TP 1 de Arquitectura del Software

1C - 2022

Informe

Grupo 3

Marchese Milena	100962
Sebastián Blázquez	99673
Maximiliano Romero Vázquez	99118
Tomás Gustavo Rodríguez	105318

Sección 1

En esta sección detallaremos cómo se comportan las 4 implementaciones:

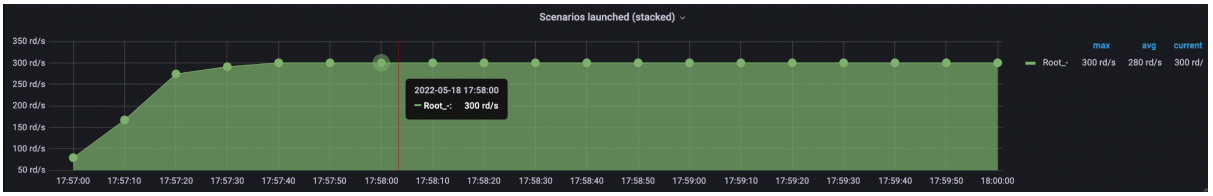
- Healthcheck: Respuesta de un valor constante.
- Proxy1: Invocación a servicio 1 provisto por la cátedra.
- Proxy2: Invocación a servicio 2 provisto por la cátedra.
- Heavy: Loop de cierto tiempo.

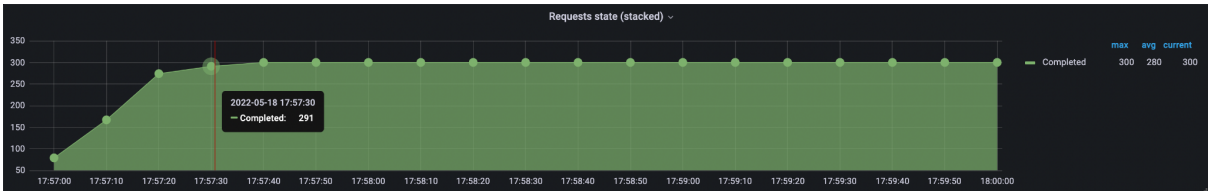
Frente a los diferentes escenarios variando la cantidad de nodos.

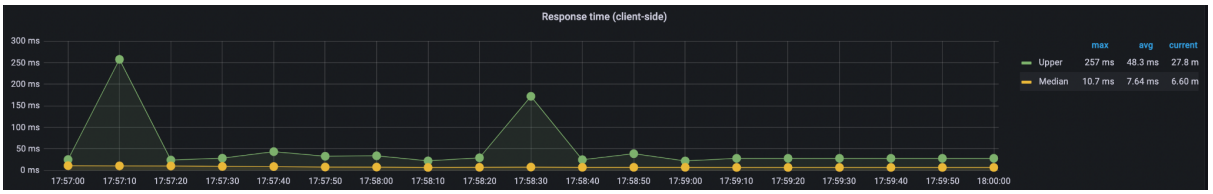
Análisis para un solo nodo

Load

- Healthcheck



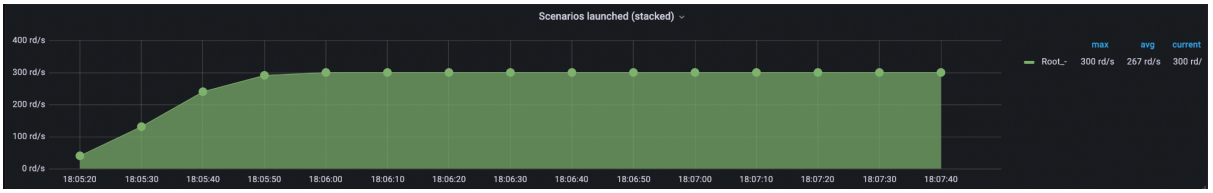


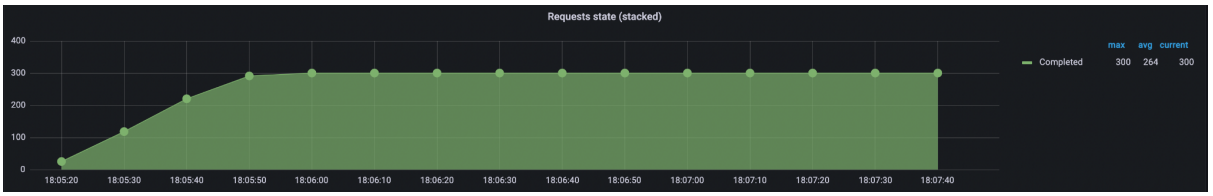


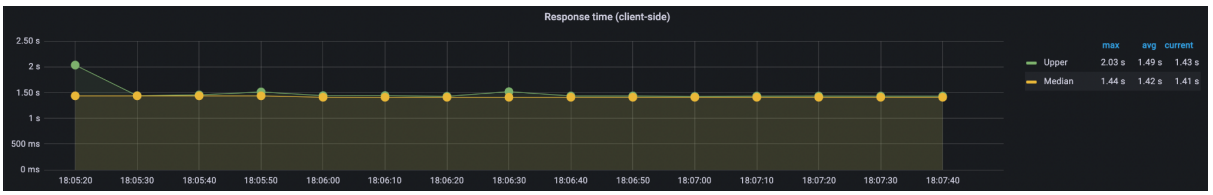

```
--------------------------------
Summary report @ 17:59:13(-0300)
--------------------------------
http.codes.200: ..................................... 4192
http.request_rate: .................................. 30/sec
http.requests: ...................................... 4192
http.response_time:
  min: .............................................. 1
  max: .............................................. 31
  median: ........................................... 4
  p95: .............................................. 7.9
  p99: .............................................. 12.1
http.responses: ..................................... 4192
vusers.completed: ................................... 4192
vusers.created: ..................................... 4192
vusers.created_by_name.Root (/): .................... 4192
vusers.failed: ...................................... 0
vusers.session_length:
  min: .............................................. 3.5
  max: .............................................. 257.4
  median: ........................................... 7.5
```

```
  p95: ..................................... 17.3
  p99: ..................................... 25.3
```

- Proxy1

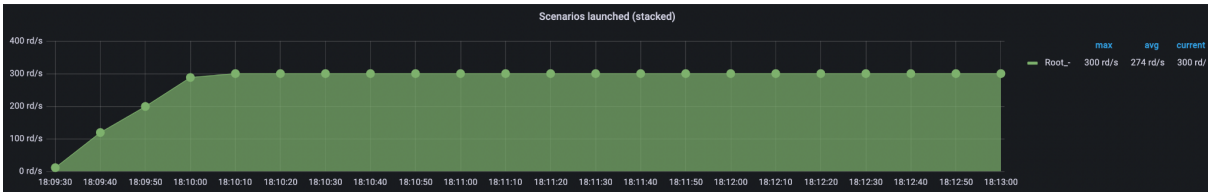


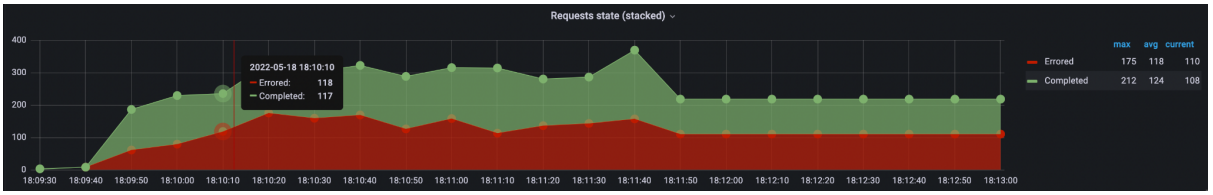


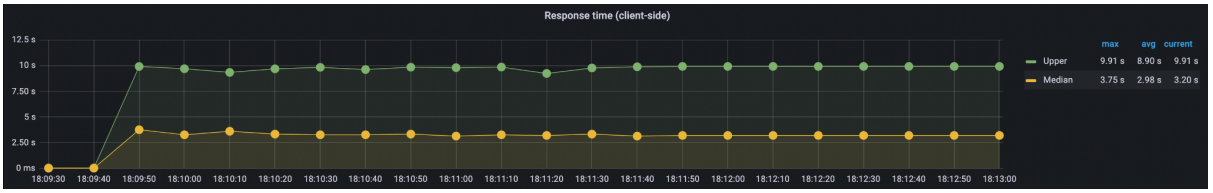



```
--------------------------------
Summary report @ 18:07:38(-0300)
--------------------------------
http.codes.200: ........................................................... 4203
http.request_rate: ........................................................ 30/sec
http.requests: ............................................................ 4203
http.response_time:
  min: ..................................................................... 1405
  max: ..................................................................... 2023
  median: .................................................................. 1408.4
  p95: ..................................................................... 1408.4
  p99: ..................................................................... 1436.8
http.responses: ........................................................... 4203
vusers.completed: ......................................................... 4203
vusers.created: ........................................................... 4203
vusers.created_by_name.Root (/): .......................................... 4203
vusers.failed: ............................................................ 0
vusers.session_length:
  min: ..................................................................... 1406.6
  max: ..................................................................... 2033.8
  median: .................................................................. 1408.4
  p95: ..................................................................... 1436.8
  p99: ..................................................................... 1436.8
```

- Proxy2

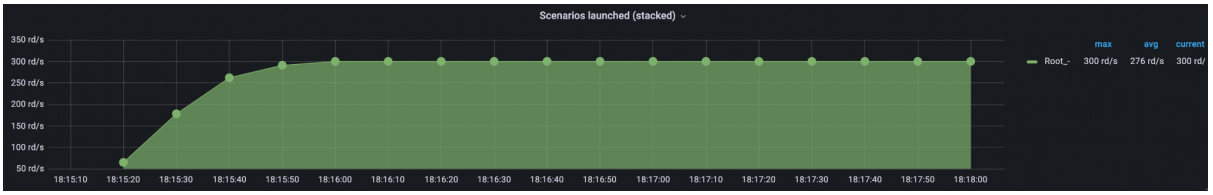


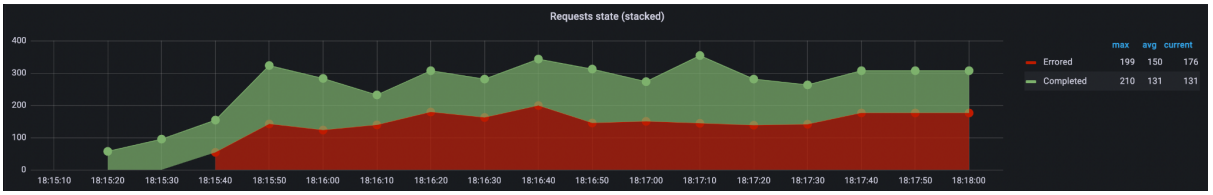


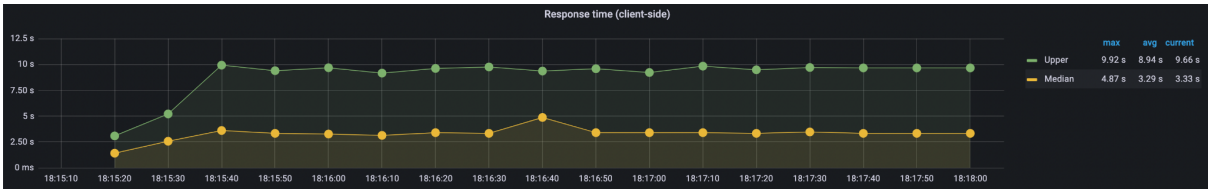



```
--------------------------------
Summary report @ 18:11:58(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 1989
http.codes.502: ....................................................... 2219
http.request_rate: .................................................... 29/sec
http.requests: ........................................................ 4208
http.response_time:
  min: ................................................................ 3
  max: ................................................................ 9947
  median: ............................................................. 3328.3
  p95: ................................................................ 9230.4
  p99: ................................................................ 9801.2
http.responses: ....................................................... 2219
vusers.completed: ..................................................... 2219
vusers.created: ....................................................... 4208
vusers.created_by_name.Root (/): ...................................... 4208
vusers.failed: ........................................................ 1989
vusers.session_length:
  min: ................................................................ 14.5
  max: ................................................................ 9950.4
  median: ............................................................. 3328.3
  p95: ................................................................ 9416.8
  p99: ................................................................ 9801.2
```

- Heavy



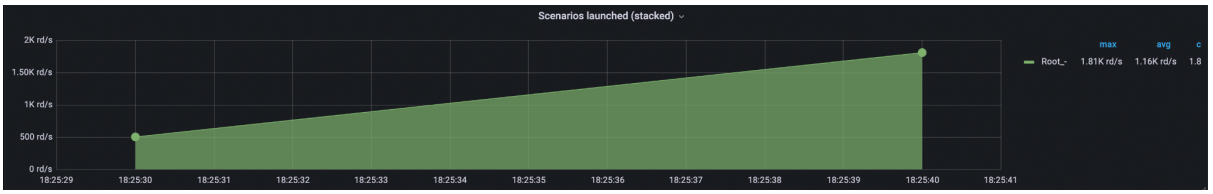


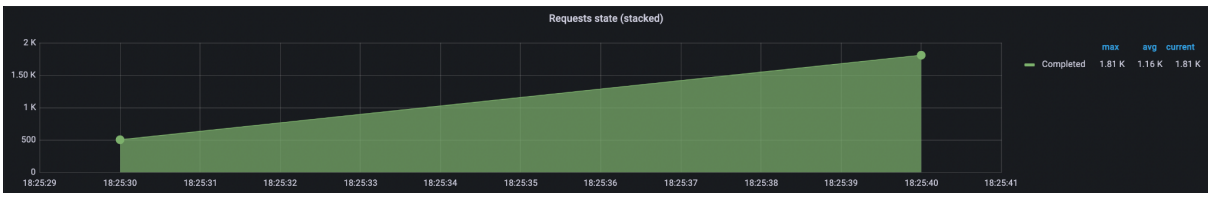


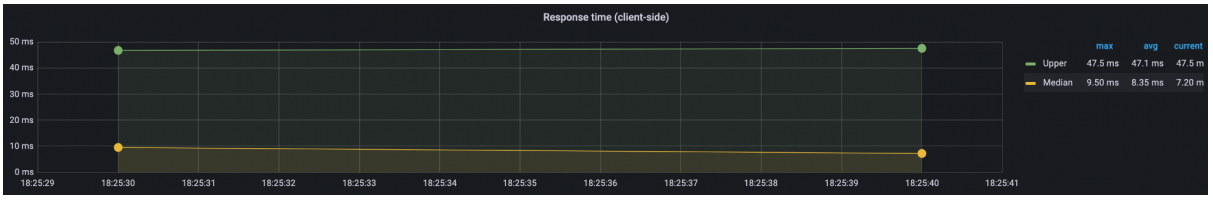

```
--------------------------------
Summary report @ 18:17:43(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 2111
http.codes.502: ....................................................... 2096
http.request_rate: .................................................... 28/sec
http.requests: ........................................................ 4207
http.response_time:
  min: ................................................................ 72
  max: ................................................................ 9964
  median: ............................................................. 3328.3
  p95: ................................................................ 9416.8
  p99: ................................................................ 9801.2
http.responses: ....................................................... 2096
vusers.completed: ..................................................... 2096
vusers.created: ....................................................... 4207
vusers.created_by_name.Root (/): ...................................... 4207
vusers.failed: ........................................................ 2111
vusers.session_length:
  min: ................................................................ 82.6
  max: ................................................................ 9965.1
  median: ............................................................. 3328.3
  p95: ................................................................ 9416.8
  p99: ................................................................ 9801.
```

Spike

- Healthcheck

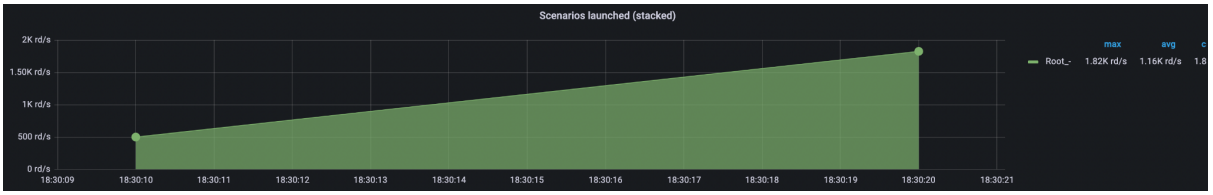


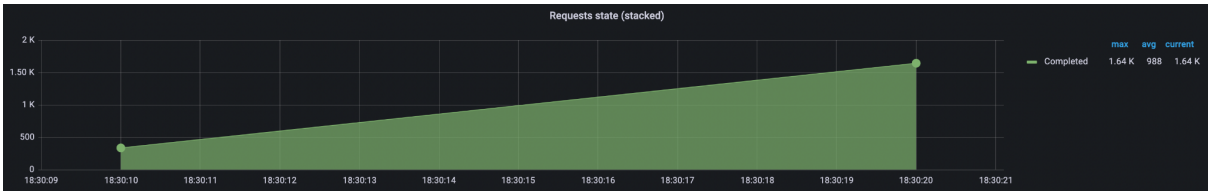


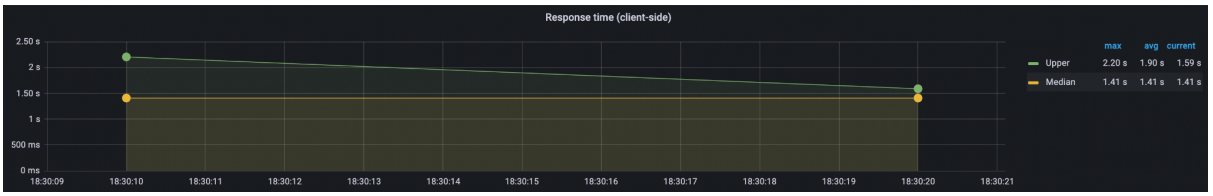


```
--------------------------------
Summary report @ 18:25:43(-0300)
--------------------------------
http.codes.200: ..................................................................... 6254
http.request_rate: .................................................................. 241/sec
http.requests: ...................................................................... 6254
http.response_time:
  min: .............................................................................. 1
  max: .............................................................................. 41
  median: ........................................................................... 4
  p95: .............................................................................. 7
  p99: .............................................................................. 13.9
http.responses: ..................................................................... 6254
vusers.completed: ................................................................... 6254
vusers.created: ..................................................................... 6254
vusers.created_by_name.Root (/): .................................................... 6254
vusers.failed: ...................................................................... 0
vusers.session_length:
  min: .............................................................................. 3.2
  max: .............................................................................. 47.5
  median: ........................................................................... 6.9
  p95: .............................................................................. 14.7
  p99: .............................................................................. 19.5
```

- Proxy1



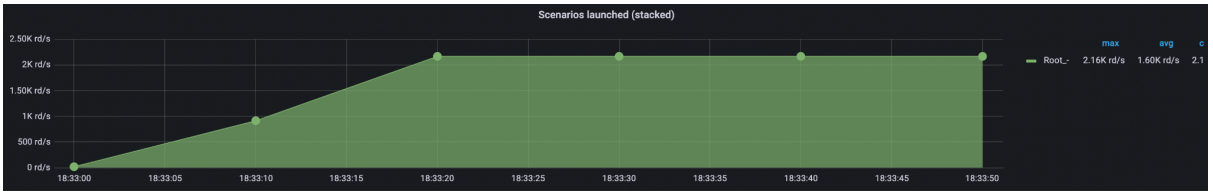


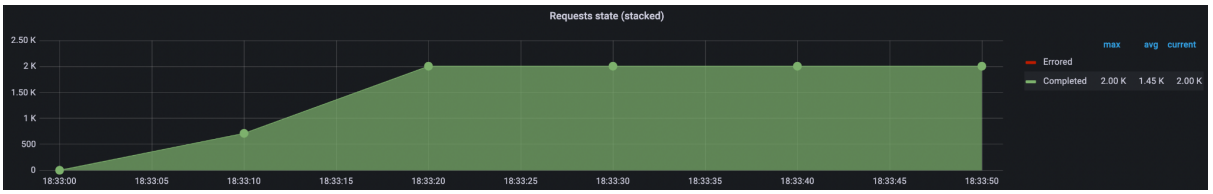


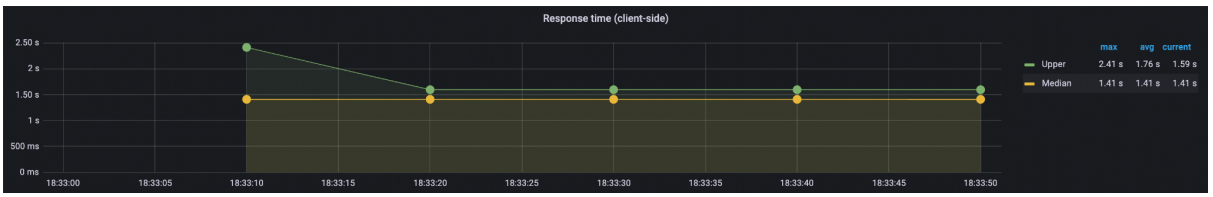

```
--------------------------------
Summary report @ 18:30:24(-0300)
--------------------------------
http.codes.200: ..................................................................... 6270
http.request_rate: .................................................................. 240/sec
http.requests: ...................................................................... 6270
http.response_time:
  min: .............................................................................. 1404
  max: .............................................................................. 2194
  median: ........................................................................... 1408.4
  p95: .............................................................................. 1436.8
  p99: .............................................................................. 1465.9
http.responses: ..................................................................... 6270
vusers.completed: ................................................................... 6270
vusers.created: ..................................................................... 6270
vusers.created_by_name.Root (/): .................................................... 6270
```

```
vusers.failed: ..................................................................... 0
vusers.session_length:
  min: ............................................................................ 1406.2
  max: ............................................................................ 2204
  median: ......................................................................... 1408.4
  p95: ............................................................................ 1436.8
  p99: ............................................................................ 1465.9
```

- Proxy2

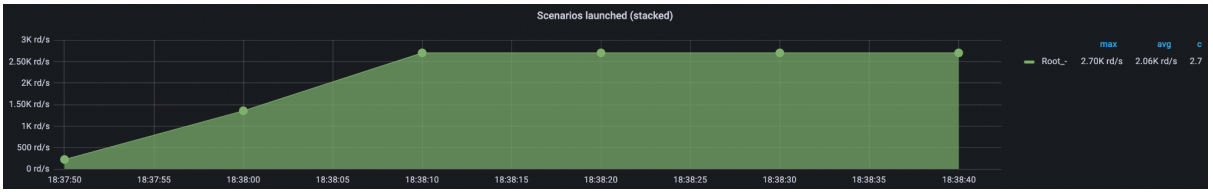


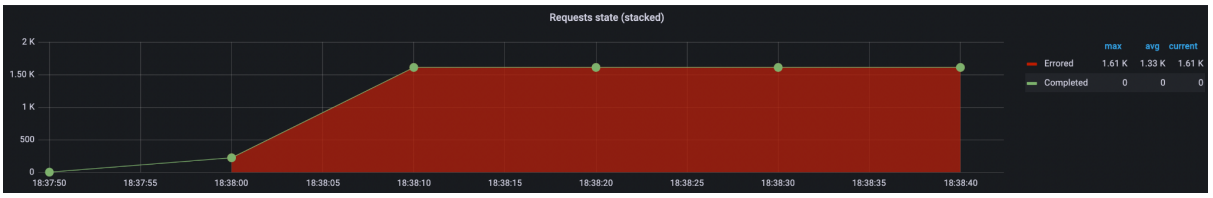





```
--------------------------------
Summary report @ 18:33:21(-0300)
--------------------------------
http.codes.200: ..................................................................... 6254
http.request_rate: .................................................................. 136/sec
http.requests: ...................................................................... 6254
http.response_time:
  min: ............................................................................ 1404
  max: ............................................................................ 2399
  median: ......................................................................... 1408.4
  p95: ............................................................................ 1436.8
  p99: ............................................................................ 1525.7
http.responses: ..................................................................... 6254
vusers.completed: ................................................................... 6254
vusers.created: ..................................................................... 6254
vusers.created_by_name.Root (/): .................................................... 6254
vusers.failed: ...................................................................... 0
vusers.session_length:
  min: ............................................................................ 1406.6
  max: ............................................................................ 2410.4
  median: ......................................................................... 1408.4
  p95: ............................................................................ 1436.8
  p99: ............................................................................ 1525.7
```

- Heavy

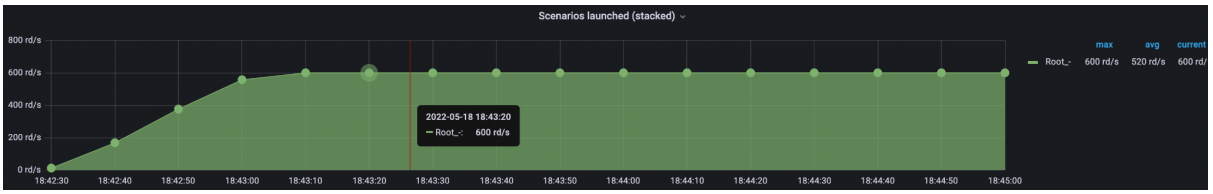


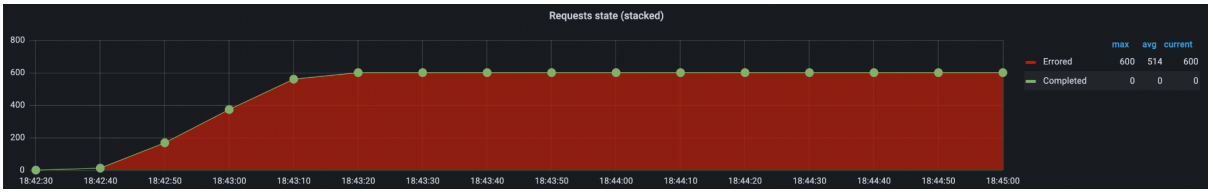



```
--------------------------------
Summary report @ 18:38:15(-0300)
--------------------------------
errors.ECONNRESET: ..................................................... 962
errors.ETIMEDOUT: ...................................................... 5273
http.request_rate: ..................................................... 167/sec
http.requests: ......................................................... 6235
vusers.created: ........................................................ 6235
vusers.created_by_name.Root (/): ....................................... 6235
vusers.failed: ......................................................... 6235
```

Volume

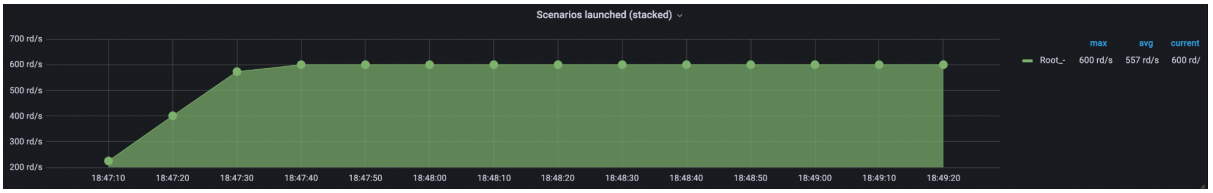
- Healthcheck

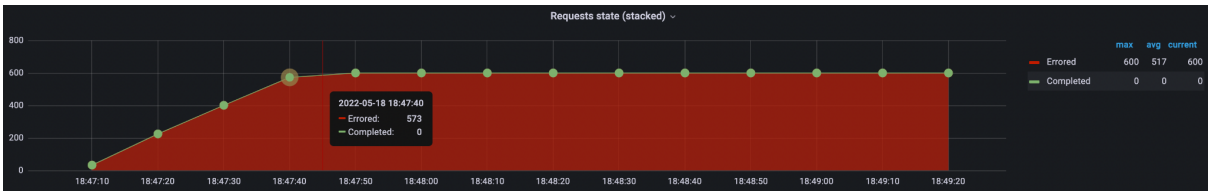





```
--------------------------------
Summary report @ 18:44:59(-0300)
--------------------------------
errors.ETIMEDOUT: ...................................................... 8271
http.request_rate: ..................................................... 51/sec
http.requests: ......................................................... 8271
vusers.created: ........................................................ 8271
vusers.created_by_name.Root (/): ....................................... 8271
vusers.failed: ......................................................... 8271
```

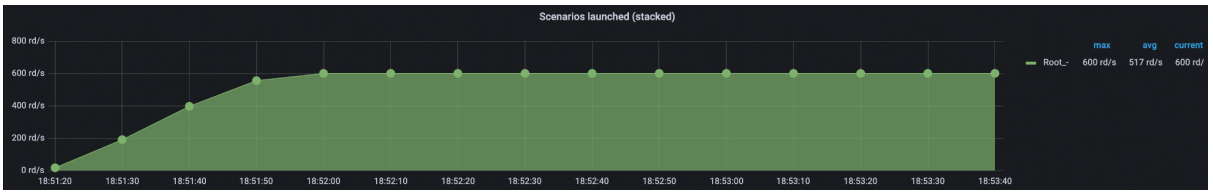
- Proxy1

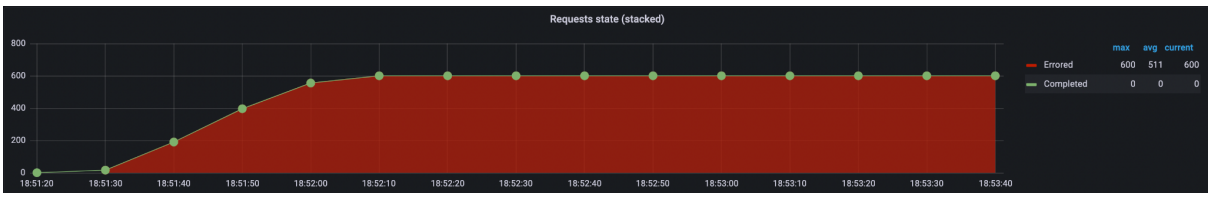





```
--------------------------------
Summary report @ 18:49:28(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 8228
http.request_rate: .................................................... 51/sec
http.requests: ........................................................ 8228
vusers.created: ....................................................... 8228
vusers.created_by_name.Root (/): ...................................... 8228
vusers.failed: ........................................................ 8228
```

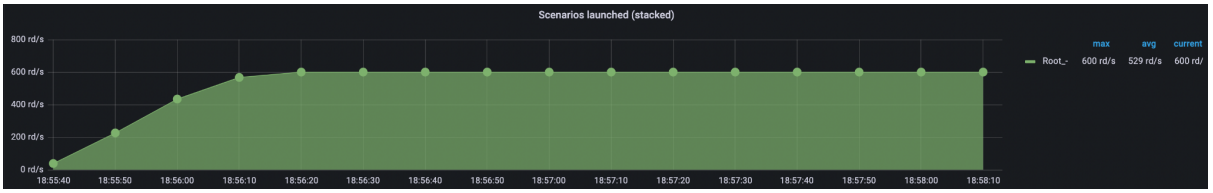
- Proxy2

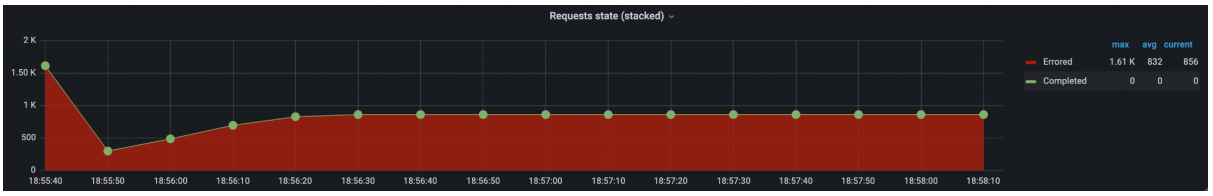





```
--------------------------------
Summary report @ 18:53:48(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 8255
http.request_rate: .................................................... 51/sec
http.requests: ........................................................ 8255
vusers.created: ....................................................... 8255
vusers.created_by_name.Root (/): ...................................... 8255
vusers.failed: ........................................................ 8255
```

- Heavy
-





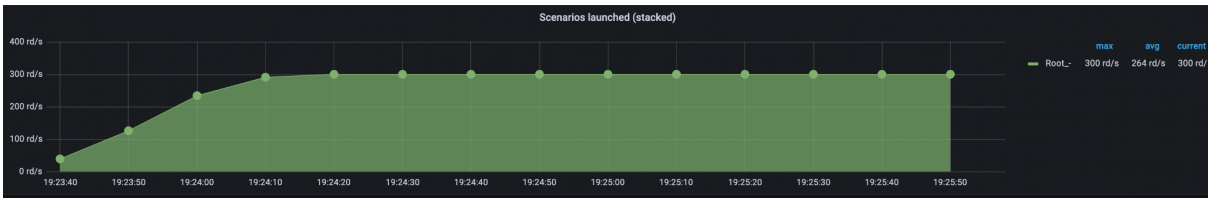

```
--------------------------------
Summary report @ 18:58:07(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 8276
http.request_rate: ..................................................... 51/sec
http.requests: ......................................................... 8276
vusers.created: ........................................................ 8276
vusers.created_by_name.Root (/): ....................................... 8276
vusers.failed: ......................................................... 8276
```

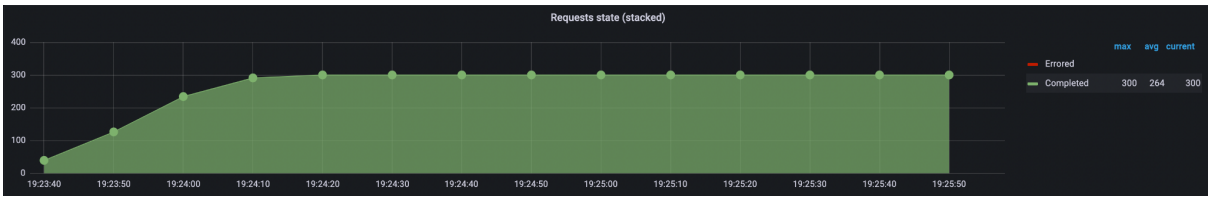
Habíamos preparado el escenario de [stress] pero viendo el comportamiento de las pruebas de volumen decidimos que no era necesario ya que el escenario de volumen falló.

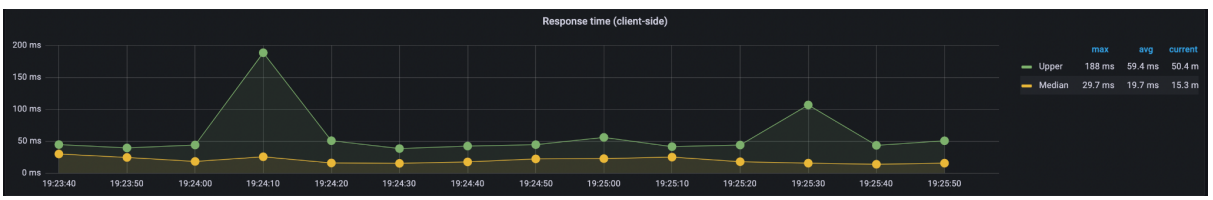
Análisis para tres nodos

Load

- Healthcheck

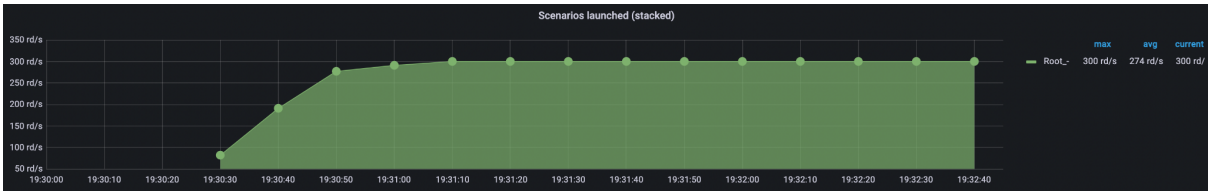


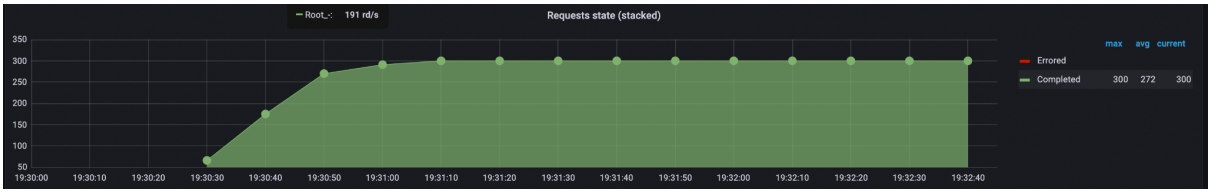


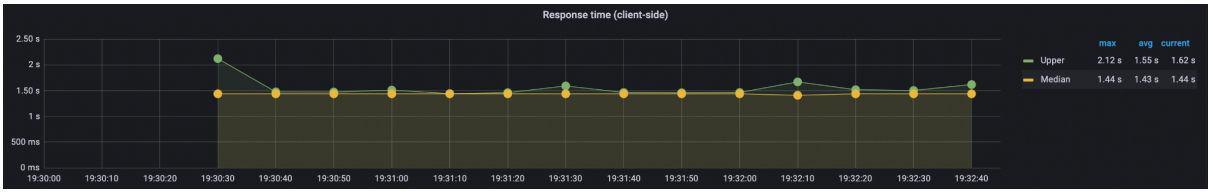


```
-------------------------------
Summary report @ 19:25:57(-0300)
-------------------------------
http.codes.200: ..................................................................... 4200
http.request_rate: .................................................................. 30/sec
http.requests: ...................................................................... 4200
http.response_time:
  min: .............................................................................. 2
  max: .............................................................................. 51
  median: ........................................................................... 12.1
  p95: .............................................................................. 30.9
  p99: .............................................................................. 36.2
http.responses: ..................................................................... 4200
vusers.completed: ................................................................... 4200
vusers.created: ..................................................................... 4200
vusers.created_by_name.Root (/): .................................................... 4200
vusers.failed: ...................................................................... 0
vusers.session_length:
  min: .............................................................................. 5.6
  max: ............................................................................. 188.3
  median: ........................................................................... 18.4
  p95: .............................................................................. 37
  p99: .............................................................................. 43.4
```

- Proxy1



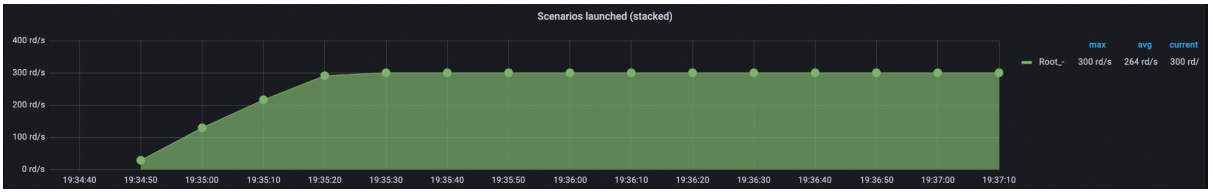


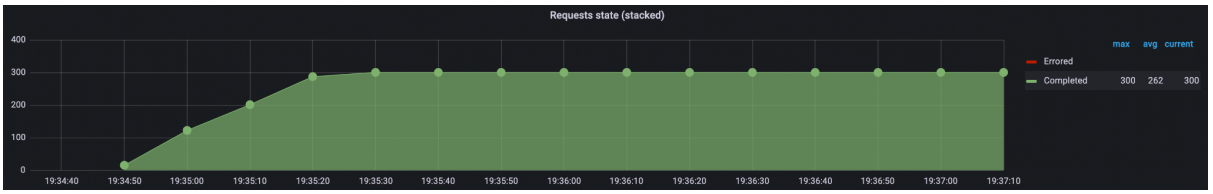


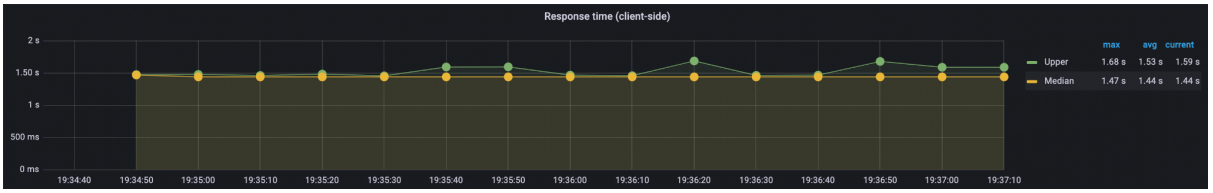

```
-------------------------------
Summary report @ 19:32:44(-0300)
-------------------------------
http.codes.200: ..................................................................... 4222
http.request_rate: .................................................................. 30/sec
http.requests: ...................................................................... 4222
http.response_time:
  min: .............................................................................. 1405
  max: .............................................................................. 2102
  median: ........................................................................... 1408.4
  p95: .............................................................................. 1436.8
  p99: .............................................................................. 1465.9
http.responses: ..................................................................... 4222
vusers.completed: ................................................................... 4222
vusers.created: ..................................................................... 4222
vusers.created_by_name.Root (/): .................................................... 4222
```

```
vusers.failed: ..................................................................... 0
vusers.session_length:
  min: ............................................................................ 1410.5
  max: ............................................................................ 2120.9
  median: ......................................................................... 1436.8
  p95: ............................................................................ 1436.8
  p99: ............................................................................ 1465.9
```

- Proxy2

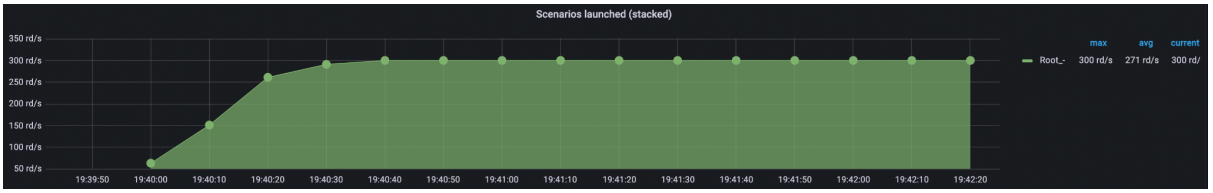


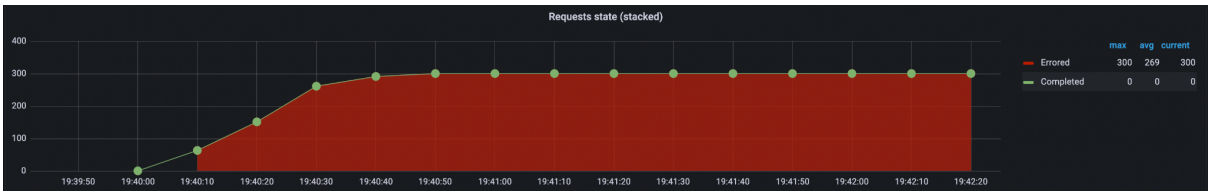





```
--------------------------------
Summary report @ 19:37:09(-0300)
--------------------------------
http.codes.200: ..................................................................... 4204
http.request_rate: .................................................................. 30/sec
http.requests: ...................................................................... 4204
http.response_time:
  min: .............................................................................. 1406
  max: .............................................................................. 1590
  median: ........................................................................... 1408.4
  p95: .............................................................................. 1436.8
  p99: .............................................................................. 1465.9
http.responses: ..................................................................... 4204
vusers.completed: ................................................................... 4204
vusers.created: ..................................................................... 4204
vusers.created_by_name.Root (/): .................................................... 4204
vusers.failed: ...................................................................... 0
vusers.session_length:
  min: .............................................................................. 1410.3
  max: .............................................................................. 1684.1
  median: ........................................................................... 1436.8
  p95: .............................................................................. 1436.8
  p99: .............................................................................. 1465.9
```

- Heavy

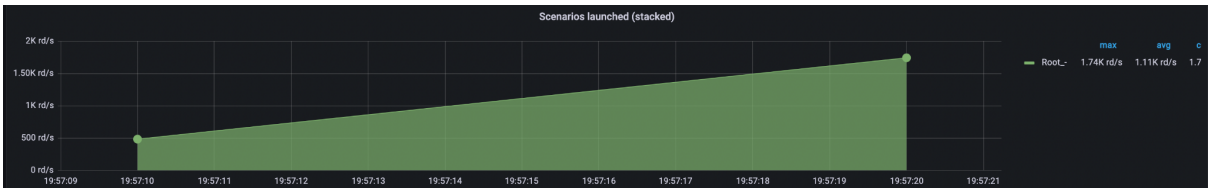


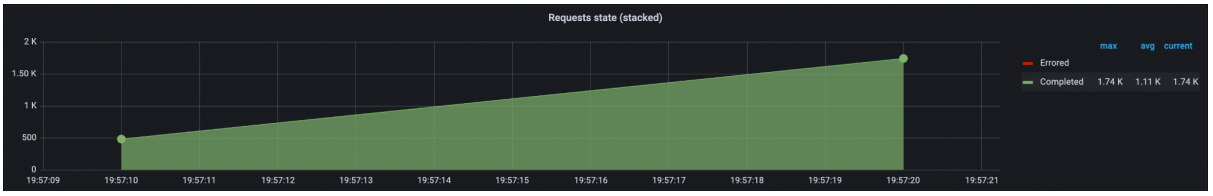


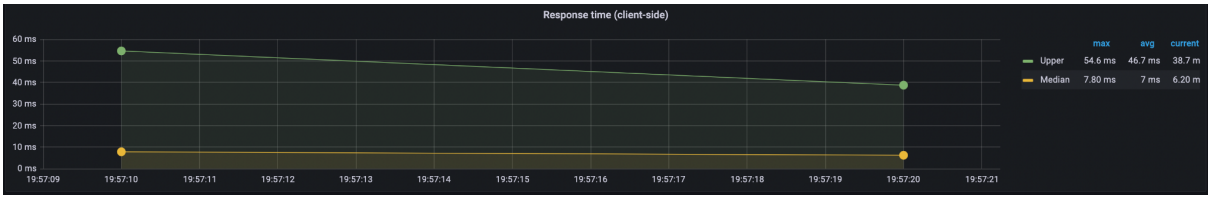

```
--------------------------------
Summary report @ 19:42:24(-0300)
--------------------------------
errors.ETIMEDOUT: ..................................................... 4195
http.request_rate: ..................................................... 27/sec
http.requests: ......................................................... 4195
vusers.created: ........................................................ 4195
vusers.created_by_name.Root (/): ....................................... 4195
vusers.failed: ......................................................... 4195
```

Spike

- Healthcheck



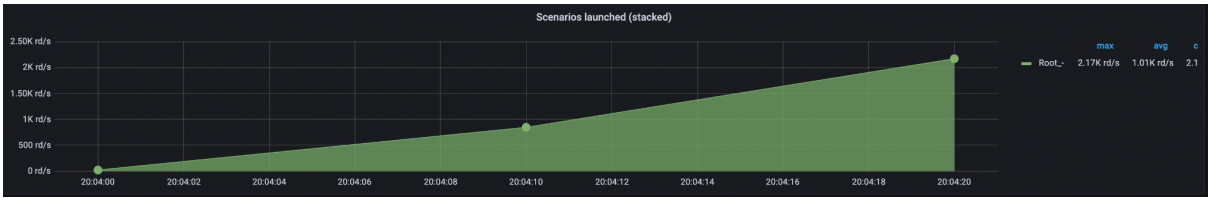


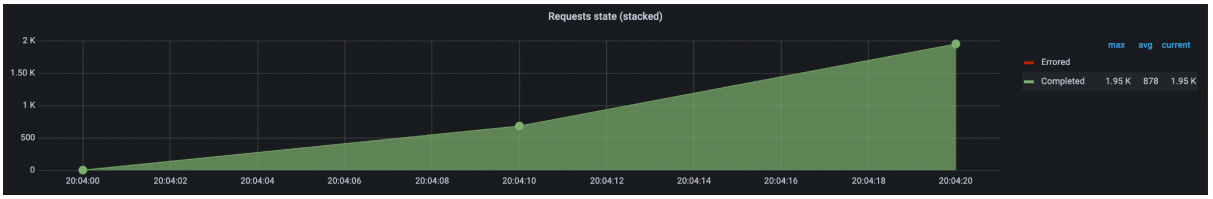


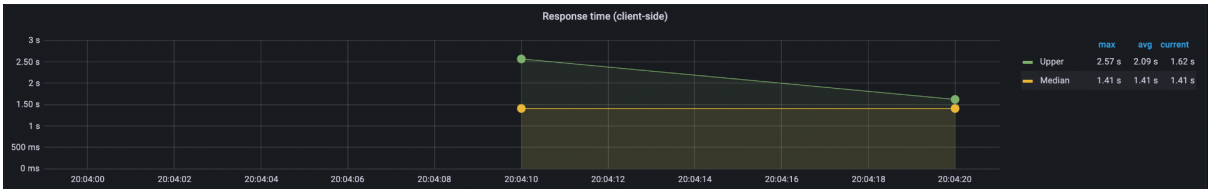

```
--------------------------------
Summary report @ 19:57:24(-0300)
--------------------------------
http.codes.200: ........................................................ 6276
http.request_rate: ..................................................... 236/sec
http.requests: ......................................................... 6276
http.response_time:
  min: ................................................................. 0
```

```
  max: ..... 41
  median: ..... 4
  p95: ..... 8.9
  p99: ..... 15
http.responses: ..... 6276
vusers.completed: ..... 6276
vusers.created: ..... 6276
vusers.created_by_name.Root (/): ..... 6276
vusers.failed: ..... 0
vusers.session_length:
  min: ..... 3.3
  max: ..... 54.6
  median: ..... 7
  p95: ..... 14.2
  p99: ..... 21.1
```

- Proxy1

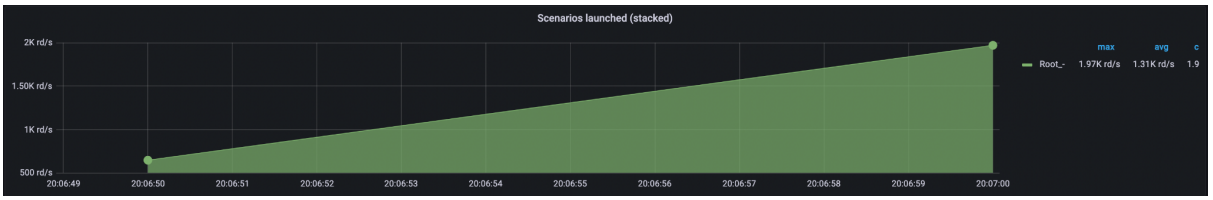


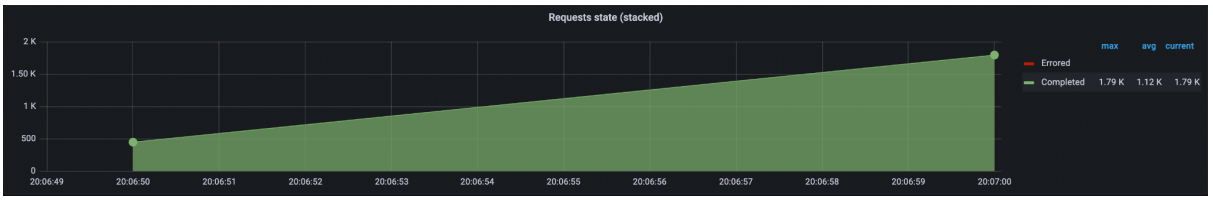


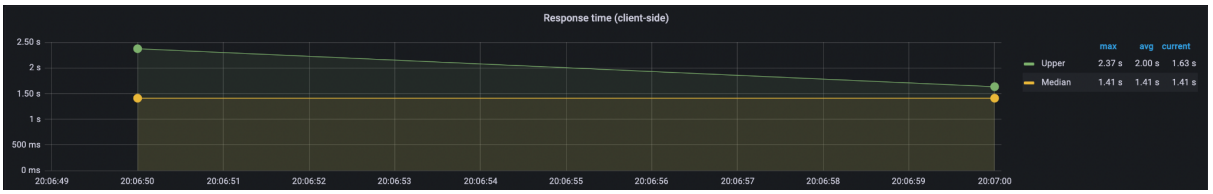



```
--------------------------------
Summary report @ 20:04:21(-0300)
--------------------------------
http.codes.200: ..... 6219
http.request_rate: ..... 137/sec
http.requests: ..... 6219
http.response_time:
  min: ..... 1405
  max: ..... 2551
  median: ..... 1408.4
  p95: ..... 1436.8
  p99: ..... 1525.7
http.responses: ..... 6219
vusers.completed: ..... 6219
vusers.created: ..... 6219
vusers.created_by_name.Root (/): ..... 6219
vusers.failed: ..... 0
vusers.session_length:
  min: ..... 1406.3
  max: ..... 2566.8
  median: ..... 1408.4
  p95: ..... 1436.8
  p99: ..... 1525.7
```

- Proxy2

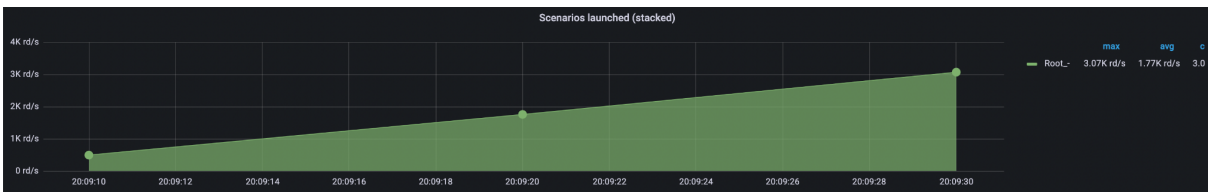


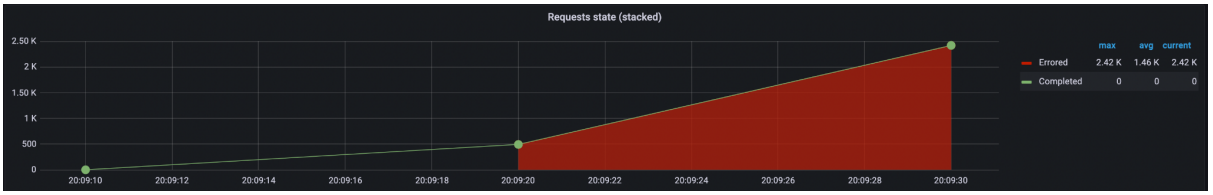





```
--------------------------------
Summary report @ 20:07:03(-0300)
--------------------------------
http.codes.200: ..................................................... 6253
http.request_rate: .................................................. 223/sec
http.requests: ...................................................... 6253
http.response_time:
  min: .............................................................. 1405
  max: .............................................................. 2359
  median: ........................................................... 1408.4
  p95: .............................................................. 1436.8
  p99: .............................................................. 1495.5
http.responses: ..................................................... 6253
vusers.completed: ................................................... 6253
vusers.created: ..................................................... 6253
vusers.created_by_name.Root (/): .................................... 6253
vusers.failed: ...................................................... 0
vusers.session_length:
  min: .............................................................. 1406.9
  max: .............................................................. 2372.4
  median: ........................................................... 1408.4
  p95: .............................................................. 1436.8
  p99: .............................................................. 1525.7
```

- Heavy

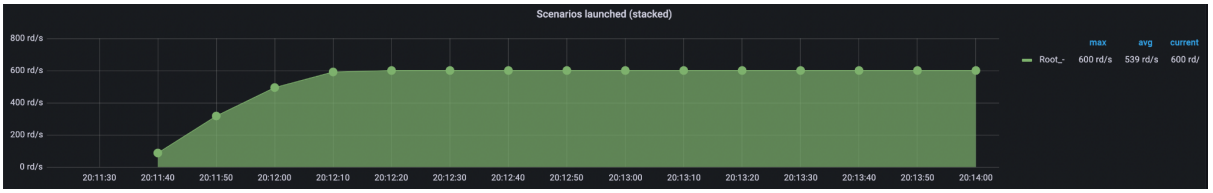


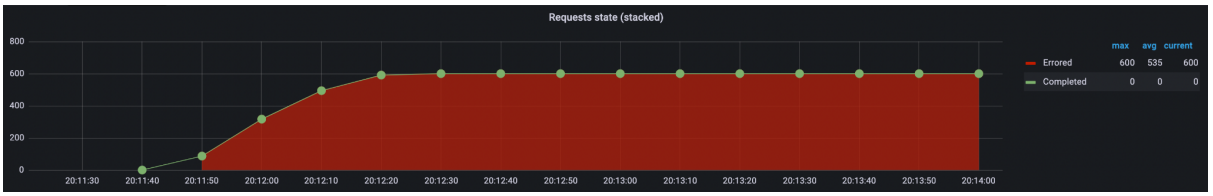



```
--------------------------------
Summary report @ 20:09:32(-0300)
--------------------------------
errors.ECONNRESET: ..................................................... 960
errors.ETIMEDOUT: ...................................................... 5234
http.request_rate: ..................................................... 189/sec
http.requests: ......................................................... 6194
vusers.created: ........................................................ 6194
vusers.created_by_name.Root (/): ....................................... 6194
vusers.failed: ......................................................... 6194
```

Volume

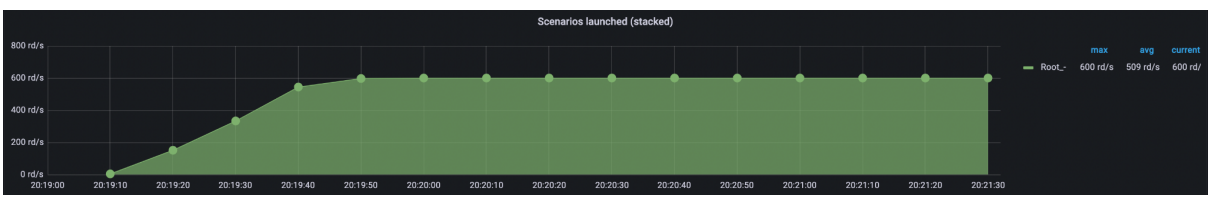
- Healthcheck

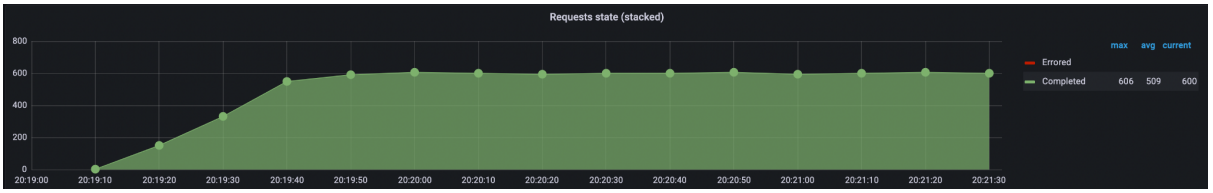


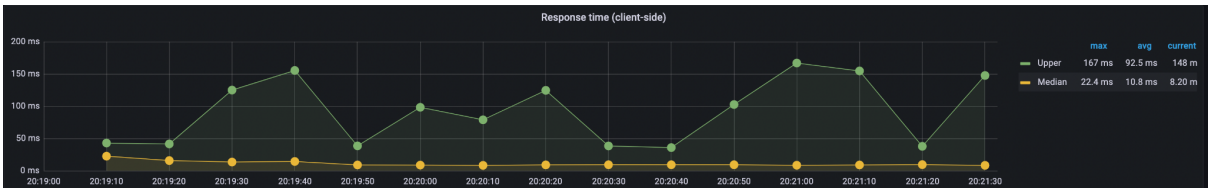



```
--------------------------------
Summary report @ 20:14:03(-0300)
--------------------------------
errors.ETIMEDOUT: ...................................................... 8236
http.request_rate: ..................................................... 51/sec
http.requests: ......................................................... 8236
vusers.created: ........................................................ 8236
vusers.created_by_name.Root (/): ....................................... 8236
vusers.failed: ......................................................... 8236
```

Ya que se observa el mismo comportamiento que en el caso de tener un solo nodo vamos a escalar horizontalmente, duplicando la cantidad de nodos.








```
--------------------------------
Summary report @ 20:21:31(-0300)
--------------------------------
http.codes.200: ..................................................................... 5748
http.request_rate: .................................................................. 37/sec
http.requests: ...................................................................... 5748
http.response_time:
  min: .............................................................................. 2
  max: .............................................................................. 41
  median: ........................................................................... 6
  p95: .............................................................................. 24.8
  p99: .............................................................................. 30.9
http.responses: ..................................................................... 5748
vusers.completed: ................................................................... 5748
vusers.created: ..................................................................... 5748
vusers.created_by_name.Root (/): .................................................... 5748
vusers.failed: ...................................................................... 0
vusers.session_length:
  min: .............................................................................. 4
  max: .............................................................................. 166.8
  median: ........................................................................... 9.7
  p95: .............................................................................. 28.5
  p99: .............................................................................. 34.8
```

Vemos que duplicando la cantidad de nodos pueden atenderse todas las requests, comportamiento que se esperaba.

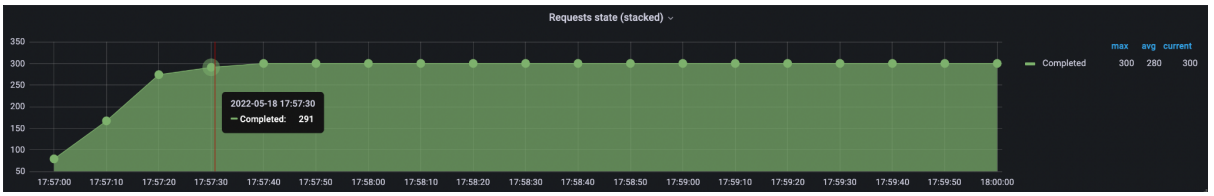
Sección 2

1. Sincrónico / Asincrónico: Uno de los servicios se comportará de manera sincrónica, y el otro de manera asincrónica. Deberán detectar de qué tipo es cada uno.

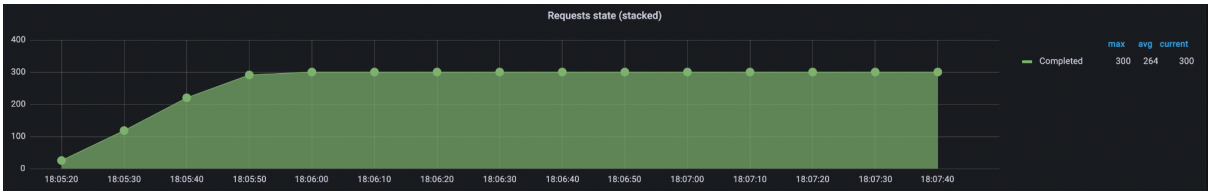
   Podemos observar a lo largo de los escenarios que probamos que el servicio 1 (Proxy1) presenta una mejor performance que el servicio 2 (Proxy2), con esto podemos detectar que el servicio 1 es el asincrónico y el servicio 2 es el sincrónico ya que, por ejemplo, es el que sufre más timeouts y su performance es más parecida al escenario implementado como Heavy o intensivo.

   Por ejemplo, veamos el estado de las requests en el caso de un solo nodo en el escenario Load para cada implementación:

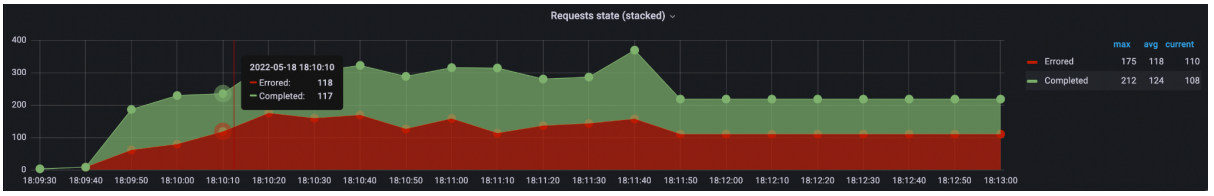
Healthcheck



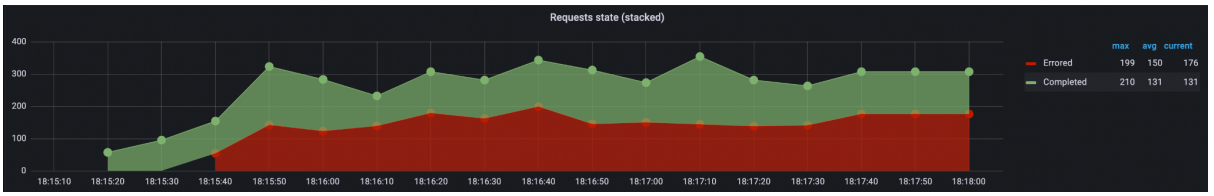
Servicio 1



Servicio 2



Heavy



2. Cantidad de workers (en el caso sincrónico): El servicio sincrónico está implementado con una cantidad de workers. Deberán buscar algún indicio sobre cuál es esta cantidad. El servicio asincrónico tiene una cantidad de event loops, que también podrían intentar calcular, aunque esto es bastante más difícil y les recomendamos hacerlo sólo si terminaron con el resto.

   Según los datos observados parece que el servicio sincrónico atiende correctamente 115 pedidos por segundo correctamente y después de dicho valor devuelve un error por timeout. Consecuentemente se estima que tiene 115 workers.

3. Demora en responder: Cada servicio demora un tiempo en responder, que puede ser igual o distinto entre ellos. Deberán obtener este valor para cada uno.

   Vamos a remitirnos al escenario del caso load para analizar el response time de los servicios:

Servicio	Min	Media	Max	p99
Proxy1	1405	1408.4	2023	1436.8
Proxy2	3	3328.3	9947	9801.2

Se puede observar que el servicio 2 tiene un response time más alto que el servicio 1 y además es interesante analizar la información que nos da el p99, mientras todos los valores obtenidos por el s1 son menores a 1436, los del servicio 2 están debajo de 9801 demostrando que el s2 tiene un response time mucho más alto, otro de los indicadores que es el servicio sincronico.