

FIAP GRADUAÇÃO

DISCIPLINA: PROJETO DE SISTEMAS APLICADO AS MELHORES PRÁTICAS EM
QUALIDADE DE SOFTWARE E GOVERNANÇA DE TI

AULA:

17 – TESTE DE SISTEMA, não funcional e automatizado

PROFESSOR:

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Renato Parducci - YouTube

AGENDA DA AULA

- ✓ CMMI nível 3 - VER/VAL
- ✓ MPS.br nível D - VER/VAL
- ✓ Técnicas para planejar e aplicar testes de Caixa branca e preta
- ✓ Modelos de definição de testes (Testes do nível de Sistema)

TESTES NÃO FUNCIONAIS AUTOMATIZADOS

CASE – FERRAMENTAS DE APOIO A ENGENHARIA E TESTE DE SOFTWARE

Além dos testes do tipo FUNCIONAL que fizemos até então com as ferramentas, precisamos fazer testes do tipo NÃO FUNCIONAIS, com técnica de CAIXA PRETA, para os níveis de HOMOLOGAÇÃO (feito com o usuário) e SISTEMA (realizado pela equipe técnica do projeto).



CASE – FERRAMENTAS DE APOIO A ENGENHARIA E TESTE DE SOFTWARE

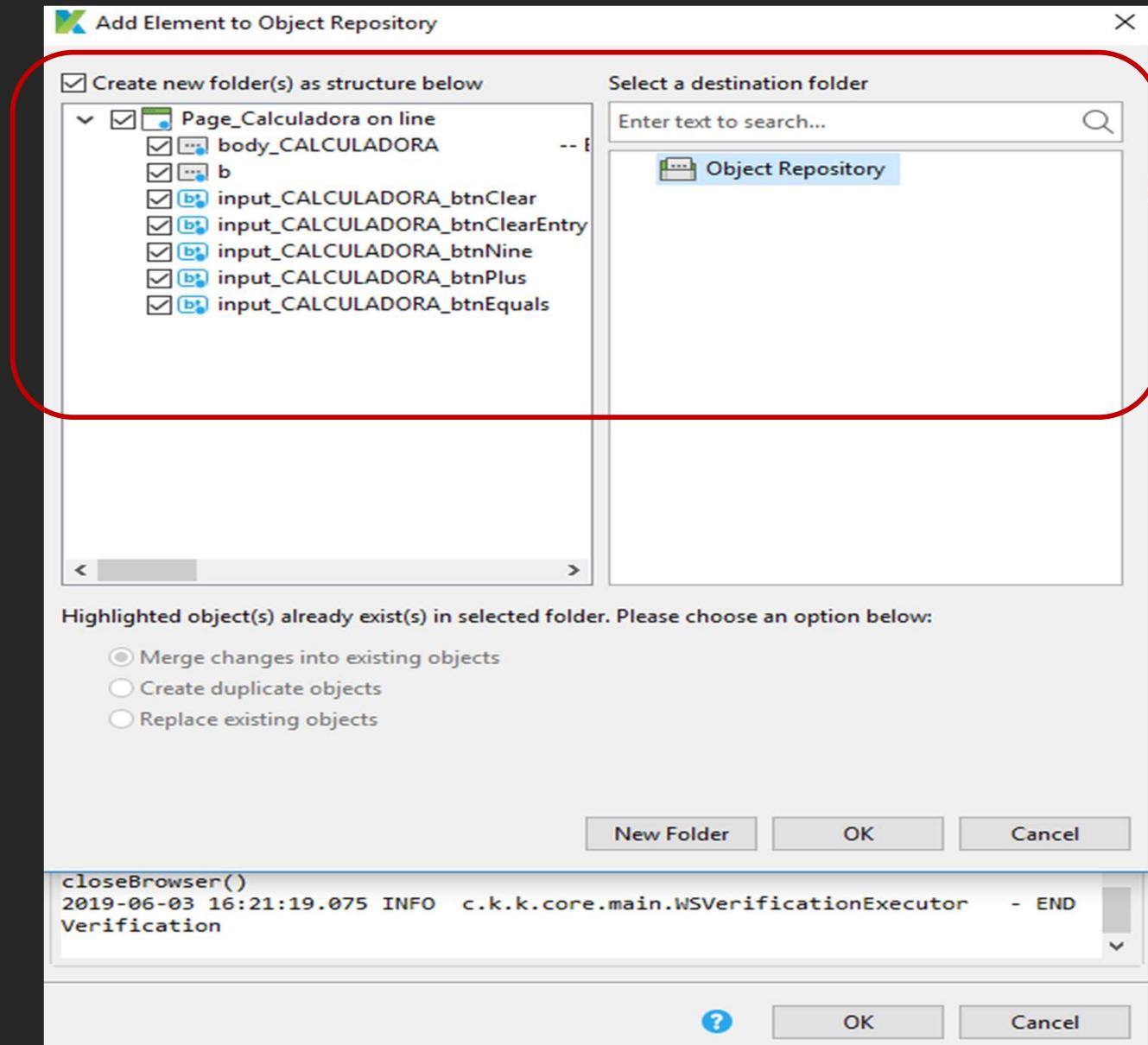
Além dos testes do tipo FUNCIONAL que fizemos até então com as ferramentas, precisamos fazer testes do tipo **NÃO FUNCIONAIS**, com técnica de **CAIXA PRETA**, para os níveis de **HOMOLOGAÇÃO** (feito com o usuário) e **SISTEMA** (realizado pela equipe técnica do projeto).

A seguir, vamos experimentar o Katalon Studio e o Jmeter para realizar testes de Portabilidade, Estresse e Performance para atender esses níveis, técnicas e tipos de testes!



TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade



Estando tudo certo, clique em OK e gere um Repositório do seu teste gravado para poder operar com os dados.

Dê um nome para esse repositório e depois, na tela principal do Katalon, você poderá reexecutar o teste, usando o menu ACTION/RUN e aplicar os testes em diversas plataformas!



TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade



Katalon Studio

Rode o teste nas diversas plataformas de navegadores WEB!

Katalon Studio - 6.1.5-ah173825c - Projeto TesteKatalon - [Location: C:\Users\renat\Katalon Studio\ProjetoTesteKatalon]

File Action Edit Project Debug TestOps Window Help Plugin

API/Web Service Spy Record Add Run Debug Search

Test Cases Test UsoCalcOnLine

Object Repository TESTE1-CALC Page_Calculadora

Test Suites Data Files Checkpoints Keywords Test Listeners Reports Include Plugins

Job Progress

Test Cases/TesteUsoCalcOnLine - Firefox - 20190603_163329

Test UsoCalcOnLine - Chrome - 20190603_163136

Custom capabilities

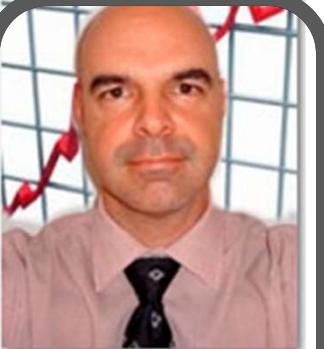
Manual </> Script Variables </> Variables (Script mode) Integration Properties

Problems Event Log Console Log Viewer

Runs: 1/1 Passes: 1 Failures: 0 Errors: 0 Skips: 0

06-03-2019 04:33:32 PM Test Cases/TesteUsoCalcOnLine
Elapsed time: 17,767s
Test Cases/TesteUsoCalcOnLine

CANAL DO PROFESSOR



Vídeos de
complementares
de aulas

Assista ao vídeo sobre KATALON
Testes de Portabilidade!

<https://youtu.be/MJs-e6gXvI8>



CASE – FERRAMENTAS DE APOIO A ENGENHARIA E TESTE DE SOFTWARE

Alguns dos testes finais que fazemos no nível de Sistema são os de Desempenho e Carga, chamados **TESTES DE ESTRESSE**.

No caso do **TESTE DE DESEMPENHO**, geramos uma transação no software de aplicação e avaliamos o tempo que ele demora para dar um retorno ao demandante da operação.

No caso do **TESTE DE CARGA**, a ideia é executar a operação/uso do software simulando várias conexões simultâneas, demandando operações.

CASE – FERRAMENTAS DE APOIO A ENGENHARIA E TESTE DE SOFTWARE

Vamos usar o **JMETER** para realizar testes simples de ESTRESSE!



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



A screenshot of the Apache JMeter 5.1.1 application window. The title bar says "Apache JMeter (5.1.1 r1855137)". The menu bar includes File, Edit, Search, Run, Options, Tools, and Help. The toolbar has various icons for file operations like Open, Save, and Print, along with other test plan management tools. A red callout box points to the "Test Plan" tab in the left sidebar, which is highlighted in blue. The main panel shows the "Test Plan" configuration with fields for "Name" (set to "Test Plan") and "Comments". Below these are buttons for "Detail", "Add", "Add from Clipboard", "Delete", "Up", and "Down". A red arrow points from the text "Crie um novo plano de teste (FLIE/NEW)" to the "Add" button. The bottom section of the interface shows settings for thread groups and a "Library" section.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

Add Paste Open... Merge Save Selection As... Save Node As Image Ctrl-G Save Screen As Image Ctrl+Shift-G Enable Disable Toggle Help

Threads (Users) Plan Test Fragment Non-Test Elements

Test Plan

Name:

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

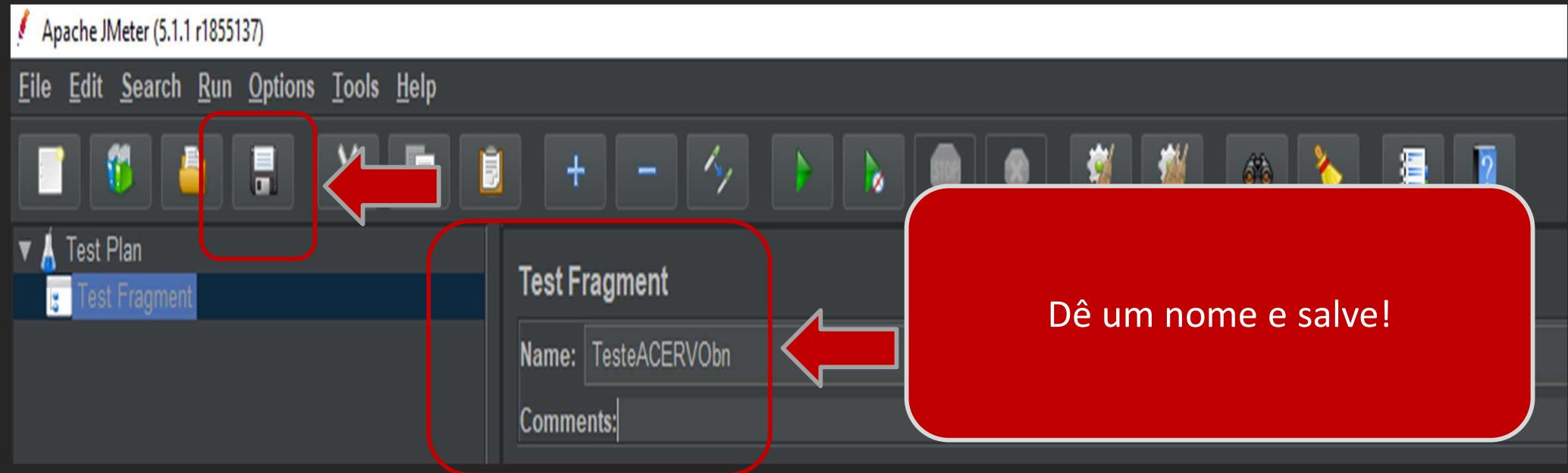
Digite aqui para pesquisar

17:54 03/06/2019

Vamos criar um passo/fragmento de teste para avaliar o tempo de resposta do portal de login da FIAP

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



TesteACEROBn.jmx (C:\Users\renat\Documents\Instaladores\JMETER\bin\TesteACEROBn.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

Test Plan

Add

Threads (Users)

Thread Group

- setUp Thread Group
- tearDown Thread Group

User Defined Variables

Name	Value

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

Library

Digite aqui para pesquisar

18:01 03/06/2019

A red arrow points from the text "Defina a quantidade de usuários que quer simular acessando o portal!" to the "Threads (Users)" button in the JMeter interface.

Defina a quantidade de usuários que quer simular acessando o portal!

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Thread Group

Name: Teste5users

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):

Ramp-Up Period (in seconds):

Loop Count: Forever

Delay Thread creation until needed

Scheduler

Scheduler Configuration

⚠ If Loop Count is not -1 or Forever, duration will be min(Duration, Loop Count * iteration duration)

Duration (seconds)

Startup delay (seconds)

A red callout box with a black border and a red arrow pointing to the "Number of Threads (users)" field contains the following text:

Defina a quantidade de usuários que quer simular acessando o portal, a quantidade de interações por usuário e o intervalo de tempo entre interações!
Salve no final!

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



TesteACEROBn.jmx (C:\Users\renat\Documents\Instaladores\JMETER\bin\TesteACEROBn.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

Test Plan Test ACEROBn Add Think Times to children Start Start no pauses Validate Cut Ctrl-X Copy Ctrl-C Paste Ctrl-V Duplicate Ctrl+Shift-C Remove Delete Open... Merge Save Selection As... Save Node As Image Ctrl-G Save Screen As Image Ctrl+Shift-G Enable Disable Toggle Help

Sampler > HTTP Request

Logic Controller > Debug Sampler

Pre Processors > JSR223 Sampler

Post Processors > AJP/1.3 Sampler

Assertions > Access Log Sampler

Timer > BeanShell Sampler

Test Fragment > FTP Request

Config Element > JDBC Request

Listener > JMS Point-to-Point

Scheduler > JMS Publisher

Schedule > JMS Subscriber

JUnit Request

Java Request

If Loop Condition

Duration (seconds)

Startup delay

Delay Timer

Scheduler Configuration

Action will be min(Duration, Loop Count * iteration duration)

Agora, adicionamos ao Grupo de Usuários, um teste HTTP!

00:00:00 0/0 0/0

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



HTTP Request

Name: HTTP Request

Comments:

Basic Advanced

Web Server

Protocol [http]: Server Name or IP: Port Number:

HTTP Request

Method: GET Path:

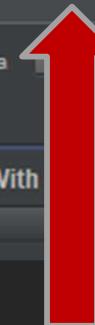
Redirect Automatically Follow Redirects Use KeepAlive Use multipart/form-data

User-compatible headers

Parameters Body Data Files Upload

Send Parameters With Request:

Name:	Value	URL Encode?	Content-Type	Include Equals?
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Informe o site que deseja testar!
NÃO COLOQUE A INICIAL HTTP ou HTTPS, só
informe a URL www.nome.extensão!

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



The screenshot shows the Apache JMeter interface with a red circle highlighting the context menu for a 'Thread Group'. The 'Listener' option in the menu is selected and highlighted in blue. A red arrow points from a callout box containing the text 'Adicione uma forma de monitorar resultados do Grupo de Usuários (Listener/Ouvinte)!' to the 'Listener' option. Another red arrow points from a second callout box containing the text 'Selecionar resultados em tabela para o teste! Não esqueça de salvar!' to the 'View Results in Table' option in the submenu.

Adicione uma forma de monitorar resultados do Grupo de Usuários (Listener/Ouvinte)!

Selecionar resultados em tabela para o teste!
Não esqueça de salvar!

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga

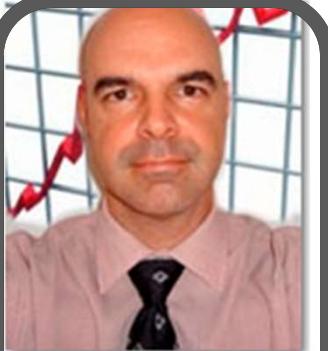


Verifique os resultados!

Você pode salvar as evidências de teste (tabela)!

Sample #	Start Time	Thread Name	Label	Sample Time(m...)	Status	Bytes	Sent Bytes	Latency	Connect Time(.
135	18:42:12.020	GrupoTESTER ...	HTTP Request	23297	✗	4337	125	403	307
136	18:42:11.623	GrupoTESTER ...	HTTP Request	23694	✗	4337	125	797	700
137	18:42:11.428	GrupoTESTER ...	HTTP Request	23890	✗	4335	125	995	890
138	18:42:11.783	GrupoTESTER ...	HTTP Request	23536	✗	4336	125	640	542
139	18:42:11.368	GrupoTESTER ...	HTTP Request	23951	✗	4336	125	1054	925
140	18:42:12.141	GrupoTESTER ...	HTTP Request	23179	✗	4337	125	282	187
141	18:42:11.524	GrupoTESTER ...	HTTP Request	23796	✗	4336	125	899	799
142	18:42:11.166	GrupoTESTER ...	HTTP Request	24155	✗	4336	125	1256	1157
143	18:42:11.763	GrupoTESTER ...	HTTP Request	23558	✗	4336	125	661	562
144	18:42:11.243	GrupoTESTER ...	HTTP Request	24078	✗	4336	125	1180	1075
145	18:42:11.980	GrupoTESTER ...	HTTP Request	23341	✗	4336	125	443	346
146	18:42:11.284	GrupoTESTER ...	HTTP Request	24037	✗	4336	125	1139	1032
147	18:42:12.101	GrupoTESTER ...	HTTP Request	23220	✗	4336	125	322	227
148	18:42:11.723	GrupoTESTER ...	HTTP Request	23599	✗	4337	125	700	600
149	18:42:11.343	GrupoTESTER ...	HTTP Request	23976	✗	4336	125	1083	980
150	18:42:12.040	GrupoTESTER ...	HTTP Request	23280	✗	4336	125	383	285
151	18:43:15.103	GrupoTESTER ...	HTTP Request	1699	✓	44951	232	345	173
152	18:43:15.020	GrupoTESTER ...	HTTP Request	1803	✓	44927	232	355	182
153	18:43:15.306	GrupoTESTER ...	HTTP Request	1595	✓	45111	232	342	173
154	18:43:15.506	GrupoTESTER ...	HTTP Request	1465	✓	45096	232	319	161
155	18:43:15.205	GrupoTESTER ...	HTTP Request	2020	✓	45124	232	354	176
156	18:43:15.707	GrupoTESTER ...	HTTP Request	1599	✓	44914	232	465	163
157	18:43:15.606	GrupoTESTER ...	HTTP Request	1715	✓	45133	232	578	190
158	18:43:15.808	GrupoTESTER ...	HTTP Request	1527	✓	44958	232	424	171
159	18:43:15.406	GrupoTESTER ...	HTTP Request	2091	✓	44929	232	338	160
160	18:43:15.926	GrupoTESTER ...	HTTP Request	2168	✓	44927	232	1036	159

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Vídeos de
complementares
de aulas

Assista ao vídeo sobre JMETER
Testes de Desempenho!

<https://youtu.be/QtTDUDHAVPw>



QUAL O PROBLEMA DO JMeter?



Como você testa à partir do seu computador local, a qualidade da sua rede dedicada vai influenciar no resultado!

Se você deseja simular acesso à partir da Internet pública, deveria disparar Threads, partindo de um computador no backbone da Internet!

O **BlazeMeter** pode lhe ajudar a completar os testes de desempenho, performando as requisições na nuvem!

Para usar o BlazeMeter, primeiramente, você deve criar o seu teste no JMETER e gravar o arquivo .jmx que ele gera para poder fazer upload dele no Blaze!

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga

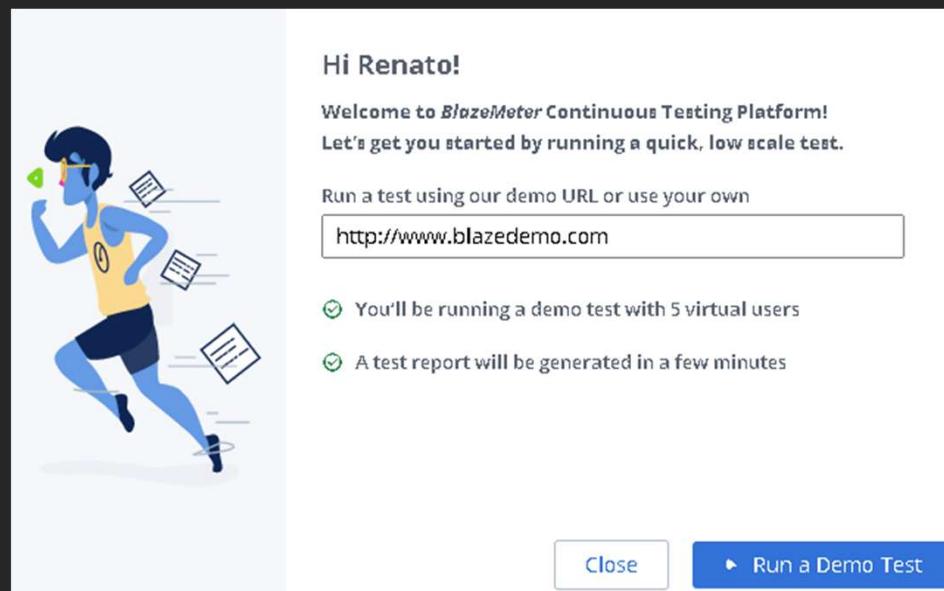


Para usar o Blazer Meter:

1º) Acesse: [BlazeMeter Continuous Testing | BlazeMeter by Perforce](https://www.blazemeter.com/)
[\(https://www.blazemeter.com/\)](https://www.blazemeter.com/)

2º) Acess 

3º) Crie uma conta gratuita de acesso



Não vamos rodar a
Demo

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



4º) Crie um teste

The screenshot shows the BlazeMeter dashboard interface. At the top, there is a navigation bar with tabs: Functional, Performance (which is selected and highlighted in purple), Mock Services, and API Monitoring. To the right of the tabs is a search bar and a user profile for Renato Parducci. Below the navigation bar, there is a secondary navigation menu with links: Home, Default workspace, Projects, Tests, Reports, and a notification badge showing '0'. A prominent blue button labeled 'Create Test' is centered in the middle of the dashboard, enclosed in a red rectangular box and with a red arrow pointing down to it from above. The main content area is divided into several sections: 'Recent Test Runs' (with a placeholder image of a smartphone and laptop displaying charts and graphs, and the text 'This workspace has no test runs yet'), 'Recently Updated Tests' (with the message 'No tests, no reports.'), 'Usage Report' (with the message 'No tests or reports here.'), and two smaller sections at the bottom left: 'Create a performance test' and 'Launch First-time wizard'.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



4º) Crie um projeto, correspondente ao seu projeto de software, onde vai catalogar testes

The screenshot shows the BlazeMeter web interface. On the left, there's a sidebar with 'Default workspace' and 'Recent Test Runs'. Below it, a message says 'This workspace has no test runs yet' with options to 'Create a performance test' or 'Launch First-time wizard'. On the right, a modal window titled 'Create a new project' is open. It has fields for 'Name' (containing 'ProjetoStartup') and 'Description' (containing 'Projeto exemplo - Teste performance'). A blue 'Create project' button is at the bottom right of the modal. A red arrow points from the text 'Crie um projeto' in step 4 to the 'Projects' dropdown in the top navigation bar of the main interface.

Create a new project

Name: ProjetoStartup

Description: Projeto exemplo - Teste performance

Create project

Projects

Default workspace

Recent Test Runs

This workspace has no test runs yet

Create a performance test

or

Launch First-time wizard

No tests or reports here.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



5º) Crie um teste

The screenshot shows the BlazeMeter dashboard interface. At the top, there is a navigation bar with tabs: Functional, Performance (which is selected and highlighted in purple), Mock Services, and API Monitoring. Below the tabs is a search bar and a user profile for Renato Parducci. The main content area has several sections: 'Default workspace' (Recent Test Runs, Recently Updated Tests, Usage Report), 'Reports' (No tests or reports here), and a central 'Create Test' button. Red boxes and arrows highlight the 'Tests' dropdown menu and the 'Create Test' button.

BlazeMeter

Functional Performance Mock Services API Monitoring

Search

Renato Parducci

Home Default workspace Projects Reports 0

Tests Create Test

Default workspace

Recent Test Runs

No tests, no reports.

Recently Updated Tests

Usage Report

This workspace has no test runs yet

Create a performance test

or

Launch First-time wizard

No tests or reports here.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



5º) Crie um teste de PERFORMANCE

Nosso foco para avaliar desempenho de aplicação →

Select a test type
This test will be created in project: ProjetoStartup ▾

Performance Tests
Upload JMeter, Gatling, The Grinder, Taurus YAML and more, or input a list of URLs/API Endpoints. Use Multi Test to combine tests into a single execution and consolidated report

Performance Test
Upgrade Plan

Need more virtual Users?

Test Creation Tools
You can easily create a Taurus YAML Selenium script with the BlazeMeter Chrome extension.
Create tests by recording via proxy

Get it now
Recorder

Funciona como o Selenium IDE ←

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

Screenshot of the BlazeMeter interface showing the creation of a new test configuration.

The interface includes:

- Top navigation bar: BlazeMeter, Functional, Performance (selected), Mock Services, API Monitoring, Search, and Renato Parducci.
- Left sidebar: Home, Default workspace, Projects, Tests, Reports, Create Test, and a list of recent tests including "December_08_9:32 AM".
- Central workspace:
 - "ProjetoStartup" project selected.
 - "Configuration" tab active.
 - "Upload Script" section with a note about supporting JMeter, Gatling, Selenium, Taurus, and many more.
 - "LOAD CONFIGURATION" section with sliders for Total Users (20), Duration (min) (20m), Iterations (Get More), Ramp up Time (min) (1), and a graph showing a linear ramp-up from 0 to 20 users over 1 minute.
 - "Enter URL/API Calls" button on the right.

A red callout box highlights the text "Edite o nome do teste" (Edit the test name) pointing to the "December_08_9:32 AM" entry in the sidebar.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

BlazeMeter Functional Performance Mock Services API Monitoring Search Renato Parducci

Home Default workspace Projects Tests Reports 0 Create Test

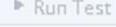
ProjetoStartup December_08_9:32 AM

Description

Tags Define Tags...

Taurus Test • Updated a few seconds ago by Renato Parducci

Send email to subscribers  1

  :

20 20m

US East (Virginia, Google) 100.00%

SCHEDULE + Add No Events

Configuration History Trend Charts

Load Script Enter URL/API Calls

Indique se quer um aviso por e-mail quando o teste acabar de executar

LOAD CONFIGURATION

Total Users: 20

Duration (min): 20

Ramp up Time (min): 1

Limit RPS: 0

Ramp up Steps: 0



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

The screenshot shows the BlazeMeter web interface for test configuration. On the left, there's a sidebar with project details like 'ProjetoStartup' and 'December_08_9:32 AM'. Below it are buttons for 'Run Test', 'Debug Test', and scheduling. A red callout box highlights the 'Threads' and 'Loop' settings, which are set to 20 and 20m respectively. The main area shows a 'Configuration' tab with a 'Upload Script' section, a 'History' tab, and a 'Trend Charts' tab. It includes a 'Send email to subscribers' option and a 'Run Test' button. To the right, there's a chart showing performance metrics over time, and a 'Enter URL/API Calls' panel.

Selezione o número de Threads e o tempo de ciclo do teste (parecido com JMETER). A versão free em limitação de 50 usuários.

20 20m

20 20m

1

0 1 20

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

The screenshot shows the BlazeMeter web interface for creating a new performance test. On the left, there's a sidebar with project details like 'ProjetoStartup' and 'December_08_9:32 AM'. Below it, there are buttons for 'Run Test' and 'Debug Test'. A red box highlights the 'US East (Virginia, Google)' location dropdown under the 'SCHEDULE' section. The main area is titled 'Configuration' and contains sections for 'Upload Script' (with support for JMeter, Gatling, Selenium, Taurus, etc.), 'Ramp up Time (min)', and 'Ramp up Steps'. A graph visualizes the ramp-up process. A large red callout box points to the 'US East (Virginia, Google)' location, with the text: 'Escolha a região do globo de onde quer disparar o teste' (Select the region from the globe where you want to trigger the test).

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

The screenshot shows the BlazeMeter web interface for creating a performance test. On the left, there's a sidebar with project details like 'ProjetoStartup' and 'December_08_9:32 AM'. The main area has tabs for 'Configuration', 'History', and 'Trend Charts'. In the center, there's a large 'Upload Script' button with instructions to use an existing script or a shared folder, supporting JMeter, Gatling, Selenium, and Taurus. Below this are settings for 'Ramp up Time (min)' (set to 20), 'Ramp up Steps' (set to 0), and 'Limit RPS' (set to 1). To the right, there's a graph showing a linear increase from 0 to 20 over 1 minute. A red callout box points to the 'SCHEDULE' section at the bottom left, which currently says 'No Events'. A red arrow also points from the text 'Programe um dia e horário para disparar o teste' (Schedule a day and time to trigger the test) to this 'SCHEDULE' box.

Programe um dia e horário para disparar o teste

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Detalhe o teste a fazer

The screenshot shows the BlazeMeter web interface for creating a performance test. On the left, there's a sidebar with project details like 'ProjetoStartup' and 'December_08_9:32 AM'. The main area has tabs for 'Configuration', 'History', and 'Trend Charts', with 'Configuration' selected. In the center, there's a large 'Upload Script' section with a blue '+' button and text about supporting JMeter, Gatling, Selenium, and Taurus. Below this is a 'LOAD CONFIGURATION' section where 'Total Users' is set to 20. A red box highlights the '+ Upload Script' button, and a red callout bubble points to it with the text: 'Faça o upload de um arquivo .jmx (criado com JMETER)'. The bottom right shows a preview of a load chart.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

The screenshot shows the BlazeMeter test configuration interface. At the top, there are tabs for Configuration (selected), History, and Trend Charts. Below this, the 'SCENARIO DEFINITION (1 FILES)' section shows a file named 'ResultExemploEstadao.jmx' selected. A red circle highlights this section. To the right, it says 'Test type: JMeter'. A red callout box points to this with the text: 'Rampup (tempo no qual serão disparadas as Threads em intervalo de segundos)'. Further down, the 'LOAD CONFIGURATION' section is shown with settings for 'Total Users' (20), 'Duration (min)' (20), and 'Ramp up Time (min)' (1). A second red callout box points to this with the text: 'Período de execução com carga total'. Arrows from both callout boxes point to the corresponding fields in the configuration interface.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

The screenshot shows the BlazeMeter web interface for a performance test named "ResultExemploEstado.jmx". The "Performance" tab is selected. In the "LOAD CONFIGURATION" section, there are two input fields highlighted with a red box: "Duration (min)" and "Iterations". A red callout bubble points to these fields with the text: "Você pode definir se quer rodar por um período de tempo OU um certo número de execuções (loops)". Other visible settings include "Ramp up Time (min)" and "Ramp up Steps". On the left sidebar, there are sections for "ProjetoStartup", "TesteFIAPOESP", "Description", "Tags", and "JMeter Test". The main status bar at the bottom right shows "12/8/22 JMeter Passed".

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

The screenshot shows the BlazeMeter web interface for a performance test named "ResultExemploEstado.jmx". The "Performance" tab is selected. The "LOAD CONFIGURATION" section displays the following settings:

- Total Users: 20
- Duration (min): 20m
- Ramp up Time (min): 1
- Ramp up Steps: 3 (highlighted with a red box)

A callout bubble with a red border and white text points to the "Ramp up Steps" input field, stating: "Você pode alterar a forma de escalar os usuários conectados na sua simulação".

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

The screenshot shows the BlazeMeter web interface for a stress test named 'ResultadoExemploEstado.jmx'. The 'Performance' tab is selected. The 'LOAD CONFIGURATION' section is highlighted, showing settings for 'Total Users' (20), 'Duration (min)' (20), 'Iterations' (30), 'Ramp up Time (min)' (1), and 'Limit RPS' (3). A red box and arrow point to the 'Limit RPS' input field. A red callout bubble contains the text: 'Você pode configurar quantas demandas cada usuário pode fazer, por segundo (se não for informado, os usuários vão gerar requisições em paralelo, ao invés de aguardar segundos de intervalo)'.

Você pode configurar quantas demandas cada usuário pode fazer, por segundo (se não for informado, os usuários vão gerar requisições em paralelo, ao invés de aguardar segundos de intervalo)

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

The screenshot shows the BlazeMeter configuration interface for a stress test. At the top, there are tabs for Configuration, History, and Trend Charts. Below this, there are two radio button options: 'Limit RPS' and 'Ramp up Steps'. Under 'Ramp up Steps', the value is set to 3. The main area is titled 'LOAD DISTRIBUTION' and contains a table for defining traffic distribution by location. A red box highlights the 'Locations' column, and a red arrow points from this box to a callout bubble. The callout bubble contains the text: 'Defina de onde partirão os Threads para simular demandas de determinadas partes do mundo'. The table shows one entry: 'US East (Virginia) - Google Cloud Platform' with 100% of traffic and 20 users. A second row is partially visible below it. To the right of the table is a '+ Add Location' button. At the bottom left, there is a section for 'FAILURE CRITERIA' with a note about setting KPI thresholds. Two red arrows point upwards from the bottom of the slide towards the '100%' and '# of Users' columns in the table.

Locations	% of Traffic	# of Users
US East (Virginia) - Google Cloud Platform	100	20
	100%	20

Defina de onde partirão os Threads para simular demandas de determinadas partes do mundo

Você pode adicionar várias regiões e apontar o percentual de demanda de cada uma

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

Configuration History Trend Charts

Limit RPS (radio button) Ramp up Steps (radio button) 3

LOAD DISTRIBUTION

50 Max Users Per Engine (1 Total Engine)

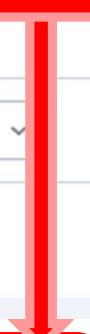
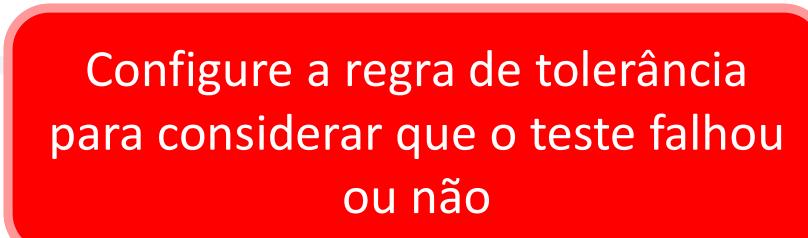
Add Location

Locations	% of Traffic	# of Users
US East (Virginia) - Google Cloud Platform	100	20
Total:	100%	20

FAILURE CRITERIA

Have your test runs flagged as "Passed" or "Failed" by setting KPI thresholds.
If you use Baseline to define the threshold, the threshold will be visible after save

Configure a regra de tolerância para considerar que o teste falhou ou não



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

TEST DATA ORCHESTRATION [?](#)

Data Target Name

No Data Target Defined

Use Data Orchestration to prepare your test environment pre-test, or to clean it up post-test.

You have to create or load Data Entity first ...

+ Add New Data Entity

MOCK SERVICES CONFIGURATION [?](#)

Use these endpoint URLs to configure your system under test to call Mock Services instead of real services.

END USER EXPERIENCE MONITORING [BETA](#) [?](#)

We will call these URLs with a real browser during the load test so that you can see what users will see under load. Once you run the test take a look at the timeline report to see the page load times as well as a waterfall report.

APM INTEGRATION [?](#)

Integrate with Application Performance Monitoring tools including DX APM, AppDynamics, AWS Cloudwatch, DynaTrace and New Relic

<input type="checkbox"/> New Relic APM	<input type="checkbox"/> DX APM	<input type="checkbox"/> CloudWatch
<input type="checkbox"/> AppDynamics	<input type="checkbox"/> DynaTrace APM	<input type="checkbox"/> New Relic Infrastructure

É possível fazer testes orientados a dados, usar endereço mock ao invés de real ou validar apps com simulações de uso (vamos usar Katalon para Data Driven Test)

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



6º) Observe a configuração final do teste

Propriedades do JMETER e da REDE também podem ser modificadas para apontar o alvo dos testes, se necessário

JMeter Version: Auto Detect Java Version: 1.8

JMeter PROPERTIES

Specify JMeter properties to parameterize the test.

DNS OVERRIDE

Use this form to specify alternative IP addresses for hostnames used in your test scenario. Entries here will be placed in the /etc/hosts file for each engine participating in the load test.

NETWORK EMULATION

NETWORK EMULATION

Emulated Network Type: Internet(Unlimited)

Max Bandwidth Per User - Limit/Device (Kb): 300000

Max Global Bandwidth - Limit/Device (Kb):

Latency - Network Delay (Milliseconds): 0

Packet loss %: 0

Network emulation permite que você diga qual o tipo de rede de acesso usada na conexão do usuário

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Faça a configuração a seguir e rode o teste para ver o resultado (parte 1 de 4)!

BlazeMeter Functional **Performance** Mock Services API Monitoring Q Search

Home Default workspace ~ Projects ~ Tests ~ Reports ~ 0 Create Test

ProjetoStartup

TesteFIAPOESP

Description

Tags

Define Tags...

JMeter Test - Updated a few seconds ago, by Renato Parducci

Send email to subscribers 1

10 100.00%

SCHEDULE + Add
No Events

Configuration History Trend Charts

SCENARIO DEFINITION {1 FILES}

Start test with: ResultExemploEstado.jmx

Test type: JMeter

Filename Shared Folder Modified Type Validation status Actions

ResultExemploEstado.jmx 12/8/22 JMeter Passed

Split CSV files with a unique subset per engine Test type: JMeter

LOAD CONFIGURATION

Disabling these settings will use the values configured in the test script.

Total Users: 10

Iterations: Duration (min): 2

Ramp up Time (min): 1

Limit RPS 3 Ramp up Steps 3

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Faça a configuração a seguir e rode o teste para ver o resultado (parte 2 de 4)!

LOAD DISTRIBUTION ?

50 Max Users Per Engine (1 Total Engine)

[+ Add Location](#)

Locations	% of Traffic	# of Users
US East (Virginia) - Google Cloud Platform	100	10
Total:	100%	10

FAILURE CRITERIA ?

Have your test runs flagged as "Passed" or "Failed" by setting KPI thresholds.
If you use Baseline to define the threshold, the threshold will be visible after save

[Advanced configuration](#)

Label	KPI	Condition	Threshold	Staples?
ALL	responseTime.avg(ms)	Greater than	50	<input type="checkbox"/> Edit
ALL	Select...	Select...		<input type="checkbox"/> Edit

TEST DATA ORCHESTRATION ?

Data Target Name	Use With This Test
	No Data Target Defined

Use Data Orchestration to prepare your test environment pre-test, or to clean it up post-test.

You have to create or load Data Entity first ...

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Faça a configuração a seguir e rode o teste para ver o resultado (parte 3 de 4)!

JMeter Version: Auto Detect Java Version: 1.8

JMETER PROPERTIES ?
Specify JMeter properties to parameterize the test.

DNS OVERRIDE ?
Use this form to specify alternative IP addresses for hostnames used in your test scenario. Entries here will be placed in the /etc/hosts file of each engine participating in the load test.

NETWORK EMULATION ?

Emulated Network Type: Custom

Max Bandwidth Per User - Limit/Device (Kb): ? 300000

Max Global Bandwidth - Limit/Device (Kb): ?

Latency - Network Delay (Milliseconds): 10

Packet loss %: 1

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



Faça a configuração a seguir e rode o teste para ver o resultado (parte 4 de 4)!

Execute ao final, escolhendo a forma para receber o reporte de teste

ProjetoStartup
TesteFIAPOESP

Description

Tags

Define Tags...

JMeter Test - Updated a few seconds ago, by Renato Parducci

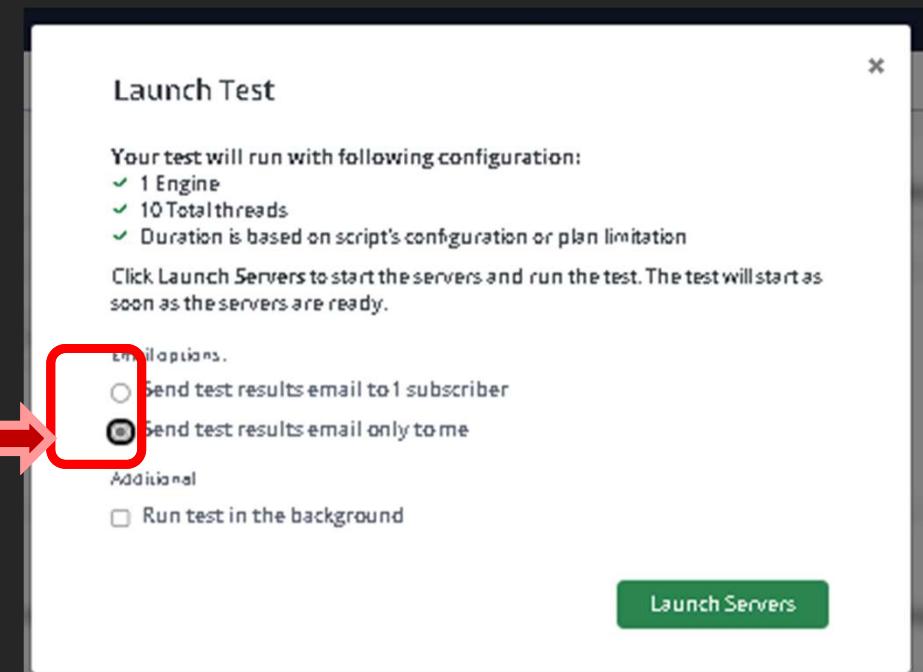
Send email to subscribers Run Test Debug Test

10 Total threads

US East(Virginia, Google) 100.00%

SCHEDULE + Add

No Events

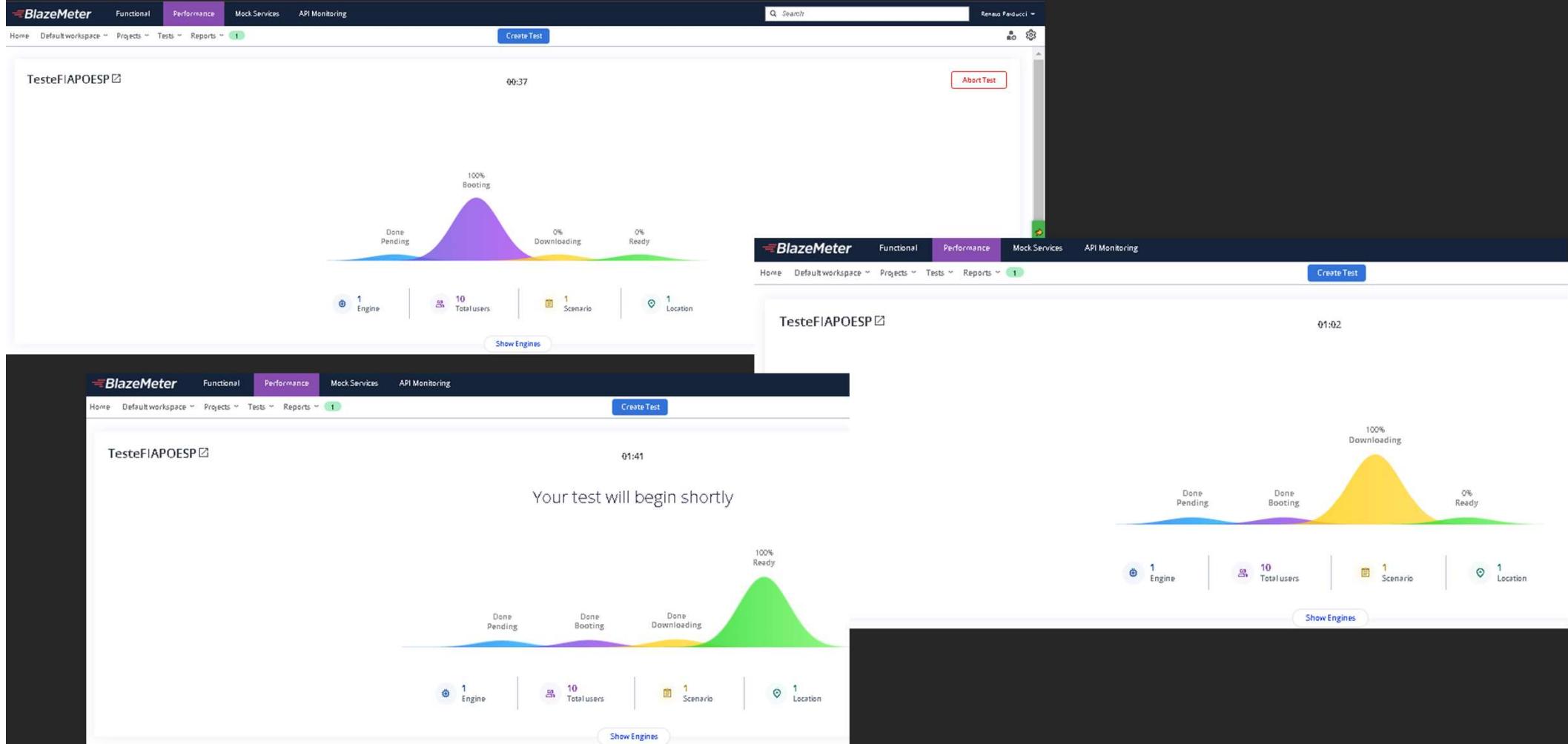


TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE A EXECUÇÃO EM TEMPO REAL!



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

BlazeMeter Functional Performance Mock Services API Monitoring Search Renato Parducci

Home Default workspace Projects Tests Reports Create Test

ProjetoStartup / TesteFIAPOESP Scenario: TesteFIAPOESP Location: US East (Virginia, Google) Filter By Transactions: Select Transactions

TesteFIAPOESP Set Report as a Baseline

Summary Timeline Report Request Stats Engine Health Failure Criteria Errors Logs Original Test Configuration

1 VU 0.37 Hits/s 0 % Errors 598 ms Avg. Response Time 949 ms 90% Response Time 1.1 MiB/s Avg. Bandwidth

Duration: 1 minute Test Type: JMeter Started: Dec 09, 2022, 8:42:31 PM Ended: Dec 09, 2022, 8:43:41 PM Response Codes: 2xx Locations: US East (Virginia, Google)

Tags: Define Tags... Report Notes: Enter report notes... Save Note

Load Response Time

5 Vu 1.25 0 ms

5 Vu 1500 ms 0 ms

www.fiap.com.br Prof. Renato Jardim Parducci

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

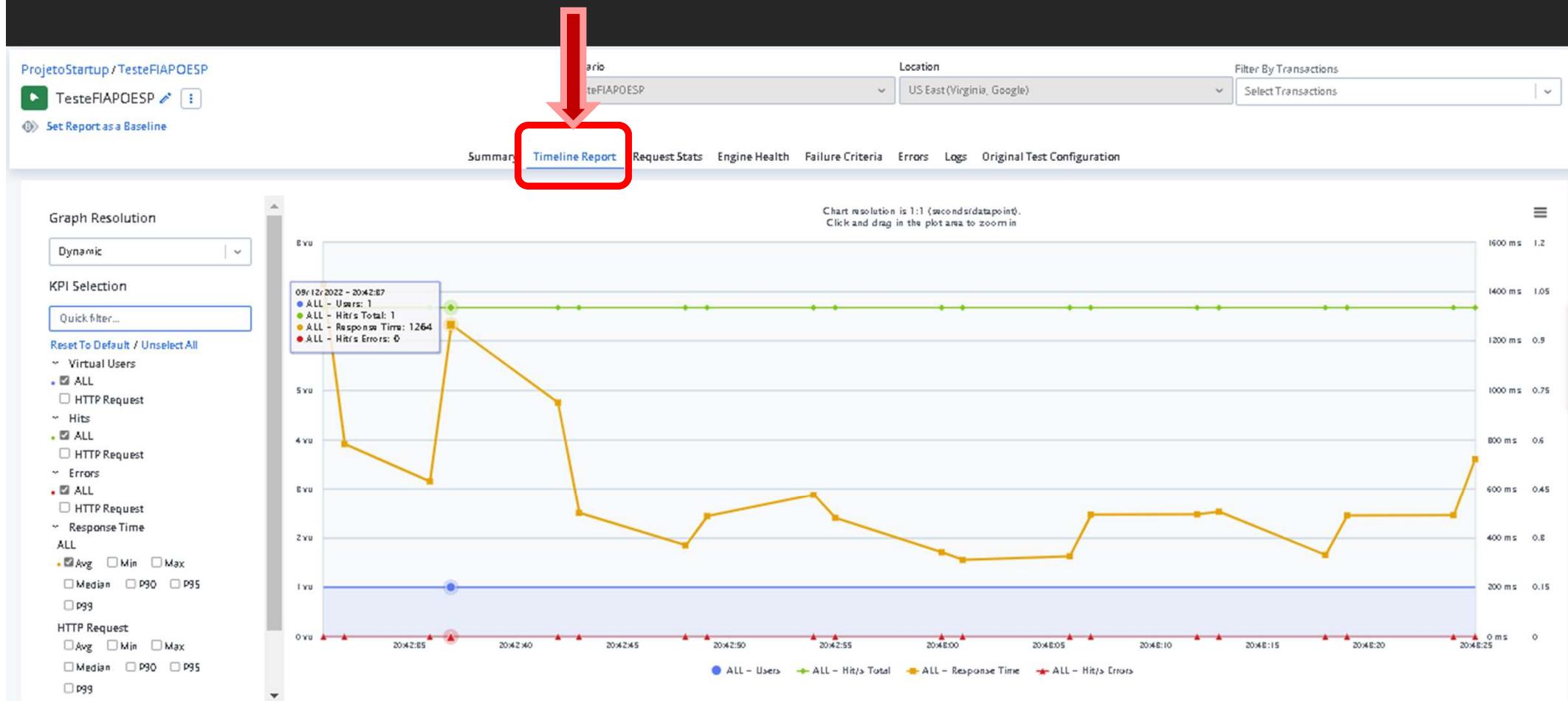
The screenshot shows the BlazeMeter interface for a stress test named 'TesteFIAPOESP'. The 'Performance' tab is selected. The summary section displays key metrics: 1 VU (Max Users), 0.37 Hits/s (Avg. Throughput), 0% Errors, 598 ms (Avg. Response Time), 949 ms (90% Response Time), and 1.1 MiB/s (Avg. Bandwidth). Below this, test details like duration (1 minute), start and end times (Dec 09, 2022), test type (JMeter), response codes (2xx), and locations (US East (Virginia, Google)) are shown. Two line charts are present: 'Load' (a flat line at 1.25 SVu) and 'Response Time' (a fluctuating yellow line between 0 ms and 1500 ms). A red arrow highlights the 'Summary' tab in the navigation bar.

TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

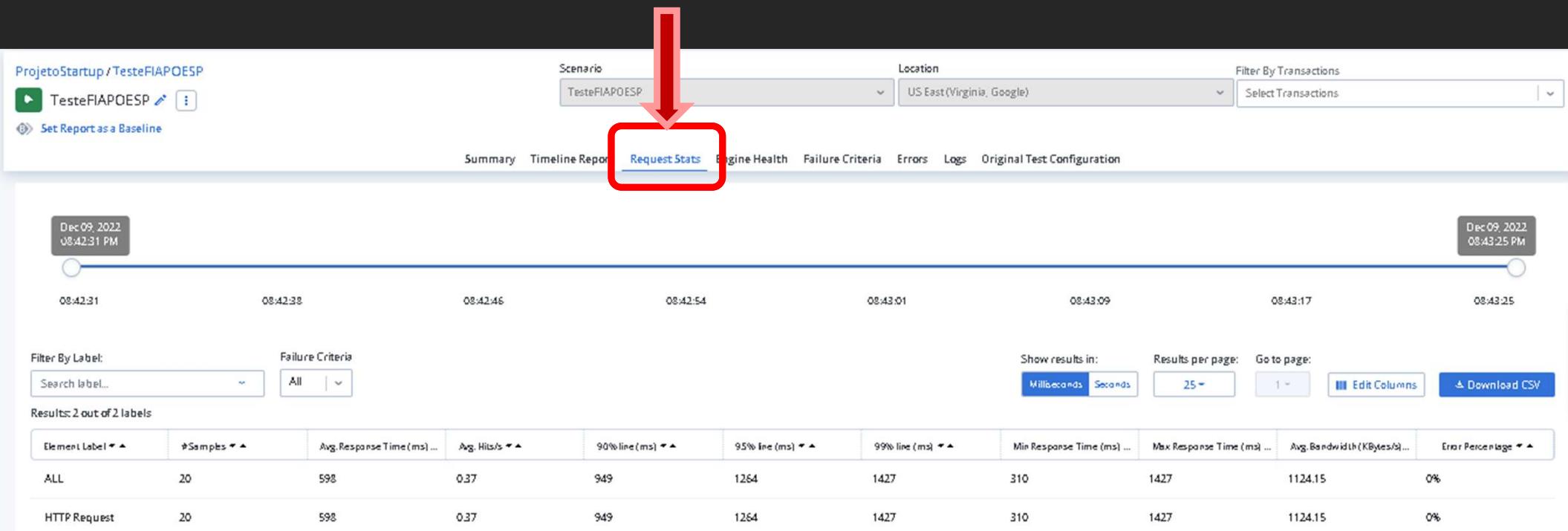


TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

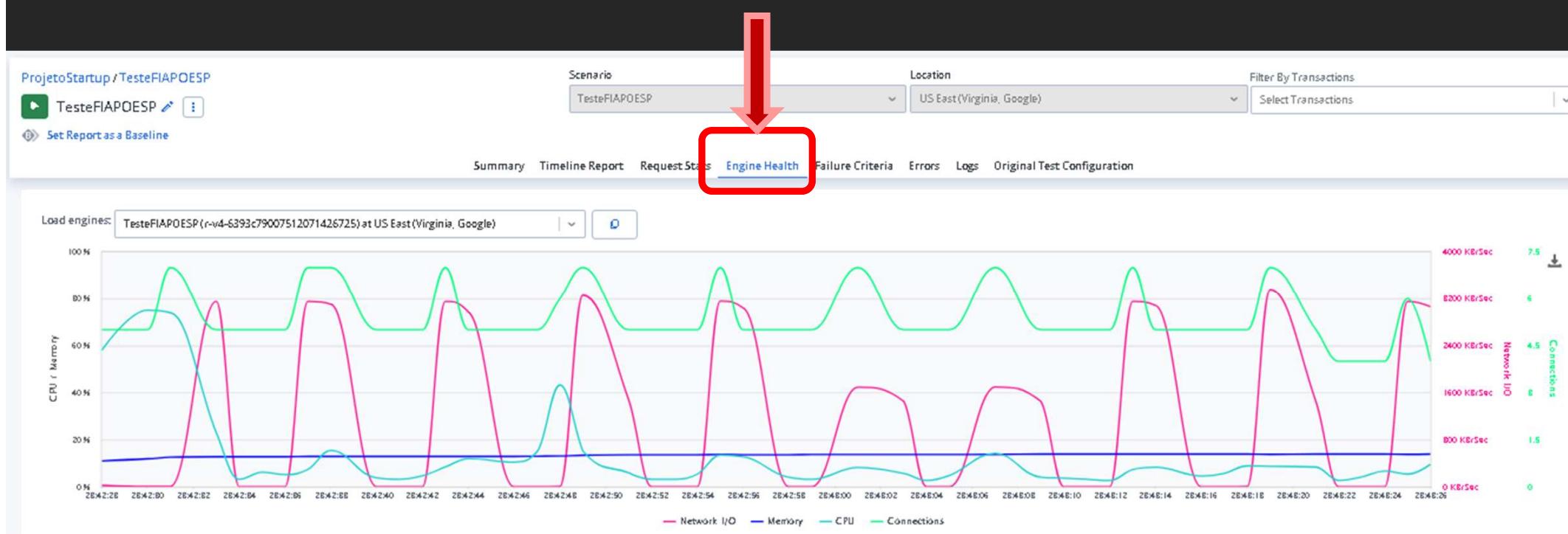


TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga

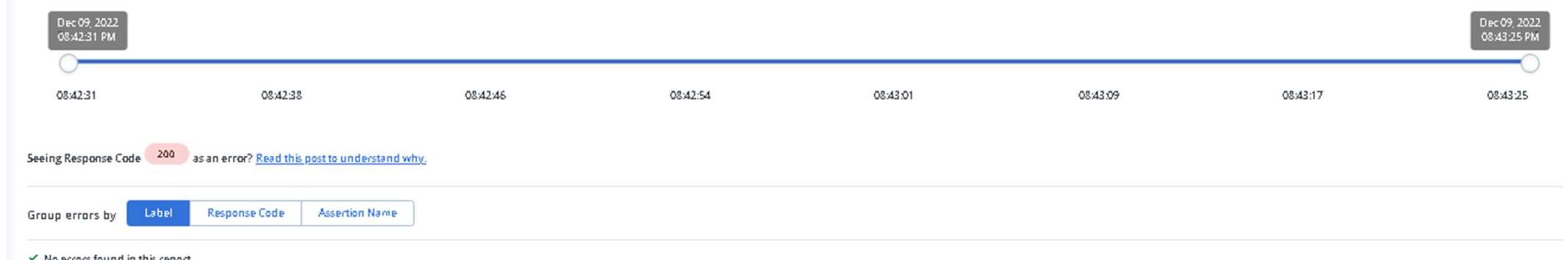


OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

The screenshot shows the BlazeMeter test results interface. At the top, there are navigation links: Home, Default workspace, Projects, Tests, Reports, and a Create Test button. Below this, the project name 'ProjetoStartup / TesteFIAPOESP' and scenario name 'TesteFIAPOESP' are displayed, along with a location set to 'US East (Virginia, Google)'. A red arrow points to the 'Failure Criteria' tab in the navigation bar, which is currently selected. Other tabs visible include Summary, Timeline Report, Request Stats, Engine Health, Errors, Logs, and Original Test Configuration. Below the tabs, there's an overall status indicator showing 'Fail' and a filter section. A detailed table follows, showing data for an element labeled 'ALL' with a KPI of 'responseTime.avg(ms)' and a threshold of '50'. The table includes columns for Element Label, KPI, Threshold, Comparison, Actual, and Status.

Errors Report

This report displays all errors received during the test run, categorized by labels (pages) and error types.



TESTE AUTOMATIZADO DE ESTRESSE

Testando desempenho e carga



OBSERVE OS RESULTADOS NO RELATÓRIO FINAL!

The screenshot shows the BlazeMeter interface for a test named 'ProjetoStartup / TesteFIAPOESP'. The top navigation bar includes 'Scenario' (set to 'TesteFIAPOESP'), 'Location' (set to 'US East (Virginia, Google)'), and 'Filter By Transactions' (with 'Select Transactions' dropdown). Below the navigation are tabs: Summary, Timeline Report, Request Stats, Engine Health, Failure Criteria, Errors, Logs, and Original Test Configuration (which is highlighted with a red box and has a red arrow pointing to it from above).

Key metrics displayed on the screen:

- Scenarios: 1
- Duration: N/A
- Total Users: 10 VUs
- Locations: 1 US East (Virginia, Google)
- Scenario Name: TesteFIAPOESP
- Duration: N/A
- Ramp up Duration: 60 Sec
- Ramp up Steps: 3
- Locations: US East (Virginia, Google)

TESTE DE PORTABILIDADE



Katalon Studio

O Katalon que é usado para gravar e reproduzir testes, permite que, uma vez gravado o teste de uma aplicação WEB usando um navegador, é possível replicar o teste em outras plataformas, realizando TESTES DE PORTABILIDADE!

Vamos experimentar o KATALON com a função de REC & PLAY e portabilidade!

TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade



Katalon Studio

Crie um projeto de testes
(só dê um nome e crie)

Katalon Studio version 6.1.5

Release Note

Tutorials

FAQs

Plugin Store

Getting Started Sample Projects Recents

Web UI API Mobile Scripting

Click here for full instructions.

1 Record to generate new Test Case

2 Execute the generated Test Case

3 View execution log

Problems Console Log Viewer

Runs: 1/1 Passes: 1 Failures: 0 Errors: 0

Test Cases/Main Test Cases/TC1_Verify Successful Log

Digitate aqui para pesquisar

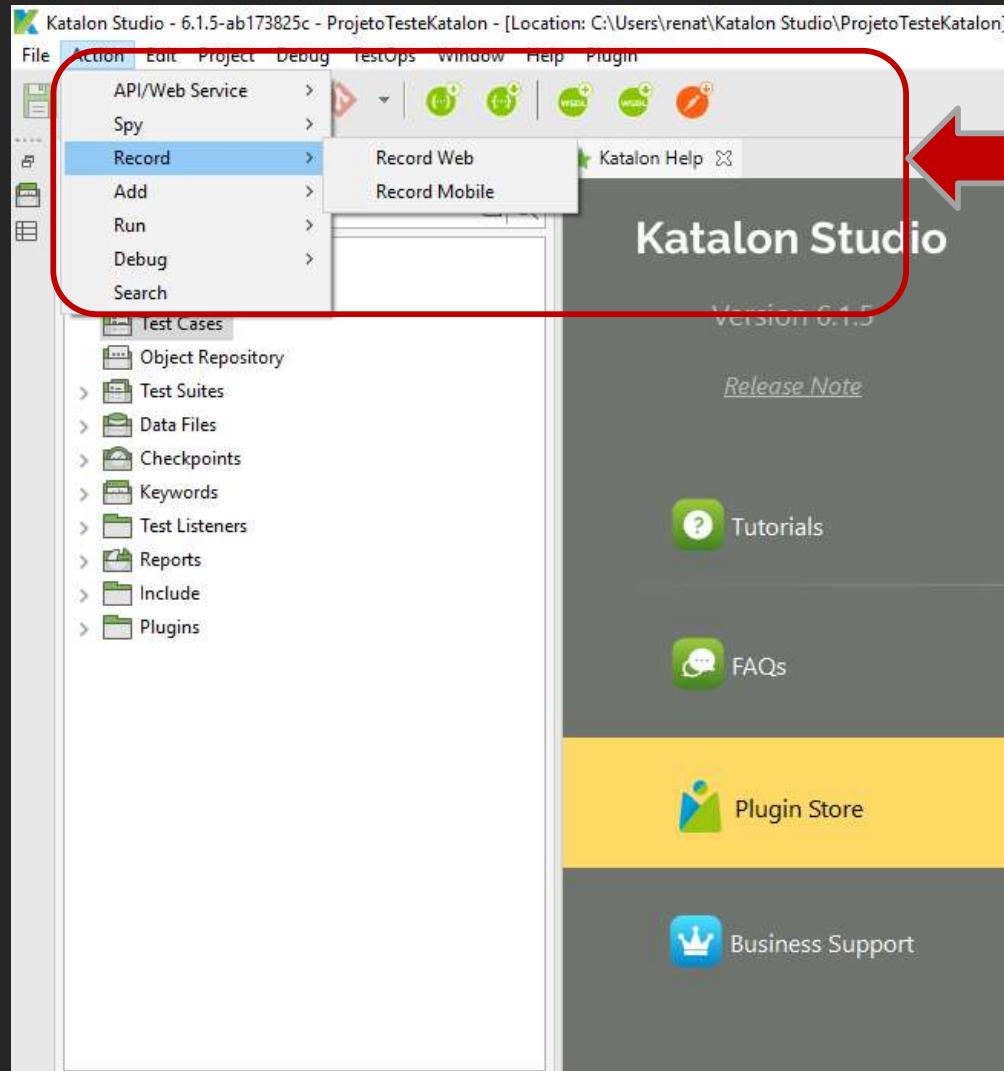
15:44 03/06/2019

TESTE AUTOMATIZADO REC & PLAY

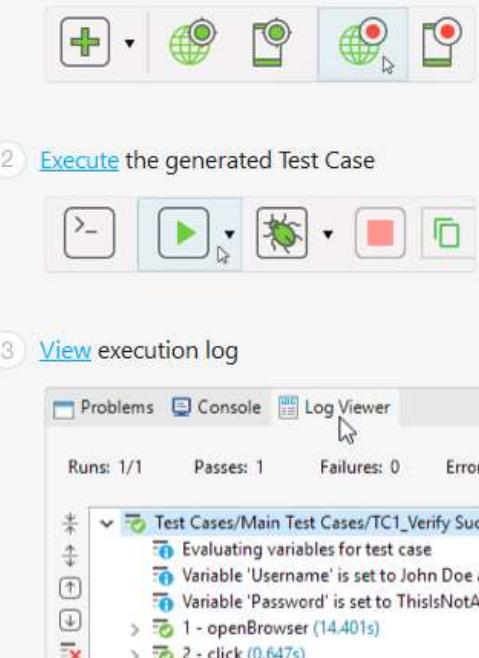
Testando portabilidade



Katalon Studio



Vamos gravar uma operação para gerar o Script base de teste e depois trabalhar com os dados



TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade

The screenshot shows the Katalon Studio Web Recorder interface. A red box highlights the URL input field containing "http://www.begur.net/calculadora/" and the Firefox icon. Below the URL field is a toolbar with "Add", "Recent keywords", "Remove", "Move Up", a help icon, and a "Run" button. The main area is titled "RECORDED ACTIONS" and contains a table with columns "Item", "Object", "Input", and "Output". At the bottom left are tabs for "Variables" and "Logs", and a toolbar with "Add", "Delete", "Clear", "Move up", and "Move down" buttons. At the bottom right are "OK" and "Cancel" buttons.

Vamos testar uma
Calculadora On Line!
Selecione o Chrome ou
Firefox!

The screenshot shows a "Test Case" creation dialog box. It has fields for "Name" (containing "TesteUsoCalcOnLine"), "Description", and "Tag". At the bottom are "OK" and "Cancel" buttons. The background shows the Katalon Studio interface with a "New" button visible.



TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade

The screenshot shows the Katalon Studio Web Recorder interface. At the top, there's a URL input field containing "http://www.begur.net/calculadora/" with a browser icon next to it. Below this is a table titled "RECORDED ACTIONS" with columns for Item, Object, Input, and Output. The table is currently empty. At the bottom, there's a "Variables" tab with columns for No., Name, Type, Default value, Description, and Mask...; and a "Logs" tab. Below these tabs are buttons for Add, Delete, Clear, Move up, and Move down. A large red arrow points from the text "Controle pausas e paradas na gravação!" to the browser icon in the URL field.

Controle pausas e paradas
na gravação!

Observe as ações
memorizadas pelo software

The screenshot shows the Katalon Studio Web Recorder interface. At the top, there's a URL input field containing "http://www.begur.net/calculadora/" with a browser icon next to it. Below this is a table titled "RECORDED ACTIONS" with columns for Item, Object, Input, and Output. The table lists the following actions:

Item	Object	Input	Output
1 - Open Browser		""	
2 - Navigate To Url		"http://www.begur.net/calculadora/	
3 - Click	body_CALCULADORA	b	
4 - Click	input_CALCULADORA_btn0		
5 - Click	input_CALCULADORA_btn1		
6 - Double Click	input_CALCULADORA_btn2		
7 - Click	input_CALCULADORA_btn3		
8 - Click	input_CALCULADORA_btn4		
9 - Click	input_CALCULADORA_btn5		
10 - Click	input_CALCULADORA_btn6		
11 - Close Browser			

A large red arrow points from the text "Observe as ações memorizadas pelo software" to the "Logs" tab at the bottom of the interface.

TESTE AUTOMATIZADO REC & PLAY

Testando portabilidade

The screenshot shows the Katalon Studio Web Recorder interface. At the top, there's a URL input field containing "http://www.begur.net/calculadora/" and a "Record" button. Below that is a table titled "RECORDED ACTIONS" listing 11 recorded steps. The "Run" button in the toolbar is highlighted with a red box and a red arrow pointing to it from the right side of the slide. At the bottom, a "Logs" tab is selected, showing a status of "PASSED" and a log of test execution commands.

Item	Object	Input	Output
1 - Open Browser		""	
2 - Navigate To Url		"http://www.begur.net/calculadora/"	
3 - Click	body_CALCULADORA		
4 - Click	b		
5 - Click	input_CALCULADORA_btnPlus		
6 - Double Click	input_CALCULADORA_btnNine		
7 - Click	input_CALCULADORA_btnOne		
8 - Click	input_CALCULADORA_btnFive		
9 - Click	input_CALCULADORA_btnSeven		
10 - Click	input_CALCULADORA_btnEquals		
11 - Close Browser			

Variables Logs

Status PASSED

```
2019-06-03 16:21:18.686 DEBUG testcase. - 8:  
click(findTestObject("Page_Calculadora on line/input_CALCULADORA_btnPlus"))  
2019-06-03 16:21:18.783 DEBUG testcase. - 9:  
click(findTestObject("Page_Calculadora on line/input_CALCULADORA_btnNine"))  
2019-06-03 16:21:18.861 DEBUG testcase. - 10:  
click(findTestObject("Page_Calculadora on line/input_CALCULADORA_btnEquals"))  
2019-06-03 16:21:18.956 DEBUG testcase. - 11:  
closeBrowser()  
2019-06-03 16:21:19.075 INFO c.k.k.core.main.WSVerificationExecutor - END  
Verification
```

?

OK

Cancel



Após a gravação, você pode executar a replicação do teste (PLAY) e ver o resultado

CANAL DO PROFESSOR



Assista ao vídeo sobre KATALON
Testes de Gravação e Reprodução!

<https://youtu.be/txXKJyA1pYk>

Katalon Studio X Selenium IDE

A ferramenta Katalon tem recursos para o Data Driven Test que vão além do que o Selenium IDE oferece.

Em contrapartida, o Selenium roda na Internet, partindo de serviços na nuvem e sofrendo menor influência da performance de rede na observação da interatividade e responsividade do software.

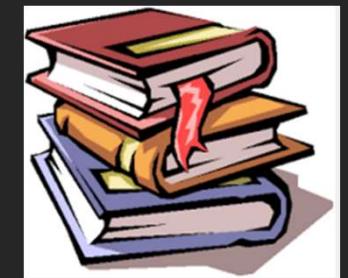


D Ú V I D A S

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TESTE DE SOFTWARE**Continua na próxima aula...****PROFESSOR:****RENATO JARDIM PARDUCCI****PROFRENATO.PARDUCCI@FIAP.COM.BR**