# THE THREE MUSKETEERS

Gregory Arendse

THE THREE MUSKETEERS

entelect
everything is possible

+

# GREGORY ARENDSE

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UNIVERSITY OF THE WITWATERSRAND
JOHANNESBURG

SATRIX
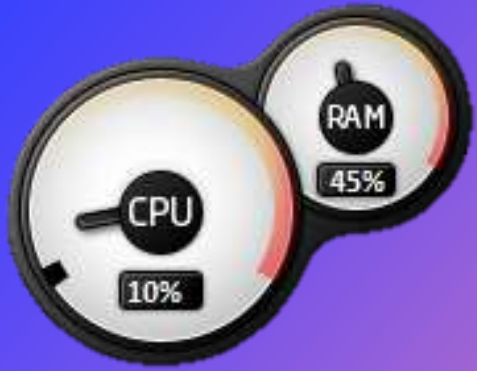OWN THE MARKET

Barloworld Equipment CAT

Vitality

# AGENDA

Java

Docker

Memory

CPU

# Resources

- CPU

- Memory

# Resources

- Virtual Machines
- Application Servers

# Resources

- Kubernetes
- Requests
- Limits

# Just Right

- Too much
- Too little
- Pragmatic

# Measure

- What

- How

# Baseline

- Define baseline

- Existing monitoring

- Service Level Agreement (SLA)

# Lever
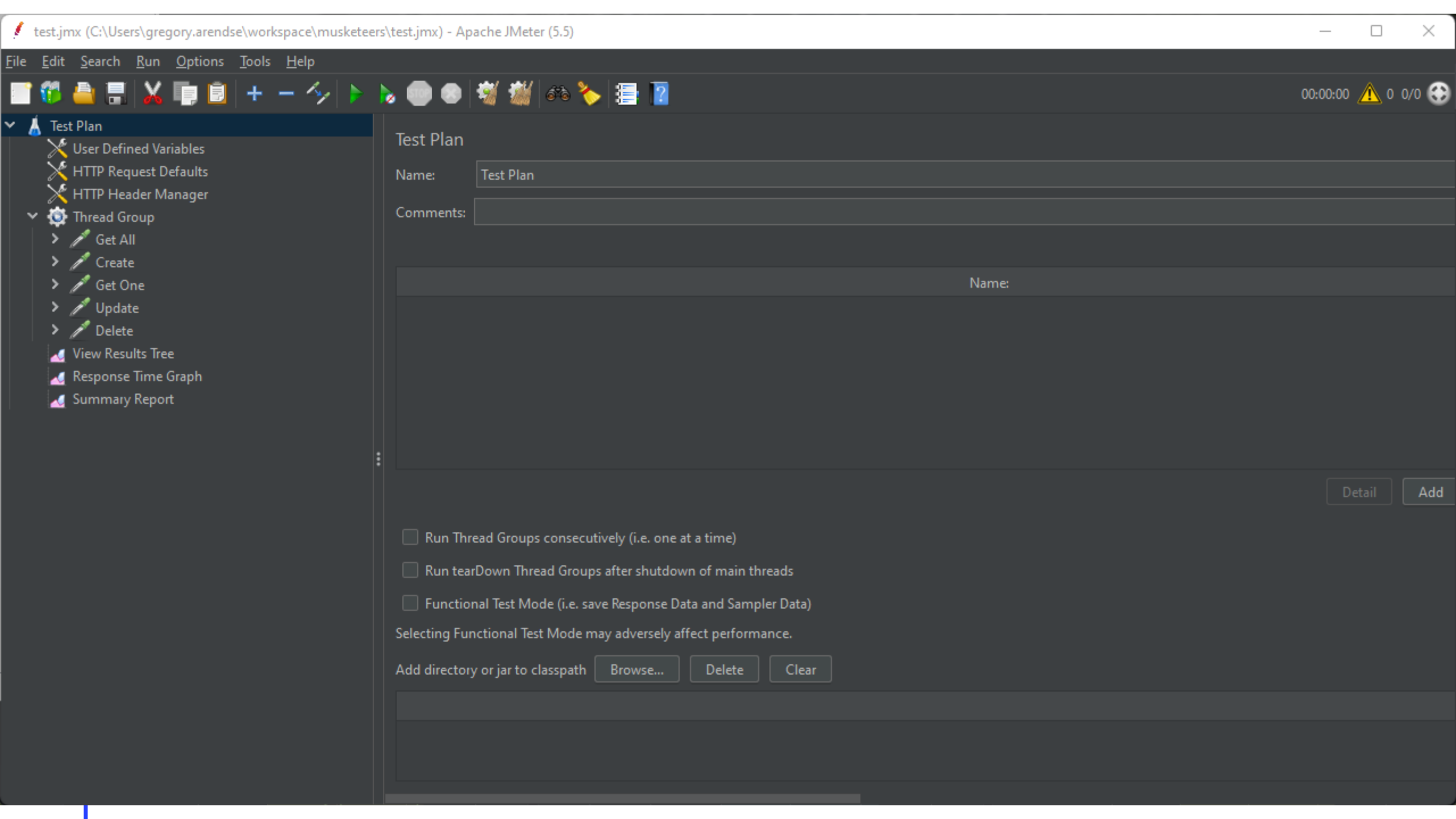
- Load/Stress tests
- Mock 3rd party
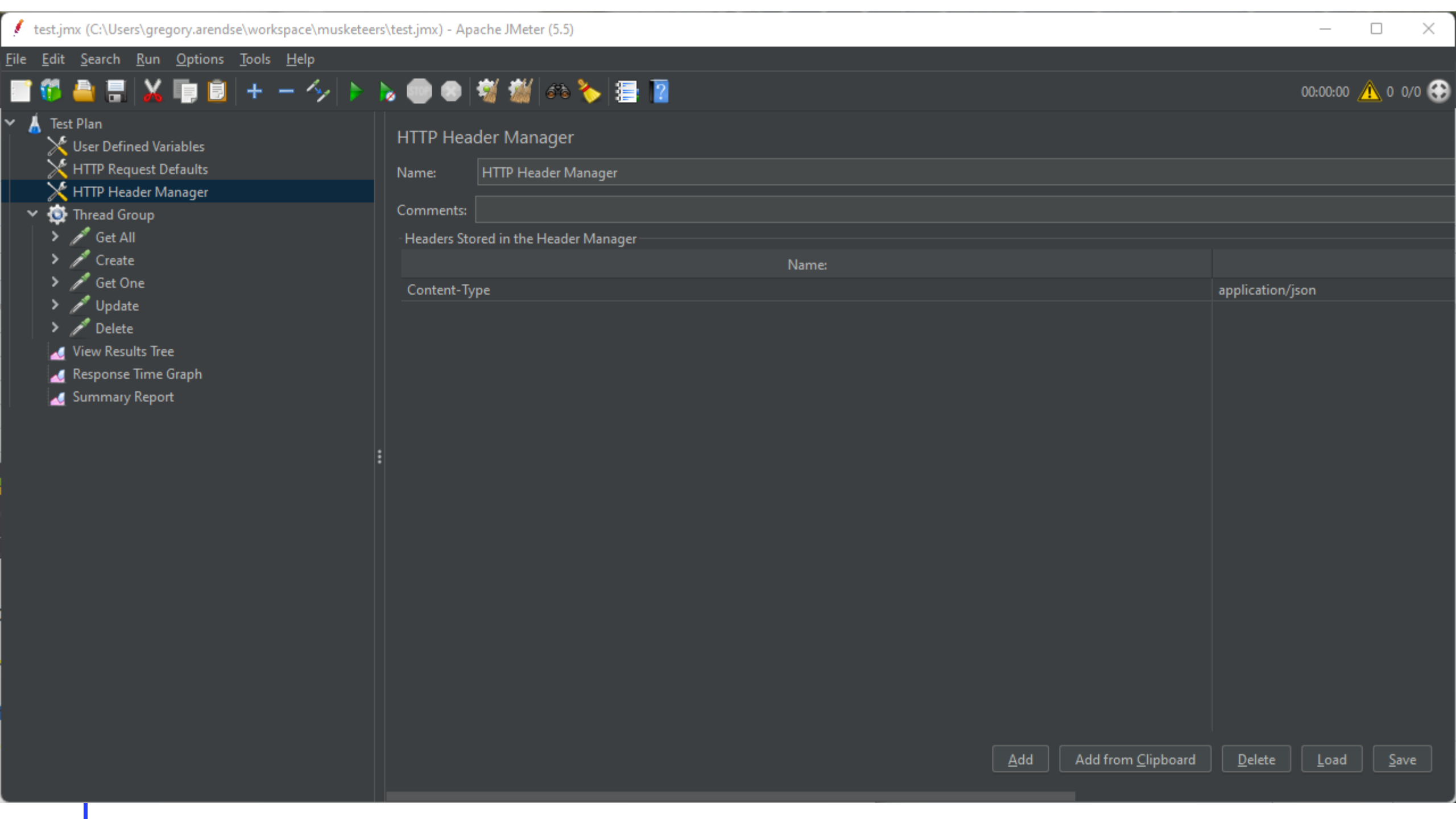
# Musketeers

- Spring Boot
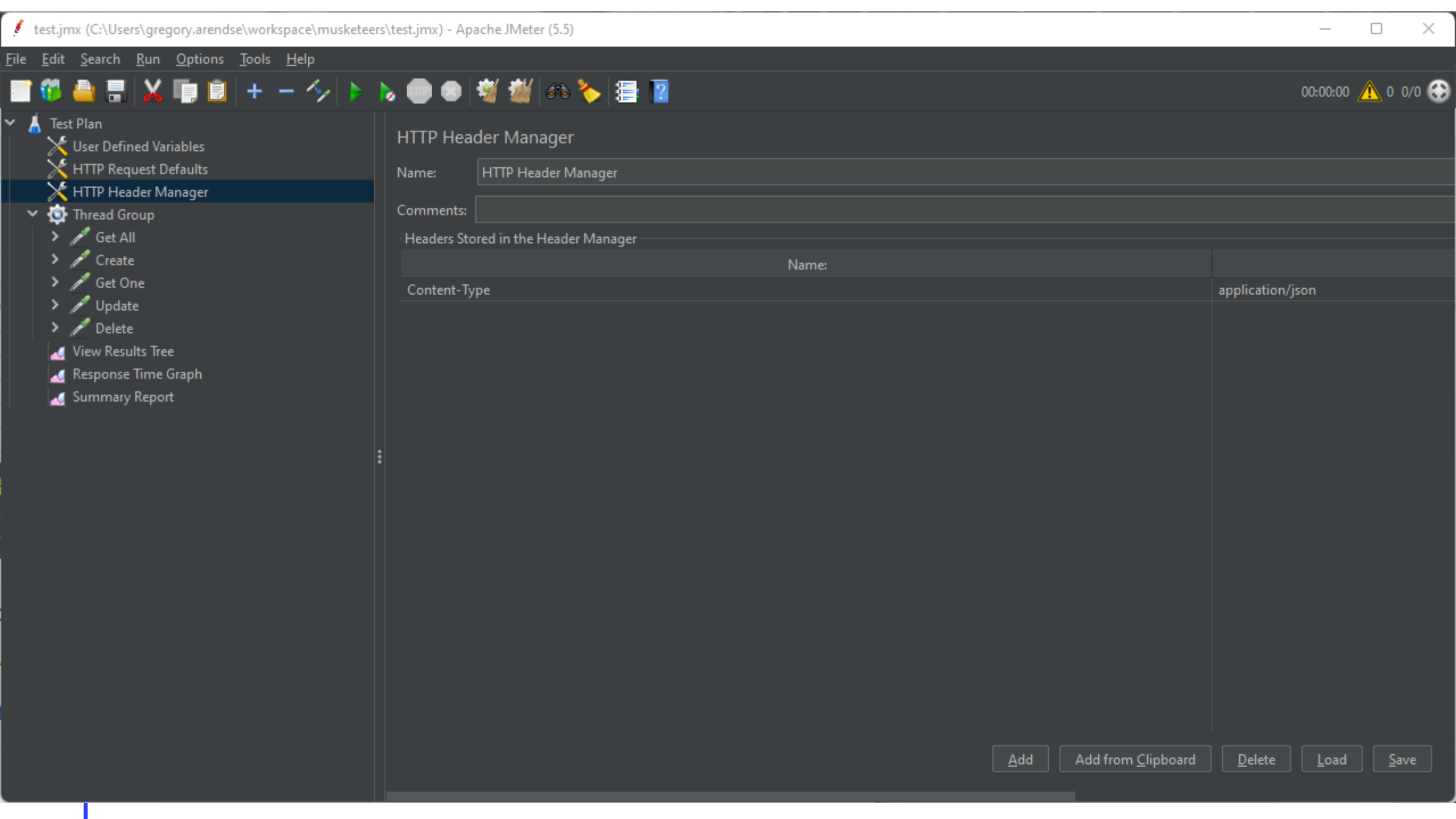- WebFlux
- Actuator
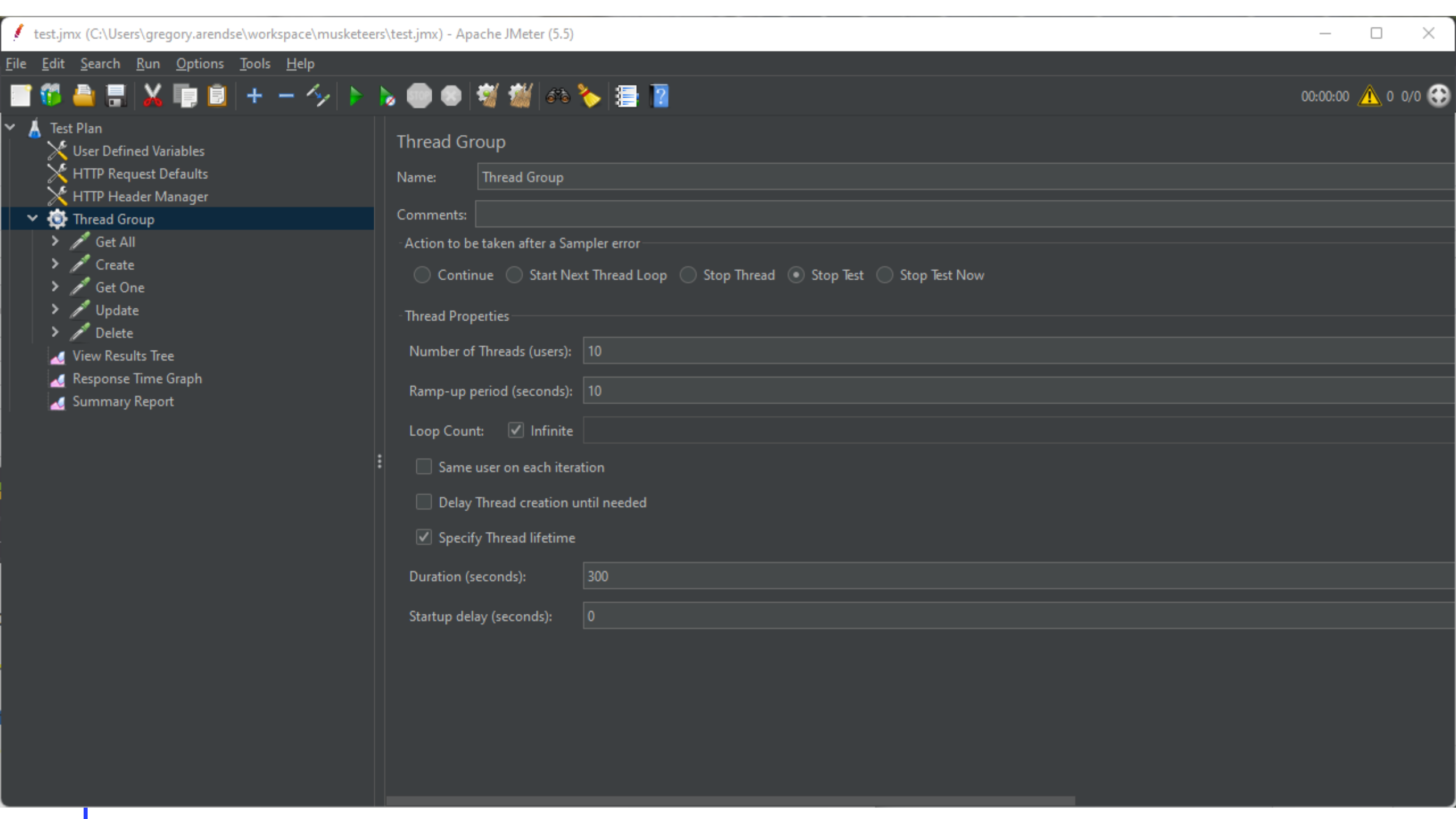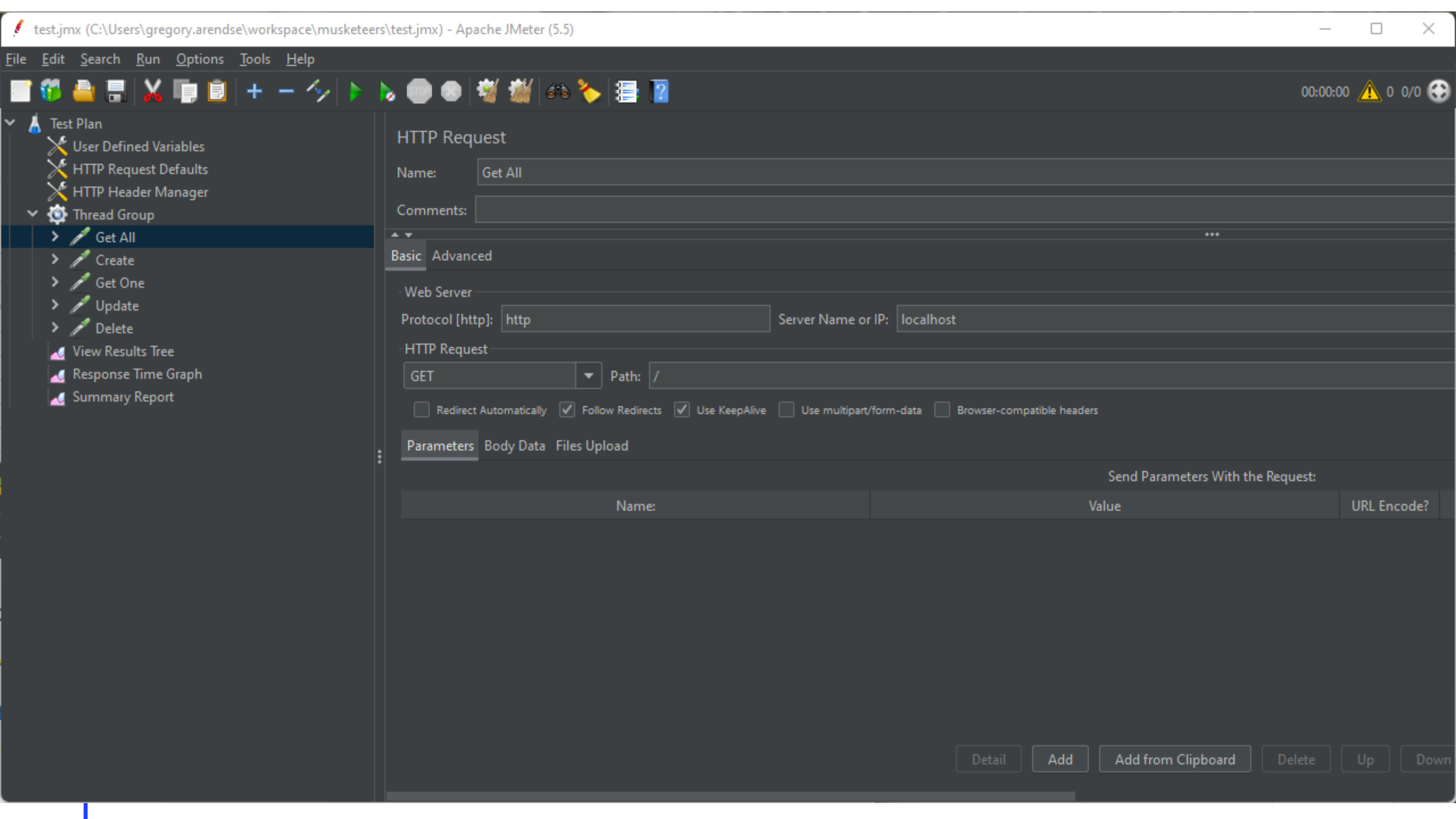- Prometheus
- Spring Native
- Grafana

# DEMO

Setting up the test plan

File   Edit   Search   Run   Options   Tools   Help

00:00:00   ⚠ 0  0/0

- Test Plan
  - User Defined Variables
  - HTTP Request Defaults
  - HTTP Header Manager
  - Thread Group
    - Get All
    - Create
    - Get One
    - Update
    - Delete
    - View Results Tree
    - Response Time Graph
    - Summary Report

## Test Plan

Name:   Test Plan

Comments:

Name:

Detail   Add

☐ Run Thread Groups consecutively (i.e. one at a time)

☐ Run tearDown Thread Groups after shutdown of main threads

☐ Functional Test Mode (i.e. save Response Data and Sampler Data)

Selecting Functional Test Mode may adversely affect performance.

Add directory or jar to classpath   Browse...   Delete   Clear

File  Edit  Search  Run  Options  Tools  Help

00:00:00  0  0/0

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## HTTP Header Manager

Name: | HTTP Header Manager

Comments: |

Headers Stored in the Header Manager

| Name: | |
|---|---|
| Content-Type | application/json |

Add  Add from Clipboard  Delete  Load  Save

File   Edit   Search   Run   Options   Tools   Help

00:00:00   0   0/0

Test Plan
- User Defined Variables
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## Thread Group

Name:   Thread Group

Comments:

### Action to be taken after a Sampler error

○ Continue   ○ Start Next Thread Loop   ○ Stop Thread   ● Stop Test   ○ Stop Test Now

### Thread Properties

Number of Threads (users):   10

Ramp-up period (seconds):   10

Loop Count:   ☑ Infinite

☐ Same user on each iteration

☐ Delay Thread creation until needed

☑ Specify Thread lifetime

Duration (seconds):   300

Startup delay (seconds):   0

File   Edit   Search   Run   Options   Tools   Help

00:00:00   ⚠ 0  0/0

Test Plan
  User Defined Variables
  HTTP Request Defaults
  HTTP Header Manager
  Thread Group
    Get All
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    Get One
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**HTTP Request**

Name:  | Get All

Comments: |

Basic   Advanced

Web Server

Protocol [http]: | http        Server Name or IP: | localhost

HTTP Request

| GET  ▼ |  Path: | /

☐ Redirect Automatically   ☑ Follow Redirects   ☑ Use KeepAlive   ☐ Use multipart/form-data   ☐ Browser-compatible headers

Parameters   Body Data   Files Upload

Send Parameters With the Request:

| Name: | Value | URL Encode? |
|-------|-------|-------------|

Detail   Add   Add from Clipboard   Delete   Up   Down

# DEMO

Visual VM start up plugin

# Baseline



Size: 239,075,360 B
Max: 8,543,797,272 B

Used: 52,219,592 B

# 512

Size: 146,800,672 B
Max: 536,870,936 B

Used: 39,477,520 B

# 256
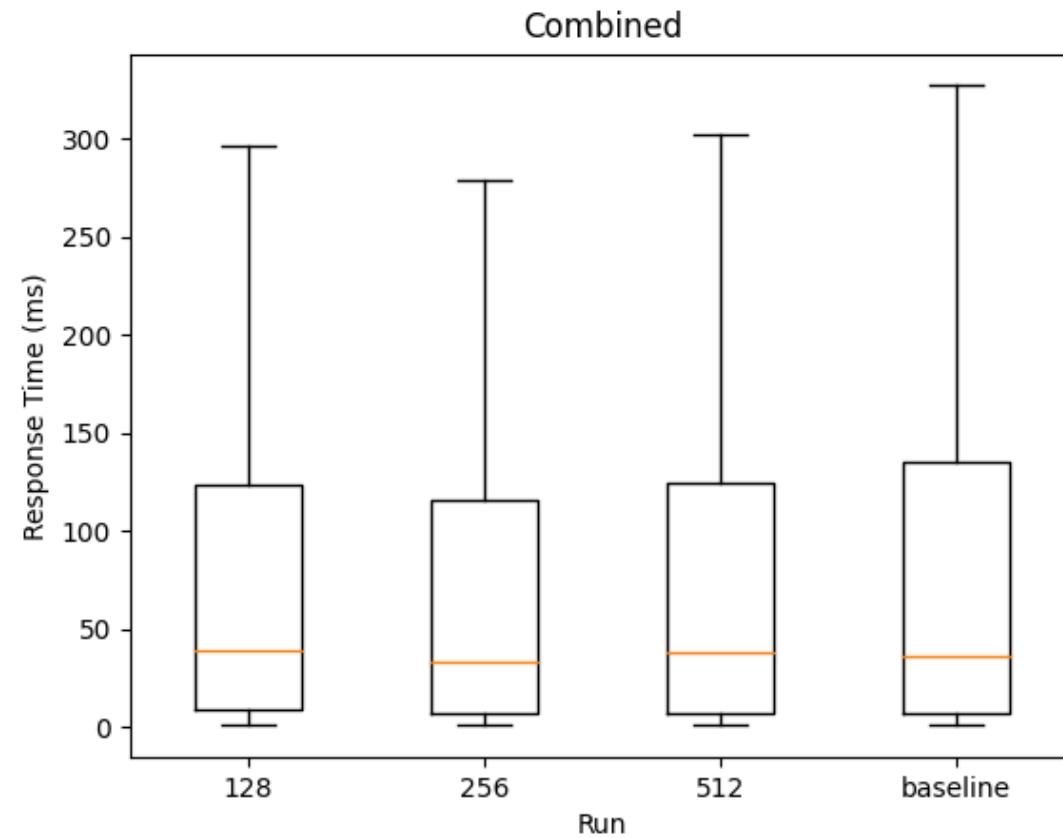
Size: 268,435,488 B
Max: 268,435,480 B

Used: 197,132,288 B

# 128

Size: 109,051,936 B
Max: 134,217,752 B

Used: 30,282,424 B



Heap size   Used heap
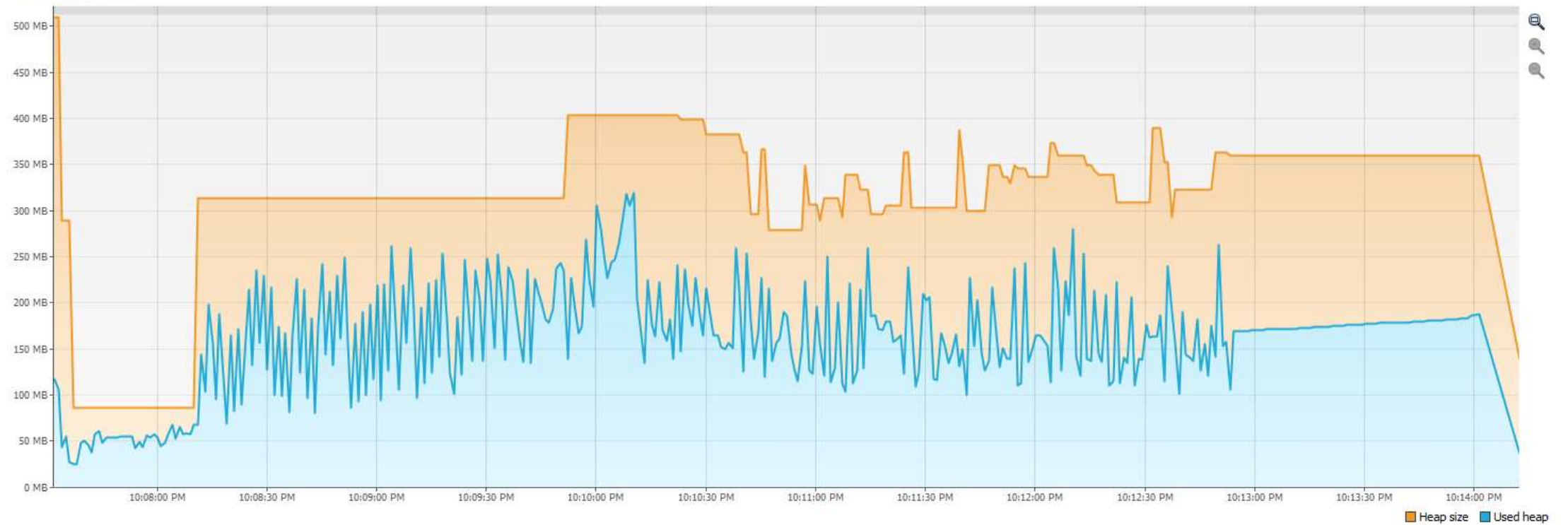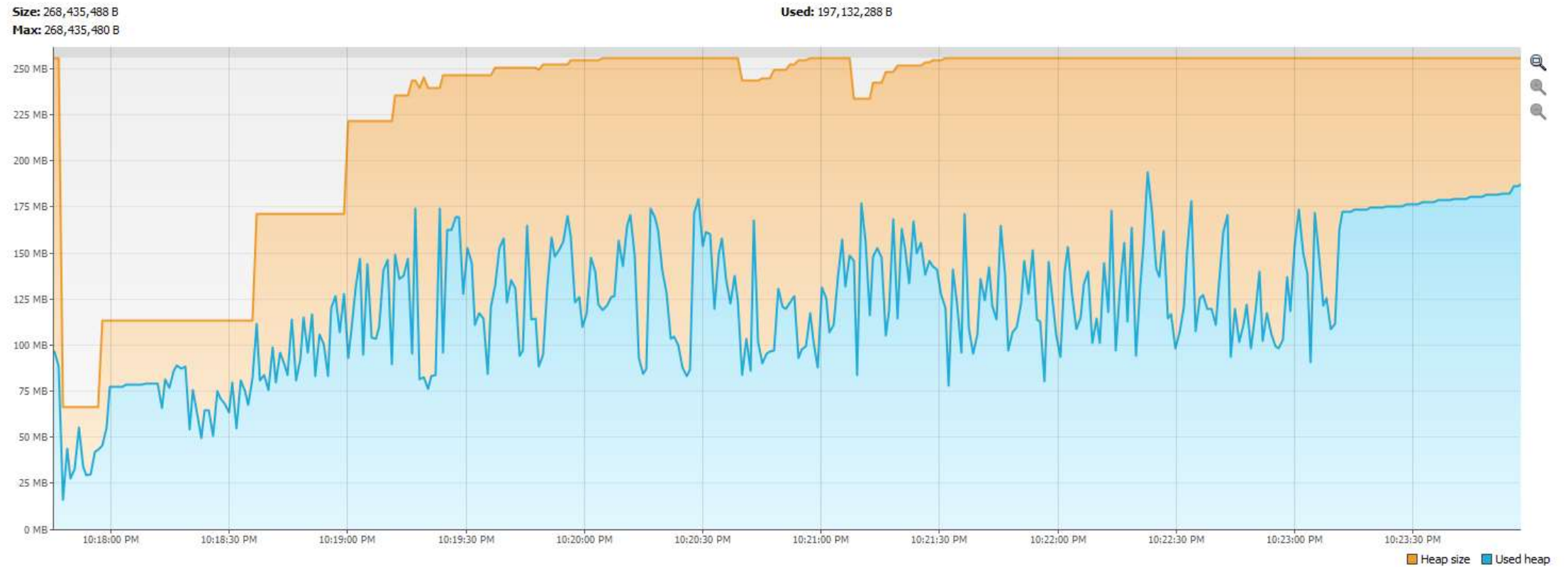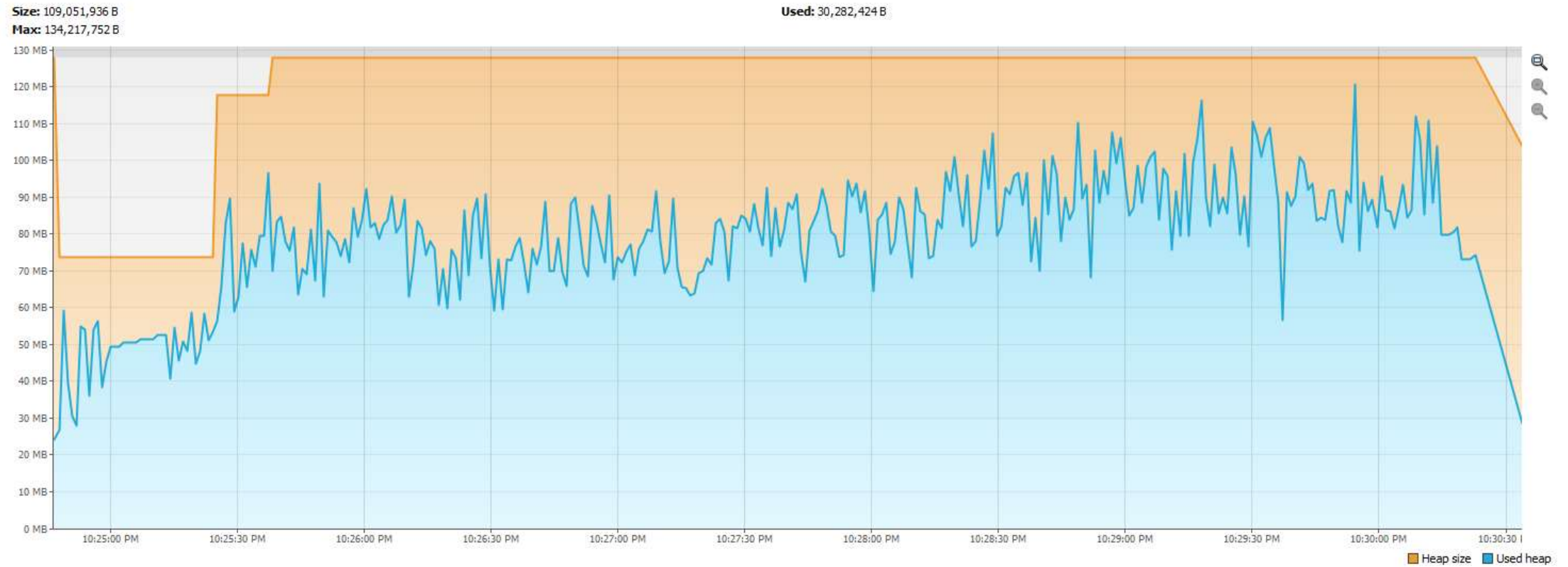
# Host Results

# DEMO

Docker

# docker-compose.yaml

```
…
  musketeers:
    build: .
    deploy:
      resources:
        limits:
          cpus: 100m
          memory: 128M
    ports:
      - "8080:8080"
…
```

# cAdvisor

## docker-compose.yaml

…

```
  cadvisor:

    image: gcr.io/cadvisor/cadvisor

    privileged: true
```

…

# cAdvisor
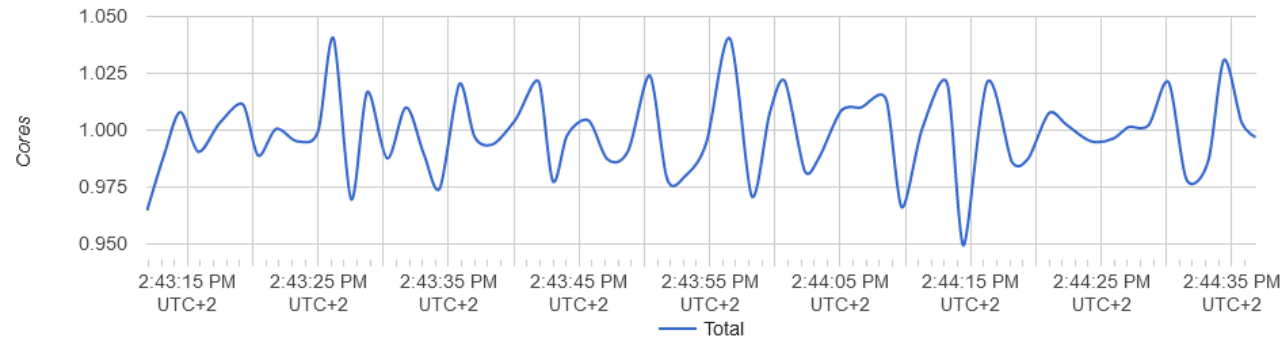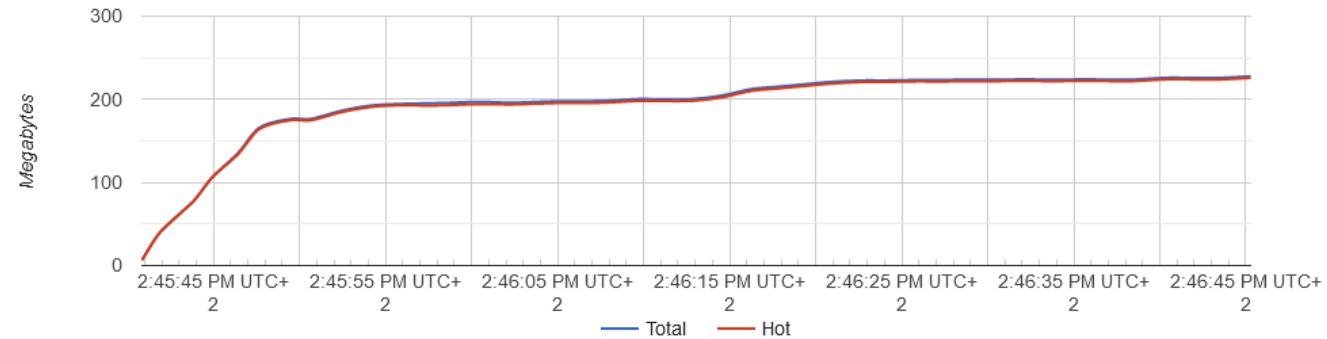
# docker-compose.yaml

…

```
  prometheus:

    image: prom/prometheus
```

…

```
  grafana:

    image: grafana/grafana-oss
```

…

# Grafana

# Docker Results

**Memory**



**CPU**
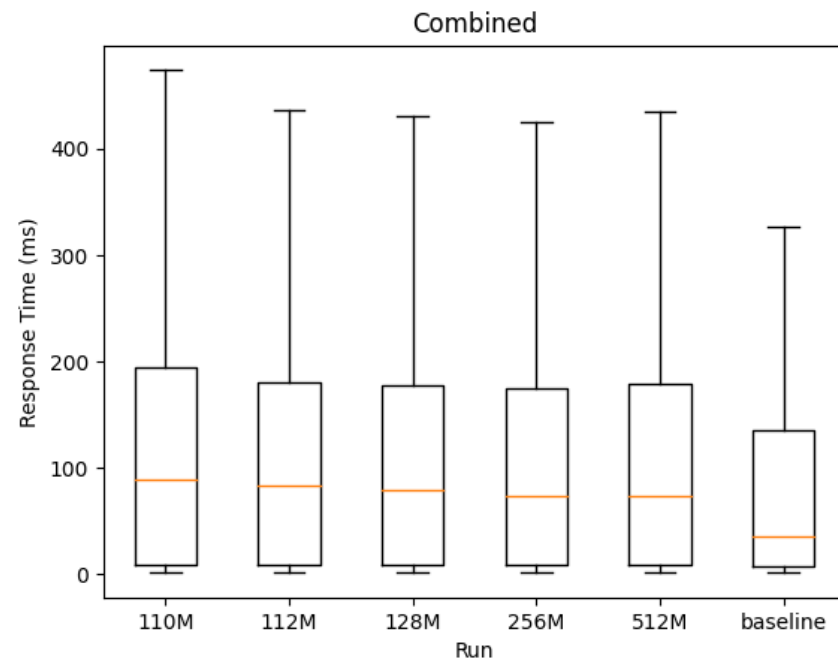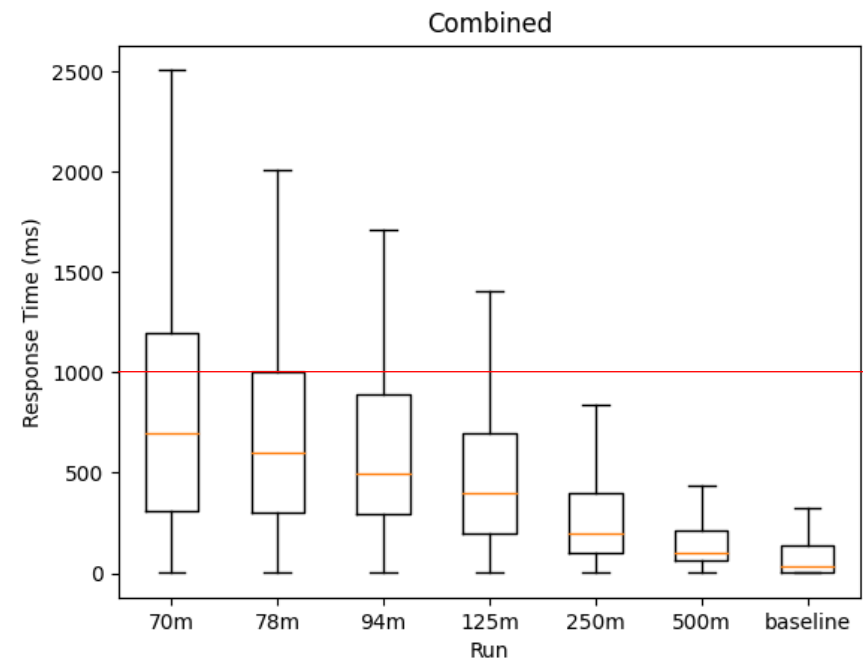
# GraalVM

"High Performance. Cloud Native. Polyglot."

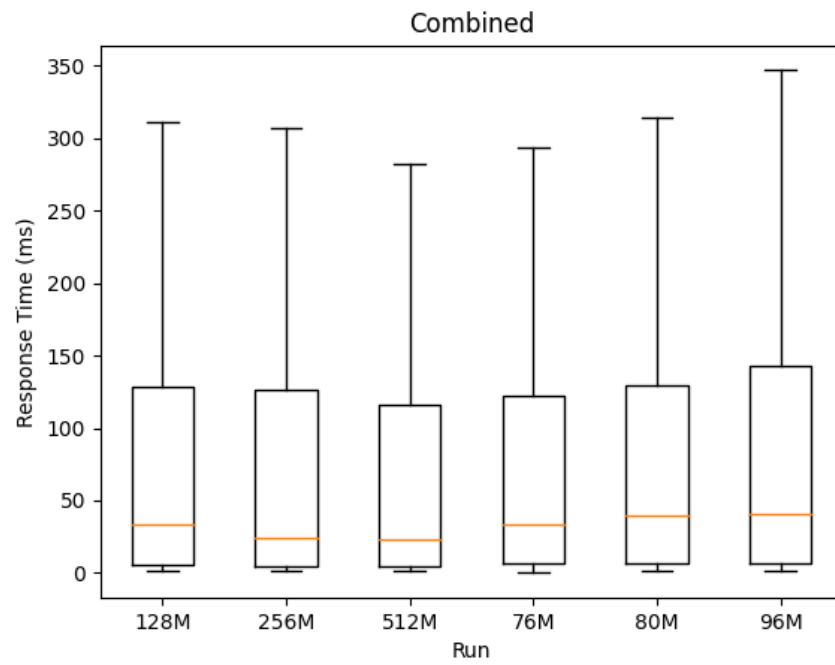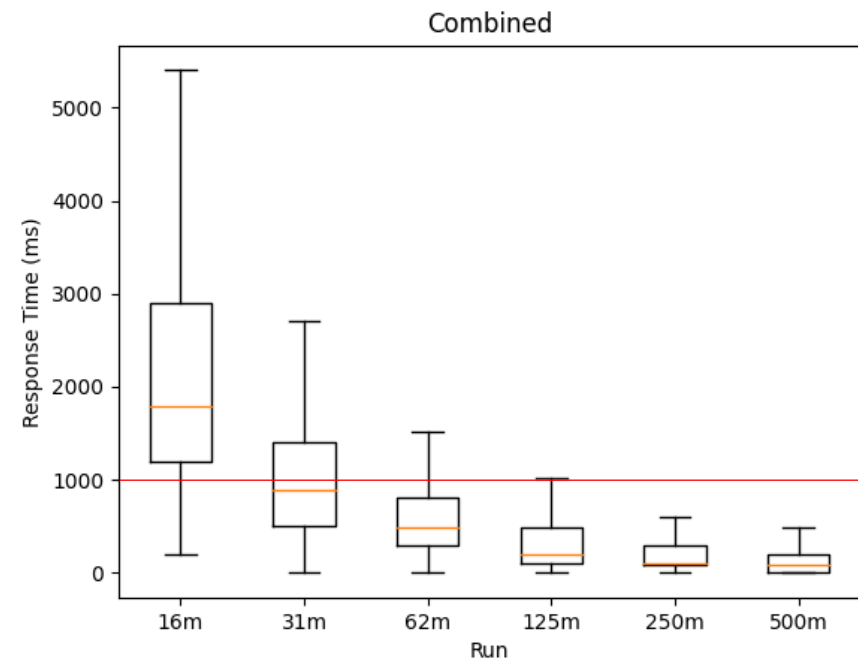Compiles Java bytecode to machine code
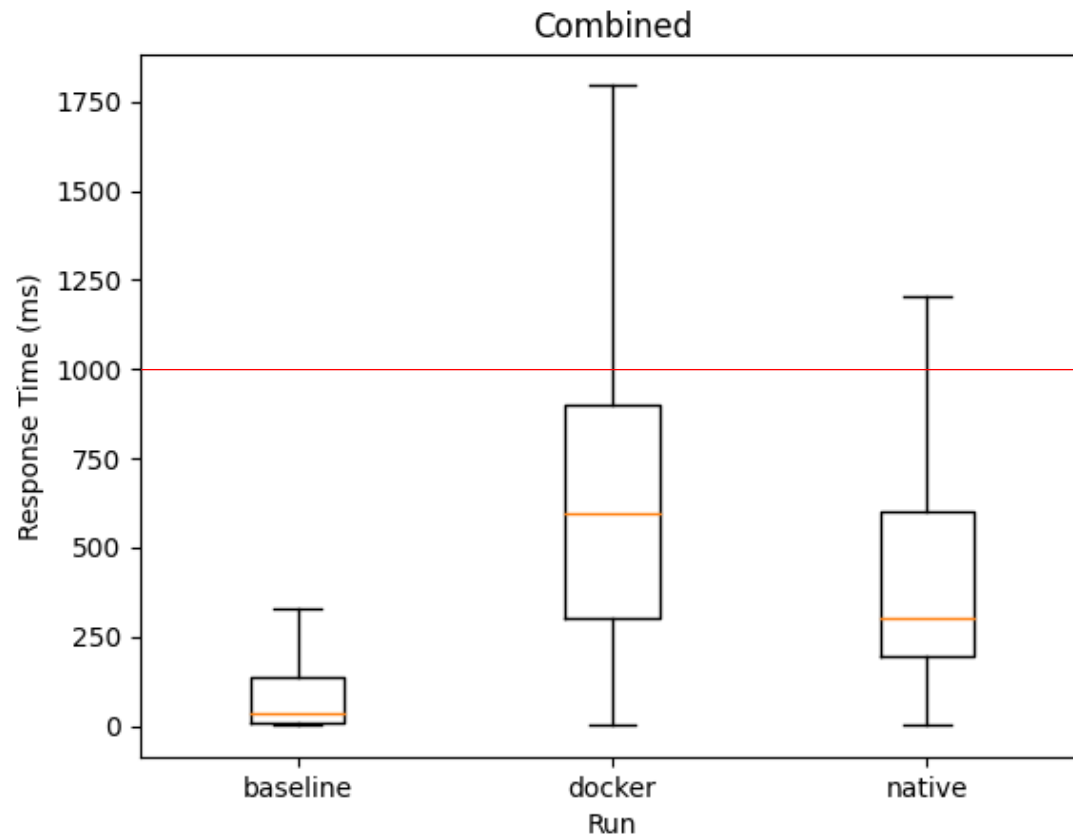
Spring Native

# DEMO

Spring Native

# Native Results

**Memory**



**CPU**

# Conclusion

Try it out

THE THREE MUSKETEERS

# THANK YOU

Questions



https://github.com/gregarendse/musketeers