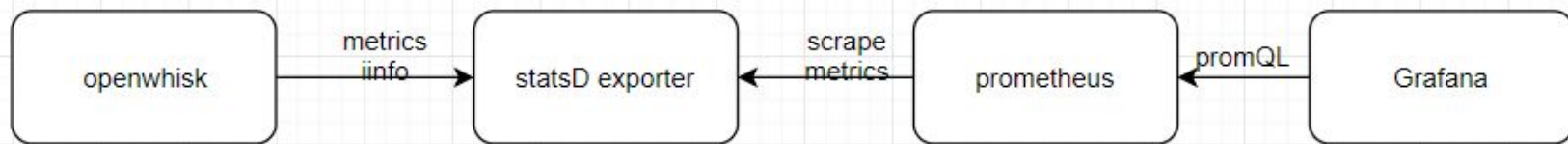
- Provide time series data
- Support PromQL, a flexible query language

# Metrics Visualization

Grafana:



# Metrics Visualization



# Demo: Google Cloud Platform

Google Cloud Platform

tszlam-host-vpc

Compute Engine

VM instances

CREATE INSTANCEIMPORT VMREFRESHSTARTSTOPRESETDELETESHOW INFO PANEL

VM instances

Instance groups

Instance templates

Sole tenant nodes

Disks

Snapshots

Images

TPUs

Committed use discounts

Metadata

Health checks

Zones

Network endpoint groups

Operations

Security scans

Settings

Filter VM instances

Columns

<input type="checkbox"/> Name ^	Zone	Recommendation	In use by	Internal IP	External IP	Connect
<input type="checkbox"/> bastion	us-east1-b			10.142.15.211 (nic0)	None	SSH ⌵ ⋮
<input type="checkbox"/> gke-faas-default-pool-cdc98979-vx68	us-east1-b		gke-faas-default-pool-cdc98979-grp, openwhisk	10.142.15.212 (nic0)	34.73.61.31	SSH ⌵ ⋮
<input type="checkbox"/> gke-faas-ow-invoker-87bd2c5e-lzmr	us-east1-b		gke-faas-ow-invoker-87bd2c5e-grp	10.142.15.225 (nic0)	34.73.222.49	SSH ⌵ ⋮

[https://console.cloud.google.com/kubernetes/discovery?authuser=3&organizationId=669079940348&project=tszlam-host-vpc&service\\_list\\_tablesize=50](https://console.cloud.google.com/kubernetes/discovery?authuser=3&organizationId=669079940348&project=tszlam-host-vpc&service_list_tablesize=50)

Navigation menu

Google Cloud Platform

tszlam-host-vpc

Navigation menu

Kubernetes Engine

Clusters

Workloads

Services

Applications

Configuration

Storage

Services

REFRESH

DELETE

Kubernetes services

Brokered services

BETA

Services are sets of Pods with a network endpoint that can be used for discovery and load balancing. Ingresses are collections of rules for routing external HTTP(S) traffic to Services.

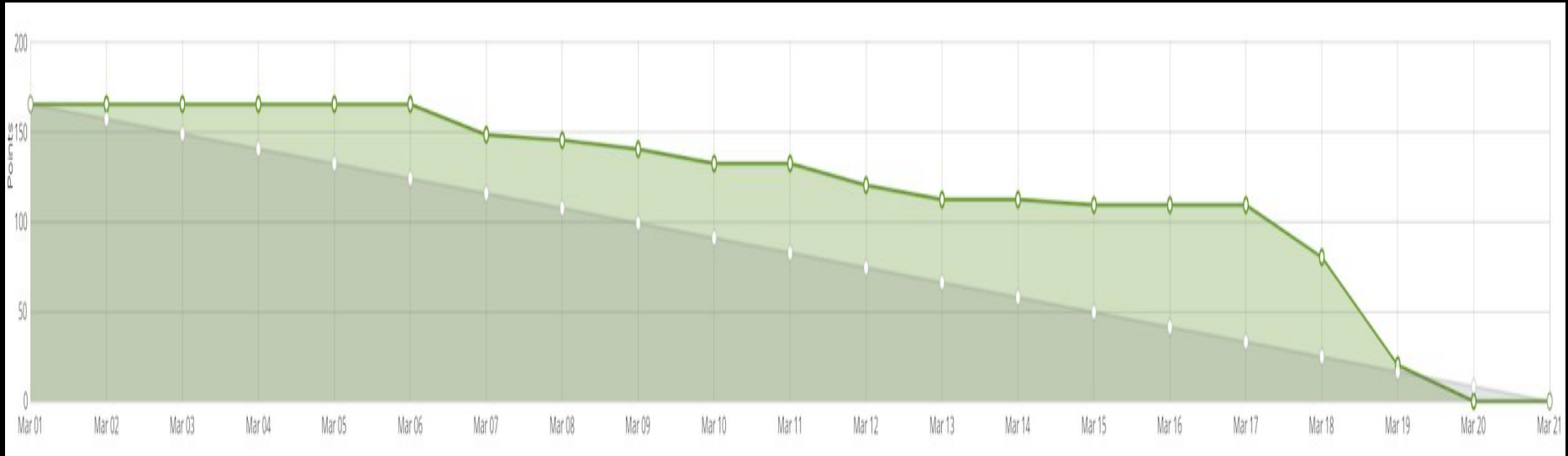
Is system object : False

Filter resources

<input type="checkbox"/> Name ^	Status	Type	Endpoints	Pods	Namespace	Cluster
<input type="checkbox"/> owdev-apigateway	Ok	Cluster IP	10.35.241.14	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-controller	Ok	Cluster IP	10.35.246.4	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-couchdb	Ok	Cluster IP	10.35.244.60	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-kafka	Ok	Cluster IP	10.35.240.251	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-nginx	Ok	Node Port	10.35.241.144:80 TCP 10.35.241.144:443 TCP	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-redis	Ok	Cluster IP	10.35.255.142	1 / 1	openwhisk	faas
<input type="checkbox"/> owdev-zookeeper	Ok	Cluster IP	None	1 / 1	openwhisk	faas

Demo:

# Current Sprint: Burn Down Chart



Question?