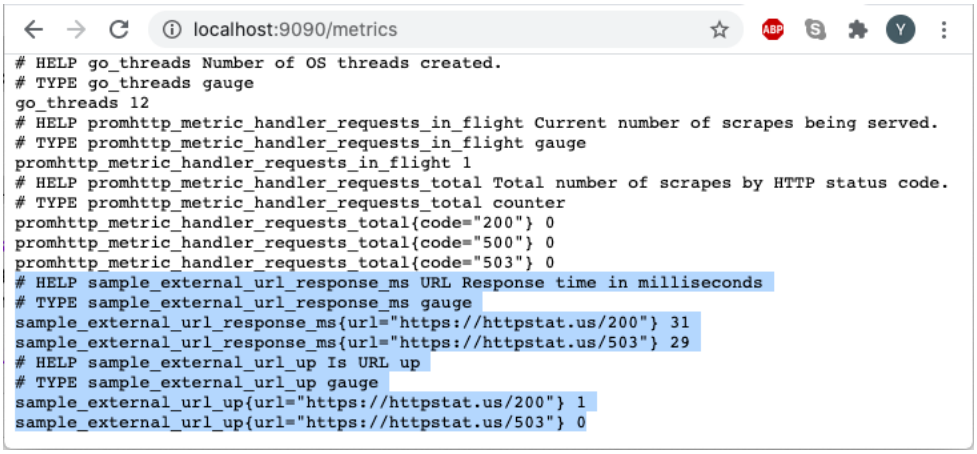
PHASE 1: Instrumenting a Go application using Prometheus Golang client

ythadhan@YTHADHAN-LVDQ metrics % make build
go build -o metrics main.go
ythadhan@YTHADHAN-LVDQ metrics % ./metrics

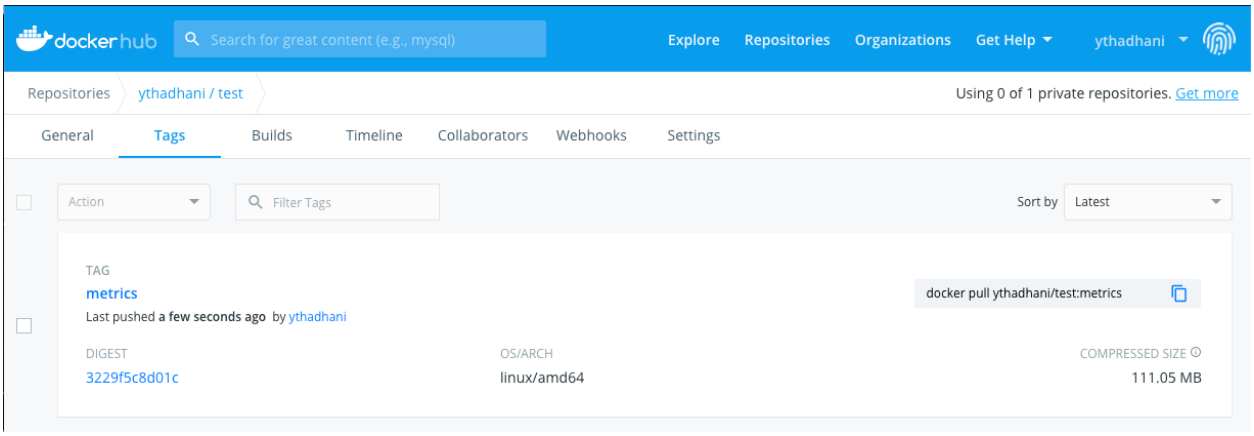


ythadhan@YTHADHAN-LVDQ metrics % make image
rm -f metrics
Building...
env GOOS=linux GOARCH=amd64 go build -o metrics main.go
docker build -t "metrics" .
Sending build context to Docker daemon 24.42MB
Step 1/5 : FROM golang:1.15.3-alpine AS build
 ---> d099254f5fc3
Step 2/5 : WORKDIR /go/src/github.com/ythadhani/metrics/
 ---> Using cache
 ---> 848ea8785165
Step 3/5 : ADD ./metrics /go/src/github.com/ythadhani/metrics
 ---> 825374e28ed1
Step 4/5 : EXPOSE 9090
 ---> Running in 36437095094d
Removing intermediate container 36437095094d
 ---> 50647e01778d
Step 5/5 : ENTRYPOINT ["./metrics"]
 ---> Running in a866b300e4cb
Removing intermediate container a866b300e4cb
 ---> 5a1ad7e94275
Successfully built 5a1ad7e94275
Successfully tagged metrics:latest

```
ythadhan@YTHADHAN-LVDQ metrics % docker images
REPOSITORY                    TAG         IMAGE ID       CREATED              SIZE
metrics                       latest      5a1ad7e94275   About a minute ago   312MB
```

```
ythadhan@YTHADHAN-LVDQ metrics % docker tag metrics:latest ythadhani/test:metrics
```

```
ythadhan@YTHADHAN-LVDQ metrics % docker push ythadhani/test:metrics
The push refers to repository [docker.io/ythadhani/test]
f7741674c42f: Pushed
c50f9f0c4de0: Layer already exists
b479241e0e6f: Layer already exists
f6773636974f: Layer already exists
27fc4e020136: Layer already exists
c07f8a820edc: Layer already exists
ace0eda3e3be: Layer already exists
metrics: digest:
sha256:3229f5c8d01c8e5a9d396acd7a52ddd5d96245646aa5600d3c17836646ba2111 size:
1783
```

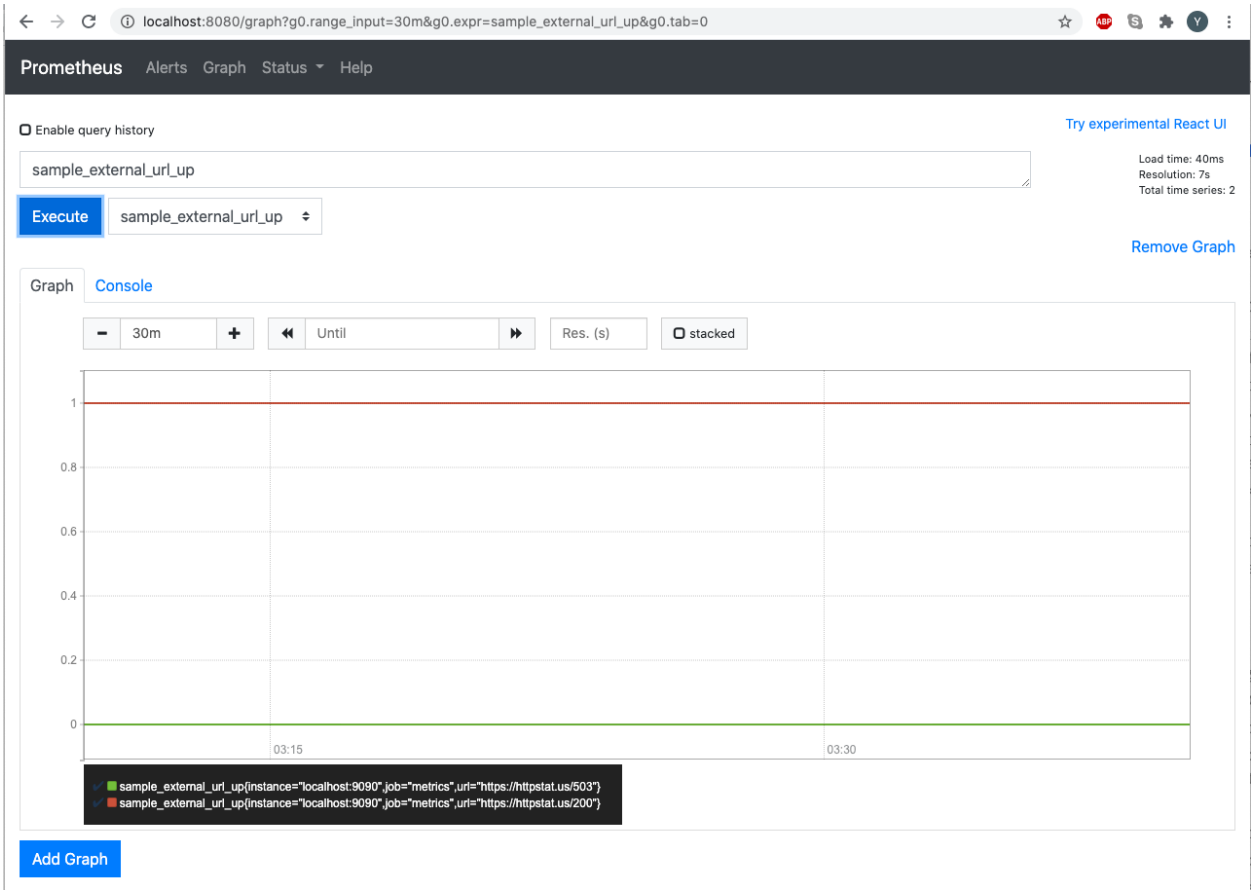


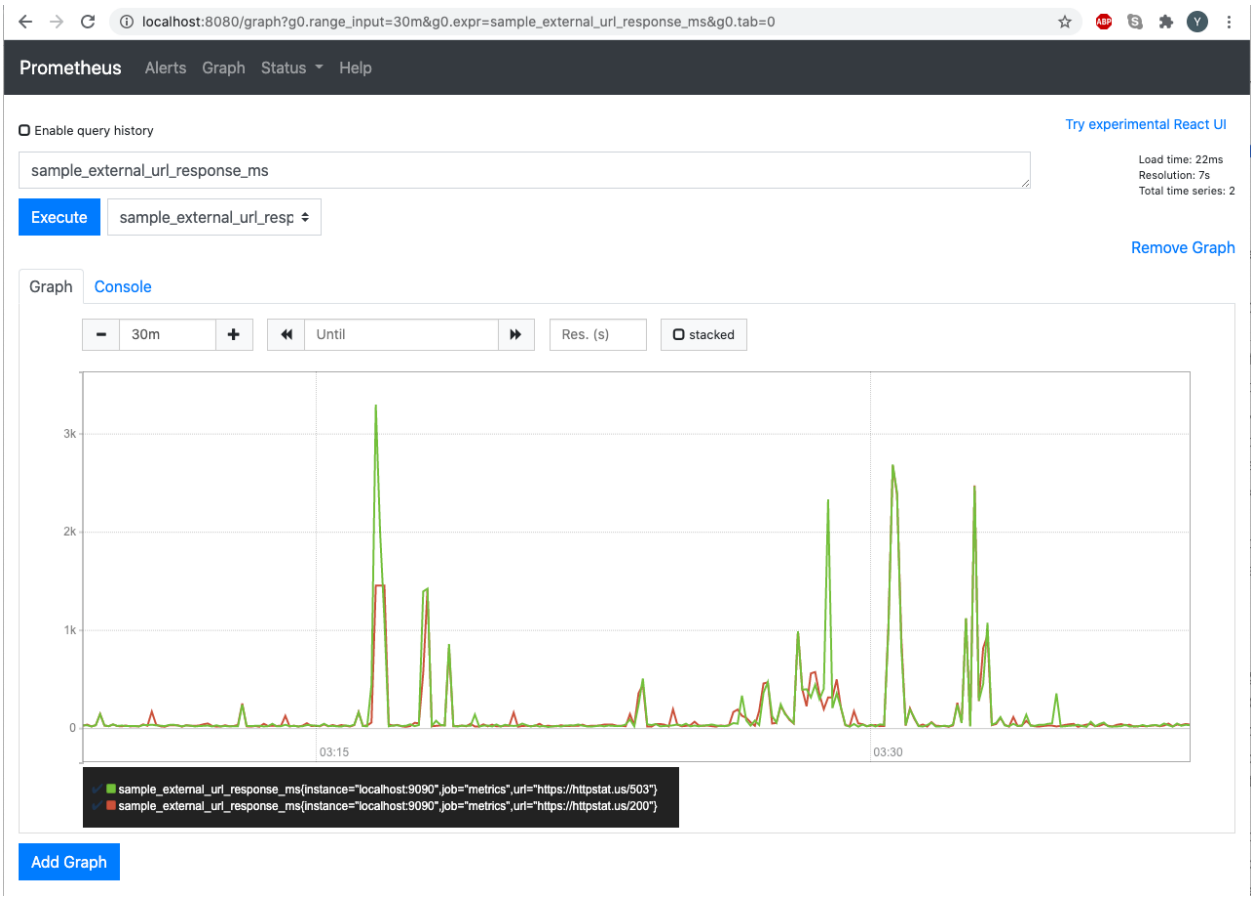

```
ythadhan@YTHADHAN-LVDQ metrics % make deploy
kubectl create -f prometheus.yml
configmap/prometheus-server-conf created
kubectl create -f grafana-dashboard-config.yaml
configmap/grafana-datasources created
kubectl create -f service.yaml
service/grafana created
```

kubectl create -f deployment.yaml
deployment.apps/metrics-deployment created

PHASE 2: Metric ingestion at the Prometheus server

ythadhan@YTHADHAN-LVDQ metrics % kubectl port-forward metrics-deployment-7dd9c8b97d-cz2jl 8080:8080
Forwarding from 127.0.0.1:8080 -> 8080
Forwarding from [::1]:8080 -> 8080
Handling connection for 8080
Handling connection for 8080

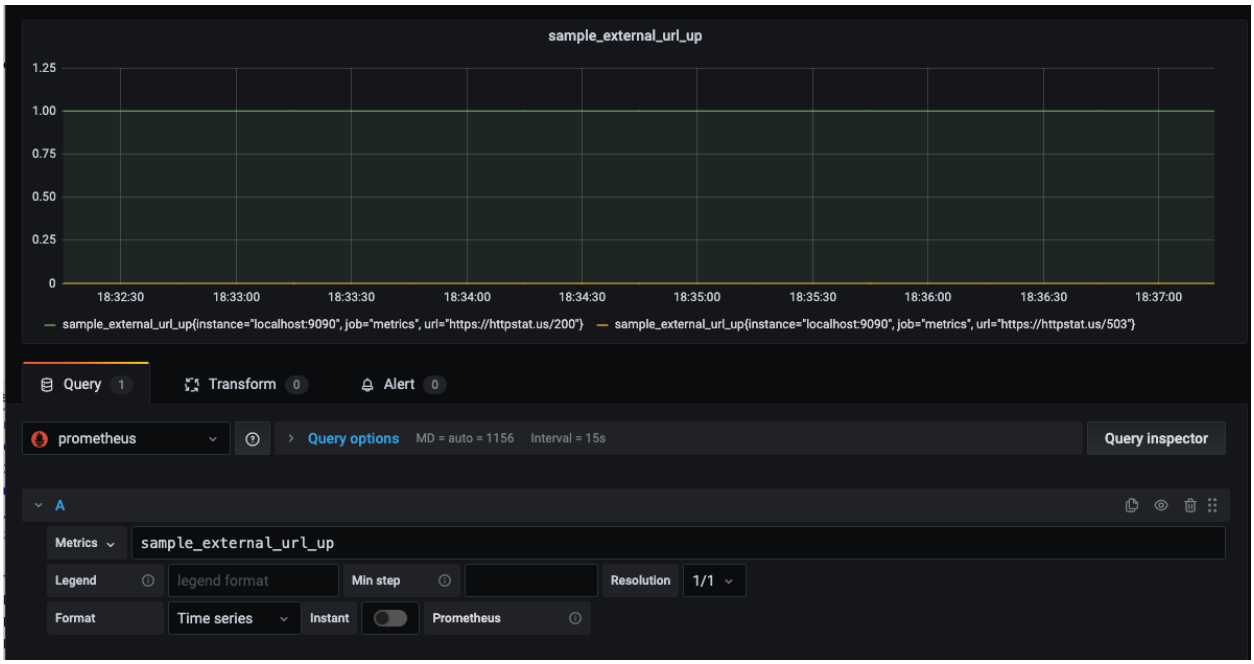




PHASE 3: Grafana dashboards

ythadhan@YTHADHAN-LVDQ metrics % kubectl get pods
NAME READY STATUS RESTARTS AGE
metrics-deployment-7dd9c8b97d-cz2jl 3/3 Running 0 19m

ythadhan@YTHADHAN-LVDQ metrics % kubectl port-forward metrics-deployment-7dd9c8b97d-cz2jl 3000:3000
Forwarding from 127.0.0.1:3000 -> 3000
Forwarding from [::1]:3000 -> 3000
Handling connection for 3000
Handling connection for 3000


sample_external_url_up
1.25
1.00
0.75
0.50
0.25
0
18:32:30
18:33:00
18:33:30
18:34:00
18:34:30
18:35:00
18:35:30
18:36:00
18:36:30
18:37:00
sample_external_url_up{instance="localhost:9090", job="metrics", url="https://httpstat.us/200"}
sample_external_url_up{instance="localhost:9090", job="metrics", url="https://httpstat.us/503"}
Query 1
Transform 0
Alert 0
prometheus
Query options
MD = auto = 1156
Interval = 15s
Query inspector
A
Metrics
sample_external_url_up
Legend
legend format
Min step
Resolution
1/1
Format
Time series
Instant
Prometheus


sample_external_url_response_ms
200
150
100
50
0
18:31:00
18:31:30
18:32:00
18:32:30
18:33:00
18:33:30
18:34:00
18:34:30
18:35:00
18:35:30
sample_external_url_response_ms{instance="localhost:9090", job="metrics", url="https://httpstat.us/200"}
sample_external_url_response_ms{instance="localhost:9090", job="metrics", url="https://httpstat.us/503"}
Query 1
Transform 0
Alert 0
prometheus
Query options
MD = auto = 1156
Interval = 15s
Query inspector
A
Metrics
sample_external_url_response_ms
Legend
legend format
Min step
Resolution
1/1
Format
Time series
Instant
Prometheus

```
ythadhan@YTHADHAN-LVDQ metrics % make undeploy
kubectl delete -f deployment.yaml
deployment.apps "metrics-deployment" deleted
kubectl delete -f service.yaml
service "grafana" deleted
kubectl delete -f grafana-dashboard-config.yaml
configmap "grafana-datasources" deleted
kubectl delete -f prometheus.yml
configmap "prometheus-server-conf" deleted
```

References:

[1] https://devopscube.com/setup-prometheus-monitoring-on-kubernetes/
[2] https://devopscube.com/setup-grafana-kubernetes/