Are our users impacted by the loss of a function?

24 avril 2018

Abstract

While users query the Astre function, they should not be impacted if one instance goes down.

Contents

Summary

Status	completed
Tagged	kubernetes, openfaas, cloudnative
Executed From	sylvain-laptop
Platform	Linux-4.13.0-39-generic-x86_64-with-Ubuntu-17.10-artful
Started	Tue, 24 Apr 2018 17:20:41 GMT
Completed	Tue, 24 Apr 2018 17:21:44 GMT
Duration	1 minute

Experiment

The experiment was made of 2 actions, to vary conditions in your system, and 2 probes, to collect objective data from your system during the experiment.

Steady State Hypothesis

The steady state hypothesis this experiment tried was "**Function is available**".

Before Run

The steady state was verified

Probe	Tolerance	Verified
there-should-be-only-one-running-function-pod	1	True
function-must-exist	200	True
function-must-respond	200	True

After Run

The steady state was verified

Probe	Tolerance	Verified
there-should-be-only-one-running-function-pod	1	True
function-must-exist	200	True
function-must-respond	200	True

Method

The experiment method defines the sequence of activities that help gathering evidence towards, or against, the hypothesis.

The following activities were conducted as part of the experimental's method:

Type	Name
action	simulate-user-traffic
action	terminate-one-function
probe	fetch-openfaas-gateway-logs
probe	query-total-function-invocation

Result

The experiment was conducted on Tue, 24 Apr 2018 17:20:41 GMT and lasted roughly 1 minute.
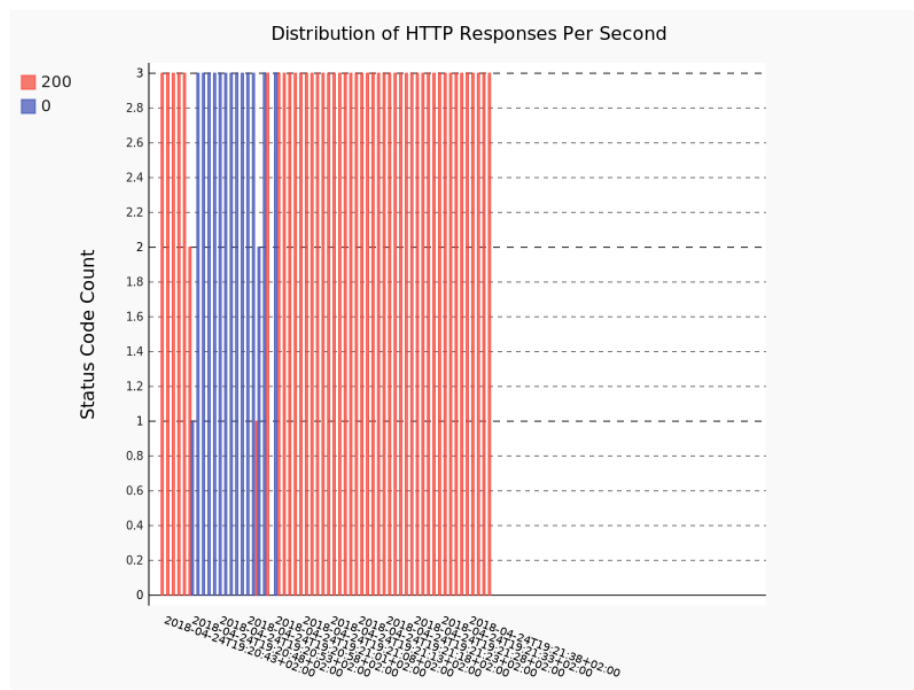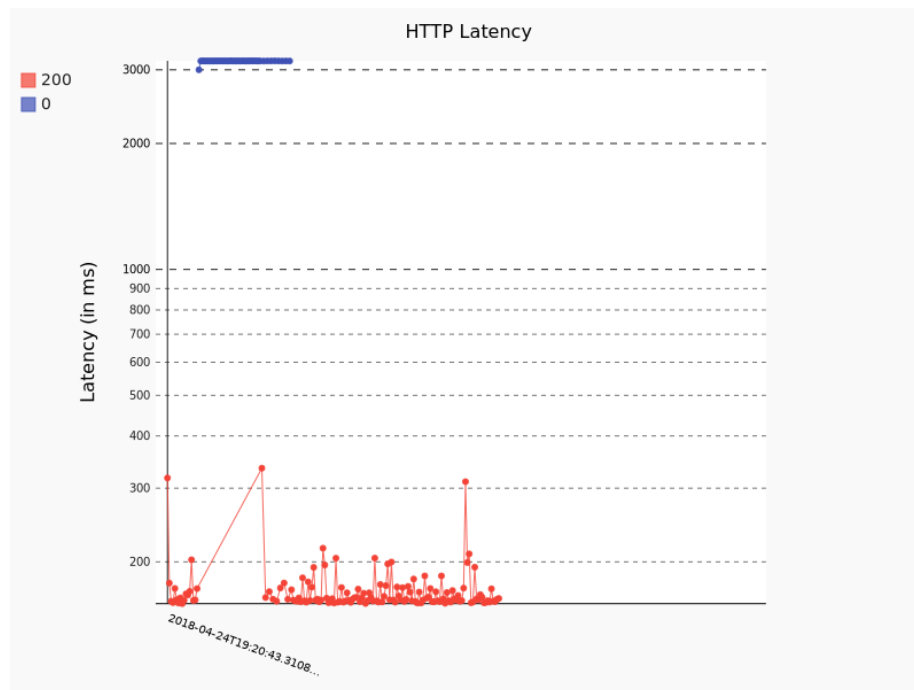
Action - simulate-user-traffic

Status	succeeded
Background	True
Started	Tue, 24 Apr 2018 17:20:43 GMT
Ended	Tue, 24 Apr 2018 17:21:43 GMT
Duration	1 minute

The action provider that was executed:

Type	process
Path	vegeta
Timeout	N/A
Arguments	-cpus 2 attack -targets=data/scenario.txt -workers=2 -connections=1 -rate=3 -timeout=3s -duration=60s -output=result.bin

```
Requests      [total, rate]           180, 3.02
Duration      [total, attack, wait]   59.830192472s, 59.666666518s, 163.525954ms
Latencies     [mean, 50, 95, 99, max] 865.254159ms, 166.592959ms, 3.14944174s, 3.150717581s
Bytes In      [total, mean]           26220, 145.67
Bytes Out     [total, mean]           3404, 18.91
Success       [ratio]                 76.67%
Status Codes  [code:count]            0:42  200:138
Error Set:
Get http://demo.foo.bar/function/astre: net/http: timeout awaiting response headers
```

HTTP Latency

Distribution of HTTP Responses Per Second

4

Action - terminate-one-function

Status	succeeded
Background	False
Started	Tue, 24 Apr 2018 17:20:48 GMT
Ended	Tue, 24 Apr 2018 17:20:49 GMT
Duration	1 seconde
Paused Before	5s
Paused After	30s

The action provider that was executed:

Type	python
Module	chaosk8s.pod.actions
Function	terminate_pods
Arguments	{'ns': 'openfaas-fn', 'label_selector': 'faas_function=astre', 'rand': True}

Probe - fetch-openfaas-gateway-logs

Status	succeeded
Background	False
Started	Tue, 24 Apr 2018 17:21:19 GMT
Ended	Tue, 24 Apr 2018 17:21:20 GMT
Duration	1 seconde

The probe provider that was executed:

Type	python
Module	chaosk8s.pod.probes
Function	read_pod_logs
Arguments	{'label_selector': 'app=gateway', 'last': '40s', 'ns': 'openfaas'}

Probe - query-total-function-invocation

Status	succeeded
Background	False
Started	Tue, 24 Apr 2018 17:21:20 GMT
Ended	Tue, 24 Apr 2018 17:21:20 GMT

Duration	0 secondes

The probe provider that was executed:

Type	python
Module	chaosprometheus.probes
Function	query_interval
Arguments	{'query': "gateway_function_invocation_total{function_name='astre'}", 'start': '1 minute ago', 'end': 'now', 'step': 1}
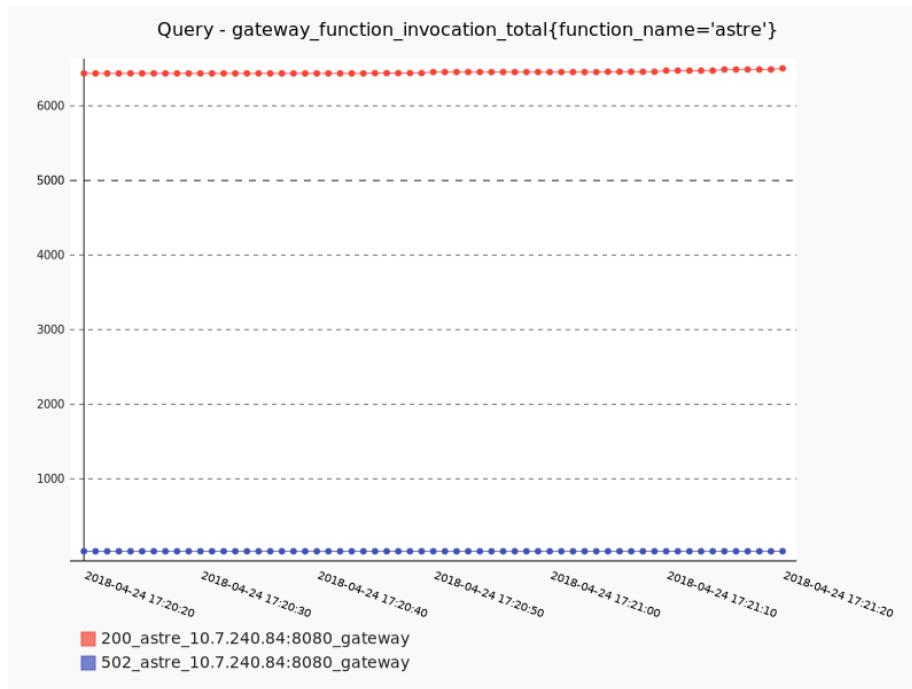
Appendix

Action - simulate-user-traffic

The *action* returned the following result:

```
{'status': 0, 'stderr': '', 'stdout': ''}
```

Action - terminate-one-function

The *action* returned the following result:

```
None
```

Probe - fetch-openfaas-gateway-logs

The *probe* returned the following result:

```
{'gateway-6444794955-rgl7s': '2018-04-24T17:20:42.904752413Z 2018/04/24 '
                             '17:20:42 Forwarded [GET] to '
                             '/system/function/astre - [200] - 0.007377 '
                             'seconds\n'
                             '2018-04-24T17:20:43.217875274Z 2018/04/24 '
                             '17:20:43 Forwarded [POST] to /function/astre - '
                             '[200] - 0.014697 seconds\n'
                             '2018-04-24T17:20:43.549891408Z 2018/04/24 '
                             '17:20:43 Forwarded [GET] to /function/astre - '
                             '[200] - 0.021953 seconds\n'
                             '2018-04-24T17:20:43.743448305Z 2018/04/24 '
                             '17:20:43 Forwarded [GET] to /function/astre - '
                             '[200] - 0.031090 seconds\n'
                             '2018-04-24T17:20:44.060802137Z 2018/04/24 '
                             '17:20:44 Forwarded [GET] to /function/astre - '
                             '[200] - 0.013026 seconds\n'
                             '2018-04-24T17:20:44.392093471Z 2018/04/24 '
                             '17:20:44 Forwarded [GET] to /function/astre - '
                             '[200] - 0.012234 seconds\n'
                             '2018-04-24T17:20:44.738334096Z 2018/04/24 '
                             '17:20:44 Forwarded [GET] to /function/astre - '
                             '[200] - 0.024082 seconds\n'
                             '2018-04-24T17:20:45.062165446Z 2018/04/24 '
                             '17:20:45 Forwarded [GET] to /function/astre - '
                             '[200] - 0.014613 seconds\n'
                             '2018-04-24T17:20:45.391765686Z 2018/04/24 '
                             '17:20:45 Forwarded [GET] to /function/astre - '
                             '[200] - 0.012756 seconds\n'
                             '2018-04-24T17:20:45.729469664Z 2018/04/24 '
                             '17:20:45 Forwarded [GET] to /function/astre - '
                             '[200] - 0.015465 seconds\n'
                             '2018-04-24T17:20:46.058912706Z 2018/04/24 '
                             '17:20:46 Forwarded [GET] to /function/astre - '
                             '[200] - 0.012317 seconds\n'
                             '2018-04-24T17:20:46.393654997Z 2018/04/24 '
                             '17:20:46 Forwarded [GET] to /function/astre - '
```

```
'[200] - 0.013046 seconds\n'
'2018-04-24T17:20:46.733952475Z 2018/04/24 '
'17:20:46 Forwarded [GET] to /function/astre - '
'[200] - 0.021711 seconds\n'
'2018-04-24T17:20:47.066335808Z 2018/04/24 '
'17:20:47 Forwarded [GET] to /function/astre - '
'[200] - 0.017434 seconds\n'
'2018-04-24T17:20:47.402162407Z 2018/04/24 '
'17:20:47 Forwarded [GET] to /function/astre - '
'[200] - 0.022175 seconds\n'
'2018-04-24T17:20:47.767694742Z 2018/04/24 '
'17:20:47 Forwarded [GET] to /function/astre - '
'[200] - 0.054858 seconds\n'
'2018-04-24T17:20:48.061348314Z 2018/04/24 '
'17:20:48 Forwarded [GET] to /function/astre - '
'[200] - 0.013644 seconds\n'
'2018-04-24T17:20:48.394275476Z 2018/04/24 '
'17:20:48 Forwarded [GET] to /function/astre - '
'[200] - 0.015509 seconds\n'
'2018-04-24T17:20:48.737988738Z 2018/04/24 '
'17:20:48 Forwarded [GET] to /function/astre - '
'[200] - 0.024036 seconds\n'
'2018-04-24T17:21:03.233857966Z 2018/04/24 '
'17:21:03 Forwarded [GET] to /function/astre - '
'[200] - 0.039936 seconds\n'
'2018-04-24T17:21:03.396349801Z 2018/04/24 '
'17:21:03 Forwarded [GET] to /function/astre - '
'[200] - 0.015278 seconds\n'
'2018-04-24T17:21:03.735060316Z 2018/04/24 '
'17:21:03 Forwarded [GET] to /function/astre - '
'[200] - 0.023282 seconds\n'
'2018-04-24T17:21:04.062420919Z 2018/04/24 '
'17:21:04 Forwarded [GET] to /function/astre - '
'[200] - 0.014995 seconds\n'
'2018-04-24T17:21:04.391645857Z 2018/04/24 '
'17:21:04 Forwarded [GET] to /function/astre - '
'[200] - 0.012806 seconds\n'
'2018-04-24T17:21:04.738406962Z 2018/04/24 '
'17:21:04 Forwarded [GET] to /function/astre - '
'[200] - 0.024662 seconds\n'
'2018-04-24T17:21:05.077998099Z 2018/04/24 '
'17:21:05 Forwarded [GET] to /function/astre - '
'[200] - 0.029775 seconds\n'
'2018-04-24T17:21:05.394804055Z 2018/04/24 '
'17:21:05 Forwarded [GET] to /function/astre - '
'[200] - 0.016010 seconds\n'
```

```
'2018-04-24T17:21:05.737997376Z 2018/04/24 '
'17:21:05 Forwarded [GET] to /function/astre - '
'[200] - 0.024293 seconds\n'
'2018-04-24T17:21:06.061824732Z 2018/04/24 '
'17:21:06 Forwarded [GET] to /function/astre - '
'[200] - 0.014807 seconds\n'
'2018-04-24T17:21:06.393267808Z 2018/04/24 '
'17:21:06 Forwarded [GET] to /function/astre - '
'[200] - 0.014411 seconds\n'
'2018-04-24T17:21:06.726435678Z 2018/04/24 '
'17:21:06 Forwarded [GET] to /function/astre - '
'[200] - 0.014369 seconds\n'
'2018-04-24T17:21:07.063769791Z 2018/04/24 '
'17:21:07 Forwarded [GET] to /function/astre - '
'[200] - 0.013967 seconds\n'
'2018-04-24T17:21:07.392522556Z 2018/04/24 '
'17:21:07 Forwarded [GET] to /function/astre - '
'[200] - 0.012600 seconds\n'
'2018-04-24T17:21:07.748250266Z 2018/04/24 '
'17:21:07 Forwarded [GET] to /function/astre - '
'[200] - 0.036640 seconds\n'
'2018-04-24T17:21:08.060791673Z 2018/04/24 '
'17:21:08 Forwarded [GET] to /function/astre - '
'[200] - 0.013154 seconds\n'
'2018-04-24T17:21:08.391963081Z 2018/04/24 '
'17:21:08 Forwarded [GET] to /function/astre - '
'[200] - 0.013203 seconds\n'
'2018-04-24T17:21:08.744502766Z 2018/04/24 '
'17:21:08 Forwarded [GET] to /function/astre - '
'[200] - 0.031712 seconds\n'
'2018-04-24T17:21:09.060644173Z 2018/04/24 '
'17:21:09 Forwarded [GET] to /function/astre - '
'[200] - 0.013452 seconds\n'
'2018-04-24T17:21:09.405823264Z 2018/04/24 '
'17:21:09 Forwarded [GET] to /function/astre - '
'[200] - 0.027087 seconds\n'
'2018-04-24T17:21:09.759305245Z 2018/04/24 '
'17:21:09 Forwarded [GET] to /function/astre - '
'[200] - 0.045493 seconds\n'
'2018-04-24T17:21:10.061602926Z 2018/04/24 '
'17:21:10 Forwarded [GET] to /function/astre - '
'[200] - 0.015110 seconds\n'
'2018-04-24T17:21:10.394899758Z 2018/04/24 '
'17:21:10 Forwarded [GET] to /function/astre - '
'[200] - 0.014611 seconds\n'
'2018-04-24T17:21:10.726060358Z 2018/04/24 '
```

```
'17:21:10 Forwarded [GET] to /function/astre - '
'[200] - 0.013671 seconds\n'
'2018-04-24T17:21:11.061645083Z 2018/04/24 '
'17:21:11 Forwarded [GET] to /function/astre - '
'[200] - 0.014889 seconds\n'
'2018-04-24T17:21:11.447392432Z 2018/04/24 '
'17:21:11 Forwarded [GET] to /function/astre - '
'[200] - 0.067503 seconds\n'
'2018-04-24T17:21:11.761799509Z 2018/04/24 '
'17:21:11 Forwarded [GET] to /function/astre - '
'[200] - 0.050093 seconds\n'
'2018-04-24T17:21:12.064465952Z 2018/04/24 '
'17:21:12 Forwarded [GET] to /function/astre - '
'[200] - 0.015410 seconds\n'
'2018-04-24T17:21:12.391413681Z 2018/04/24 '
'17:21:12 Forwarded [GET] to /function/astre - '
'[200] - 0.012503 seconds\n'
'2018-04-24T17:21:12.725351407Z 2018/04/24 '
'17:21:12 Forwarded [GET] to /function/astre - '
'[200] - 0.012595 seconds\n'
'2018-04-24T17:21:13.064208385Z 2018/04/24 '
'17:21:13 Forwarded [GET] to /function/astre - '
'[200] - 0.015342 seconds\n'
'2018-04-24T17:21:13.39160606Z 2018/04/24 '
'17:21:13 Forwarded [GET] to /function/astre - '
'[200] - 0.012782 seconds\n'
'2018-04-24T17:21:13.76947098Z 2018/04/24 '
'17:21:13 Forwarded [GET] to /function/astre - '
'[200] - 0.055774 seconds\n'
'2018-04-24T17:21:14.059912587Z 2018/04/24 '
'17:21:14 Forwarded [GET] to /function/astre - '
'[200] - 0.013520 seconds\n'
'2018-04-24T17:21:14.392956738Z 2018/04/24 '
'17:21:14 Forwarded [GET] to /function/astre - '
'[200] - 0.012462 seconds\n'
'2018-04-24T17:21:14.739133076Z 2018/04/24 '
'17:21:14 Forwarded [GET] to /function/astre - '
'[200] - 0.026375 seconds\n'
'2018-04-24T17:21:15.05995117Z 2018/04/24 '
'17:21:15 Forwarded [GET] to /function/astre - '
'[200] - 0.013541 seconds\n'
'2018-04-24T17:21:15.392382945Z 2018/04/24 '
'17:21:15 Forwarded [GET] to /function/astre - '
'[200] - 0.012507 seconds\n'
'2018-04-24T17:21:15.733689218Z 2018/04/24 '
'17:21:15 Forwarded [GET] to /function/astre - '
```

'[200] - 0.021626 seconds\n'
'2018-04-24T17:21:16.06151413Z 2018/04/24 '
'17:21:16 Forwarded [GET] to /function/astre - '
'[200] - 0.014005 seconds\n'
'2018-04-24T17:21:16.391569258Z 2018/04/24 '
'17:21:16 Forwarded [GET] to /function/astre - '
'[200] - 0.012795 seconds\n'
'2018-04-24T17:21:16.72501503Z 2018/04/24 '
'17:21:16 Forwarded [GET] to /function/astre - '
'[200] - 0.012218 seconds\n'
'2018-04-24T17:21:17.063801138Z 2018/04/24 '
'17:21:17 Forwarded [GET] to /function/astre - '
'[200] - 0.014396 seconds\n'
'2018-04-24T17:21:17.405404031Z 2018/04/24 '
'17:21:17 Forwarded [GET] to /function/astre - '
'[200] - 0.018119 seconds\n'
'2018-04-24T17:21:17.737057Z 2018/04/24 17:21:17 '
'Forwarded [GET] to /function/astre - [200] - '
'0.021507 seconds\n'
'2018-04-24T17:21:18.060529952Z 2018/04/24 '
'17:21:18 Forwarded [GET] to /function/astre - '
'[200] - 0.013885 seconds\n'
'2018-04-24T17:21:18.395394035Z 2018/04/24 '
'17:21:18 Forwarded [GET] to /function/astre - '
'[200] - 0.015528 seconds\n'
'2018-04-24T17:21:18.733840315Z 2018/04/24 '
'17:21:18 Forwarded [GET] to /function/astre - '
'[200] - 0.021041 seconds\n'
'2018-04-24T17:21:19.058936312Z 2018/04/24 '
'17:21:19 Forwarded [GET] to /function/astre - '
'[200] - 0.012448 seconds\n'
'2018-04-24T17:21:19.071397203Z 2018/04/24 '
'17:21:19 error with upstream request to: '
'/function/astre, Get '
'http://astre.openfaas-fn.svc.cluster.local.:8080/function/astr'
'net/http: request canceled while waiting for '
'connection (Client.Timeout exceeded while '
'awaiting headers)\n'
'2018-04-24T17:21:19.07142871Z 2018/04/24 '
'17:21:19 Forwarded [GET] to /function/astre - '
'[502] - 30.000175 seconds\n'
'2018-04-24T17:21:19.393385497Z 2018/04/24 '
'17:21:19 Forwarded [GET] to /function/astre - '
'[200] - 0.013554 seconds\n'
'2018-04-24T17:21:19.527163367Z 2018/04/24 '
'17:21:19 error with upstream request to: '

                                  '/function/astre, Get '
                                  'http://astre.openfaas-fn.svc.cluster.local.:8080/function/astr
                                  'net/http: request canceled while waiting for '
                                  'connection (Client.Timeout exceeded while '
                                  'awaiting headers)\n'
                                  '2018-04-24T17:21:19.527358492Z 2018/04/24 '
                                  '17:21:19 Forwarded [GET] to /function/astre - '
                                  '[502] - 30.000200 seconds\n'
                                  '2018-04-24T17:21:19.73385226Z 2018/04/24 '
                                  '17:21:19 Forwarded [GET] to /function/astre - '
                                  '[200] - 0.022118 seconds\n'
                                  '2018-04-24T17:21:19.861512793Z 2018/04/24 '
                                  '17:21:19 error with upstream request to: '
                                  '/function/astre, Get '
                                  'http://astre.openfaas-fn.svc.cluster.local.:8080/function/astr
                                  'net/http: request canceled while waiting for '
                                  'connection (Client.Timeout exceeded while '
                                  'awaiting headers)\n'
                                  '2018-04-24T17:21:19.861537744Z 2018/04/24 '
                                  '17:21:19 Forwarded [GET] to /function/astre - '
                                  '[502] - 30.000169 seconds\n'}

Probe - query-total-function-invocation

The *probe* returned the following result:

{'data': {'result': [{'metric': {'__name__': 'gateway_function_invocation_total',
                                  'code': '200',
                                  'function_name': 'astre',
                                  'instance': '10.7.240.84:8080',
                                  'job': 'gateway'},
                      'values': [[1524590420.15, '6436'],
                                 [1524590421.15, '6436'],
                                 [1524590422.15, '6436'],
                                 [1524590423.15, '6436'],
                                 [1524590424.15, '6436'],
                                 [1524590425.15, '6436'],
                                 [1524590426.15, '6436'],
                                 [1524590427.15, '6436'],
                                 [1524590428.15, '6436'],
                                 [1524590429.15, '6436'],
                                 [1524590430.15, '6436'],
                                 [1524590431.15, '6436'],
                                 [1524590432.15, '6436'],
                                 [1524590433.15, '6436'],

```
[1524590434.15, '6436'],
[1524590435.15, '6436'],
[1524590436.15, '6436'],
[1524590437.15, '6436'],
[1524590438.15, '6436'],
[1524590439.15, '6436'],
[1524590440.15, '6436'],
[1524590441.15, '6436'],
[1524590442.15, '6436'],
[1524590443.15, '6436'],
[1524590444.15, '6436'],
[1524590445.15, '6440'],
[1524590446.15, '6440'],
[1524590447.15, '6440'],
[1524590448.15, '6440'],
[1524590449.15, '6440'],
[1524590450.15, '6454'],
[1524590451.15, '6454'],
[1524590452.15, '6454'],
[1524590453.15, '6454'],
[1524590454.15, '6454'],
[1524590455.15, '6454'],
[1524590456.15, '6454'],
[1524590457.15, '6454'],
[1524590458.15, '6454'],
[1524590459.15, '6454'],
[1524590460.15, '6454'],
[1524590461.15, '6454'],
[1524590462.15, '6454'],
[1524590463.15, '6454'],
[1524590464.15, '6454'],
[1524590465.15, '6458'],
[1524590466.15, '6458'],
[1524590467.15, '6458'],
[1524590468.15, '6458'],
[1524590469.15, '6458'],
[1524590470.15, '6473'],
[1524590471.15, '6473'],
[1524590472.15, '6473'],
[1524590473.15, '6473'],
[1524590474.15, '6473'],
[1524590475.15, '6488'],
[1524590476.15, '6488'],
[1524590477.15, '6488'],
[1524590478.15, '6488'],
[1524590479.15, '6488'],
```

```
                        [1524590480.15, '6503']]},
          {'metric': {'__name__': 'gateway_function_invocation_total',
                      'code': '502',
                      'function_name': 'astre',
                      'instance': '10.7.240.84:8080',
                      'job': 'gateway'},
           'values': [[1524590420.15, '29'],
                      [1524590421.15, '29'],
                      [1524590422.15, '29'],
                      [1524590423.15, '29'],
                      [1524590424.15, '29'],
                      [1524590425.15, '29'],
                      [1524590426.15, '29'],
                      [1524590427.15, '29'],
                      [1524590428.15, '29'],
                      [1524590429.15, '29'],
                      [1524590430.15, '29'],
                      [1524590431.15, '29'],
                      [1524590432.15, '29'],
                      [1524590433.15, '29'],
                      [1524590434.15, '29'],
                      [1524590435.15, '29'],
                      [1524590436.15, '29'],
                      [1524590437.15, '29'],
                      [1524590438.15, '29'],
                      [1524590439.15, '29'],
                      [1524590440.15, '29'],
                      [1524590441.15, '29'],
                      [1524590442.15, '29'],
                      [1524590443.15, '29'],
                      [1524590444.15, '29'],
                      [1524590445.15, '29'],
                      [1524590446.15, '29'],
                      [1524590447.15, '29'],
                      [1524590448.15, '29'],
                      [1524590449.15, '29'],
                      [1524590450.15, '29'],
                      [1524590451.15, '29'],
                      [1524590452.15, '29'],
                      [1524590453.15, '29'],
                      [1524590454.15, '29'],
                      [1524590455.15, '29'],
                      [1524590456.15, '29'],
                      [1524590457.15, '29'],
                      [1524590458.15, '29'],
                      [1524590459.15, '29'],
```

```
                                       [1524590460.15, '29'],
                                       [1524590461.15, '29'],
                                       [1524590462.15, '29'],
                                       [1524590463.15, '29'],
                                       [1524590464.15, '29'],
                                       [1524590465.15, '29'],
                                       [1524590466.15, '29'],
                                       [1524590467.15, '29'],
                                       [1524590468.15, '29'],
                                       [1524590469.15, '29'],
                                       [1524590470.15, '29'],
                                       [1524590471.15, '29'],
                                       [1524590472.15, '29'],
                                       [1524590473.15, '29'],
                                       [1524590474.15, '29'],
                                       [1524590475.15, '29'],
                                       [1524590476.15, '29'],
                                       [1524590477.15, '29'],
                                       [1524590478.15, '29'],
                                       [1524590479.15, '29'],
                                       [1524590480.15, '30']]}],
         'resultType': 'matrix'},
 'status': 'success'}
```