JMeter com Grafana e Prometheus

Agenda

01 Testes de Performance

02 JMeter

03 Prometheus

04 Grafana

05 Integrando as 3 ferramentas

Quem sou eu?

Formada em **Sistemas de Informação** na USP.

Apaixonada por **QA** desde sempre, mas trabalho na área oficialmente desde 2018.

Tenho as certificações CTFL, CTFL-AT, **CTFL-PT**, CTAL-TTA, CTAL-TAE.

Trabalho atualmente na **Avalara** como SDET.

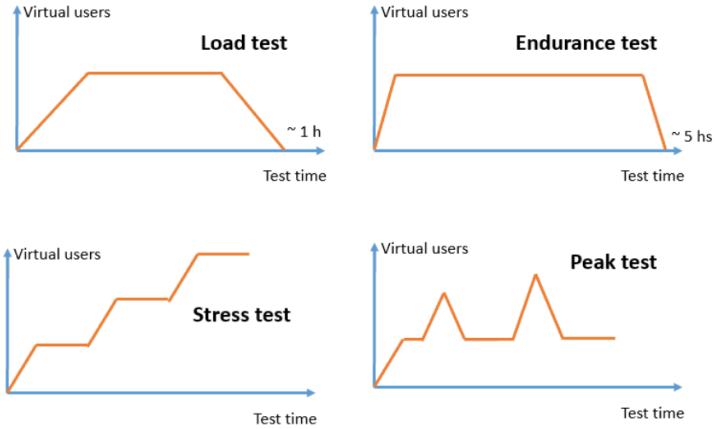
1. Testes de Performance

Testes de Performance

- Definido pela ISO-25010 como uma característica não funcional:
    - **Comportamento do tempo**
    - **Utilização de recursos**
    - **Capacidade**
- Os testes devem ser alinhados às expectativas dos stakeholders (Usuários, Arquitetos do sistema, Produto, Operação, etc.);
- Os testes devem ser **reprodutíveis**;
- Os testes devem ser realizados em ambientes similares ao ambiente de produção.

Tipos de Testes de Performance

- Teste de Carga (Load Testing)
- Teste de Estresse (Stress Testing)
- Teste de Pico (Spike Testing)
- Teste de Resistência (Endurance Testing)



Fonte: https://abstracta.us/blog/performance-testing/types-performance-tests/

Razões para testar a performance

- Quanto mais rápido o site, mais receita ele irá gerar;
- Resolver as falhas antes de ir para o mercado;
- Aumentar a robustez do aplicativo;
- Melhorar a escalabilidade (capacidade de crescer de forma eficiente);
- Melhorar a estabilidade e confiabilidade.

“ QUEBRE SEU SISTEMA, OU ALGUÉM O QUEBRARÁ POR VOCÊ”

Herval Freire, Gerente de Engenharia no Facebook

Todas | Shopping | Notícias | Imagens | Vídeos | Mais | Ferram

Aproximadamente 1.100.000 resultados (0,55 segundos)

https://oglobo.globo.com › Economia

Apagão e lentidão na Black Friday causam perdas de R$ 24 ...

28 de nov. de 2018 — SÃO PAULO — A **Black Friday** de 2018 bateu recordes de faturamento e vendas no Brasil. Em cinco dias de descontos em boa parte dos varejistas ...

https://www.istoedinheiro.com.br › e-commerce-perde...

Lojas virtuais perdem pelo menos R$ 23,9 milhões durante a ...

29 de nov. de 2018 — Dia dos Solteiros, **Black Friday** e Cyber Monday são dias para ficar de ... resultando em **perda** de faturamento de pelo menos R$ 23,9 milhões ...

https://www.supervarejo.com.br › materias › black-frid...

Black Friday: perda de R$ 18 milhões em 12 horas

@Jonvlogs

Globo Play deu pau logo agora, sério? #BBB21

12:05 PM · 11 de mar de 2021

535 | 9 | Compartilhar este Tweet

Tweete sua resposta

lucas
@oliveiraloucas

Em resposta a @marinafarias @globoplay e @bbb

Pra cair a cobrança na fatura não dá erro! Pois eu quero um desconto na minha próxima fatura porque eu contratei o serviço por causa do reality e o serviço cai num dos momentos mais importantes do jogo

12:12 PM · 11 de mar de 2021

44 | 2 | Compartilhar este Tweet

Tweete sua resposta

Procurada, a plataforma enviou o seguinte comunicado:

Houve uma queda no serviço de conteúdos ao vivo do Globoplay na manhã desta quinta-feira, com duração de 15 minutos, como efeito de um grande números de acessos simultâneos às câmeras do BBB. Em ocasiões onde há um pico extraordinário de pessoas entrando ao mesmo tempo na plataforma em um intervalo muito curto de tempo, acontece o que chamamos de efeito rajada, efeito sem soluções de mitigação prontas no mercado. O problema afetou quem tentava acessar as câmeras ou trocar de canal. Quem já estava assistindo ao conteúdo não foi afetado.

Menu | Eventos

e-commercebrasil
MUITO MAIS QUE E-COMMERCE

Redação E-Commerce Brasil

E-commerces perdem ao menos R$ 48,7 milhões na Black Friday e Cyber Monday

Sexta-feira, 04 de dezembro de 2020 • BLACK FRIDAY, OPERAÇÃO, RELATÓRIOS

Tempo de leitura: 7 minutos •

★★★★★ 4/5.0

A lentidão e a instabilidade dos **e-commerces** durante a **Black Friday** e a **Cyber Monday** custou ao varejo online brasileiro ao menos R$ 48,7 milhões, segundo levantamento da Sofist. Em 2020, a empresa acompanhou 105 lojas virtuais a partir das 22h da quinta-feira (26) até as 23h59 de segunda-feira (30), período que engloba tanto a Black Friday quanto a Cyber Monday).

No estudo, a Sofist considerou que um site estava indisponível quando era impossível navegar pela loja. Qualquer um dos seguintes fatores poderia causar uma indisponibilidade: problemas técnicos, como páginas de erro; uso de página de espera, também conhecida como “tampão”; e demora excessiva (timeout), quando o site não termina de carregar mesmo após 45 segundos do acesso inicial.

2. JMeter

JMeter

- Open Source;
- Baseado em Java;
- Originalmente feita para testes Web, mas hoje possui diferentes tipos de protocolos (HTTPs, JDBC, SOAP/REST, SMTP(S), POP3(S) and IMAP(S), etc.);
- Permite testes distribuídos;
- Permite utilização de recorder/player;
- Possui biblioteca de plugins.

3. Prometheus

Prometheus

- Open Source;
- Coleta e armazena suas métricas como dados de série temporal, ou seja, as informações das métricas são armazenadas com o carimbo de data / hora em que foram registradas, junto com pares de valores-chave opcionais chamados rótulos.

4. Grafana

Grafana

- Open Source;
- Suporta integração com diferentes fonte de dados (Data Sources) que seguem o formato time-series (série temporal):
  - Alertmanager, AWS CloudWatch, Azure Monitor, Elasticsearch, Google Cloud Monitoring, InfluxDB, Loki, Microsoft SQL Server (MSSQL), MySQL, PostgreSQL, **Prometheus**;
- Permite que você consulte, visualize, alerte e explore suas métricas, não importa onde estejam armazenadas, transformandos em belos gráficos e visualizações.

5. Integrando as 3 ferramentas

jmeter.apache.org/download_jmeter.cgi

d Testing
; Tests
pler
g Sampler
; JMeter

king

sts
positories
nd Contributing
fo at Apache
ors

ne Software Foundation

Apache JMeter 5.4.1 (Requires Java 8+)

Binaries

apache-jmeter-5.4.1.tgz sha512 pgp
apache-jmeter-5.4.1.zip sha512 pgp

Source

apache-jmeter-5.4.1_src.tgz sha512 pgp
apache-jmeter-5.4.1_src.zip sha512 pgp

This PC › Downloads › apache-jmeter-5.4.1 › apache-jmeter-5.4.1 › bin

Name	Date modified	Type	Size
examples	01/02/1980 00:00	File folder	
report-template	01/02/1980 00:00	File folder	
templates	01/02/1980 00:00	File folder	
ApacheJMeter.jar	01/02/1980 00:00	Executable Jar File	14 KB
BeanShellAssertion.bshrc	01/02/1980 00:00	BSHRC File	2 KB
BeanShellFunction.bshrc	01/02/1980 00:00	BSHRC File	3 KB
BeanShellListeners.bshrc	01/02/1980 00:00	BSHRC File	2 KB
BeanShellSampler.bshrc	01/02/1980 00:00	BSHRC File	3 KB
create-rmi-keystore.bat	01/02/1980 00:00	Windows Batch File	2 KB
create-rmi-keystore.sh	01/02/1980 00:00	Shell Script	2 KB

Apache JMeter (5.2.1)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

Test Plan

Test Plan

Name: Test Plan

Comments:

User Defined Variables

Name:	Value

Detail Add Add from Clipboard Delete Up Down

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

Library

prometheus.io/download/

Operating system popular Architecture amd64

prometheus

The Prometheus monitoring system and time series

2.29.2 / 2021-08-27 Release notes

File name
prometheus-2.29.2.darwin-amd64.tar.gz
prometheus-2.29.2.linux-amd64.tar.gz
prometheus-2.29.2.windows-amd64.zip

This PC › Downloads › prometheus-2.29.2.windows-amd64 › prometheus-2.29.2.windows-amd64

Name	Date modified	Type
console_libraries	01/09/2021 14:34	File folder
consoles	01/09/2021 14:34	File folder
data	20/09/2021 19:04	File folder
jmeter.log	04/09/2021 20:04	Text Document
LICENSE	01/09/2021 14:34	File
NOTICE	01/09/2021 14:34	File
prometheus.exe	01/09/2021 14:34	Application
prometheus.yml	04/09/2021 20:17	YML File
promtool.exe	01/09/2021 14:34	Application

prometheus.yml

```yaml
# my global config
global:
  scrape_interval: 15s # Set the scrape interval to every 15 seconds. Default is every 1 minute.
  evaluation_interval: 15s # Evaluate rules every 15 seconds. The default is every 1 minute.
  # scrape_timeout is set to the global default (10s).

# Alertmanager configuration
alerting:
  alertmanagers:
    - static_configs:
        - targets:
          # - alertmanager:9093

# Load rules once and periodically evaluate them according to the global 'evaluation_interval'.
rule_files:
  # - "first_rules.yml"
  # - "second_rules.yml"

# A scrape configuration containing exactly one endpoint to scrape:
# Here it's Prometheus itself.
scrape_configs:
  # The job name is added as a label `job=<job_name>` to any timeseries scraped from this config.
  - job_name: "prometheus"

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.

    static_configs:
      - targets: ["localhost:9090"]
  - job_name: 'jmeter'
    static_configs:
    - targets: ["localhost:9270"]

```

cmd - prometheus.exe --config.file=prometheus.yml (Admin)

```
C:\Users\beatriz.navarro
λ cd C:\Users\beatriz.navarro\Downloads\prometheus-2.29.2.windows-amd64\prometheus-2.29.2.windows-amd64

C:\Users\beatriz.navarro\Downloads\prometheus-2.29.2.windows-amd64\prometheus-2.29.2.windows-amd64
λ prometheus.exe --config.file=prometheus.yml
level=info ts=2021-09-20T20:04:09.594Z caller=main.go:390 msg="No time or size retention was set so using the default time
level=info ts=2021-09-20T20:04:09.595Z caller=main.go:428 msg="Starting Prometheus" version="(version=2.29.2, branch=HEAD,
017f2feb66730c67ed8)"
level=info ts=2021-09-20T20:04:09.595Z caller=main.go:433 build_context="(go=go1.16.7, user=root@e5e77da87f9c, date=202108
level=info ts=2021-09-20T20:04:09.595Z caller=main.go:434 host_details=(windows)
level=info ts=2021-09-20T20:04:09.595Z caller=main.go:435 fd_limits=N/A
level=info ts=2021-09-20T20:04:09.595Z caller=main.go:436 vm_limits=N/A
```

grafana.com/grafana/download?platform=windows

Overview | Deployment options | Plugins | Dashboards | Download | About | Resources

Linux | Windows | Mac | Docker

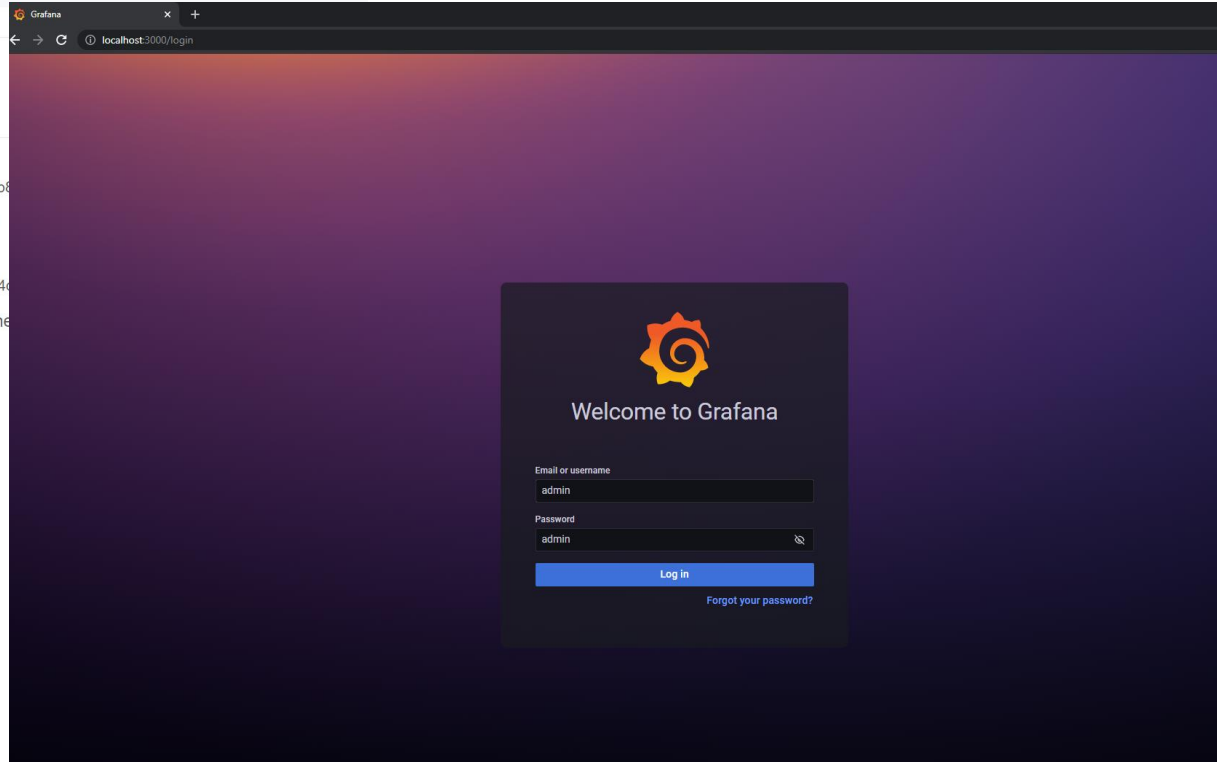
Windows Installer (64 Bit) SHA256: cdd4e86cb82b6067d23ee75572528f9e27b8

Download the installer (grafana-enterprise-8.1.2.windows-amd64.msi) and run it.

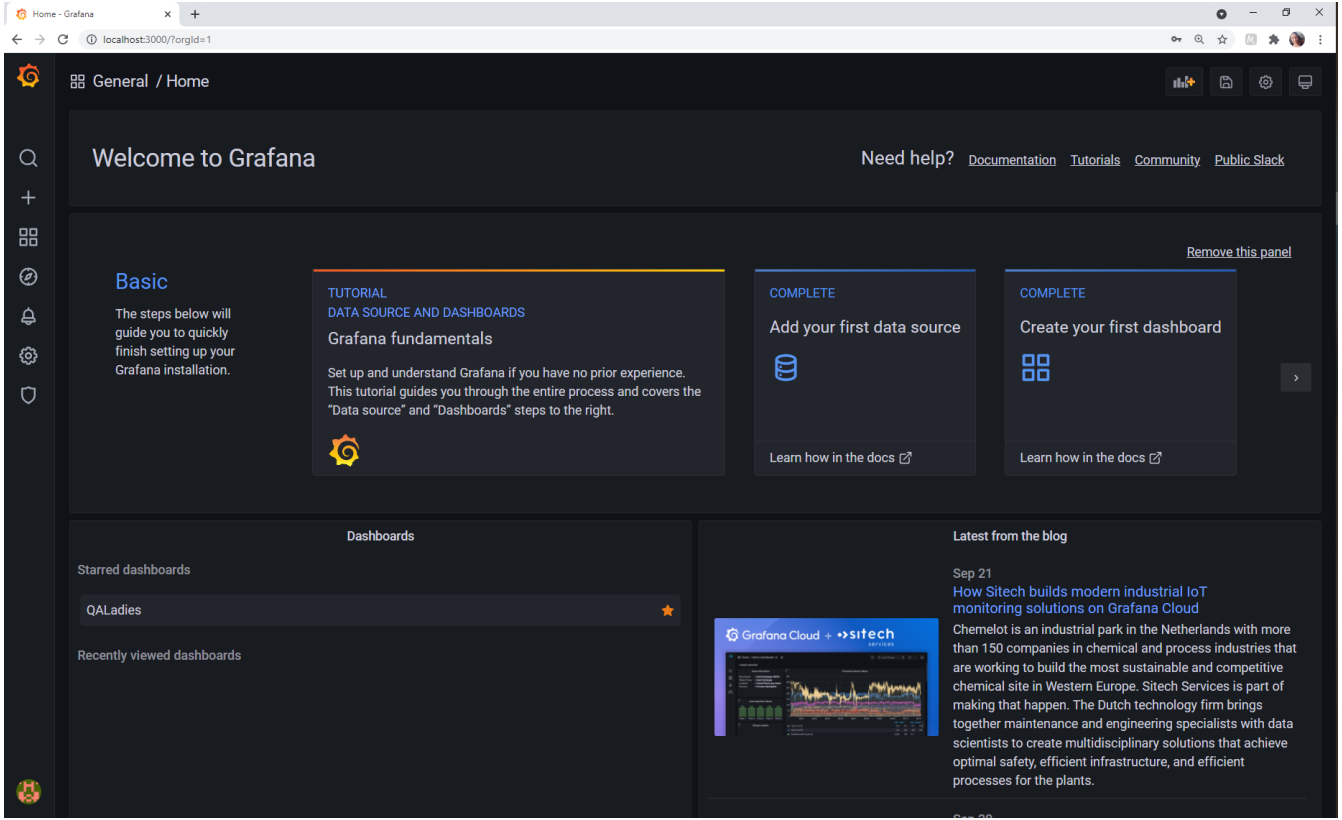
Standalone Windows Binaries (64 Bit) SHA256: 8c714545a80365bde56f4

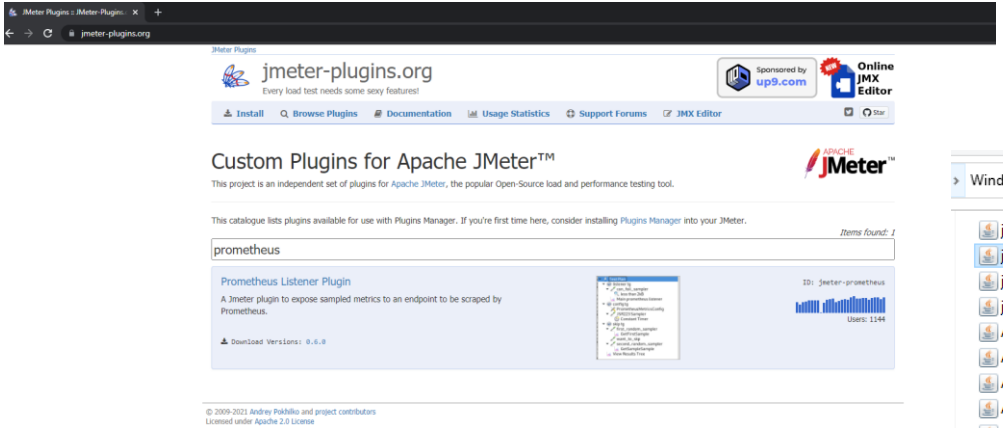
Download the zip file (grafana-enterprise-8.1.2.windows-amd64.zip) and follow the

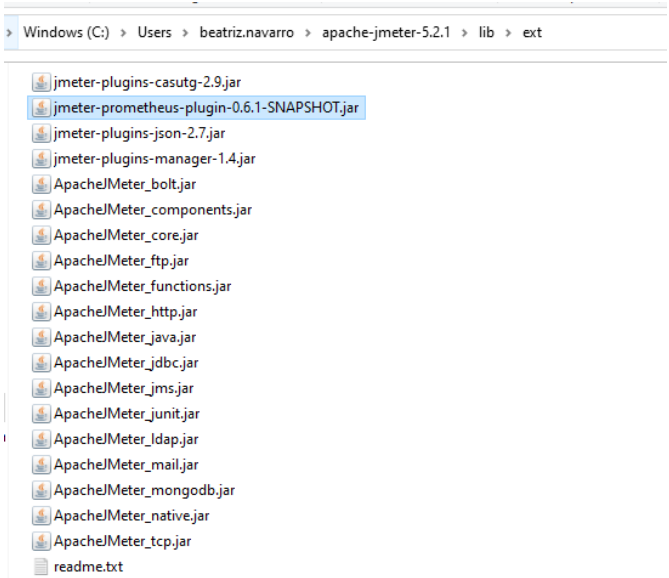
Read the Windows installation guide.



APACHE JMeter™ Prometheus Grafana

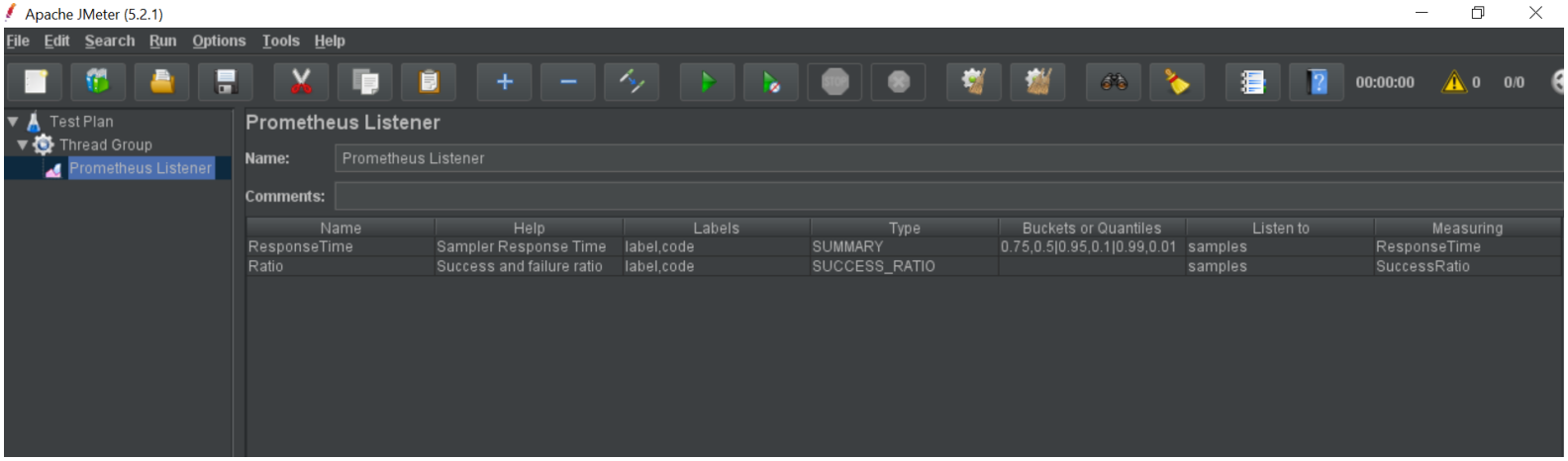


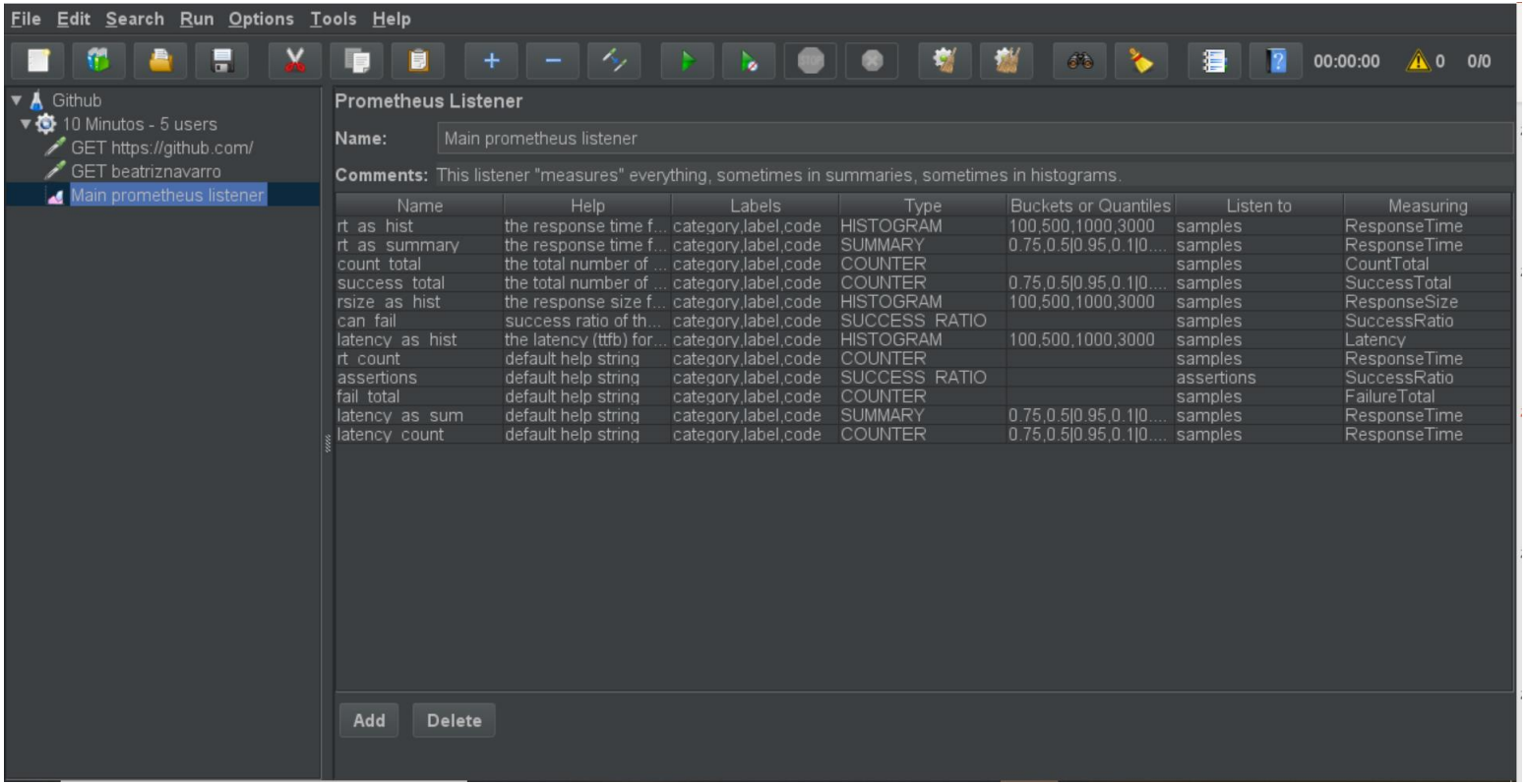

JMeter Plugins :: JMeter-Plugins
jmeter-plugins.org
JMeter Plugins
jmeter-plugins.org
Every load test needs some sexy features!
Sponsored by up9.com
Online JMX Editor
Install
Browse Plugins
Documentation
Usage Statistics
Support Forums
JMX Editor
Star
Custom Plugins for Apache JMeter™
This project is an independent set of plugins for Apache JMeter, the popular Open-Source load and performance testing tool.
APACHE JMeter™
This catalogue lists plugins available for use with Plugins Manager. If you're first time here, consider installing Plugins Manager into your JMeter.
Items found: 1
prometheus
Prometheus Listener Plugin
A Jmeter plugin to expose sampled metrics to an endpoint to be scraped by Prometheus.
Download Versions: 0.6.0
ID: jmeter-prometheus
Users: 1144
© 2009-2021 Andrey Pokhilko and project contributors
Licensed under Apache 2.0 License


Windows (C:) › Users › beatriz.navarro › apache-jmeter-5.2.1 › lib › ext
jmeter-plugins-casutg-2.9.jar
jmeter-prometheus-plugin-0.6.1-SNAPSHOT.jar
jmeter-plugins-json-2.7.jar
jmeter-plugins-manager-1.4.jar
ApacheJMeter_bolt.jar
ApacheJMeter_components.jar
ApacheJMeter_core.jar
ApacheJMeter_ftp.jar
ApacheJMeter_functions.jar
ApacheJMeter_http.jar
ApacheJMeter_java.jar
ApacheJMeter_jdbc.jar
ApacheJMeter_jms.jar
ApacheJMeter_junit.jar
ApacheJMeter_ldap.jar
ApacheJMeter_mail.jar
ApacheJMeter_mongodb.jar
ApacheJMeter_native.jar
ApacheJMeter_tcp.jar
readme.txt

Listener

É um componente que apresenta os resultados dos requests em forma de árvores, gráficos, tabelas ou arquivos de log.




File Edit Search Run Options Tools Help
00:00:00
0
0/0
Github
10 Minutos - 5 users
GET https://github.com/
GET beatriznavarro
Main prometheus listener
Prometheus Listener
Name:
Main prometheus listener
Comments:
This listener "measures" everything, sometimes in summaries, sometimes in histograms.
Name
Help
Labels
Type
Buckets or Quantiles
Listen to
Measuring
rt_as_hist
the response time f...
category,label,code
HISTOGRAM
100,500,1000,3000
samples
ResponseTime
rt_as_summary
the response time f...
category,label,code
SUMMARY
0.75,0.5|0.95,0.1|0....
samples
ResponseTime
count_total
the total number of ...
category,label,code
COUNTER
samples
CountTotal
success_total
the total number of ...
category,label,code
COUNTER
0.75,0.5|0.95,0.1|0....
samples
SuccessTotal
rsize_as_hist
the response size f...
category,label,code
HISTOGRAM
100,500,1000,3000
samples
ResponseSize
can_fail
success ratio of th...
category,label,code
SUCCESS_RATIO
samples
SuccessRatio
latency_as_hist
the latency (ttfb) for...
category,label,code
HISTOGRAM
100,500,1000,3000
samples
Latency
rt_count
default help string
category,label,code
COUNTER
samples
ResponseTime
assertions
default help string
category,label,code
SUCCESS_RATIO
assertions
SuccessRatio
fail_total
default help string
category,label,code
COUNTER
samples
FailureTotal
latency_as_sum
default help string
category,label,code
SUMMARY
0.75,0.5|0.95,0.1|0....
samples
ResponseTime
latency_count
default help string
category,label,code
COUNTER
0.75,0.5|0.95,0.1|0....
samples
ResponseTime
Add
Delete

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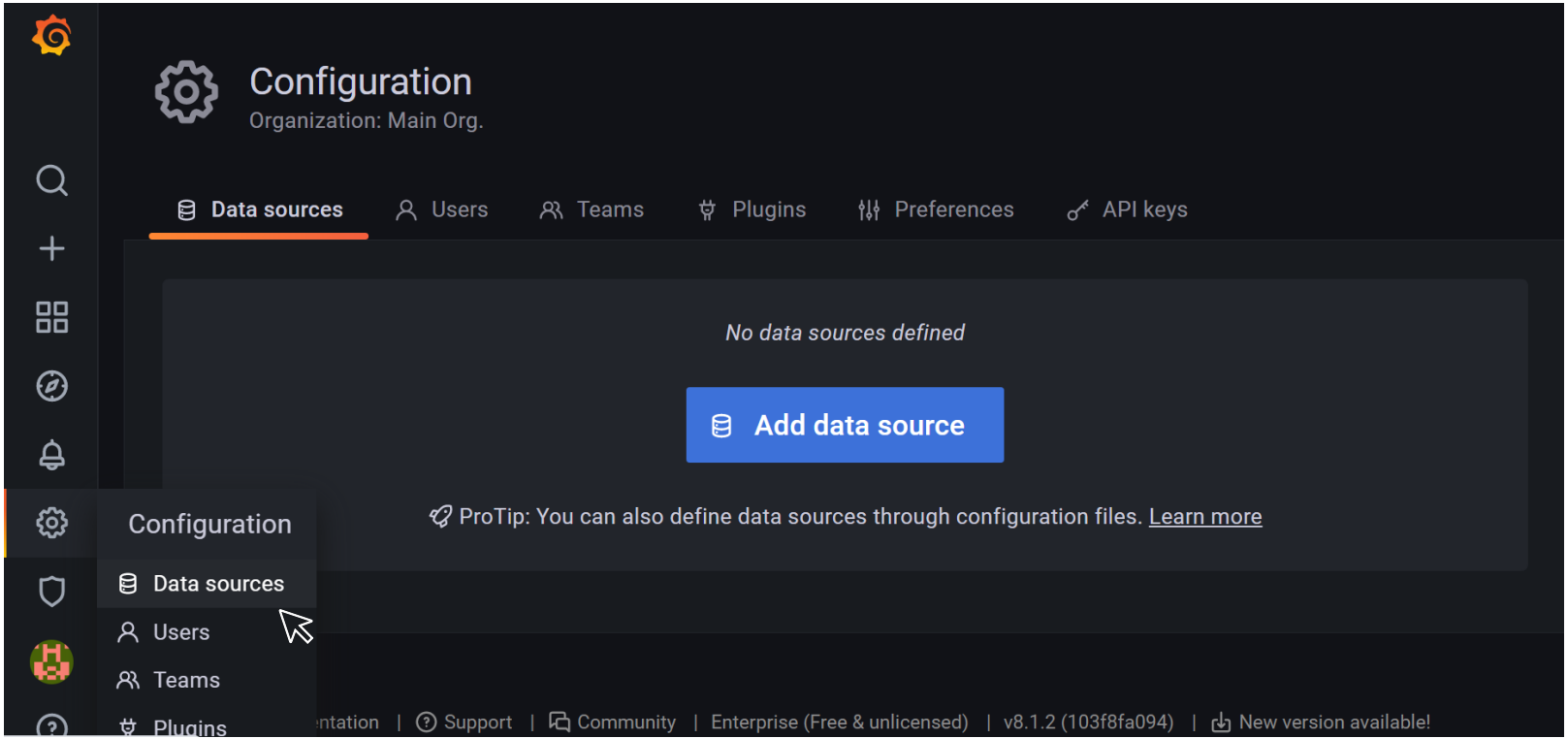
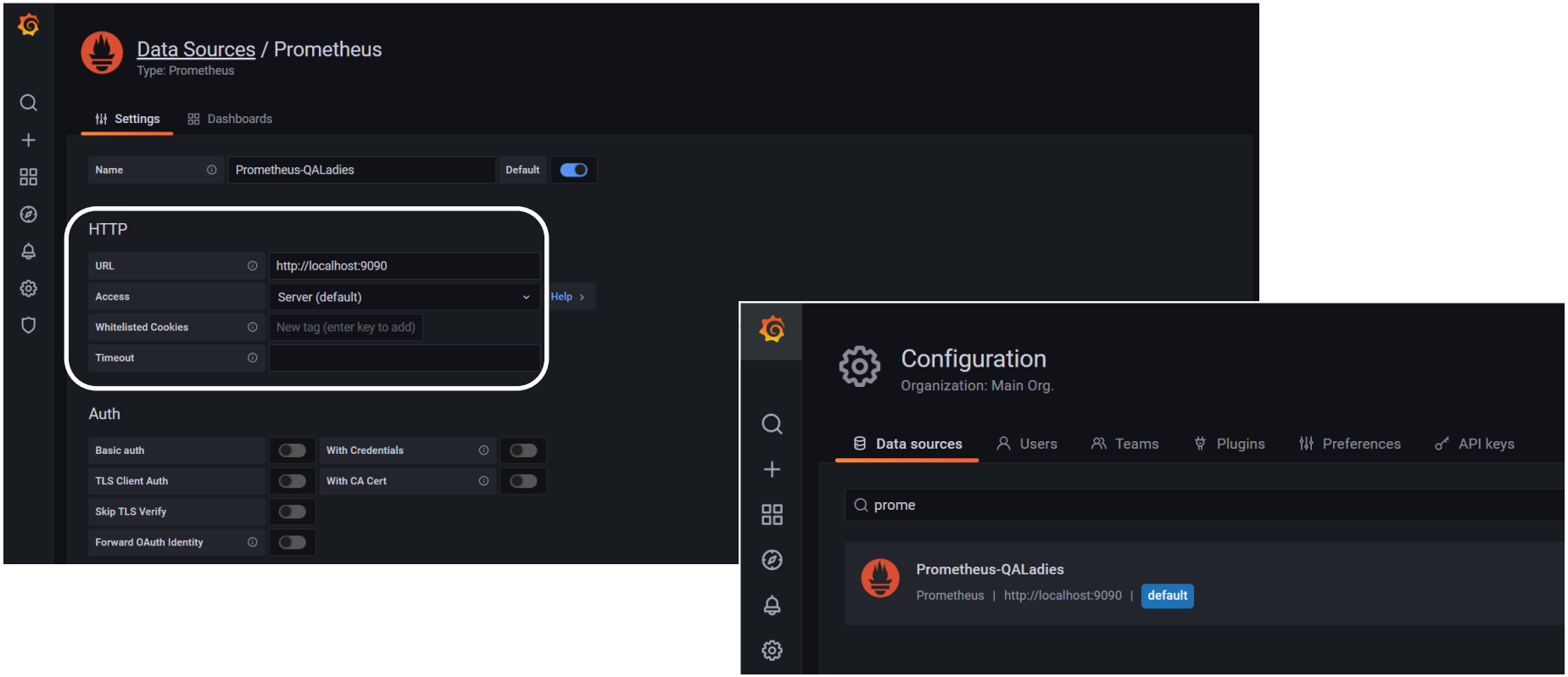



Data Sources / Prometheus
Type: Prometheus
Settings
Dashboards
Name
Prometheus-QALadies
Default
HTTP
URL
http://localhost:9090
Access
Server (default)
Help
Whitelisted Cookies
New tag (enter key to add)
Timeout
Auth
Basic auth
With Credentials
TLS Client Auth
With CA Cert
Skip TLS Verify
Forward OAuth Identity
Configuration
Organization: Main Org.
Data sources
Users
Teams
Plugins
Preferences
API keys
prome
Prometheus-QALadies
Prometheus | http://localhost:9090 | default

jmeter-prometheus-plugin/docs/

github.com/johrstrom/jmeter-prometheus-plugin/tree/master/docs/examples

Search or jump to... / Pull requests Issues Marketplace Explore

johrstrom / jmeter-prometheus-plugin

Code Issues 18 Pull requests Actions Projects Wiki Security

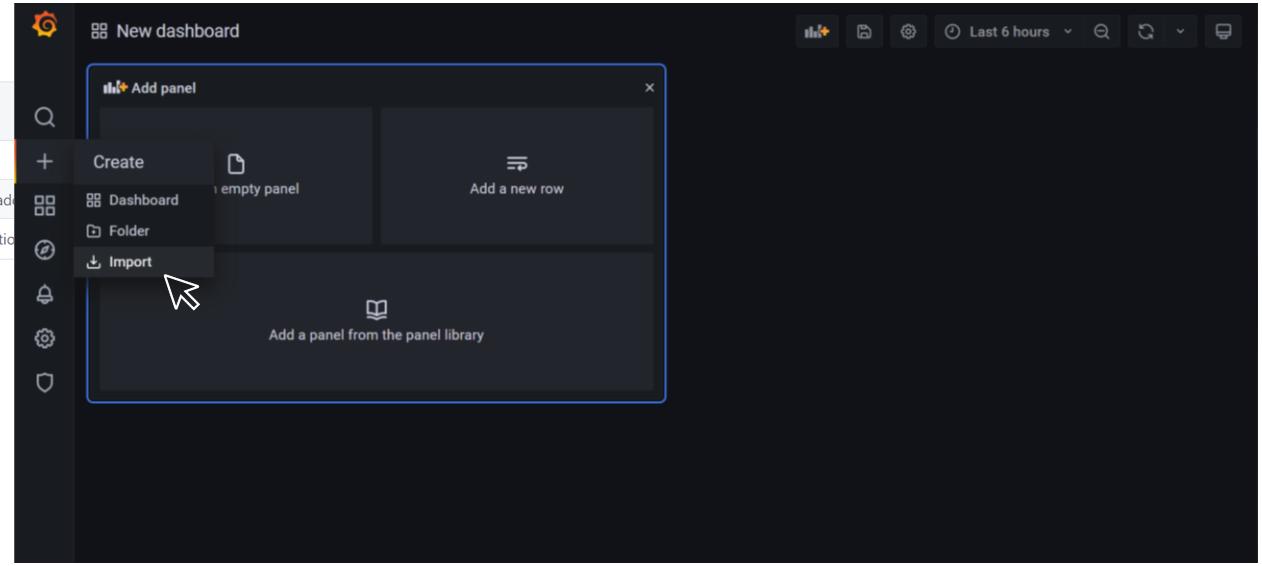
master jmeter-prometheus-plugin / docs / examples /

GiovanniPaoloGibilisco Feature/add default metrics (#73) ...

..

grafana.json Feature/ad

simple_prometheus_example.jmx #51 functio




```
C:\Users\beatriz.navarro\Desktop
λ jmeter -n -t github.jmx  -l testresults.log -e -o testresults
Creating summariser <summary>
Created the tree successfully using github.jmx
Starting standalone test @ Mon Sep 20 19:11:32 BRT 2021 (1632175892938)
Waiting for possible Shutdown/StopTest
summary +      1 in 00:00:02 =    0,7/
summary +   1010 in 00:00:25 =   40,1/
summary =   1011 in 00:00:27 =   37,8/
```

localhost:9270

localhost:9270

```
# HELP assertions_success default help string
# TYPE assertions_success counter
# HELP assertions_failure default help string
# TYPE assertions_failure counter
# HELP assertions_total default help string
# TYPE assertions_total counter
# HELP success_total the total number of successful samplers
# TYPE success_total counter
success_total{category="null",label="GET beatriznavarro",code="200",} 108.0
success_total{category="null",label="GET https://github.com/",code="200",} 108.0
# HELP fail_total default help string
# TYPE fail_total counter
# HELP jvm_classes_loaded The number of classes that are currently loaded in the JVM
# TYPE jvm_classes_loaded gauge
jvm_classes_loaded 5400.0
# HELP jvm_classes_loaded_total The total number of classes that have been loaded since the JVM has started
execution
# TYPE jvm_classes_loaded_total counter
jvm_classes_loaded_total 5400.0
# HELP jvm_classes_unloaded_total The total number of classes that have been unloaded since the JVM has started
execution
# TYPE jvm_classes_unloaded_total counter
jvm_classes_unloaded_total 0.0
```

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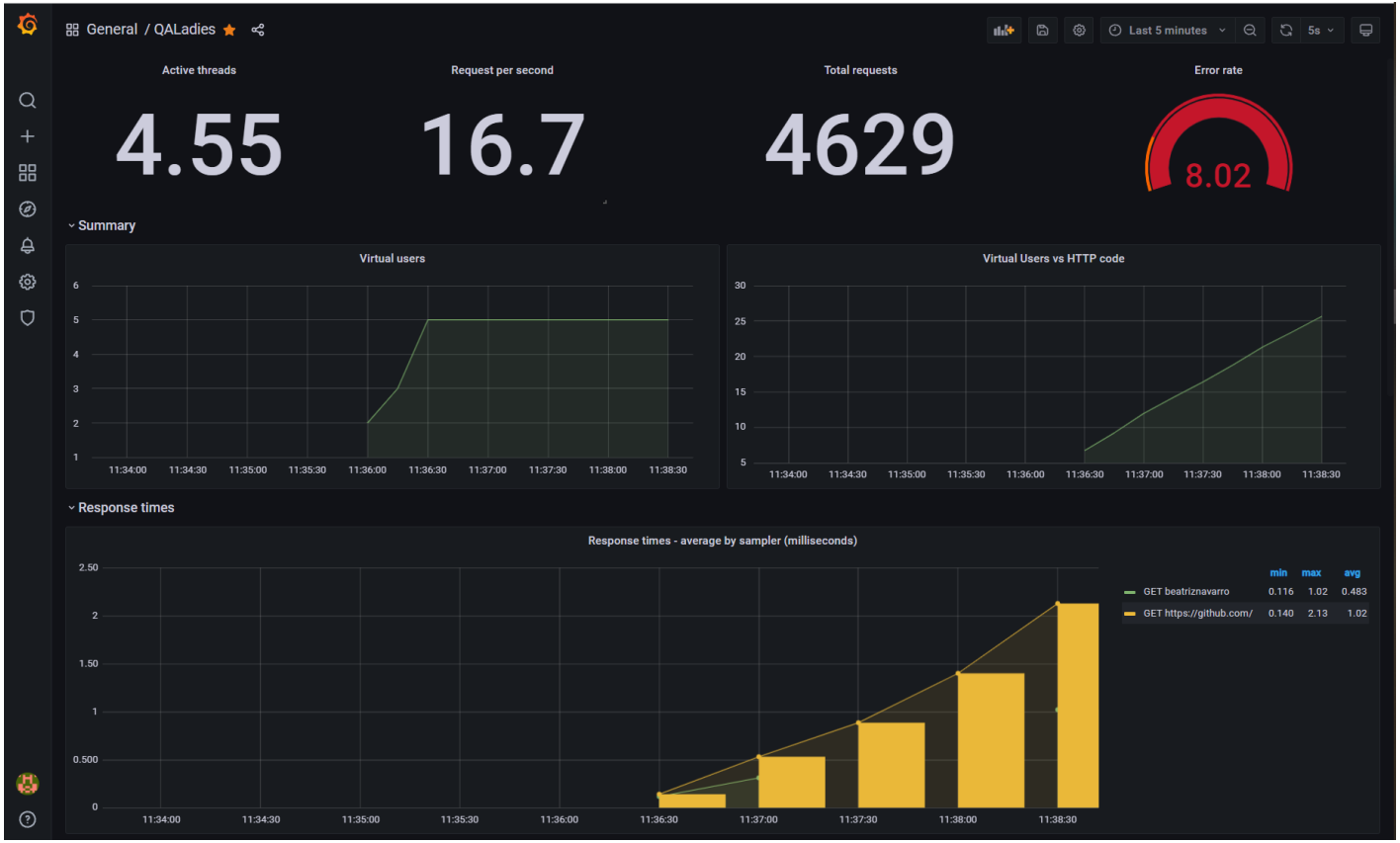


APACHE
JMeter
Prometheus
Grafana
General / QALadies
Last 5 minutes
5s
Requests per second - Total
min max avg
1.92 34.0 19.3
Requests per second - by sampler
total
GET beatriznavarro 62.7
GET https://github.com/ 62.9
Requests per second - by HTTP code
total
HTTP 200 13.1
HTTP 429 113
Errors
HTTP 4** 5** per second
total
GET beatriznavarro - HTTP 429 17.1 K
GET https://github.com/ - HTTP 429 16.1 K

File | C:/Users/beatriz.navarro/Desktop/testresults/index.html

Apache JMeter Dashboard

- Dashboard
- Charts
- Customs Graphs

Test and Report information

Source file	"testresults.log"
Start Time	"06/09/21 16:14"
End Time	"06/09/21 16:24"
Filter for display	""

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.097	500 ms	1 sec 500 ms	Total
0.072	500 ms	1 sec 500 ms	GET beatriznavarro
0.122	500 ms	1 sec 500 ms	GET https://github.com/

Requests Summary

Statistics

Requests	Executions			Response Times (ms)						Throughput	Network (KB/sec)	
Label	#Samples	KO	Error %	Average	Min	Max	90th pct	95th pct	99th pct	Transactions/s	Received	Sent
Total	30657	27678	90.28%	94.43	16	21045	143.00	172.00	280.00	51.09	864.21	6.73
GET beatriznavarro	15327	14230	92.84%	90.30	16	21029	136.00	159.00	230.72	25.58	49.21	3.87
GET https://github.com/	15330	13448	87.72%	98.57	16	21045	143.90	171.00	277.00	25.55	815.07	2.87

Errors

Type of error	Number of errors	% in errors	% in all samples

Referências

https://beatriznavarro.medium.com/jmeter-prometheus-grafana-d38fa92488c0
https://bstqb.org.br/b9/sobre-ctfl-pt
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Obrigada!

Perguntas?