LONDON
INTERNATIONAL
SOFTWARE DEVELOPMENT
CONFERENCE 2015

goto; conference

Migrating Applications To The Cloud In A Cost Effective Manner

Andy Bennett

goto; conference

Click ‘engage’ to rate session.

Rate **12** sessions to get the supercool GOTO reward

Join the conversation #gotoldn

Introduction

The Problem

Operations Want To Be Agile

Operations Want To Be Lean

Applying Machine Learning

Making Savings

SKIPJAQ

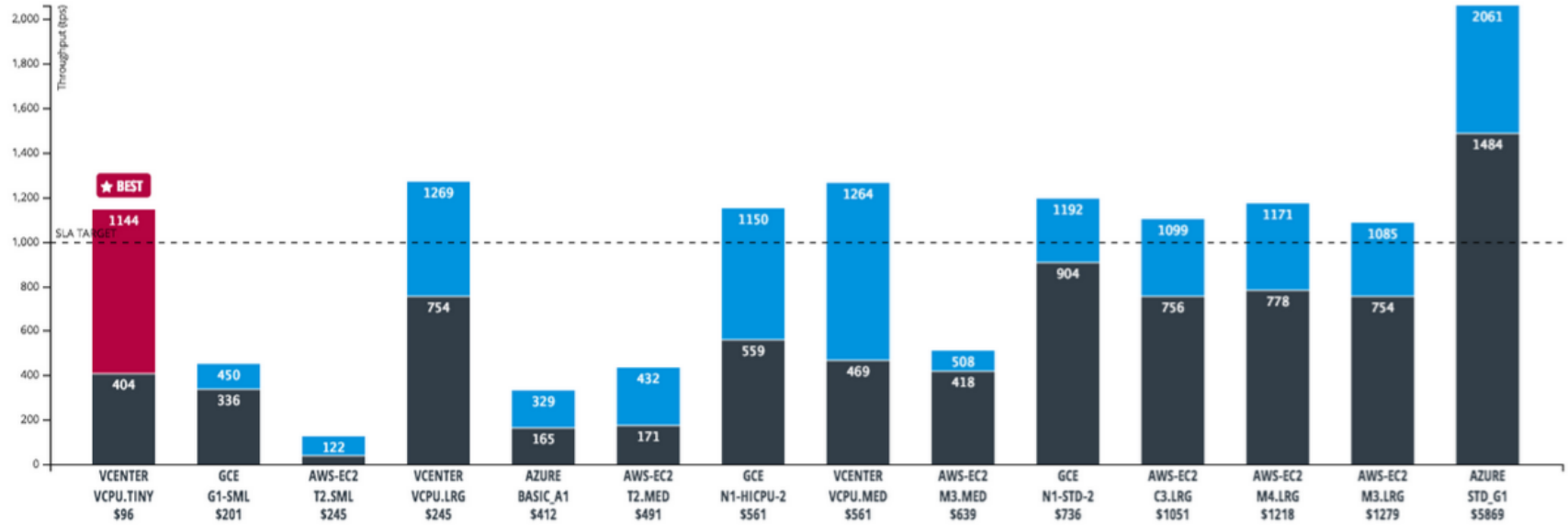
Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE **HIDE LEGEND**

LEGEND

BASELINE OPTIMISED TO BE DEPLOYED



Making Savings

SKIPJAQ

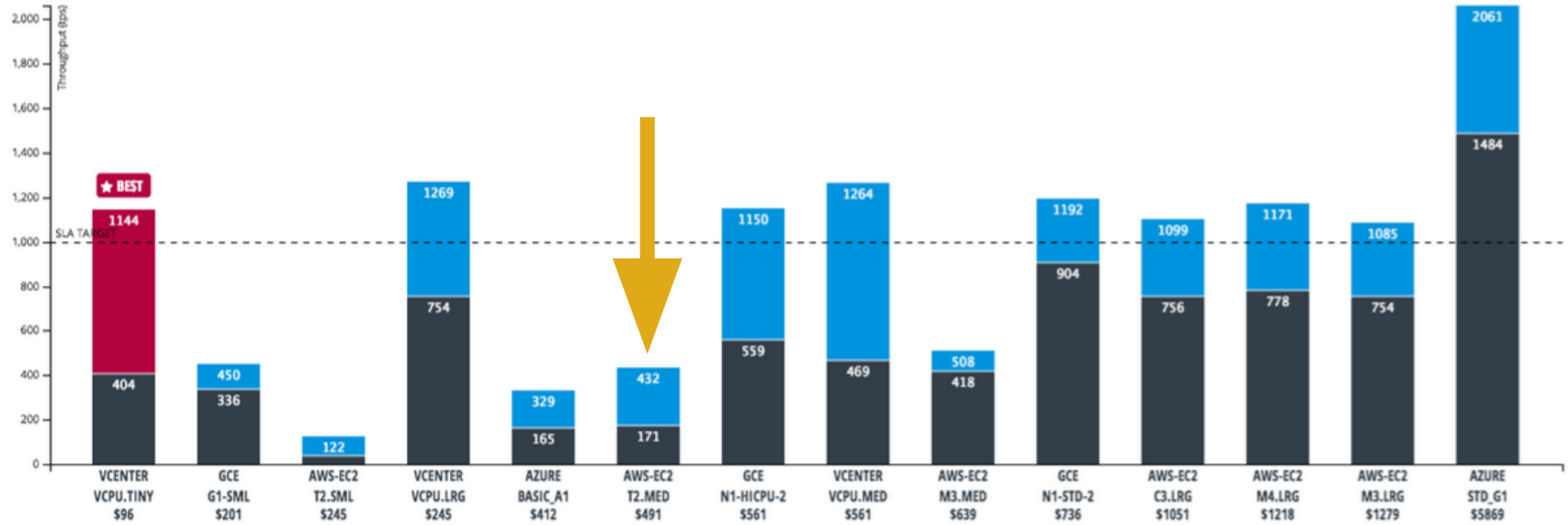
Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE **HIDE LEGEND**

LEGEND

BASELINE OPTIMISED TO BE DEPLOYED



Making Savings

SKIPJAQ

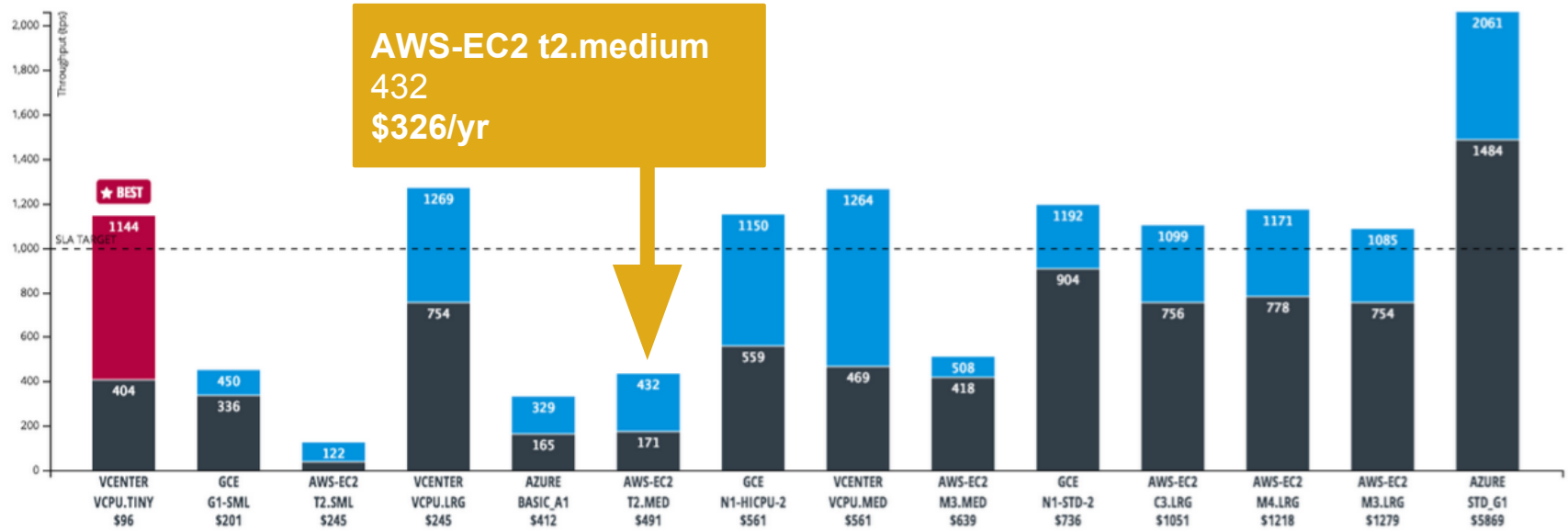
Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE **HIDE LEGEND**

LEGEND

BASELINE OPTIMISED TO BE DEPLOYED



Making Savings

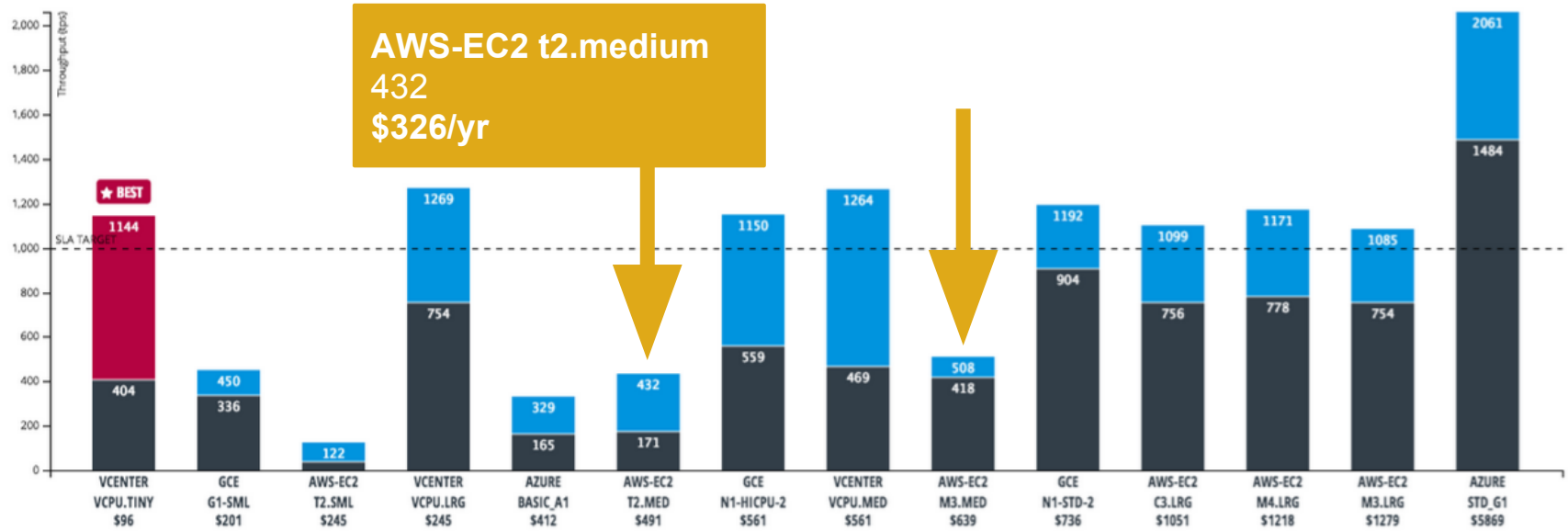
SKIPJAC

Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE HIDE LEGEND

LEGEND
BASELINE OPTIMISED TO BE DEPLOYED



Making Savings

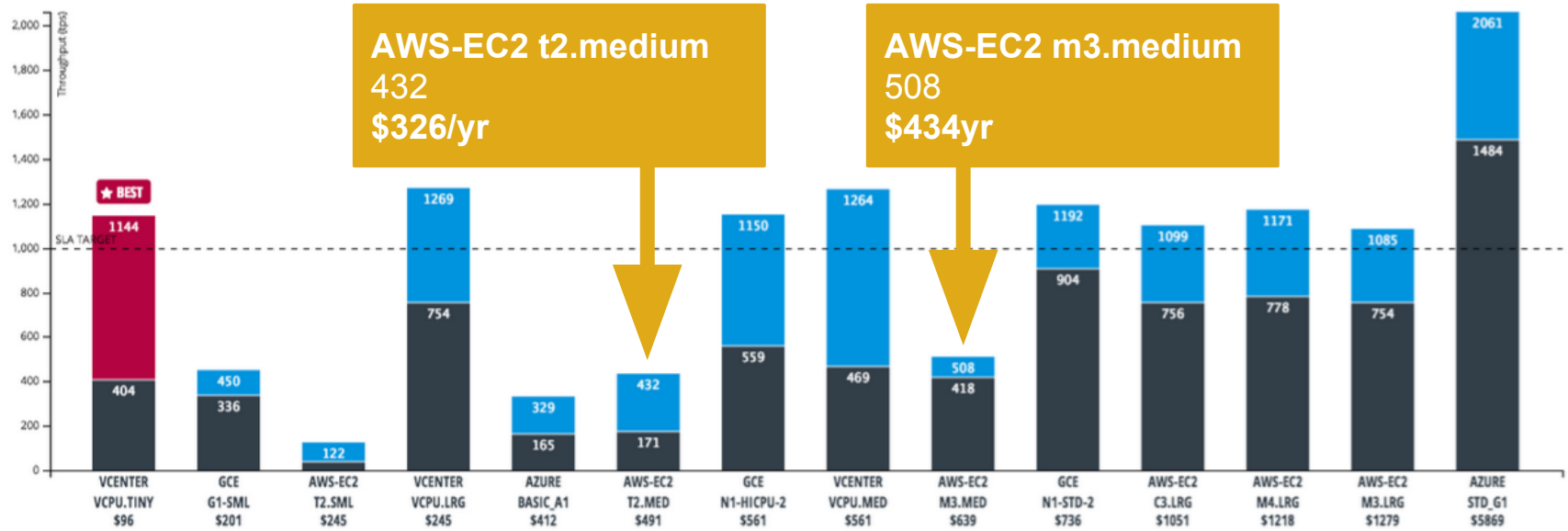
SKIPJAC

Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE HIDE LEGEND

LEGEND
BASELINE OPTIMISED TO BE DEPLOYED



Making Savings

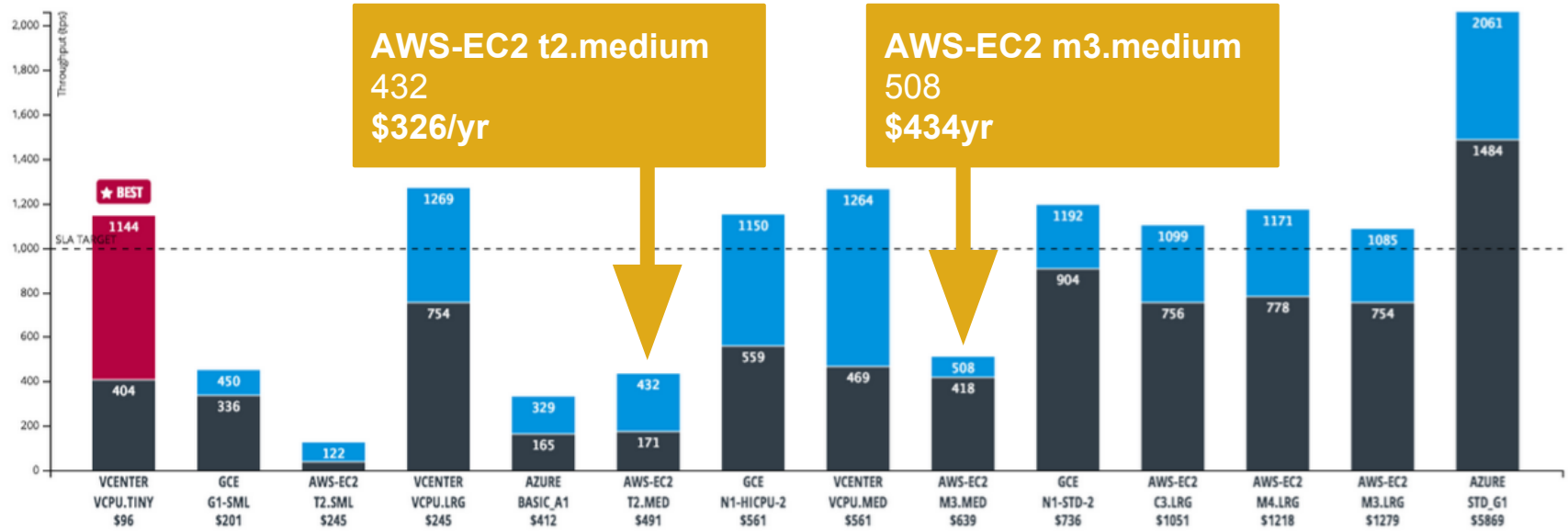
SKIPJAQ

Optimisation Results

Compare tested performance for available instances. Click on the instance to show test details.

SHOW: ALL VCENTER GOOGLE_COMPUTE AMAZON_EC2 AZURE HIDE LEGEND

LEGEND
BASELINE OPTIMISED TO BE DEPLOYED



15% Reduction in Performance for a 25% Reduction in Cost

Calculating Performance

SKIPJA

Test Details

SELECT INSTANCE

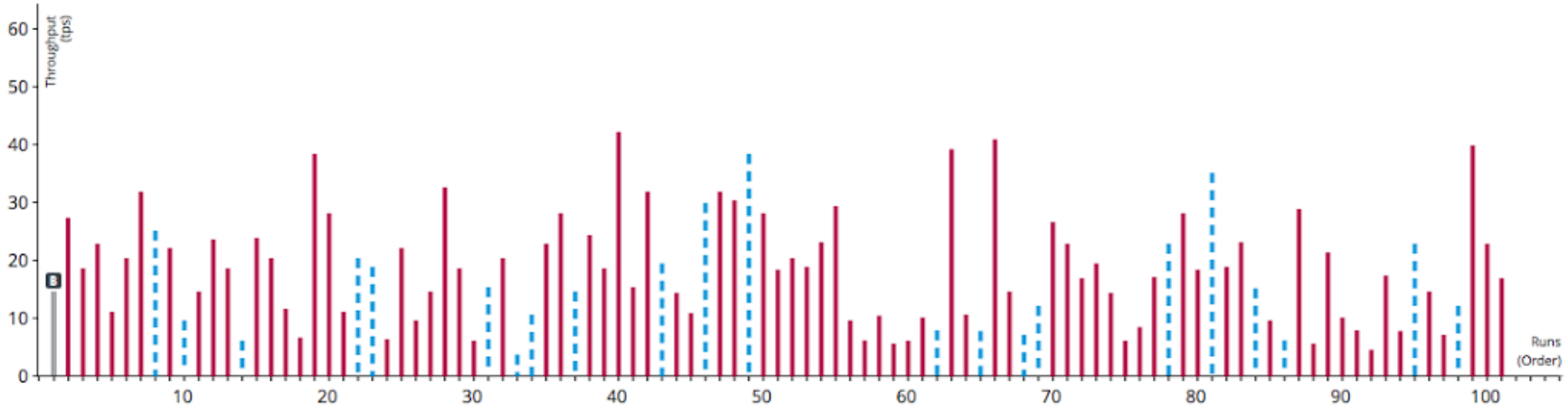
Amazon t2.small

GRID SEARCH TEST RUNS

HIDE LEGEND

LEGEND

BASELINE PREDICTED FULL TEST RUN



The Parameter Space Is Vast

SKIPJAQ™

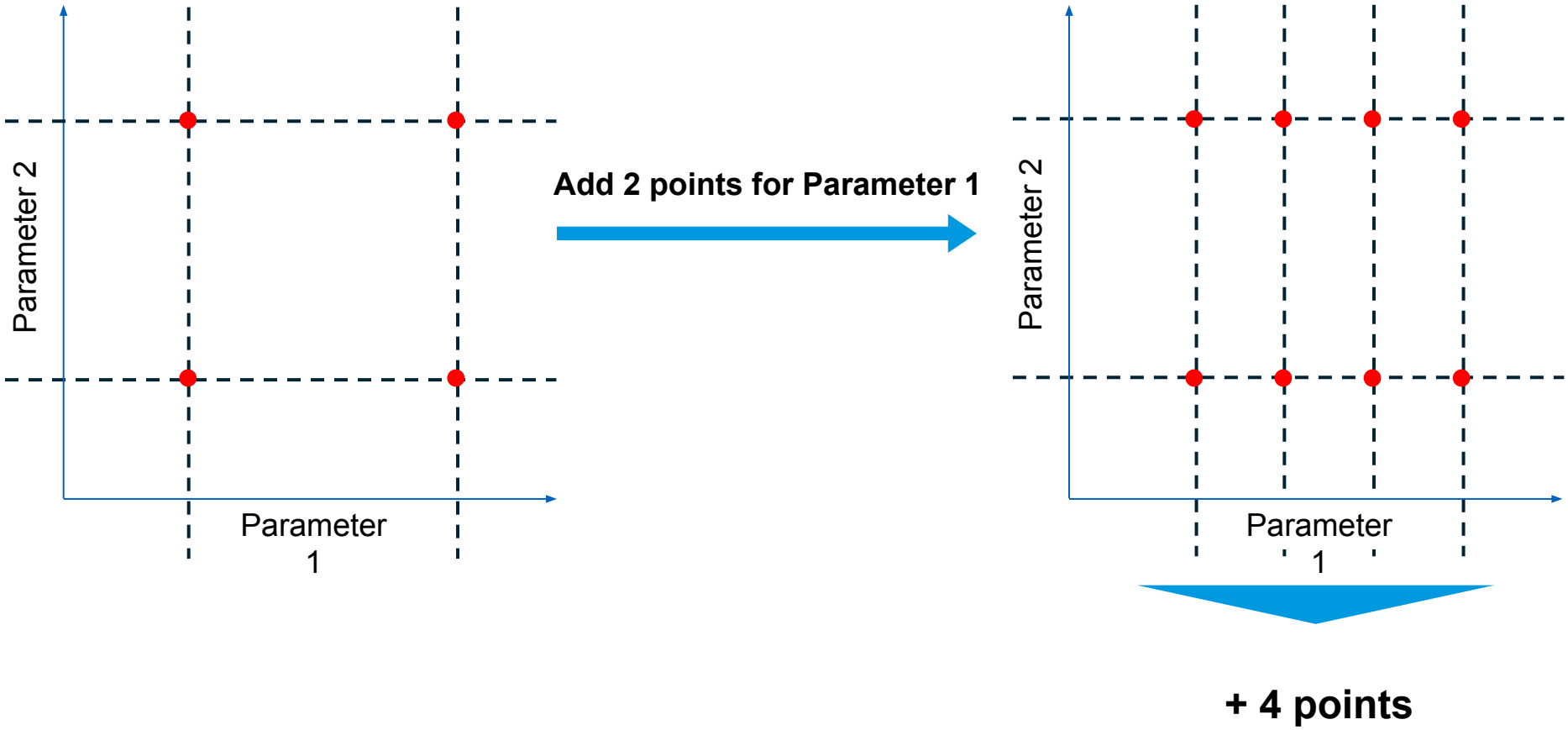
A conservative example

- 18 JVM Parameters
  - Heap size; Garbage collector options; etc
- 5 Servlet Container Parameters
  - Acceptor Threads; etc
- 5 Operating System Parameters
  - Queue sizes; Swap space; Scheduler settings

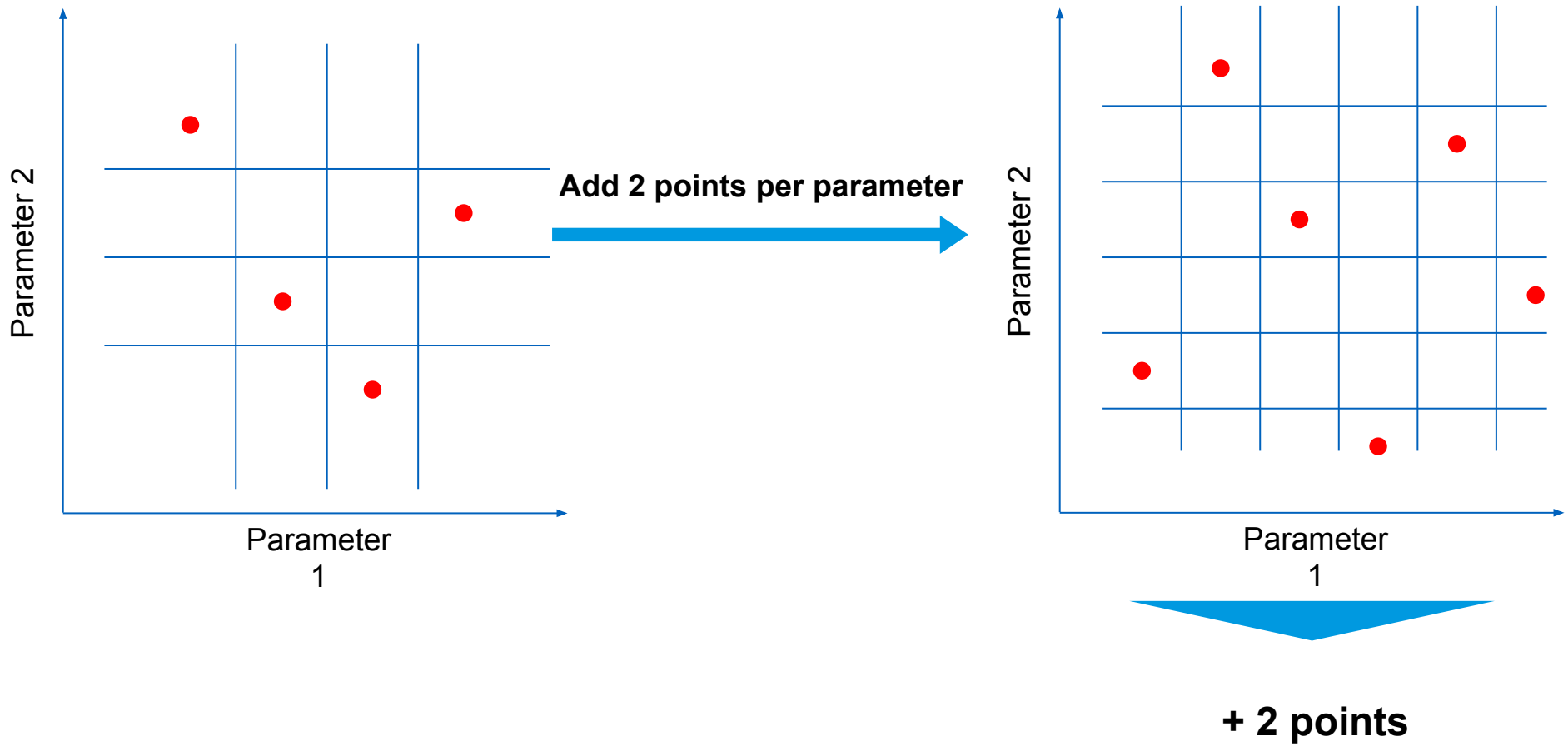
- Assume each option has 10 settings
  - Most actually have a lot more but a few have less.

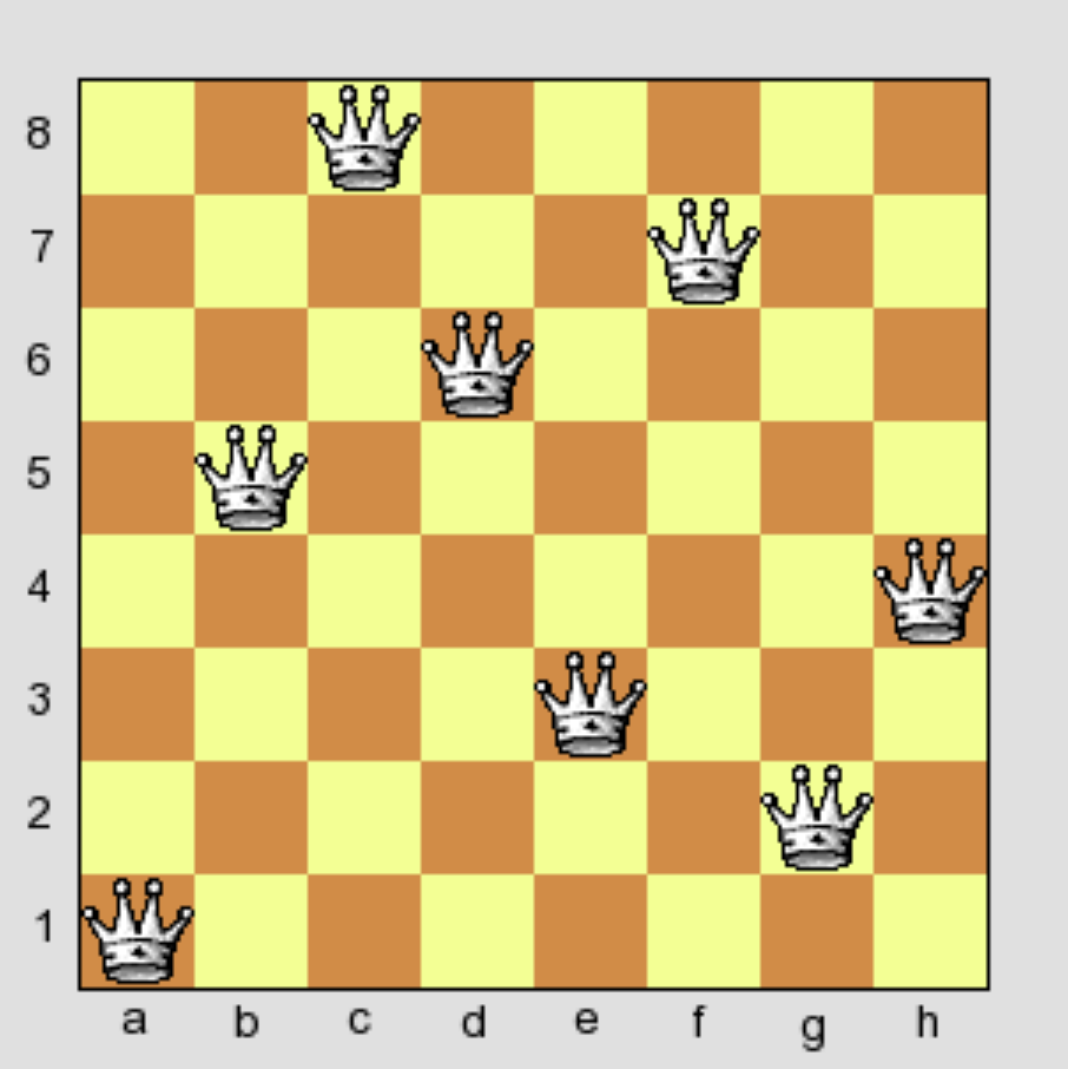
10^{28} possible configurations spread over 28 dimensions

The Parameter Space Is Vast

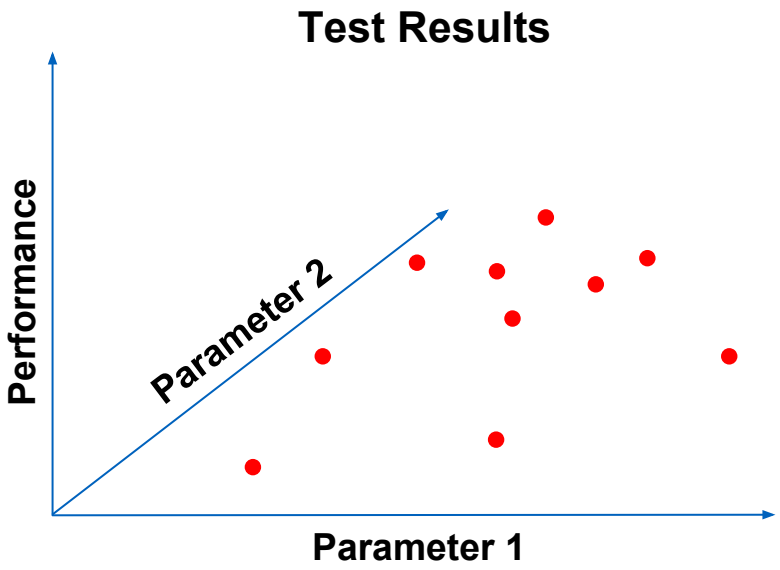


The Problem Space Is Vast

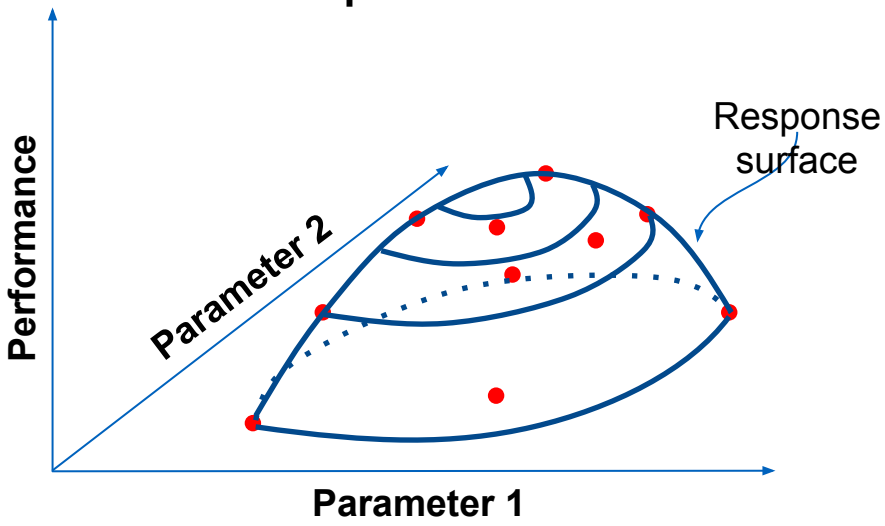




http://paulbutler.org/archives/n-queens-in-a-tweet/8queens.png


Test Results
Performance
Parameter 2
Parameter 1

Fit response surface

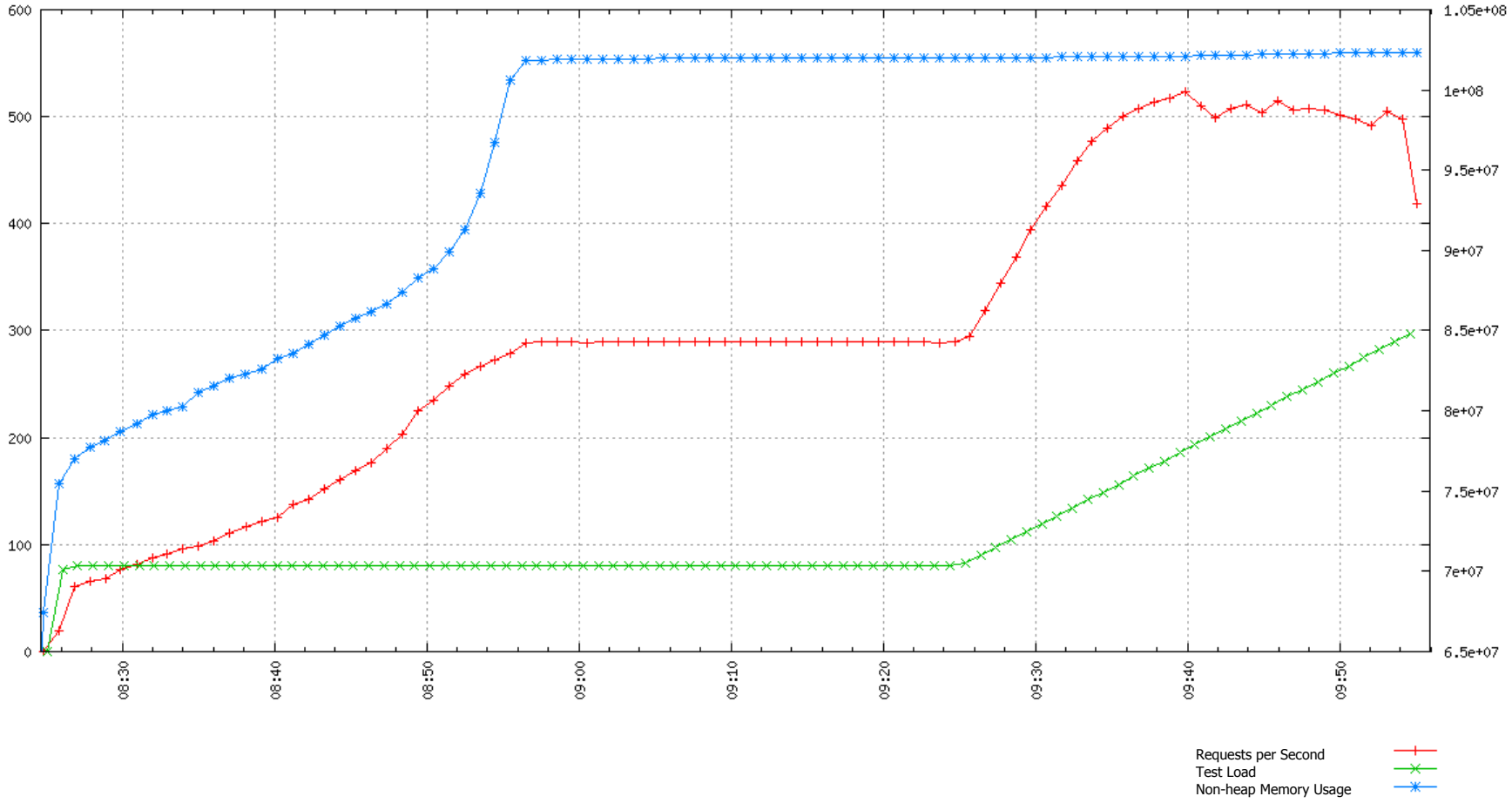


"No Silver Bullet"

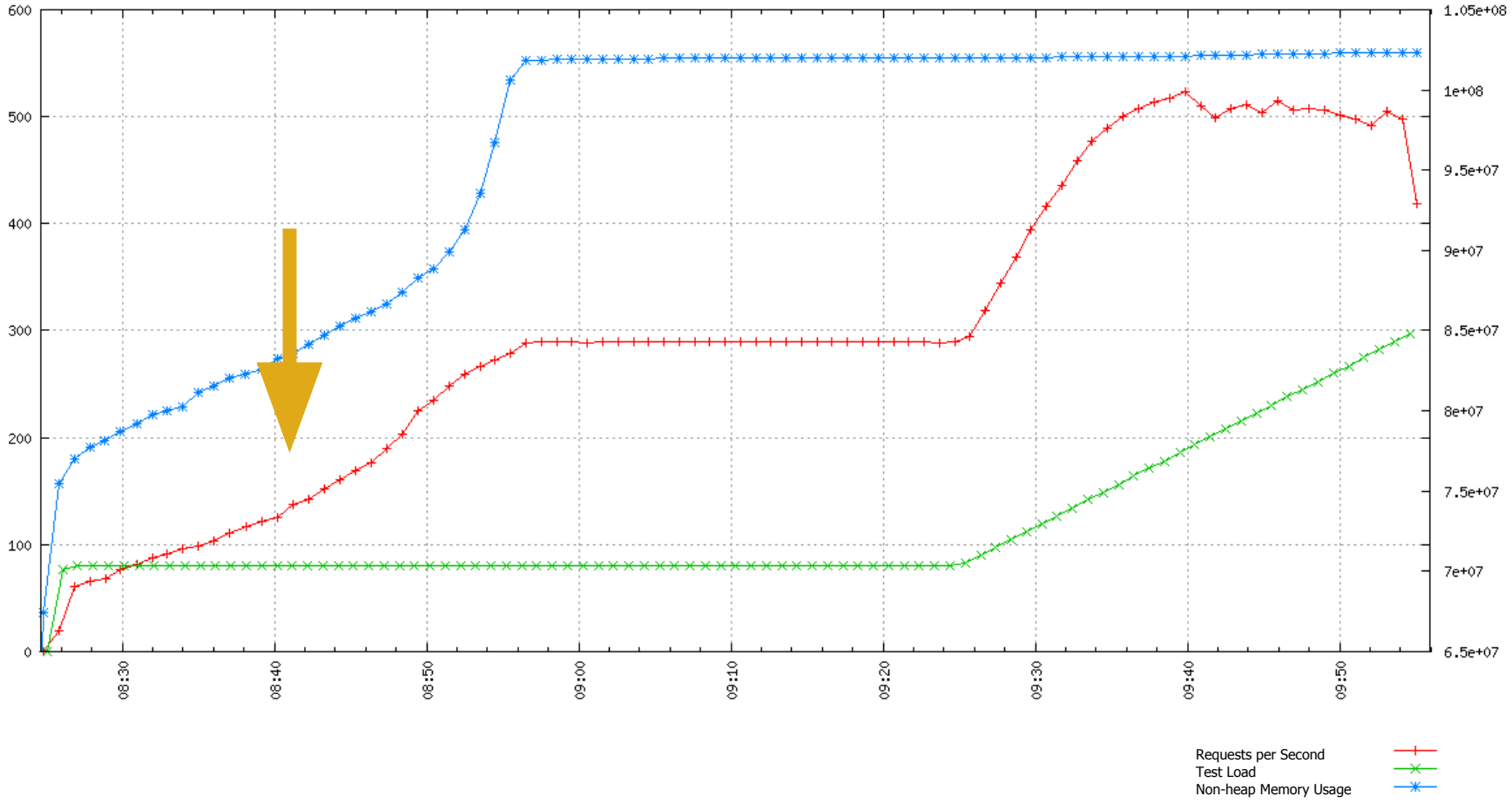
Counterintuitive Results

Infrastructure For Testing

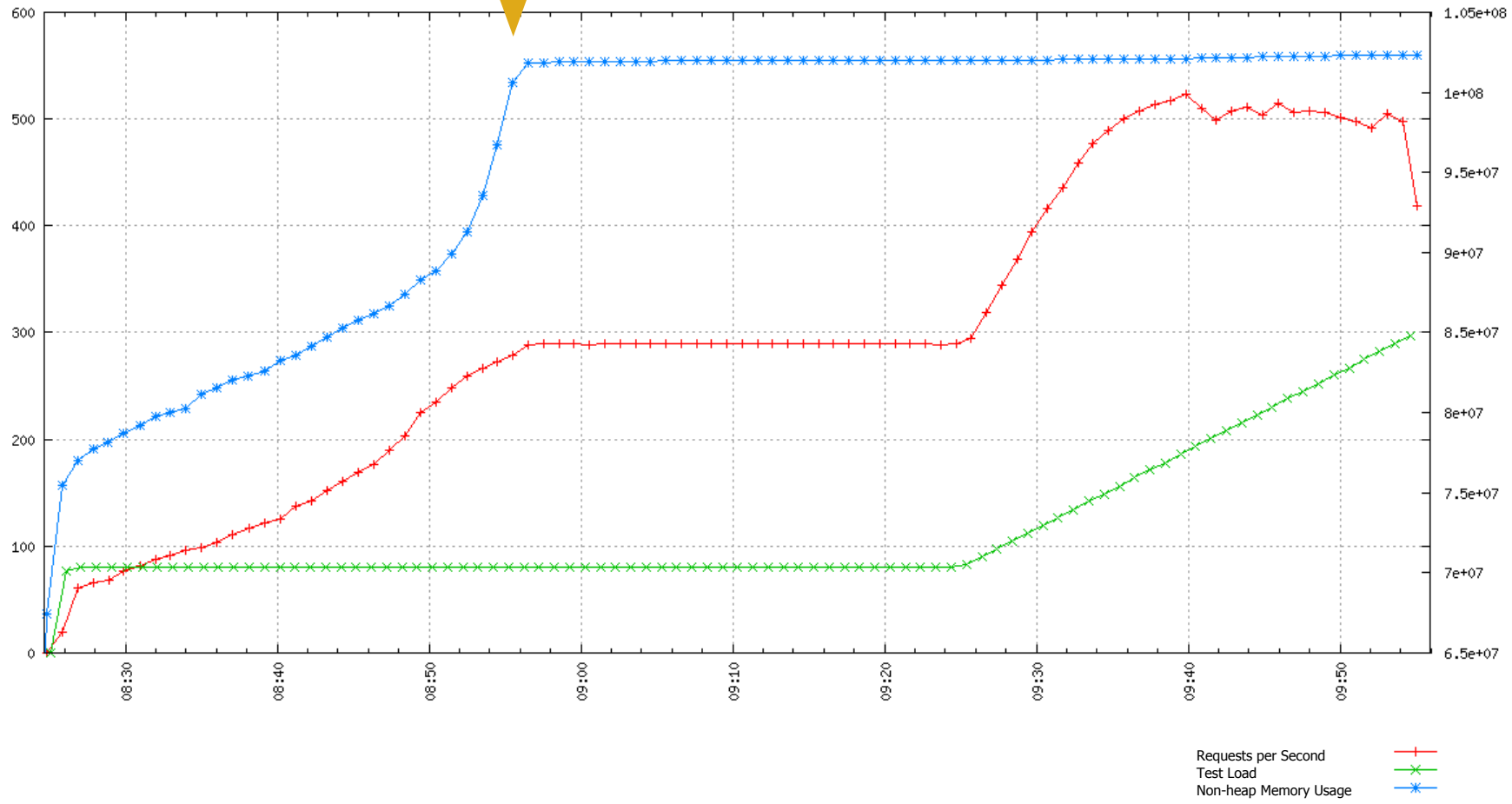
Testing Lifecycle



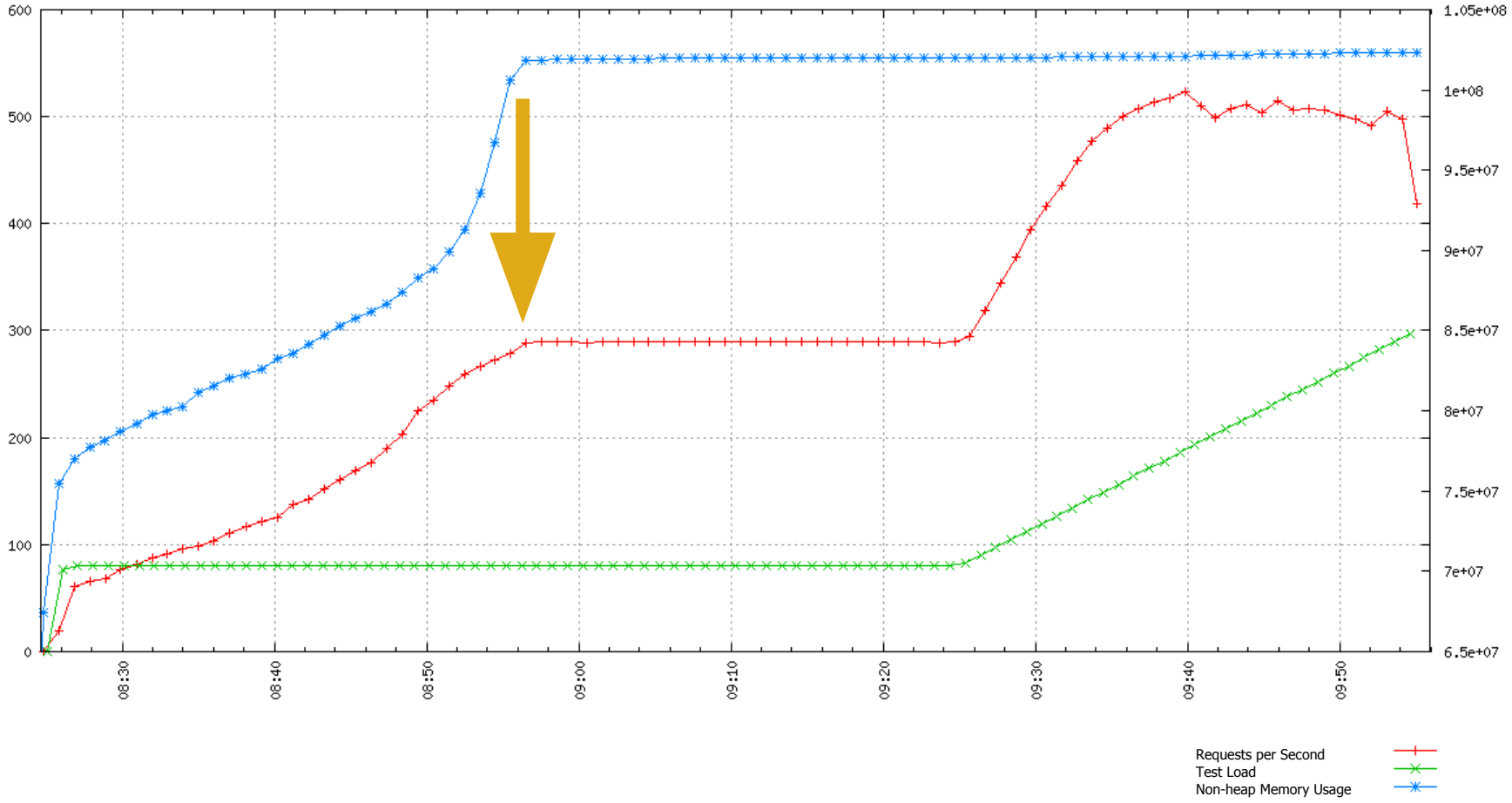
Testing Lifecycle



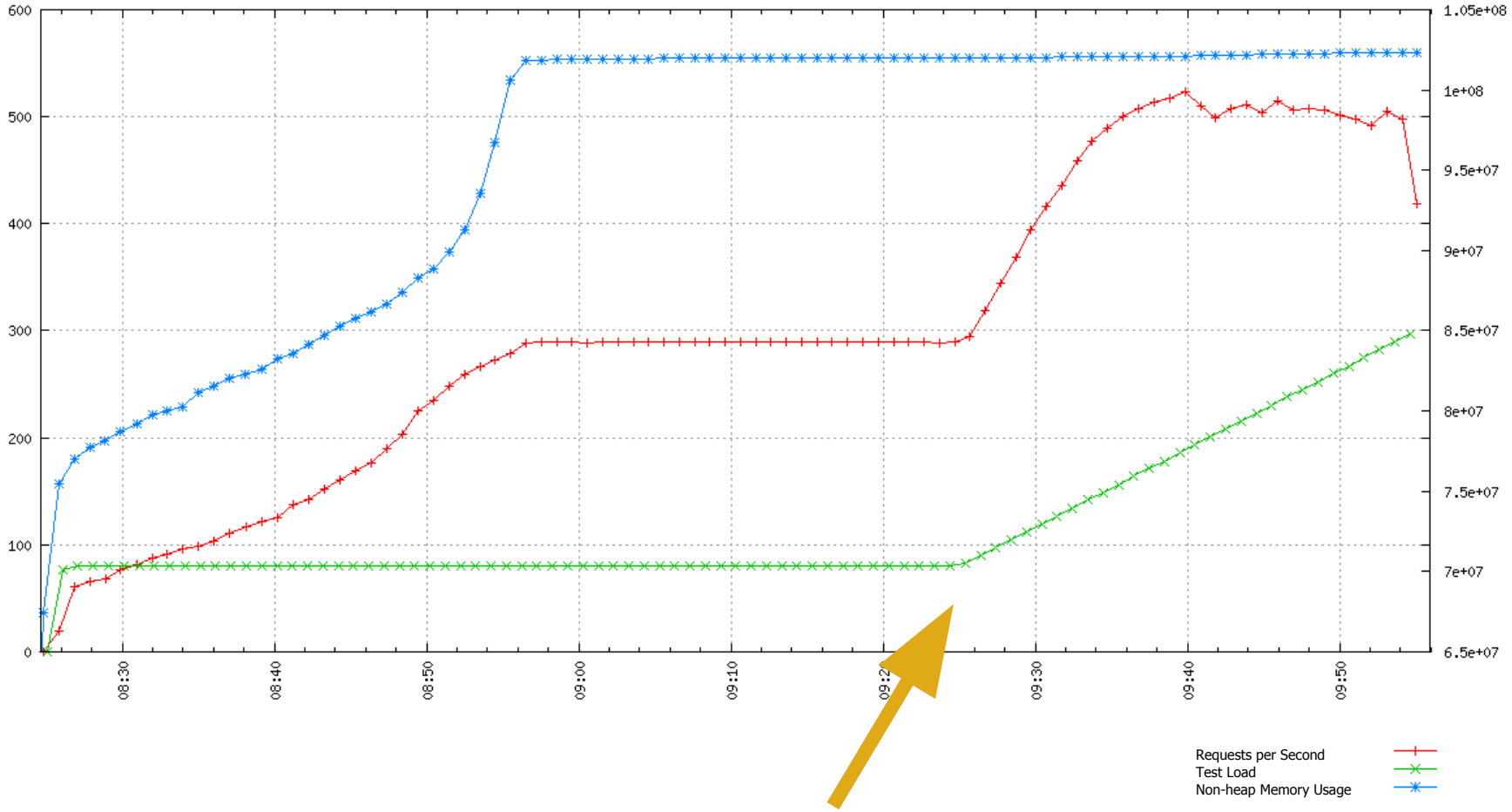
Testing Lifecycle



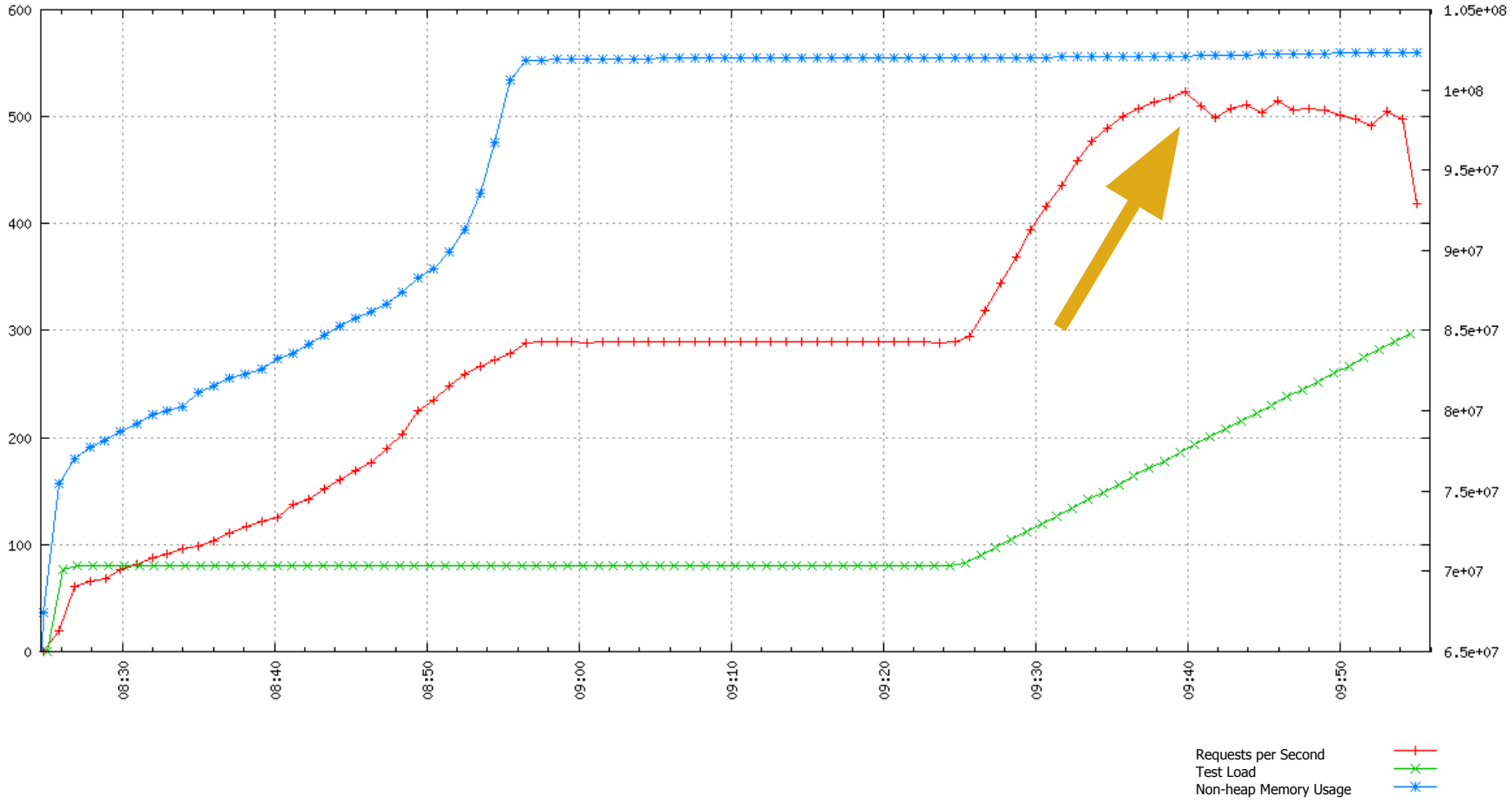
Testing Lifecycle



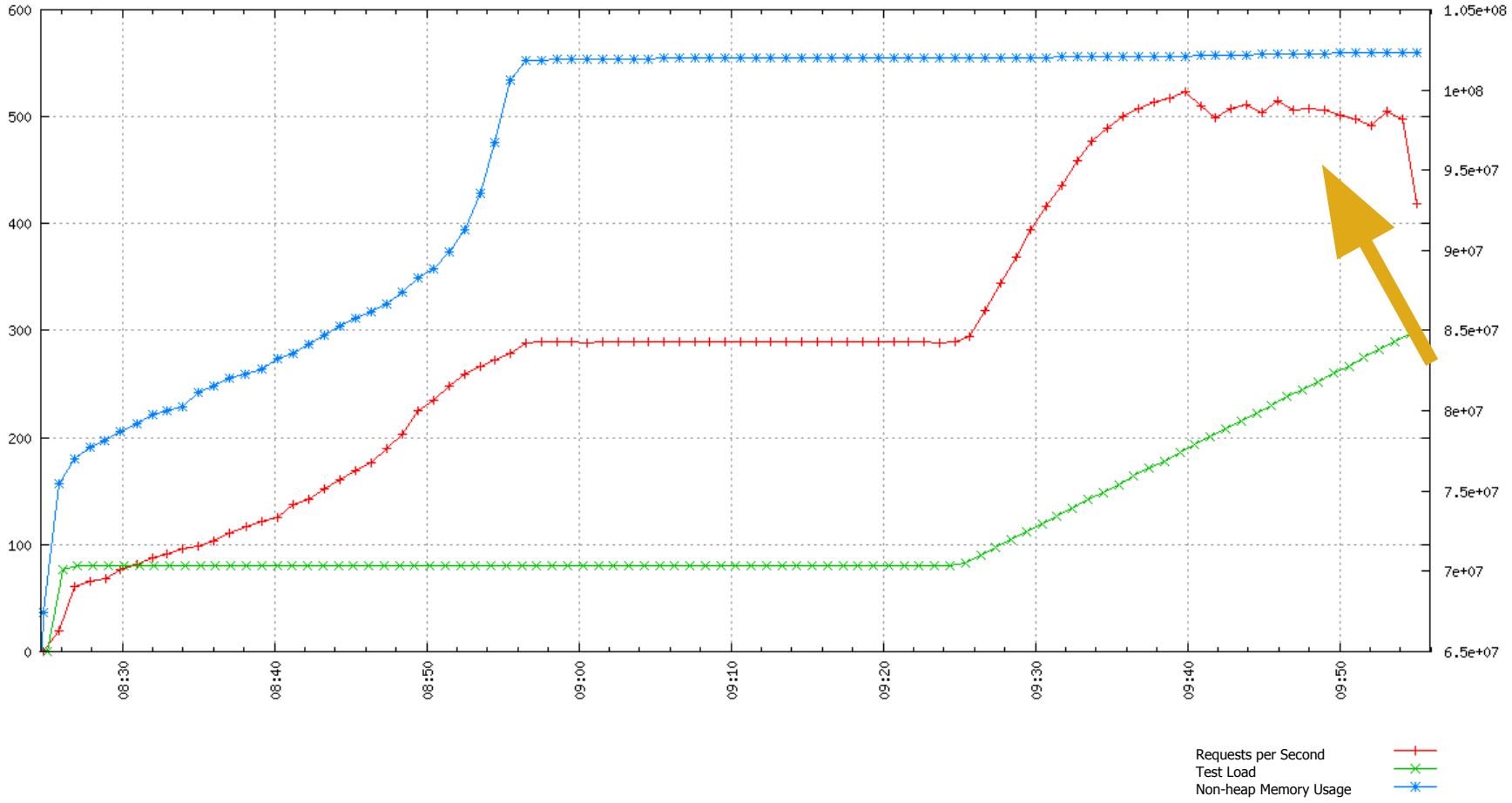
Testing Lifecycle



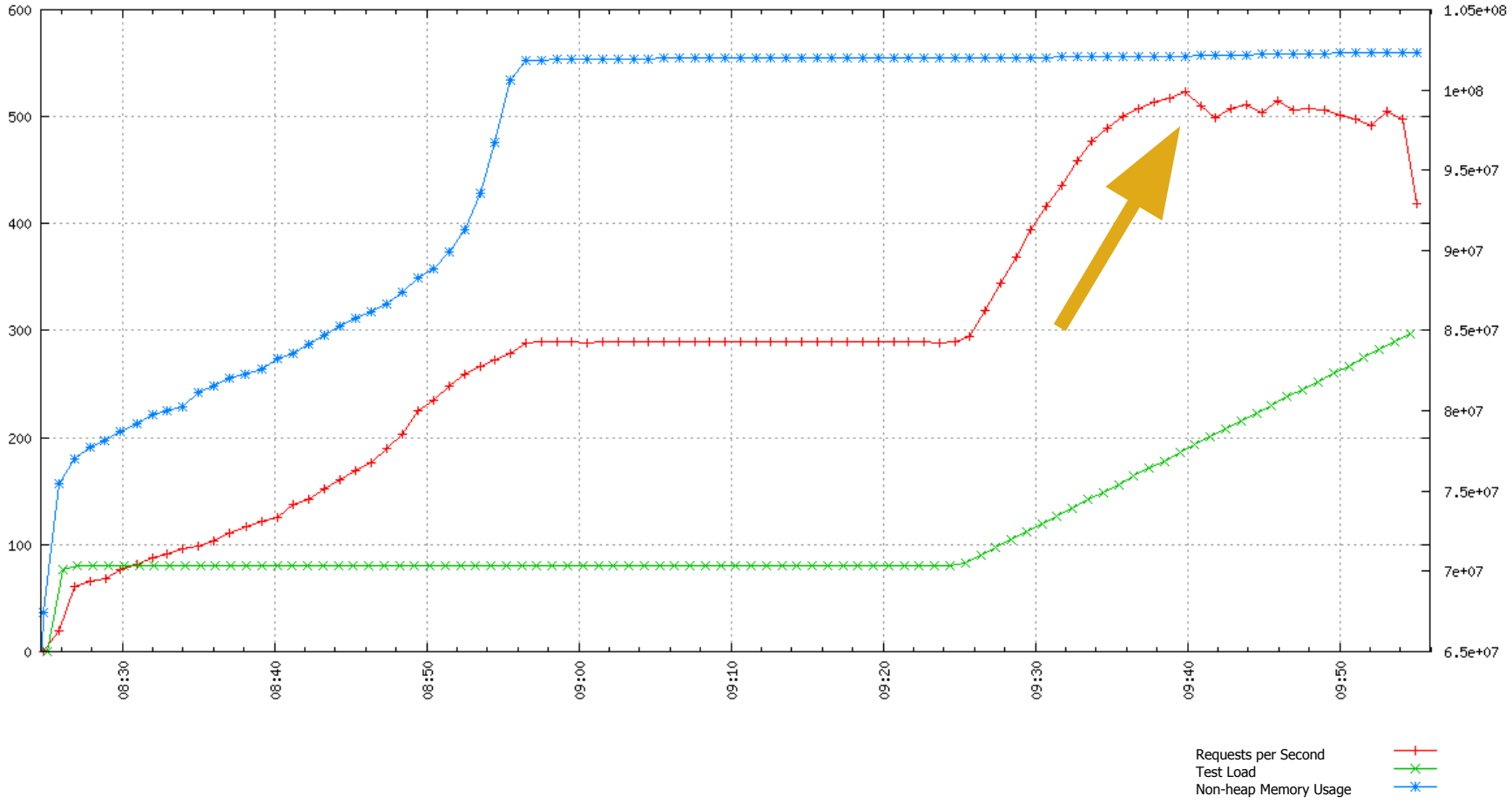
Testing Lifecycle

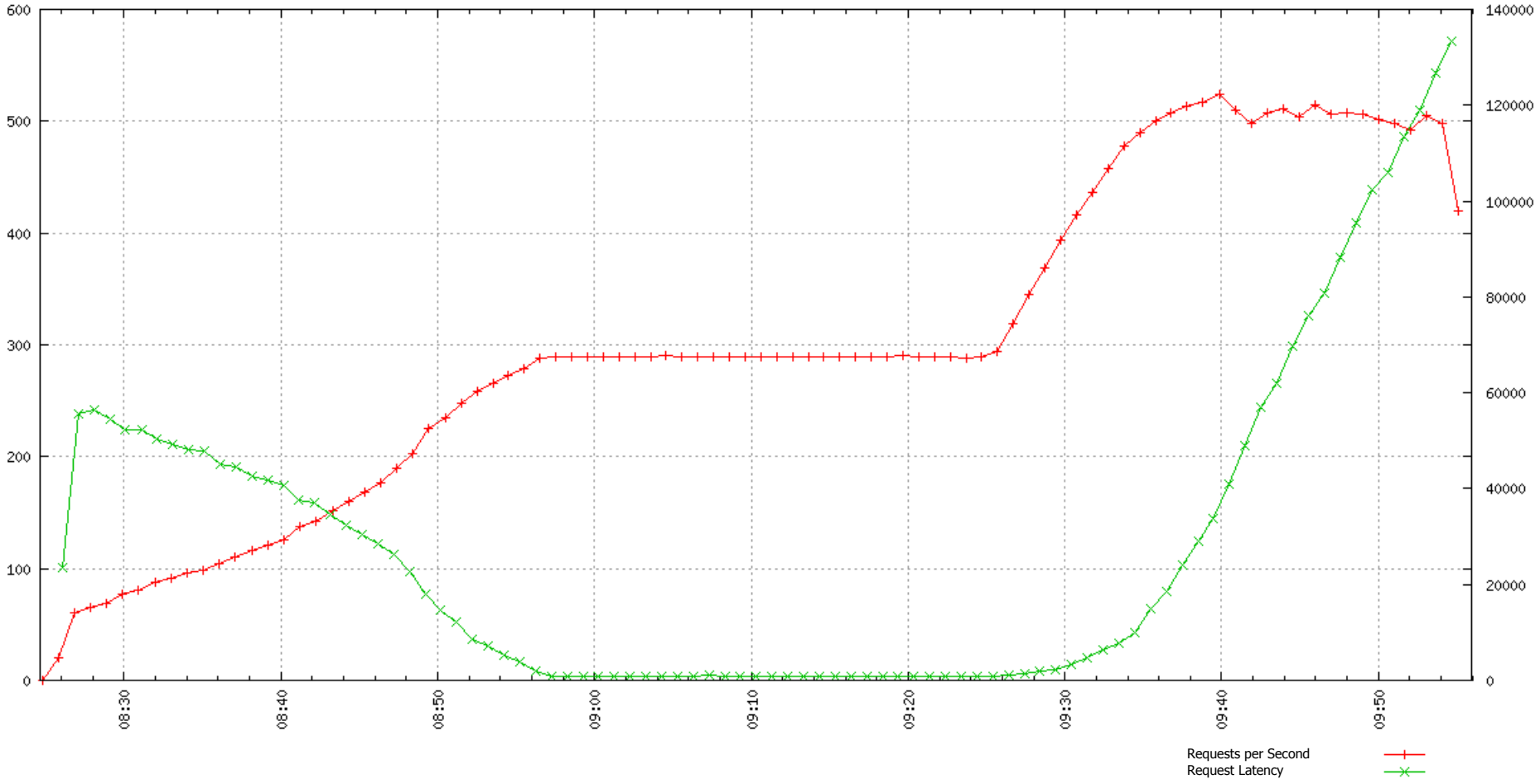


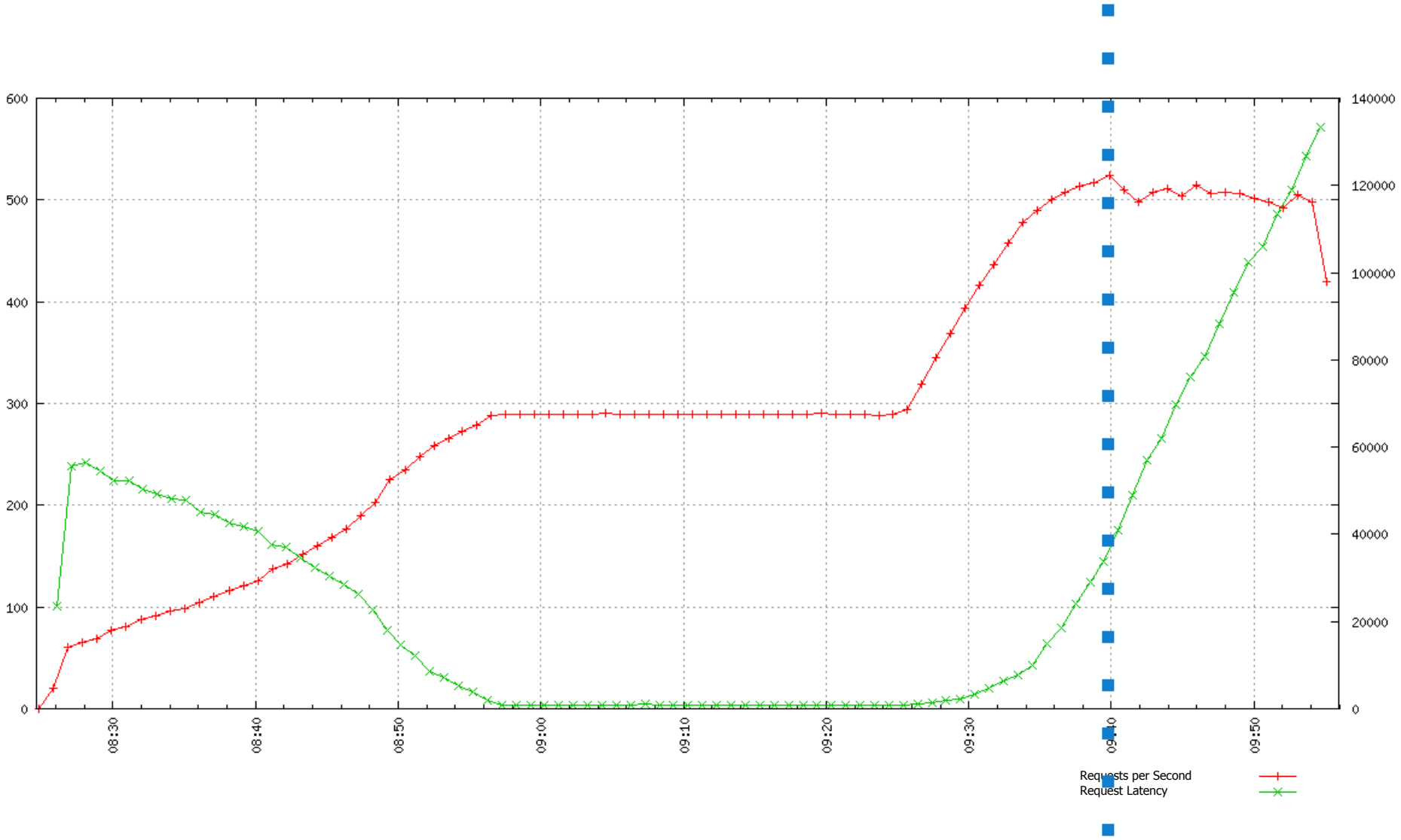
Testing Lifecycle

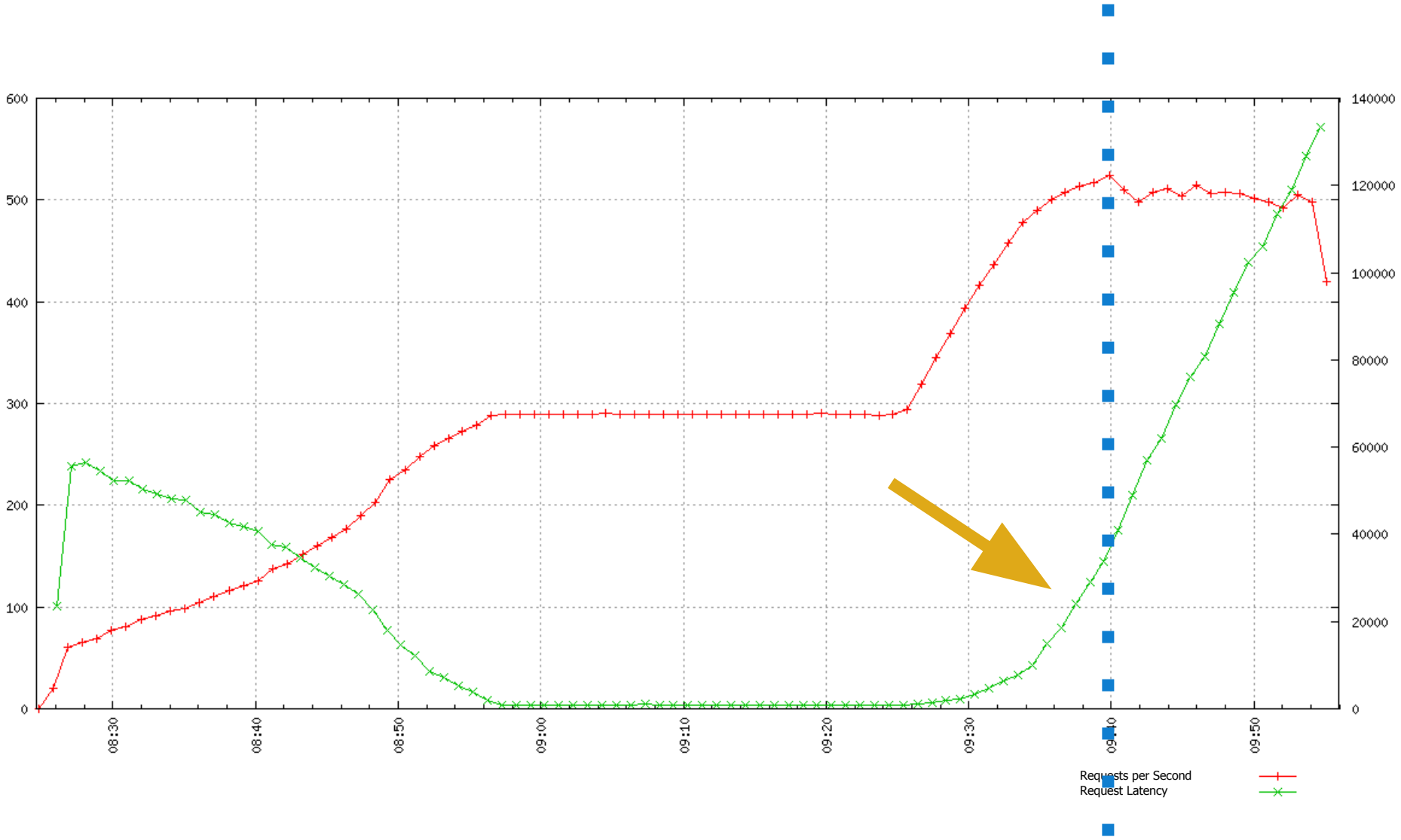


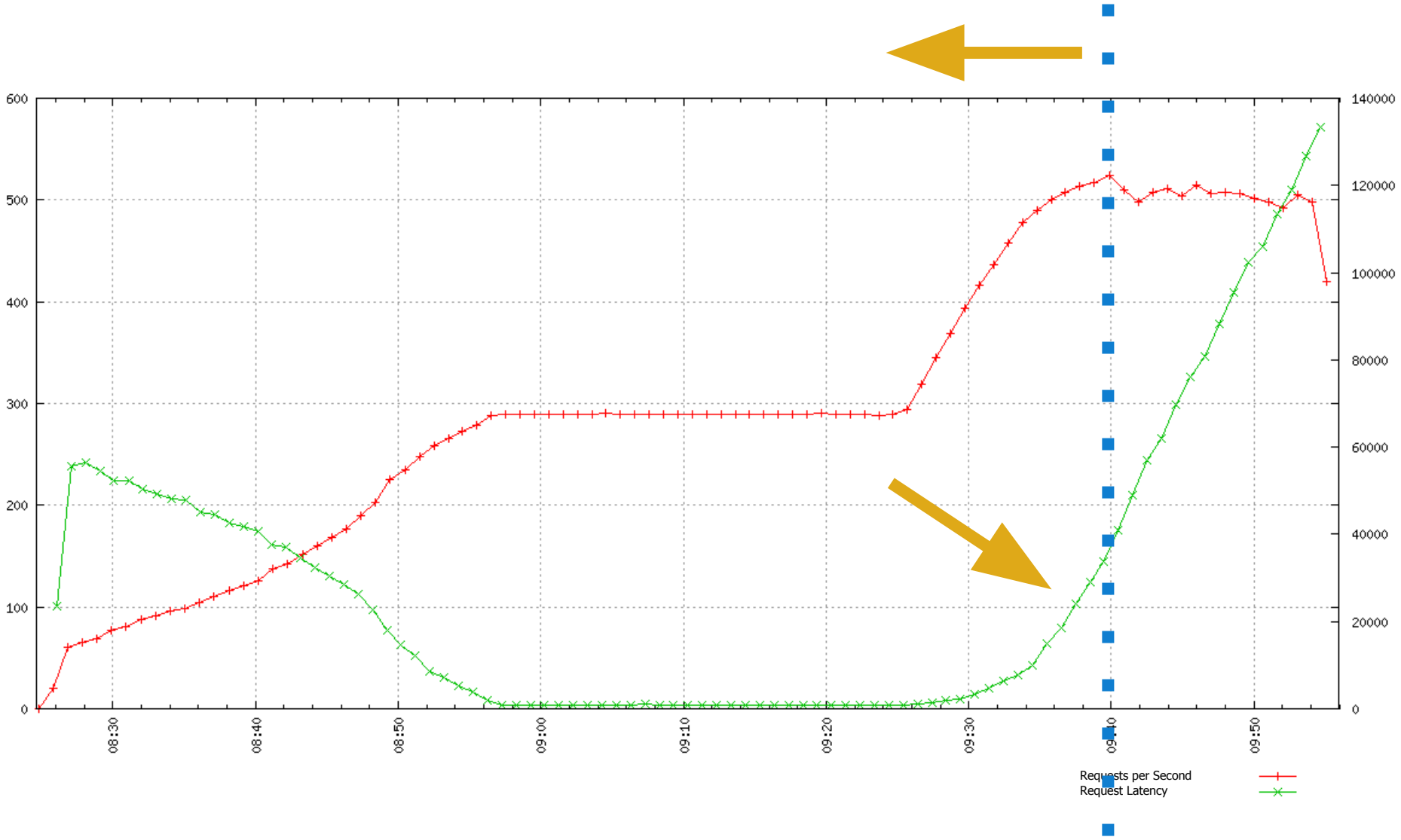
Testing Lifecycle

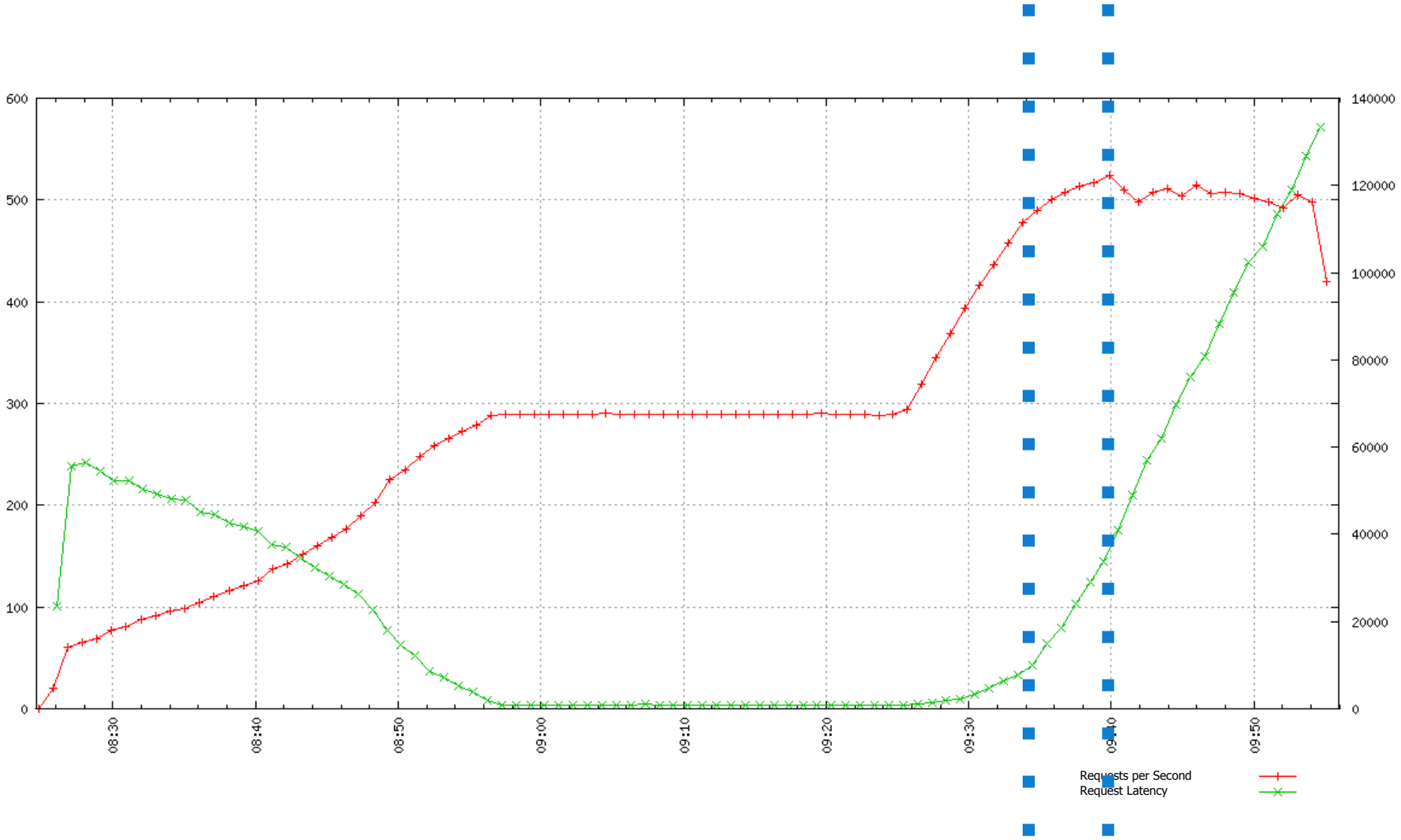


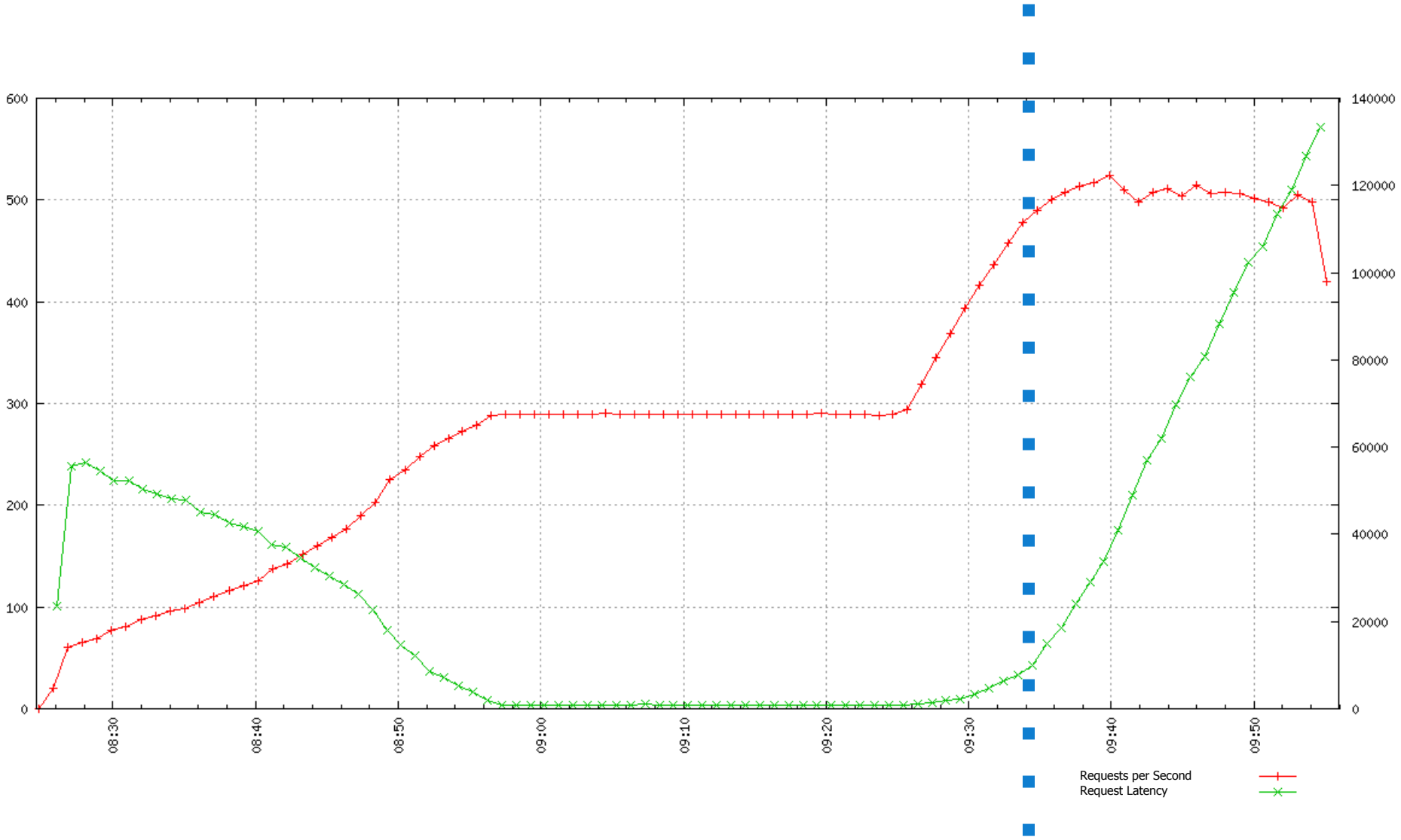

600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency

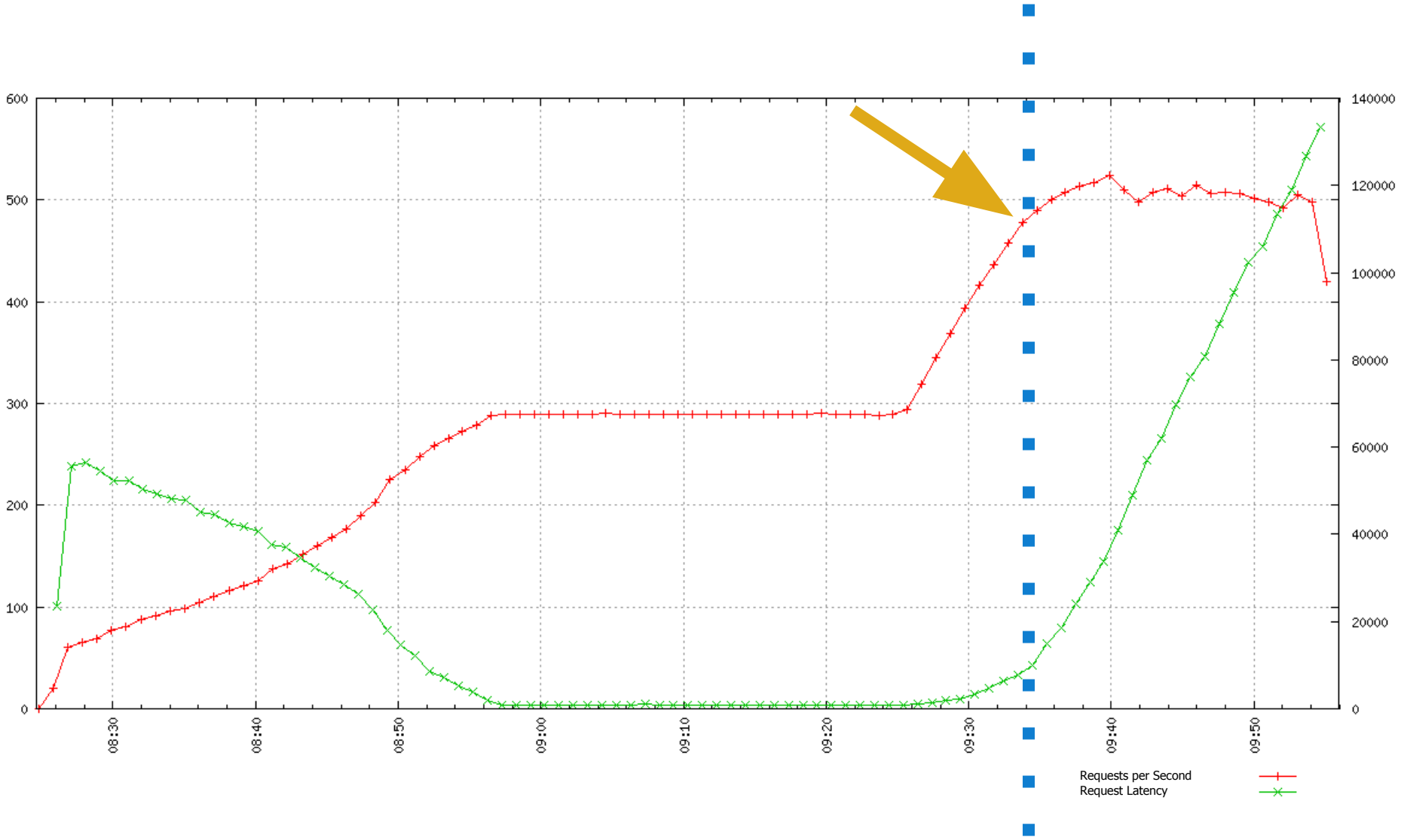

600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency

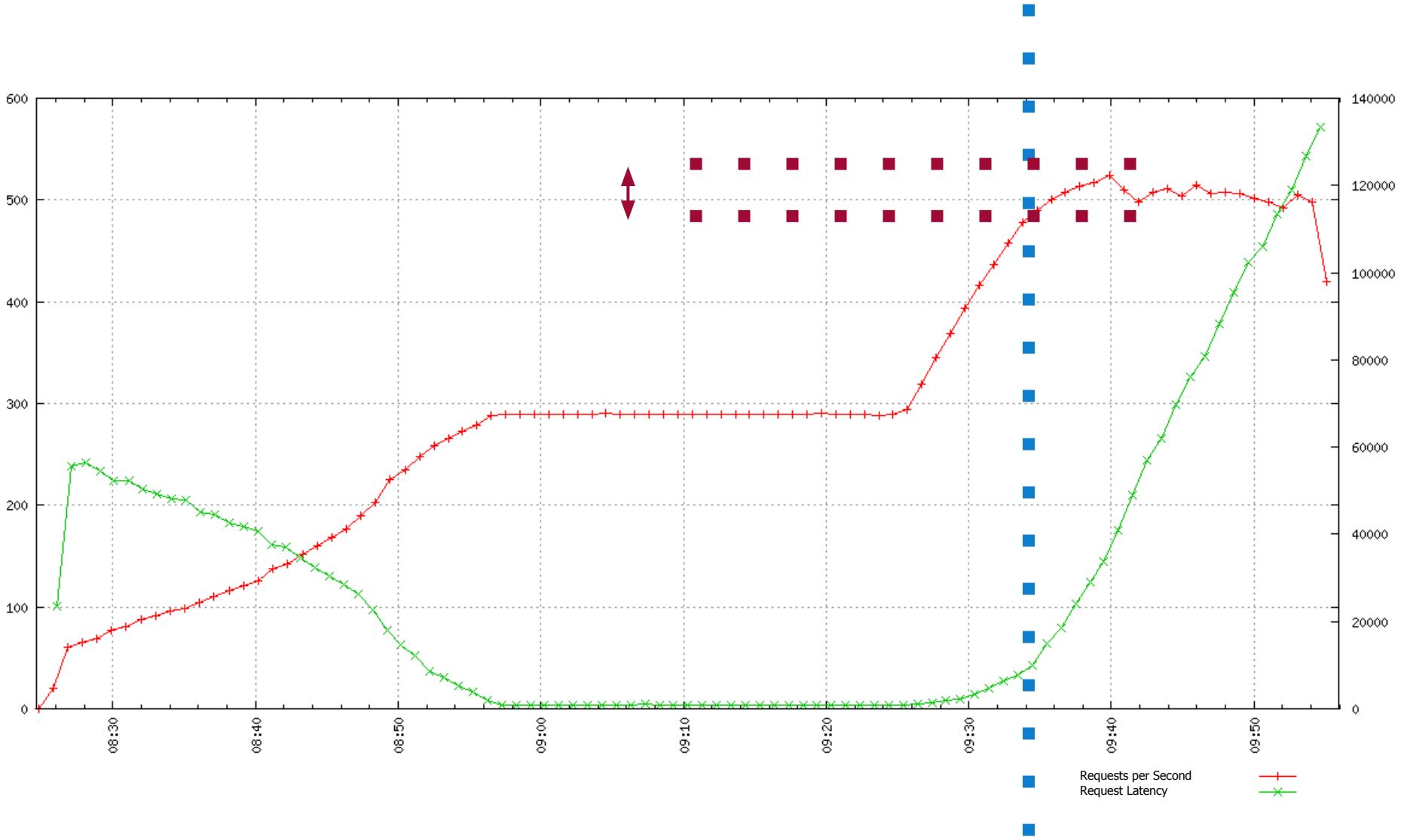

600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency


600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency


600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency


600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency


600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency


600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
08:30
08:40
08:50
09:00
09:10
09:20
09:30
09:40
09:50
Requests per Second
Request Latency

m3.large

m3.large

Startup	

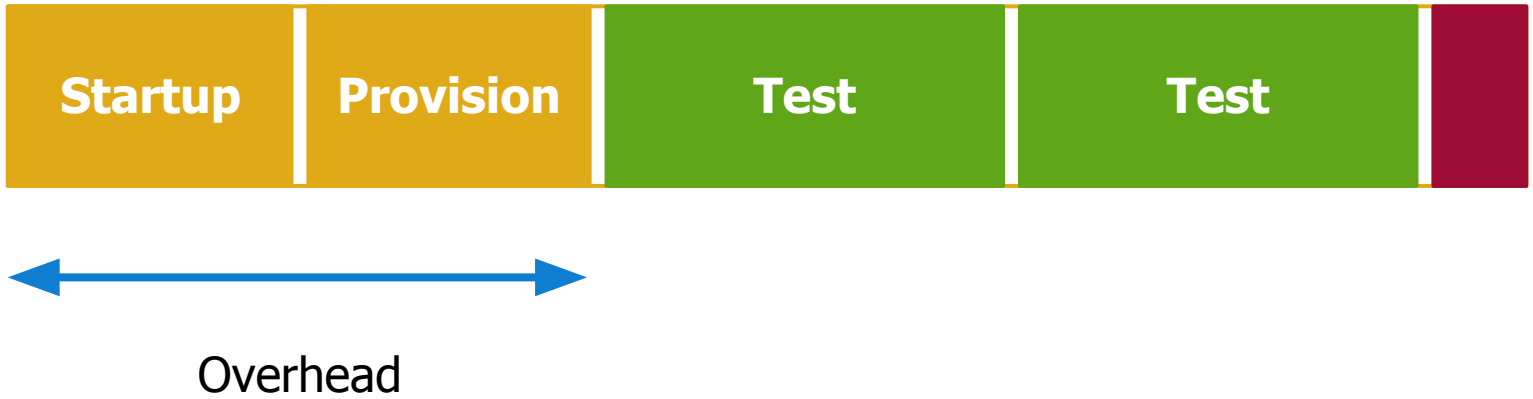
m3.large

m3.large

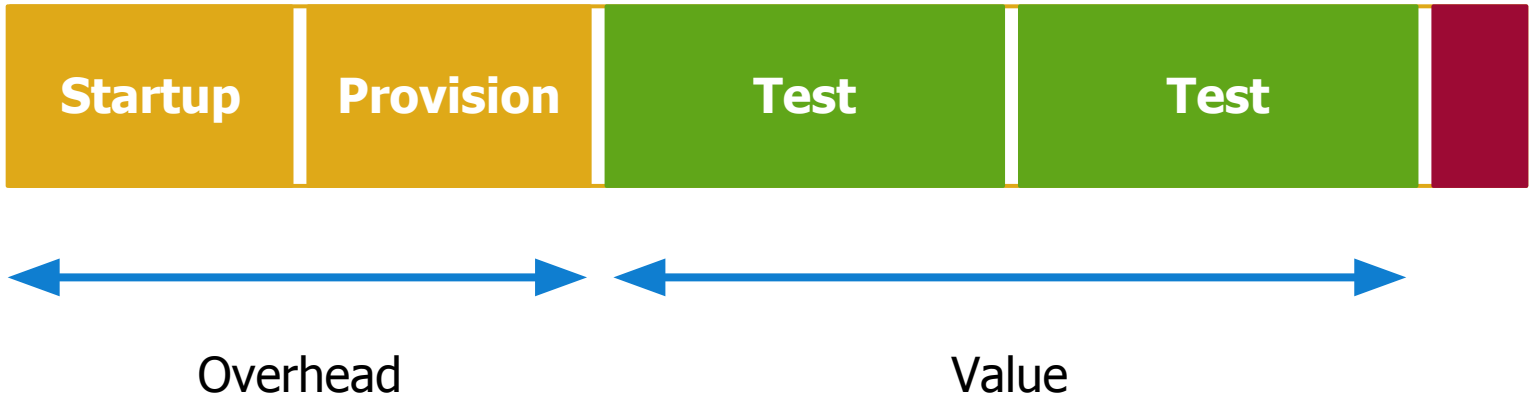
m3.large

m3.large

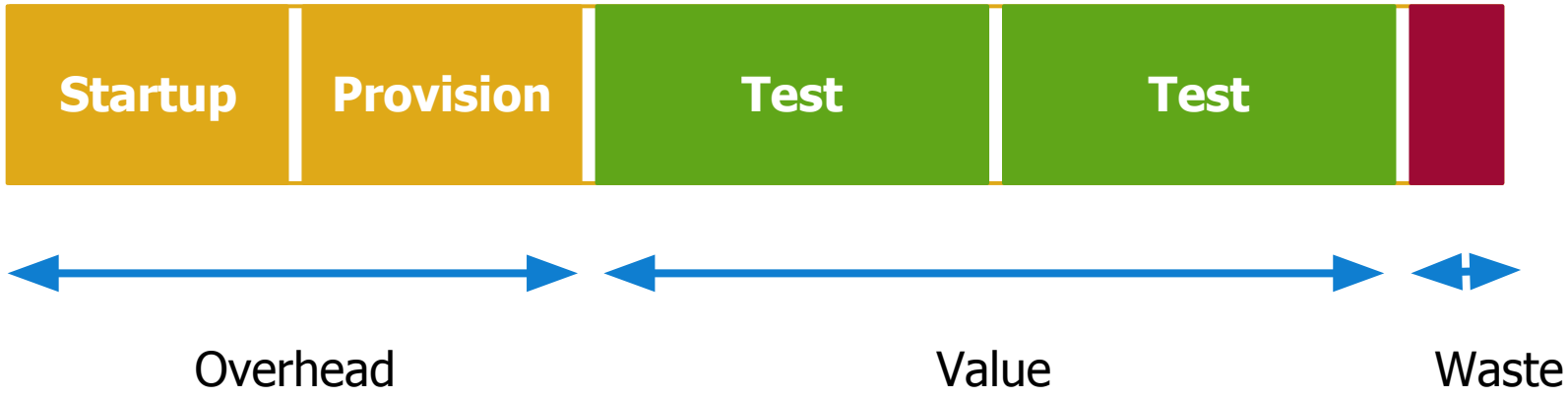
m3.large



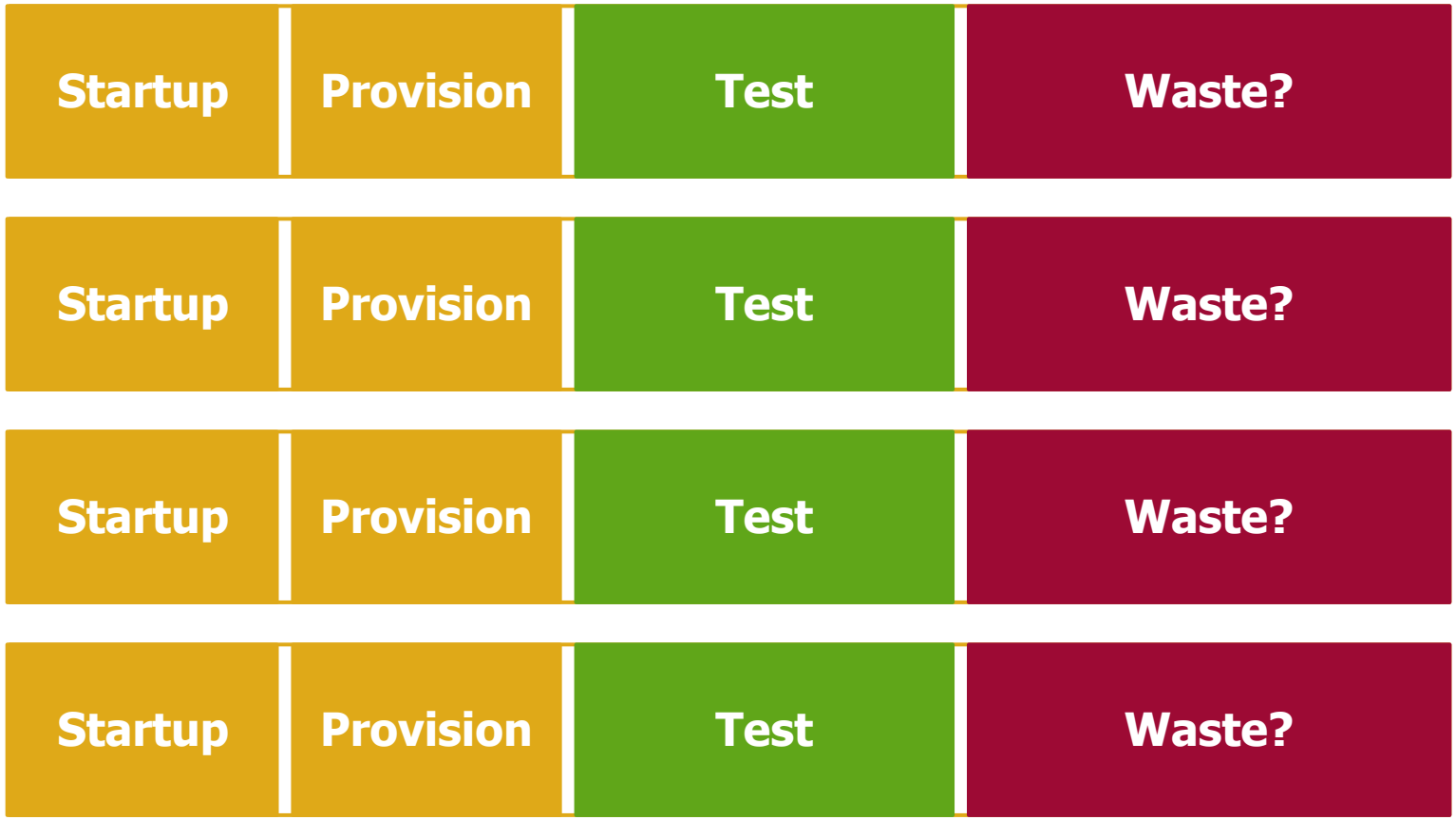
m3.large



m3.large



m3.large


Startup
Provision
Test
Waste?
Startup
Provision
Test
Waste?
Startup
Provision
Test
Waste?
Startup
Provision
Test
Waste?

m3.large

goto; conference

Please

Remember to rate this session

Thank you!

Join the conversation #gotoldn

goto; conference

Thanks !