

Швейцарский нож тестировщика или JMeter не только для нагрузки

контур

SQA[®]
DAYS#25

Махетов Сергей

Обо мне

- ▶ В области разработки ПО > 10 лет, тестирование > 5 лет.
- ▶ Тестирование как бизнес-приложения(Web, API, desktop), так и инфраструктурные решения(Интеграции через HTTP, JMS, JDBC, Kafka...)
- ▶ Основной стек - Java(Scala)/JMeter, Gatling, Postman



О чем поговорим

- ▶ Базовое описание Apache JMeter
- ▶ Создание функционального теста
- ▶ Дополнительные возможности
- ▶ Описание других сценариев использования
- ▶ Работа в команде

Что такое Apache JMeter



- ▶ Open Source application designed to load test applications and measure performance. By The Apache Software Foundation



Что такое Apache JMeter



TM

- ▶ **Open Source application designed to load test applications and measure performance. By The Apache Software Foundation**



Внешний вид

The screenshot displays the Apache JMeter 4.0 user interface. The title bar shows the file name "JMTest.jmx (D:\Преза\jmeter Пермь\JMTest.jmx) - Apache JMeter (4.0 r1823414)". The menu bar includes "File", "Edit", "Search", "Run", "Options", and "Help". The toolbar contains various icons for file operations, navigation, and execution.

The left pane shows a test plan tree structure:

- Тест-план
 - Пользовательские переменные
 - setUp Thread Group
 - Получение токена
 - Извлечение токена из ответа
 - Запись токена в переменную
 - Thread Group
 - HTTP Header Manager
 - Публикация записи
 - Формирование записи
 - Извлечение идентификатора из ответа** (highlighted)
 - Получение записи по идентификатору
 - JSON Assertion
 - tearDown Thread Group
 - JDBC Connection Configuration
 - Чистка таблицы после тестов
 - View Results Tree

The right pane shows the configuration for the selected "Извлечение идентификатора из ответа" element:

JSON Extractor

Name: Извлечение идентификатора из ответа

Comments:

Apply to:
 Main sample and sub-samples Main sample only Sub-samples

Names of created variables: recId

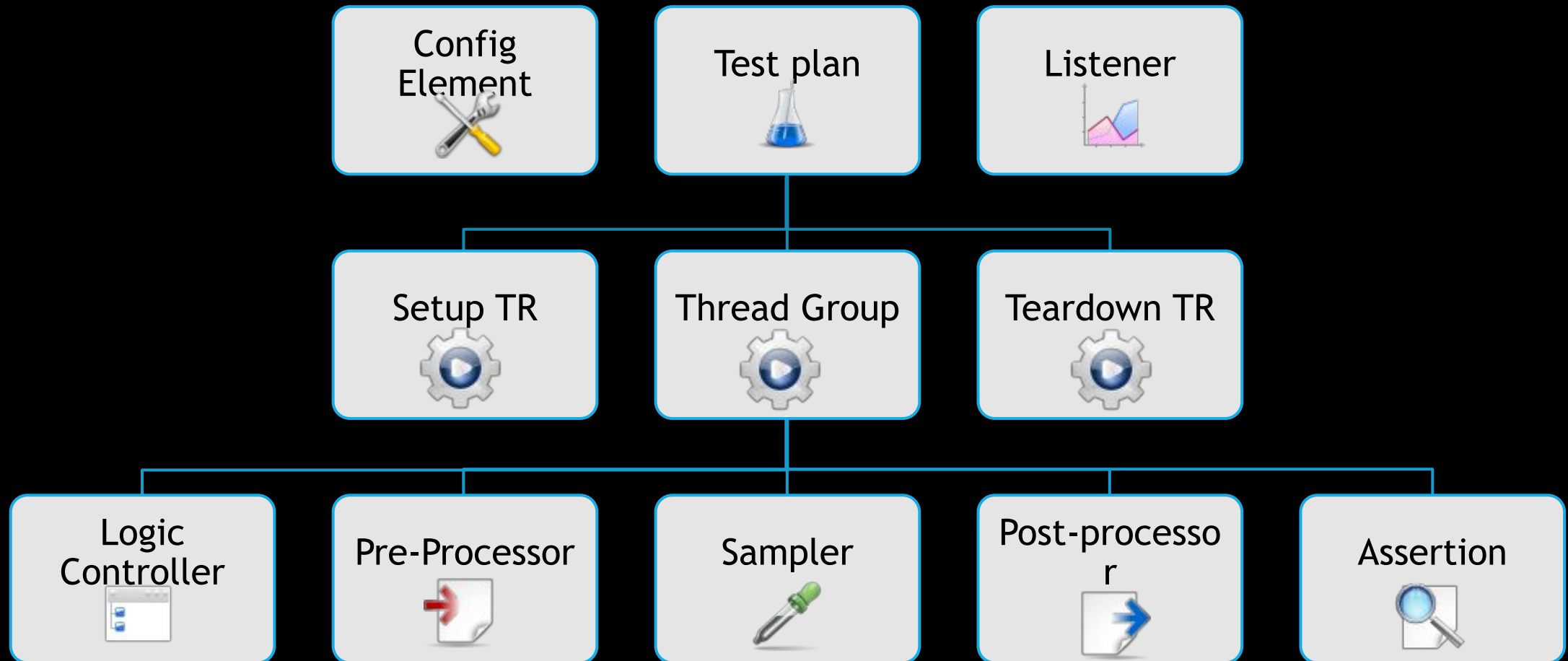
JSON Path expressions: \$.id

Match No. (0 for Random):

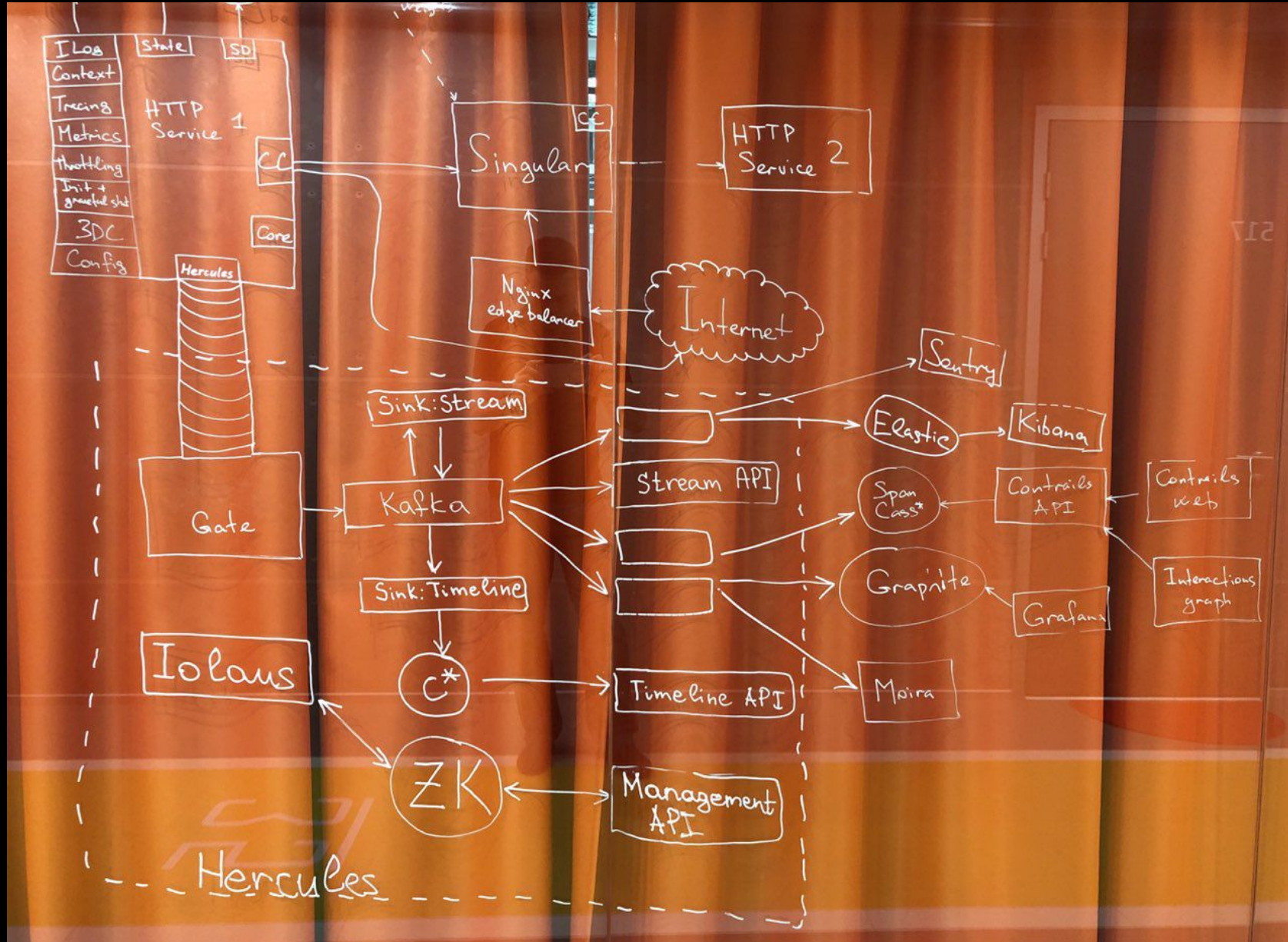
Compute concatenation var (suffix _ALL):

Default Values:

Компоненты JMeter



Тест цепочки отправки логов



Тест цепочки отправки логов



Thread group

The screenshot displays the Apache JMeter 4.0 r1823414 interface. The main window is titled "Test Plan" and contains a sub-element named "Тест отправки логов". This sub-element is highlighted with a green rounded rectangle. The right-hand pane shows the configuration for this "Thread Group". The "Name" field is set to "Тест отправки логов". The "Thread Properties" section is also highlighted with a green rounded rectangle and contains the following settings:

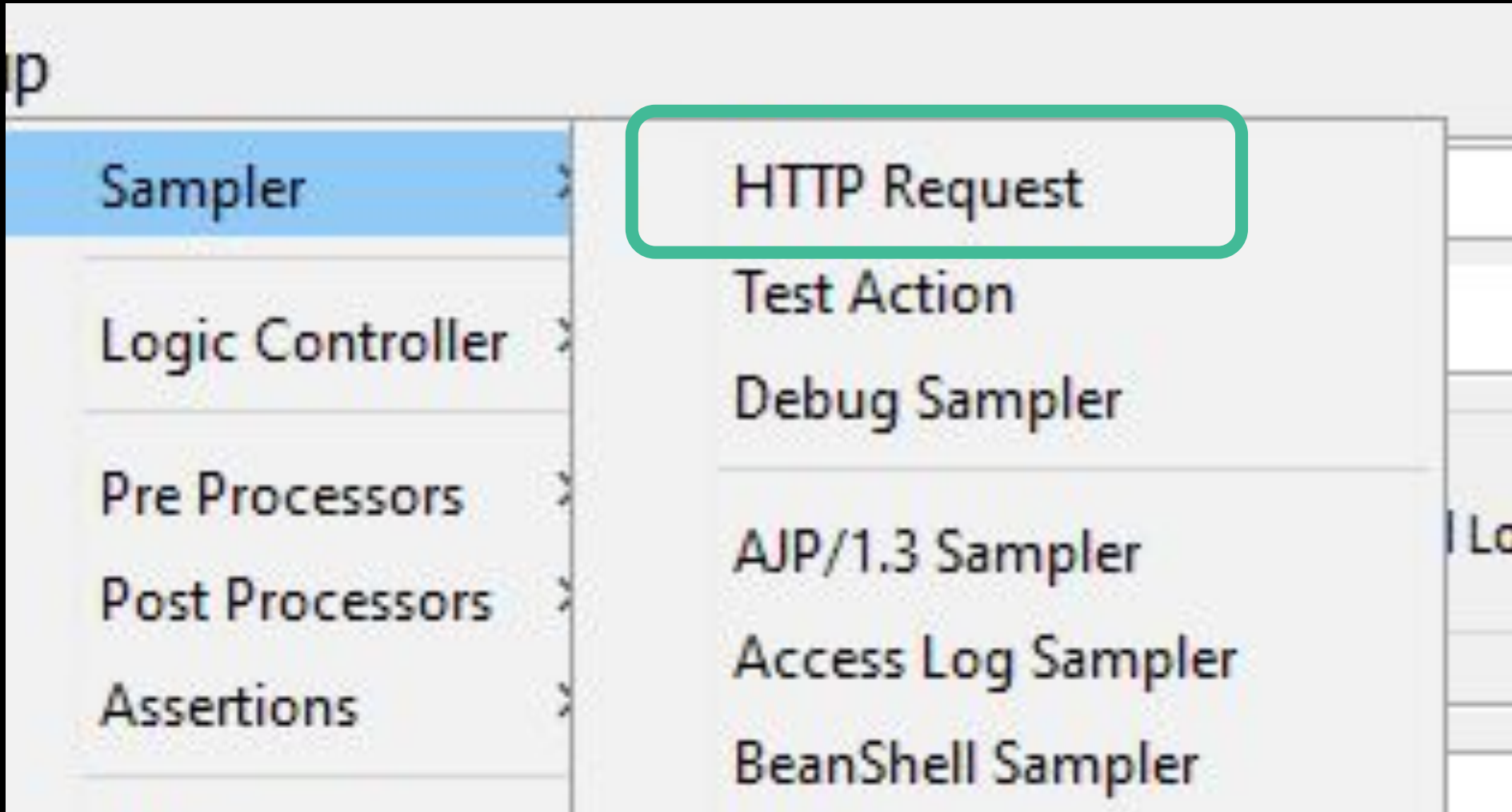
- Number of Threads (users): 1
- Ramp-Up Period (in seconds): 1
- Loop Count: Forever 1
- Delay Thread creation until needed
- Scheduler

Other visible settings in the Thread Group configuration include "Comments", "Action to be taken after a Sampler error" (set to "Continue"), and "Action to be taken after a Thread error" (set to "Continue").

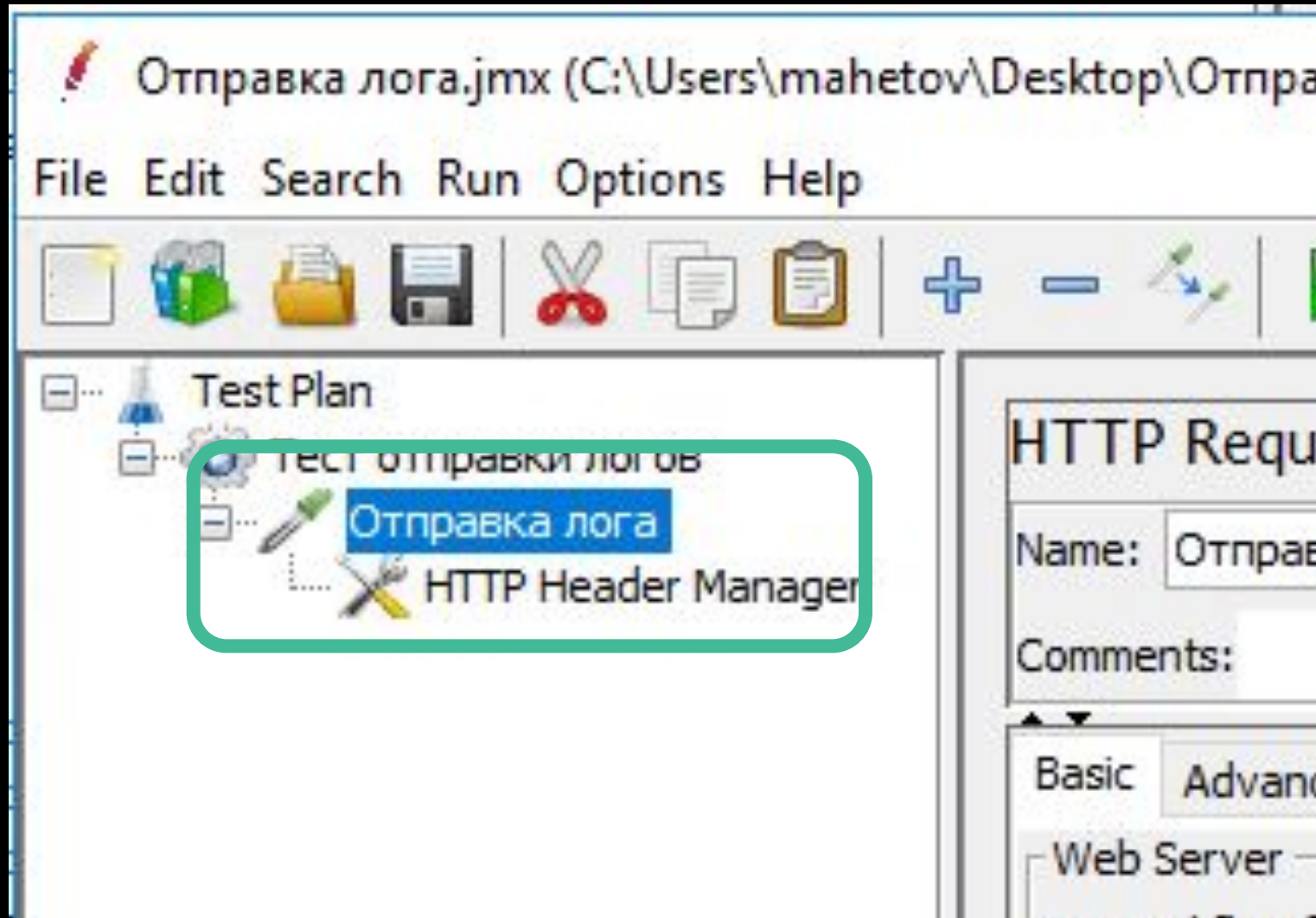
Sampler

The screenshot shows the Apache JMeter 4.0 interface. The title bar reads "Apache JMeter (4.0 r1823414)". The menu bar includes "File", "Edit", "Search", "Run", "Options", and "Help". The toolbar contains various icons for file operations and execution. The main workspace is divided into a "Test Plan" tree on the left and a "Thread Group" configuration area on the right. The "Test Plan" tree shows a folder named "Тест отправки логов". The "Thread Group" configuration area has the "Add" menu open, with "Sampler" selected. The "Add" menu lists various actions like "Add Think Times to children", "Start", "Cut", "Copy", "Paste", "Duplicate", "Remove", "Open...", "Merge", "Save Selection As...", "Save Node As Image", and "Save Screen As Image". The "Sampler" submenu is open, showing a list of sampler types: HTTP Request, Test Action, Debug Sampler, AJP/1.3 Sampler, Access Log Sampler, BeanShell Sampler, FTP Request, JDBC Request, JSR223 Sampler, JUnit Request, Java Request, OS Process Sampler, SSH Command, SSH SFTP, TCP Sampler, and jp@gc - Dummy Sampler.

Sampler



Отправка лог-записи



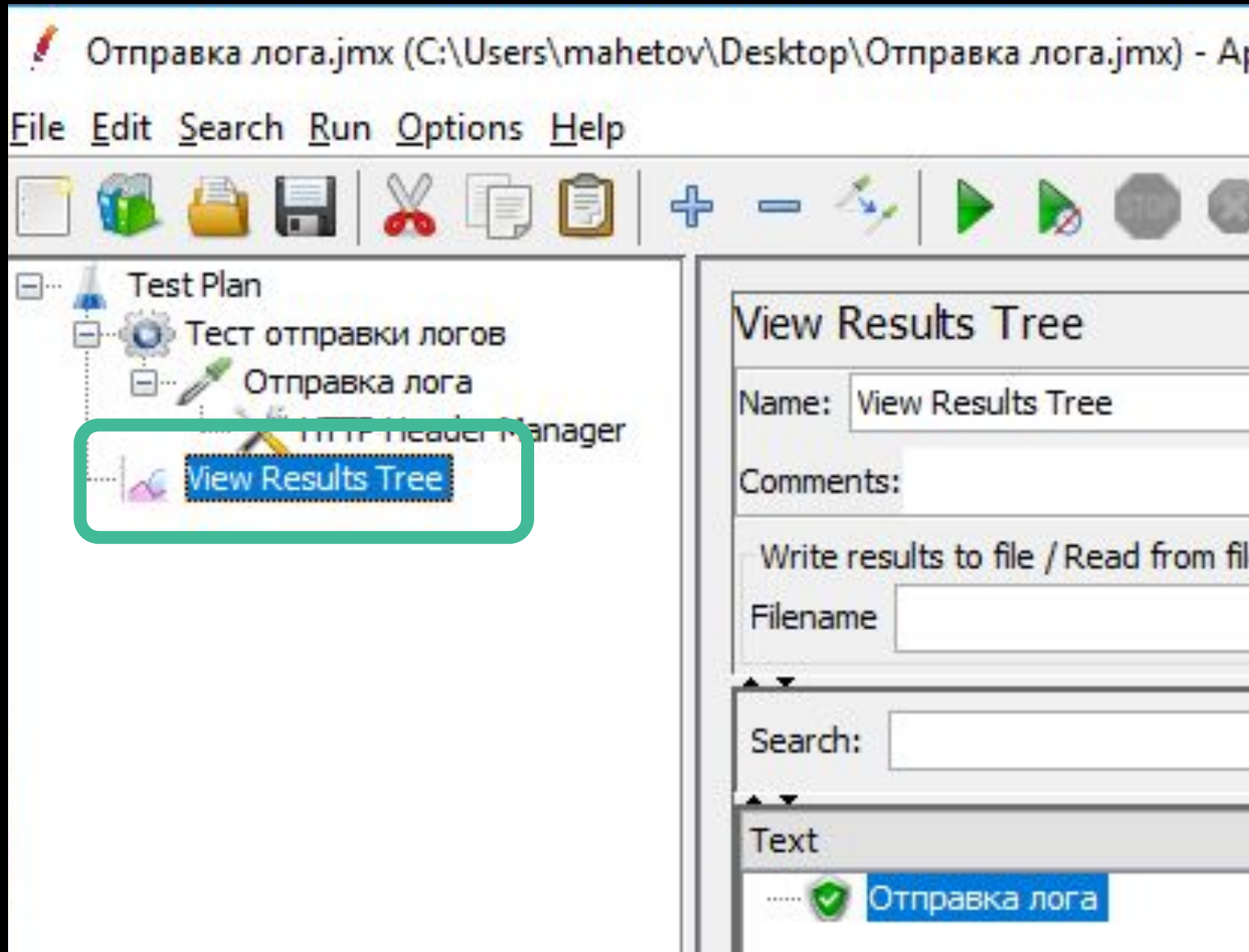
Отправка лог-записи

The screenshot shows a web client interface with the following details:

- Web Server:** Protocol [http], Server Name or IP: `vostok14`, Port Number: `6308`
- HTTP Request:** Method: `GET`, Path: `/async-logs/hercules-test-elk-0-2018.12.18`, Content encoding: [empty]
- Options:** Redirect Automatically, Follow Redirects, Use KeepAlive, Use multipart/form-data for POST, Browser-compatible headers
- Parameters:** [empty]
- Body Data:**

```
{ "level": "ERROR", "logger": "Gatling logger", "@timestamp": "2018-12-18T12:14:53.693Z", "message": "123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4", "thread": "main", "From": "Gatling" }
```


Просмотр результата отправки



Просмотр результата отправки

Text

..... Отправка лога

Sampler result Request Response data

Thread Name: Тест отправки логов 1-1
Sample Start: 2018-12-18 15:19:08 MSK
Load time: 8
Connect Time: 2
Latency: 8
Size in bytes: 99
Sent bytes:453
Headers size in bytes: 99
Body size in bytes: 0
Sample Count: 1
Error Count: 0
Data type ("text"|"bin"|""):
Response code: 200
Response message: OK

Response headers:
HTTP/1.1 200 OK
Connection: keep-alive
Content-Length: 0
Date: Tue, 18 Dec 2018 12:19:08 GMT

Scroll automatically?

Raw Parsed

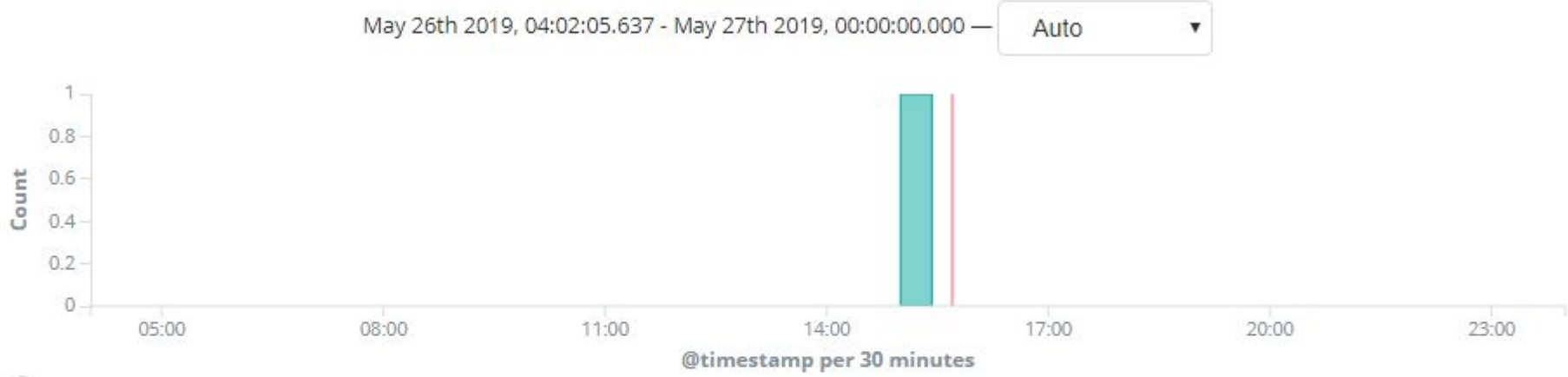
Просмотр результата отправки

1 hit New Save Open Share Auto-refresh May 26th 2019, 04:02:05.637 to May 27th 2019, 00:00:00.000

Search... (e.g. status:200 AND extension:PHP) Uses lucene query syntax

Add a filter +

hercules-test-elk* May 26th 2019, 04:02:05.637 - May 27th 2019, 00:00:00.000 Auto



Count

@timestamp per 30 minutes

Time Time _source

May 26th 2019, 15:13:56.757 @timestamp: May 26th 2019, 15:13:56.757 elk-index: hercules-test-elk-0

Dkj;tyyjcnm.dfsgds: fdsfds level: ERROR logger: Gatling logger чиселка: 33 thread: main

From: Gatling message: 123_SomeGatlingLogs_280c8626-6ae7-4506-8423-7a91b4ec29a3 Array: a

1, a2, a3 host: vm-hercules05 ПолеНаРусском: Значение на русском stand: testing _id: ADd

h70V0iFD40I nrf54R67z1f5vDi8AA type: LogEvent index: hercules-test-elk-0-2019.05.26

Table JSON View surrounding documents View single document

```
1 {
2   "_index": "hercules-test-elk-0-2019.05.26",
```

Чтение лог-записи из ES

The screenshot displays the JMeter GUI. On the left, a tree view shows a 'Test Plan' containing several test elements: 'Тест отправки логов', 'Отправка лога', 'Чтение лога из Elasticsearch' (highlighted with a green box), and 'JSON Assertion'. The main panel shows the configuration for the selected 'HTTP Request' element. The 'Name' is 'Чтение лога из Elasticsearch'. The 'Basic' tab is active, showing the 'Web Server' section with 'Protocol [http]:' and 'Server Name or IP: elk-hercules01'. The 'HTTP Request' section shows 'Method: GET' and 'Path: /_search?q=\${__urlencode(@timestamp:"2018-12-18T12:14:53.693Z')}}" (highlighted with a green box). Below this, there are checkboxes for 'Redirect Automatically', 'Follow Redirects', 'Use KeepAlive', 'Use multipart/form-data for POST', and 'Browser-o'. At the bottom, there are tabs for 'Parameters', 'Body Data', and 'Files Upload'.

Проверка текста в ответе

```
{ "took": 2,  
  ...  
  "hits": {  
    ...  
    "hits": [{  
      "_index": "hercules-test-elk-0-2019.05.26",  
      ...  
      "_source": {  
        "@timestamp": "2019-05-26T10:13:56.757000000Z",  
        "elk-index": "hercules-test-elk-0",  
        ...  
        "level": "ERROR",  
        ...  
        "stand": "testing"}  
    ]  
  }  
}
```


Проверка текста в ответе

The screenshot shows the configuration for a JSON Assertion in SoapUI. The left sidebar contains a list of tools: "отправки логов", "Отправка лога", "HTTP Header Manager", "Чтение лога из Elasticsearch", "JSON Assertion" (highlighted with a blue dashed border), and "Results Tree". The main panel is titled "JSON Assertion" and contains the following fields and options:

- Name: JSON Assertion
- Comments: (empty)
- Assert JSON Path exists: `$.hits.hits[0]._source.level` (highlighted with a green border)
- Additionally assert value
- Match as regular expression
- Expected Value: **ERROR** (highlighted with a green border)

Дублирование запросов

Отправка лога.jmx (C:\Users\mahetov\Desktop\Отправка лога.jmx) - Apache JMeter (4.0 r1823414)

File Edit Search Run Options Help

00:00:01 0 0/1

Test Plan

- Тест отправки логов
 - Отправка лога
 - HTTP Header Manager
 - Чтение лога из Elasticsearch
 - JSON Assertion
 - View Results Tree**

View Results Tree

Name: View Results Tree

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: Errors Successes

Search: Case sensitive Regular exp.

Text

- Отправка лога
- Чтение лога из Elasticsearch**

Sampler result Request Response data

```
{ "took": 2, "timed_out": false, "_shards": { "total": 5, "successful": 5, "skipped": 0, "failed": 0 }, "hits": { "total": 3, "max_score": 1.0, "hits": [ { "_index": "hercules-test-elk-0-2018.12.18", "_type": "LogEvent", "_id": "869c1ad0-02be-11e9-8311-e1ae469d6000", "score": 1.0, "source": { "@timestamp": "2018-12-18T12:14:53.693000000Z", "level": "ERROR", "logger": "Gatling logger", "thread": "main", "From": "Gatling", "message": "123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4" } }, { "_index": "hercules-test-elk-0-2018.12.18", "_type": "LogEvent", "_id": "869c1ad0-02be-11e9-9c30-4bc113d46000", "score": 1.0, "source": { "@timestamp": "2018-12-18T12:14:53.693000000Z", "level": "ERROR", "logger": "Gatling logger", "thread": "main", "From": "Gatling", "message": "123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4" } }, { "_index": "hercules-test-elk-0-2018.12.18", "_type": "LogEvent", "_id": "869c1ad0-02be-11e9-93c9-dc386792c000", "score": 1.0, "source": { "@timestamp": "2018-12-18T12:14:53.693000000Z", "level": "ERROR", "logger": "Gatling logger", "thread": "main", "From": "Gatling", "message": "123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4" } } ] } }
```

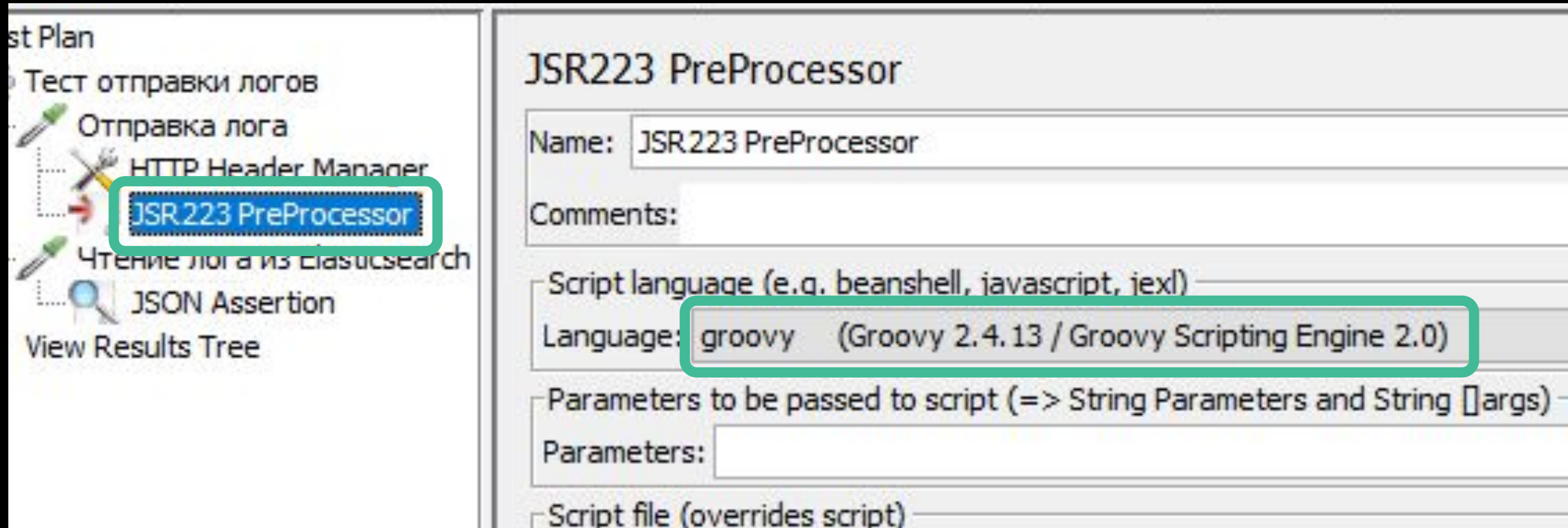
Search: Find Case sensitive Regular exp.

Scroll automatically?

Дублирование запросов

Sampler result	Request	Response data
		<pre>{\"took\":2,\"timed_out\":false,\"_shards\":{\"total\":5,\"successful\":5,\"skipped\":0,\"failed\":0},\"hits\":{\"total\":3,\"max_score\":1.0,\"hits\":[{\"_index\":\"hercules-test-elk-0-2018.12.18\",\"_type\":\"LogEvent\",\"_id\":\"869c1ad0-02be-11e9-8311-e1ae469d6000\",\"_score\":1.0,\"_source\":{\"@timestamp\":\"2018-12-18T12:14:53.693000000Z\",\"level\":\"ERROR\",\"logger\":\"Gatling logger\",\"thread\":\"main\",\"From\":\"Gatling\",\"message\":\"123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4\"}},{\"_index\":\"hercules-test-elk-0-2018.12.18\",\"_type\":\"LogEvent\",\"_id\":\"869c1ad0-02be-11e9-9c30-4bc113d46000\",\"_score\":1.0,\"_source\":{\"@timestamp\":\"2018-12-18T12:14:53.693000000Z\",\"level\":\"ERROR\",\"logger\":\"Gatling logger\",\"thread\":\"main\",\"From\":\"Gatling\",\"message\":\"123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4\"}},{\"_index\":\"hercules-test-elk-0-2018.12.18\",\"_type\":\"LogEvent\",\"_id\":\"869c1ad0-02be-11e9-93c9-dc386792c000\",\"_score\":1.0,\"_source\":{\"@timestamp\":\"2018-12-18T12:14:53.693000000Z\",\"level\":\"ERROR\",\"logger\":\"Gatling logger\",\"thread\":\"main\",\"From\":\"Gatling\",\"message\":\"123_SomeGatlingLogs_7dd44be7-9059-4b6f-b625-481e3097d8a4\"}}]}}</pre>

Pre-processor для подстановки времени



The image shows a screenshot of the JMeter configuration interface. On the left, a tree view shows the test plan structure with 'JSR223 PreProcessor' highlighted in a blue box. On the right, the configuration panel for 'JSR223 PreProcessor' is shown. The 'Name' field is 'JSR223 PreProcessor'. The 'Language' dropdown is set to 'groovy (Groovy 2.4.13 / Groovy Scripting Engine 2.0)', which is also highlighted in a blue box. Other fields include 'Comments', 'Script language (e.g. beanshell, javascript, jexl)', 'Parameters to be passed to script (= > String Parameters and String []args)', 'Parameters', and 'Script file (overrides script)'.

st Plan

- Тест отправки логов
 - Отправка лога
 - HTTP Header Manager
 - JSR223 PreProcessor**
 - Чтение лога из Elasticsearch
 - JSON Assertion

View Results Tree

JSR223 PreProcessor

Name: JSR223 PreProcessor

Comments:

Script language (e.g. beanshell, javascript, jexl)

Language: groovy (Groovy 2.4.13 / Groovy Scripting Engine 2.0)

Parameters to be passed to script (= > String Parameters and String []args)

Parameters:

Script file (overrides script)

Текущее время в переменной

Script:

```
1 dt = java.time.Instant.now().toString()  
2 //vars.put("tmstamp", "2018-08-02T20:19:52.703Z")  
3 vars.put("tmstamp", dt)  
4
```

Добавление переменной и функции

```
Parameters Body Data Files Upload
1 [{"level": "ERROR", "logger": "Gatling logger", "@timestamp": "${tmstmp}" "message":
  " 123_SomeGatlingLog:_${__UUID}", "thread": "main", "From": "Gatling"}]
```

Переменная в запросе лог-записи

Host or IP: Port:

URL: Content-Type:

Follow Redirects Use KeepAlive Use multipart/form-data for POST Browse

Подстановка значения переменной и функции

Search: Case sensitive Regular exp.

Text ▼

- Отправка лога
- Чтение лога из Elasticsearch

Sampler result Request Response data

```
POST
http://vostok15:6308/async-logs/hercules-test-elk-0-2018.12.18

POST data:
{"level":"ERROR","logger":"Gatling
logger","@timestamp":"2018-12-18T13:35:52.791Z","mes
sage":""
123_SomeGatlingLogs_fee6851c-5082-4cde-9208-15ca740d
0bbd","thread":"main", "From":"Gatling"}

[no cookies]
```

Ошибка при запросе лог-записи

The screenshot displays a test runner interface with two main panels. The left panel, titled 'Text', shows a test execution tree with three steps: 'Отправка лога' (Log sending) with a green checkmark, 'Чтение лога из Elasticsearch' (Reading log from Elasticsearch) with a red 'X' icon, and 'JSON Assertion' with a red 'X' icon and a blue highlight. The right panel, titled 'Assertion result', shows the following text: 'Assertion error: false', 'Assertion failure: true', and 'Assertion failure message: No results for path: \$[hits][hits][0][_source][level]'.

Text

- Отправка лога
- Чтение лога из Elasticsearch
- JSON Assertion

Assertion result

Assertion error: false
Assertion failure: true
Assertion failure message: No results for path: \$[hits][hits][0][_source][level]

Добавление таймаута

The screenshot displays the Apache JMeter 4.0 interface. The title bar reads "Отправка лога.jmx (C:\Users\mahetov\Desktop\Отправка лога.jmx) - Apache JMeter (4.0 r1823414)". The menu bar includes "File", "Edit", "Search", "Run", "Options", and "Help". The toolbar contains various icons for file operations and execution. The left pane shows a test plan tree with the following elements: "Test Plan", "Тест отправки логов", "Отправка лога", "HTTP Header Manager", "JSR223 PreProcessor", "Чтение лога из Elasticsearch", "JSON Assertion", "Constant Timer", and "View Results Tree". The "Constant Timer" element is highlighted with a green box. The right pane shows the configuration for the "Constant Timer", with the "Thread Delay (in milliseconds)" field set to "2000", also highlighted with a green box.

Отправка лога.jmx (C:\Users\mahetov\Desktop\Отправка лога.jmx) - Apache JMeter (4.0 r1823414)

File Edit Search Run Options Help

Test Plan

- Тест отправки логов
 - Отправка лога
 - HTTP Header Manager
 - JSR223 PreProcessor
 - Чтение лога из Elasticsearch
 - JSON Assertion
 - Constant Timer**
 - View Results Tree

Constant Timer

Name: Constant Timer

Comments:

Thread Delay (in milliseconds): 2000

Тест пройден!

The screenshot displays a monitoring tool interface with the following components:

- Filename:** A text input field with a "Browse..." button.
- Log/Display Only:** Checkboxes for "Errors" and "Success".
- Search:** A search input field with checkboxes for "Case sensitive" and "Regular exp.", and "Search" and "Reset" buttons.
- Text:** A tree view showing test results:
 - Отправка лога (Success)
 - Чтение лога из Elasticsearch (Failure)
 - Отправка лога (Success)
 - Чтение лога из Elasticsearch (Success) - highlighted with a green box
- Sampler result:** A detailed view of the selected test result:
 - Request
 - Response data
 - Thread Name: Тест отправки логов 1-1
 - Sample Start: 2018-12-18 16:51:29 MSK
 - Load time: 6
 - Connect Time: 3
 - Latency: 6
 - Size in bytes: 543
 - Sent bytes: 278
 - Headers size in bytes: 87
 - Body size in bytes: 456
 - Sample Count: 1
 - Error Count: 0
 - Data type ("text"|"bin"|"): text
 - Response code: 200

Ошибка в цепочке

Write results to file / Read from file

Filename Log/Display Only: Errors Successes

Search: Case sensitive Regular exp.

Text Assertion result

- Отправка лога
- Чтение лога из Elasticsearch
- JSON Assertion

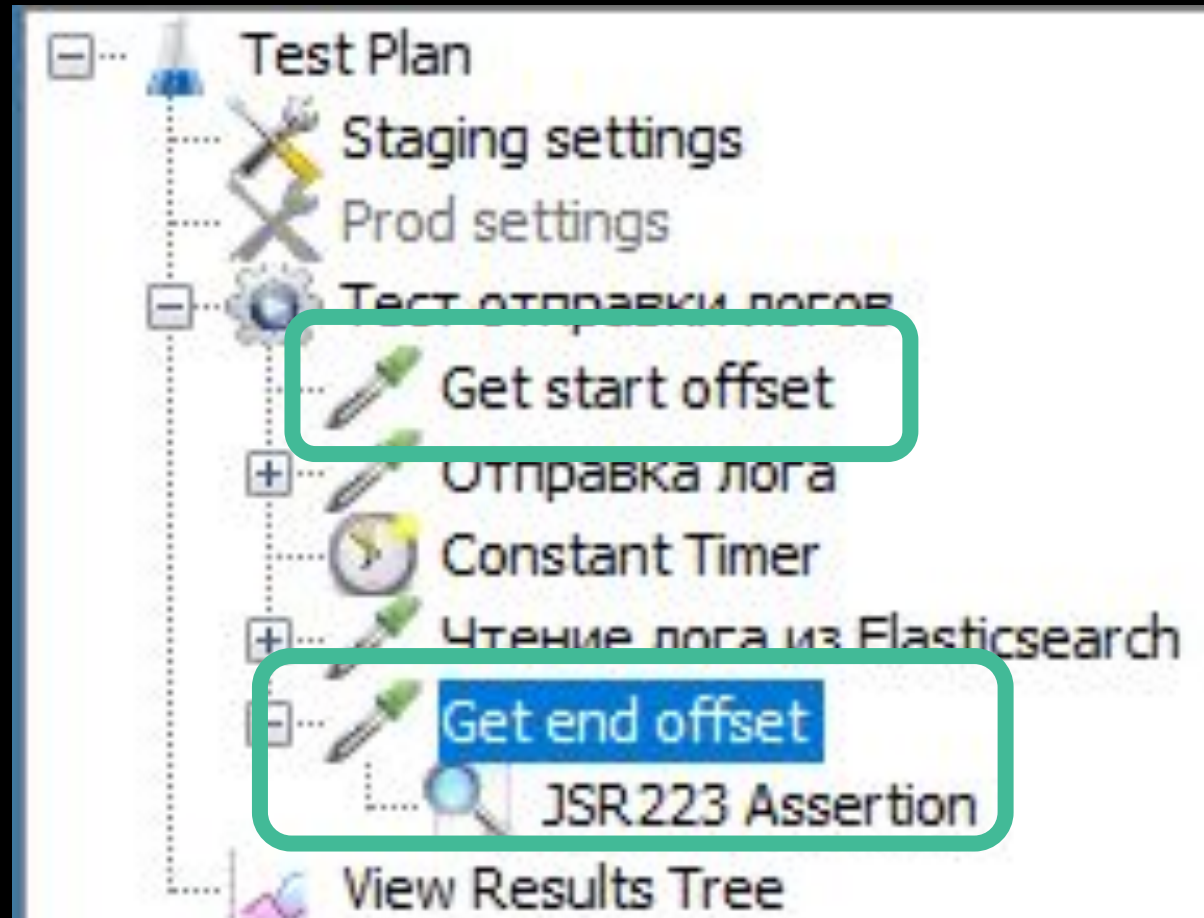
Assertion error: false
Assertion failure: true
Assertion failure message: No results for path: `$.hits.hits[0]._source.level`

Офсеты Kafka

TOPIC	PARTITION	CURRENT-OFFSET
elk_adapter_test_0	0	17111565
elk_adapter_test_0	2	17105615
elk_adapter_test_0	1	17105427

Проверка увеличения офсета Kafka

TOPIC	PARTITION	CURRENT-OFFSET
elk_adapter_test_0	0	17111565
elk_adapter_test_0	2	17105615
elk_adapter_test_0	1	17105427



Получение офсета

```
1 import java.util.Arrays;
2 import java.util.Properties;
3 import org.apache.kafka.clients.consumer.KafkaConsumer;
4 import org.apache.kafka.common.TopicPartition;
5 import org.apache.kafka.common.serialization.StringDeserializer;
6
7 Properties props = new Properties();
8 props.put("bootstrap.servers", "${kafkaHostPort}");
9 props.put("group.id", "consumer-tutorial1");
10 props.put("key.deserializer", StringDeserializer.class.getName());
11 props.put("value.deserializer", StringDeserializer.class.getName());
12 KafkaConsumer<String, String> consumer = new KafkaConsumer<>(props);
13
14 String topic = "${kafkaTopic}";
15
16 List<TopicPartition> tp = new ArrayList<>();
17 consumer.partitionsFor(topic).each{x -> tp.add(new TopicPartition(topic, x.partition()))};
18 Map<TopicPartition, Long> topicPartitionLongMap = consumer.endOffsets(tp);
19 long offset = 0;
20 topicPartitionLongMap.each{k, v ->
21     offset += v;
22     log.info(v.toString());
23 };
24 consumer.close();
25 vars.put("startOffset", offset.toString())
26 System.out.println(offset.toString());
27 return "Current offset: " + offset.toString()
```

Сохранение текущего офсета

```
topicPartitionLongMap.each{k, v ->
    offset += v;
    log.info(v.toString());
};
consumer.close();
vars.put("startOffset", offset.toString())
System.out.println(offset.toString());
return "Current offset: " + offset.toString()
```

Сравнение офсетов до отправки и после

Script:

```
1 String var1 = vars.get("startOffset");
2 String var2 = vars.get("endOffset");
3
4 fail = var1==var2;
5
6 AssertionResult.setFailure(fail)
7 AssertionResult.setFailureMessage("Offsets are equal")
```


Ошибка осталась

Search: Case sensitive Reg

Text

- ✓ Get start offset
- ✓ Отправка логов
- ✓ Get end offset
- +..... ✗ Чтение логов из Elasticsearch

Sampler result

Thread Name:
Sample Start:
Load time: 5
Connect Time
Latency: 5
Size in bytes:
Sent bytes: 27
Headers size i
Body size in b
Sample Count

Плагины

The screenshot shows the JMeter Plugins Manager interface. On the left, a list of plugins is displayed, with 'Selenium/WebDriver Support' selected and highlighted in blue. The main area shows the details for this plugin, including its vendor, description, documentation link, and version information. Below the details, a tree view shows the plugin's configuration within a test plan, and a right-hand pane shows the configuration for the 'jp@gc - Web Driver Sampler'.

JMeter Plugins Manager

Installed Plugins Available Plugins Upgrades

Search...

- Page Data Extractor
- Parallel Controller & Sampler
- Parameterized Controller & Set Variables Action
- RTE Protocol Support
- Random CSV Data Set
- Redis Data Set
- Rotating JTL Listener
- SSHMon Sample Collector
- Selenium/WebDriver Support**
- Siebel CRM Recorder
- Synthesis Report
- Test Plan Check Tool
- UDP Protocol Support
- Variables from CSV File
- WS Security for SOAP
- WebSocket Sampler by Maciej Zaleski
- WebSocket Samplers by Peter Doornbosch
- Weighted Switch Controller
- XML Plugins
- XMPP Protocol Support
- jmeter - JMS Support
- jmeter - LDAP Protocol Support
- jmeter - Mail/SMTP Support
- jmeter - MongoDB Support

Selenium/WebDriver Support

Vendor: *JMeter-Plugins.org*

This plugin allows testing real browser behavior using Selenium/WebDriver technology

Documentation: <https://github.com/undera/jmeter-plugins-webdriver>

What's new in version 3.0: Upgrade Selenium library to version 3.14.0

Maven groupId: *kg.apc*, artifactId: *jmeter-plugins-webdriver*, version: *3.0*

Test Plan

- Thread Group
 - jp@gc - Firefox Driver Config
 - jp@gc - Web Driver Sampler
- WorkBench

jp@gc - Web Driver Sampler

Name: jp@gc - Web Driver Sampler

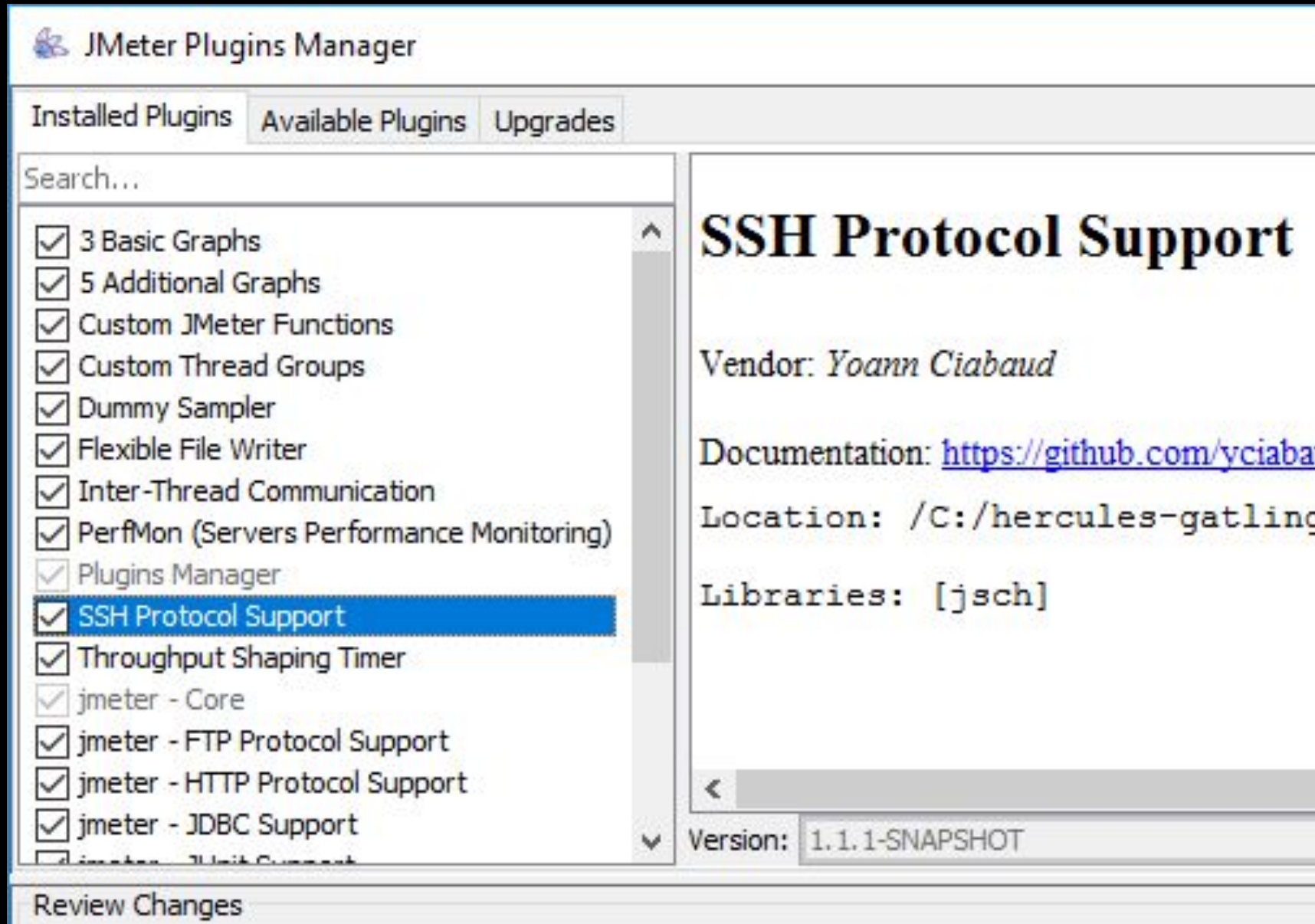
Comments:

[Help on this plugin](#)

Parameters (-> String Parameters and String[] args)

Version: 3.0

SSH Protocol Support



The screenshot shows the JMeter Plugins Manager interface. The 'Available Plugins' tab is selected. A search bar is at the top left. A list of plugins is shown on the left, with 'SSH Protocol Support' highlighted. The right pane displays details for this plugin, including the vendor name, documentation link, location, libraries, and version.

JMeter Plugins Manager

Installed Plugins | Available Plugins | Upgrades

Search...

- 3 Basic Graphs
- 5 Additional Graphs
- Custom JMeter Functions
- Custom Thread Groups
- Dummy Sampler
- Flexible File Writer
- Inter-Thread Communication
- PerfMon (Servers Performance Monitoring)
- Plugins Manager
- SSH Protocol Support**
- Throughput Shaping Timer
- jmeter - Core
- jmeter - FTP Protocol Support
- jmeter - HTTP Protocol Support
- jmeter - JDBC Support
- jmeter - JUnit Support

SSH Protocol Support

Vendor: *Yoann Ciabaud*

Documentation: <https://github.com/yciaba>

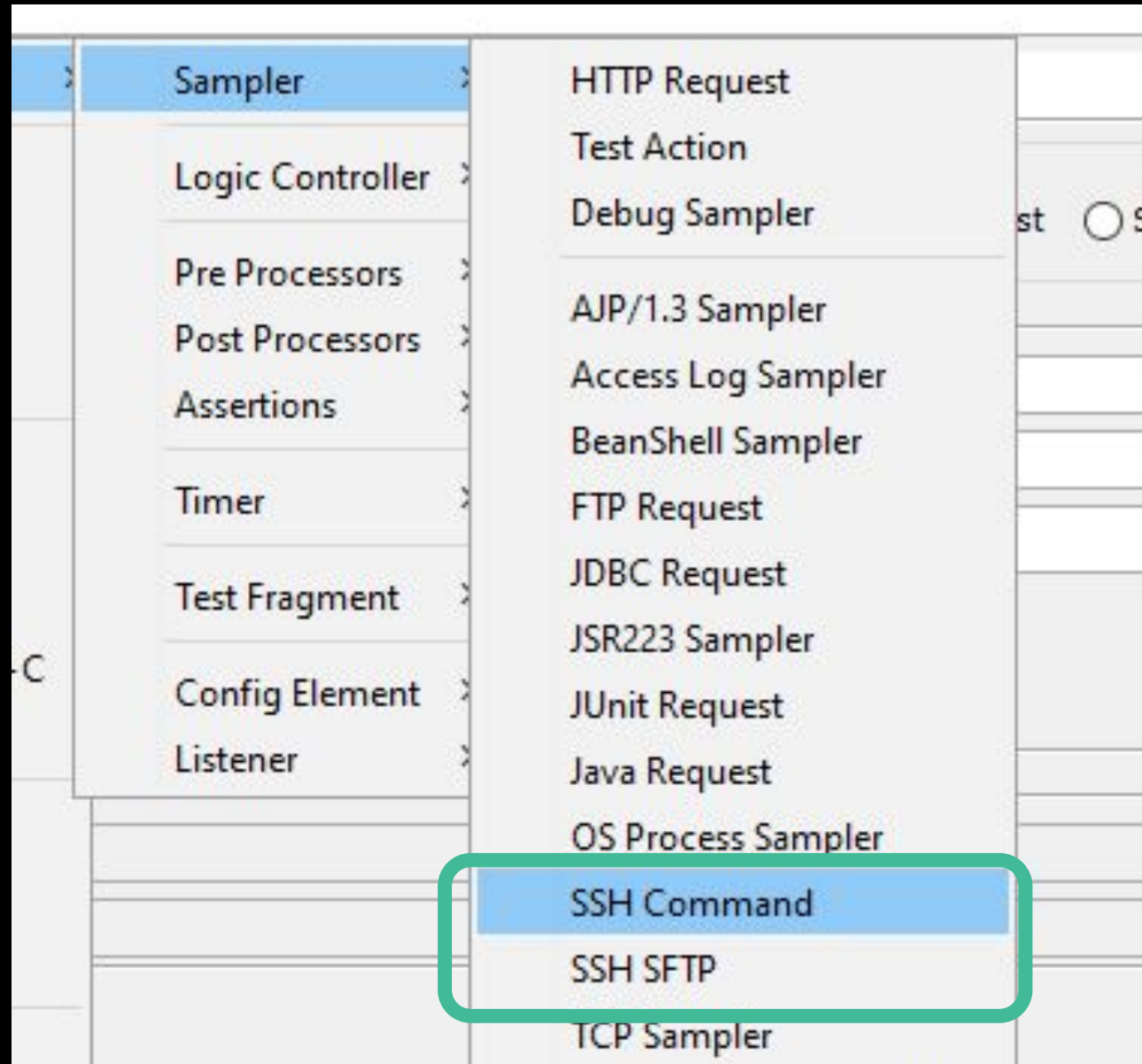
Location: `/C:/hercules-gatling`

Libraries: `[jsch]`

Version: 1.1.1-SNAPSHOT

Review Changes

SSH Sampler



Команда проверки статуса

Base:	
Command:	<code>systemctl status hercules-elasticsearch-sink</code>
Use return code:	True
Standard Error output:	True

Ошибка приложения

The screenshot shows a monitoring tool interface with two main panels. The left panel, titled 'Text', contains a list of tasks with their status:

- Get start offset (green checkmark)
- Отправка лога (green checkmark)
- Get end offset (green checkmark)
- Check elk-adapter:(mahatov@vostok 16:22) (red X)
- Чтение лога из Elasticsearch (red X)

The right panel shows a detailed view of the error message for the 'Check elk-adapter' task. It contains the following text:

```
=== stdin ===  
  
=== stderr ===  
  
Unit hercules-elasticsearch-sink.service could not be found.
```


Настройки для разных стендов

The screenshot shows the JMeter GUI. On the left, the Test Plan tree is visible, with 'Staging settings' highlighted in a green box. The right pane shows the 'User Defined Variables' configuration for 'Staging settings'. Below this, a table lists the variables and their values, also highlighted with a green border.

Test Plan

- Staging settings
- Prod settings
- Тест отправки логов
 - Отправка лога
 - HTTP Header Manager
 - JSR223 PreProcessor
 - Чтение лога из Elasticsearch
 - JSON Assertion
 - Constant Timer
- View Results Tree

User Defined Variables

Name: Staging settings

Comments:

Name:	Value
kafkaHostPort	vostok02:9092,vostok03:9092,vostok04:9092
kafkaTopic	legacy_logs_elk_0
elkAdapterHost	vostok15
elkAdapterPort	6308
elasticHost	elk-hercules01
elasticPort	9200

Настройки для разных стендов

Server Name or IP: Port Number:

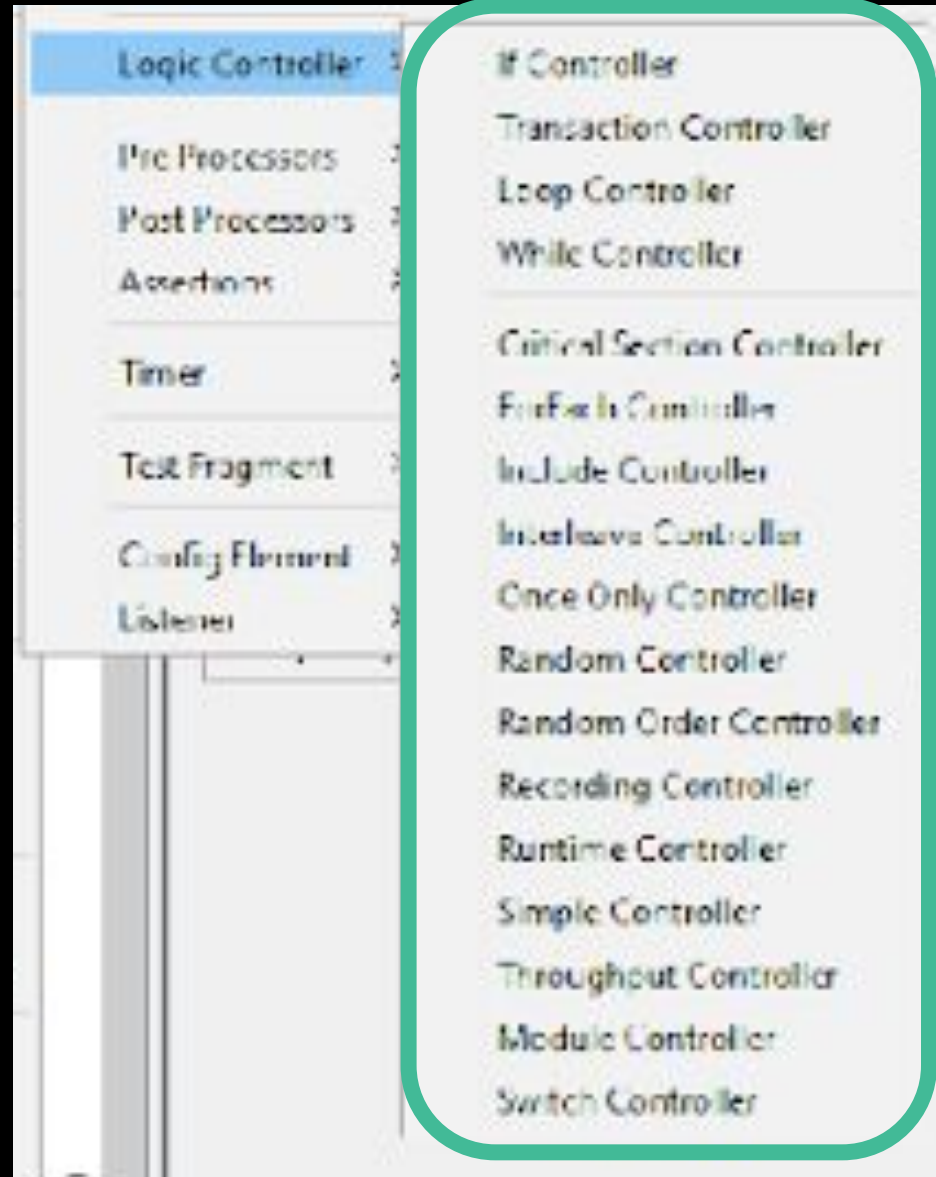
Path: Content encoding:

Follow Redirects Use KeepAlive Use multipart/form-data for POST Browser-compatible headers

Files Upload

```
,"logger":"Gatling logger","@timestamp":"${tmstmp}","message":  
ngLogs_${__UUID}","thread":"main","From":"Gatling"}]
```

Logic Controllers



Проверка нескольких хостов

Отправка лога.jmx (C:\Users\mahetov\Desktop\Отправка лога.jmx) - Apache JMeter (4.0 r1823414)

File Edit Search Run Options Help

00:00:12 0 0/1

Test Plan

- Staging settings
- Prod settings
- Тест отправки логов
 - Get start offset
 - ForEach Controller
 - Отправка лога \${host}
 - HTTP Header Manager
 - JSR223 PreProcessor
 - Constant Timer
 - Get end offset
 - Check elk-adapter
 - Чтение лога из Elasticsearch
 - View Results Tree

User Defined Variables

Name: Staging settings

Comments:

Name:	Value	Description
kafkaHostPort	vostok02:9092,vostok03:9092,vostok04:9092	
kafkaTopic	legacy_logs_elk_0	
elkAdapterHost_1	vostok14	
elkAdapterHost_2	vostok15	
elkAdapterPort	6308	
elasticHost	elk-hercules01	
elasticPort	9200	
elkSinkHost	vostok16	

Detail Add Add from Clipboard Delete Up Down

ForEach контроллер

The image shows a screenshot of the Apache JMeter GUI. On the left, a tree view of a 'Test Plan' is visible. A 'ForEach Controller' is highlighted with a green rounded rectangle. Below it, several steps are listed: 'Отправка лога \${host}', 'HTTP Header Manager', and 'JSR223 PreProcessor'. On the right, the configuration panel for the 'ForEach Controller' is shown. The 'Name' field is 'ForEach Controller'. The 'Input variable prefix' is 'elkAdapterHost'. The 'Output variable name' is 'host'. The 'Add "_" before number?' checkbox is checked.

Test Plan

- Staging settings
- Prod settings
- Тест отправки логов
 - Get start offset
 - ForEach Controller**
 - Отправка лога `${host}`
 - HTTP Header Manager
 - JSR223 PreProcessor
 - Constant timer
 - Get end offset
 - Check elk-adapter
 - Чтение лога из Elasticsearch
- View Results Tree

ForEach Controller

Name: ForEach Controller

Comments:

Input variable prefix: elkAdapterHost

Start index for loop (exclusive):

End index for loop (inclusive):

Output variable name: host

Add "_" before number ?

ForEach контроллер

HTTP Request

Name:

Comments:

Basic Advanced

Web Server

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

HTTP Request

Method: Path: Content encoding:

Redirect Automatically Follow Redirects Use KeepAlive Use multipart/form-data for POST Browser-compatible headers

Parameters Body Data Files Upload

```
1 {"level":"ERROR","logger":"Gatling logger","@timestamp":"${tmstmp}","message":  
" 123_SomeGatlingLogs_${__UUID}|","thread":"main", "From":"Gatling"}
```

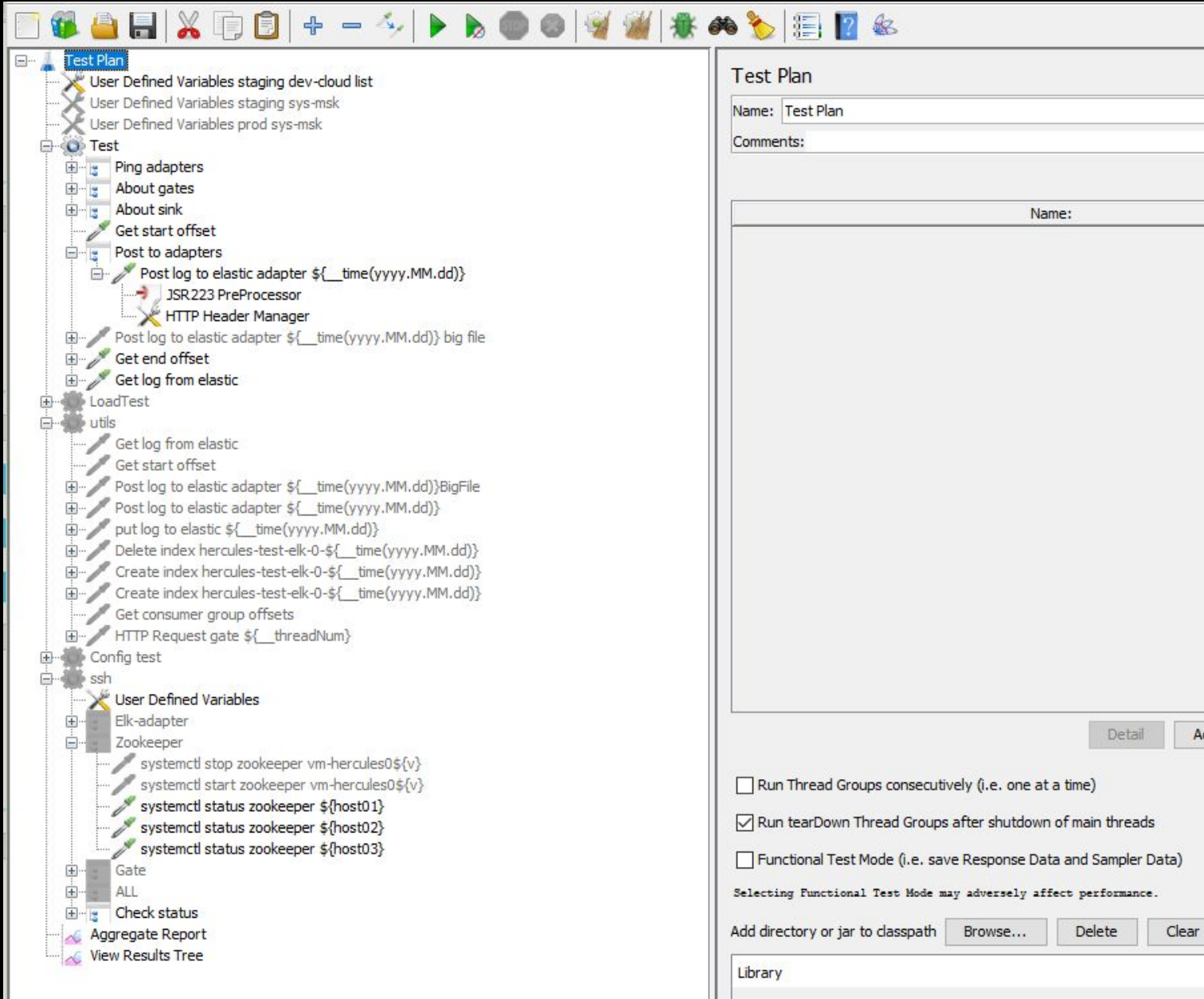
ForEach контроллер

The screenshot displays the Gatling test runner interface. On the left, a 'Text' panel shows a list of test steps: 'Get start offset', 'Отправка лога vostok14', 'Отправка лога vostok15', 'Get end offset', 'Check elk-adapter:(mahetov@vostok16:22)', and 'Чтение лога из Elasticsearch'. The 'Отправка лога vostok15' step is highlighted with a green box. On the right, the 'Request' tab shows a POST request to 'http://vostok15:6308/async-logs/hercules-test-e1k-0-2018.12.20', which is also highlighted with a green box. Below the URL, the 'POST data:' is shown as a JSON object:

```
{ "level": "ERROR", "logger": "Gatling logger", "@timestamp": "2018-12-20T09:19:38.603Z", "message": "123_SomeGatlingLogs_9a9fe9de-79a9-4830-99f7-08e749049458", "thread": "main", "From": "Gatling" }
```

 The bottom of the right panel shows '[no cookies]'.

Реальный пример теста



The screenshot displays the JMeter Test Plan configuration interface. The left pane shows a hierarchical tree of test elements:

- Test Plan
 - User Defined Variables staging dev-cloud list
 - User Defined Variables staging sys-msk
 - User Defined Variables prod sys-msk
 - Test
 - Ping adapters
 - About gates
 - About sink
 - Get start offset
 - Post to adapters
 - Post log to elastic adapter `${__time(yyyy.MM.dd)}`
 - JSR223 PreProcessor
 - HTTP Header Manager
 - Post log to elastic adapter `${__time(yyyy.MM.dd)}` big file
 - Get end offset
 - Get log from elastic
 - LoadTest
 - utils
 - Get log from elastic
 - Get start offset
 - Post log to elastic adapter `${__time(yyyy.MM.dd)}` BigFile
 - Post log to elastic adapter `${__time(yyyy.MM.dd)}`
 - put log to elastic `${__time(yyyy.MM.dd)}`
 - Delete index hercules-test-elk-0-`${__time(yyyy.MM.dd)}`
 - Create index hercules-test-elk-0-`${__time(yyyy.MM.dd)}`
 - Create index hercules-test-elk-0-`${__time(yyyy.MM.dd)}`
 - Get consumer group offsets
 - HTTP Request gate `${__threadNum}`
 - Config test
 - ssh
 - User Defined Variables
 - Elk-adapter
 - Zookeeper
 - systemctl stop zookeeper vm-hercules0`{v}`
 - systemctl start zookeeper vm-hercules0`{v}`
 - systemctl status zookeeper `${host01}`
 - systemctl status zookeeper `${host02}`
 - systemctl status zookeeper `${host03}`
 - Gate
 - ALL
 - Check status
 - Aggregate Report
 - View Results Tree

Test Plan

Name: Test Plan

Comments:

Name:

Detail

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

Несколько экземпляров

The image displays two side-by-side screenshots of the Apache JMeter 4.0 interface, showing the results of a test plan. Both windows are titled 'ELKTest.jmx (D:\GitLab\vostok\hercules-gatling-jmeter-tests\jmeter\ELKTest.jmx) - Apache JMeter (4.0 r1823414)'. The left window shows a 'View Results Tree' for a 'Ping elasticsearch' test, with a list of results including 'Ping elasticsearch', 'Ping gate', and 'Get start offset'. The right window shows a 'View Results Tree' for a 'status all vm-hercules04/05' test, with a list of results including 'status all vm-hercules04:(mahetov@vm-hercules04)', 'status all vm-hercules05:(mahetov@vm-hercules05)', and 'restart all vm-hercules04:(mahetov@vm-hercules04)'. The 'View Results Tree' in the right window is expanded to show the 'Text' tab, which contains the following output:

```
=== stderr ===
Loaded: loaded (/etc/systemd/system/hercules-elasticsearch-sink-1.service; preset: disabled)
Active: active (running) since Thu 2018-11-22 16:09:08 MSK; 27s ago
--
Loaded: loaded (/etc/systemd/system/hercules-gate-1.service; enabled; sabled)
Active: active (running) since Thu 2018-11-22 16:09:13 MSK; 22s ago
=== stderr ===
```

Что еще делаем JMeter

- ▶ Mock сервисов
- ▶ Мониторинг
- ▶ Запуск Java кода
- ▶ Запуск в CI
- ▶ Тесты из Swagger/Openapi

Mock-сервер с WireMock

```
1 import com.github.tomakehurst.wiremock.WireMockServer;
2 import com.github.tomakehurst.wiremock.client.WireMock;
3 import static com.github.tomakehurst.wiremock.core.WireMockConfiguration.wireMockConfig;
4
5 wireMockServer = new WireMockServer(wireMockConfig().bindAddress("0.0.0.0").port(4321));
6 wireMockServer.start();
7
8 wireMockServer.stubFor(WireMock.get("/test")
9     .willReturn(WireMock.aResponse()
10     .withBody("test response").withStatus(200)));
11
12 wireMockServer.stubFor(WireMock.get("/new")
13     .willReturn(WireMock.aResponse()
14     .withBody("new response").withStatus(203)));
```

Mock-сервер с WireMock

The image shows a test environment with Apache JMeter and two web browsers. The browser at localhost:4321/test displays 'test response', and the browser at localhost:4321/new displays 'new response'. The JMeter console shows the following log output:

```
2019-05-05 15:10:54,283 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-1
2019-05-05 15:10:54,283 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-1
2019-05-05 15:10:54,283 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
2019-05-05 15:10:54,284 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
2019-05-05 15:11:01,341 INFO /: RequestHandlerClass from context returned com.github.tomakehurst.wiremock.http.StubRequestHandl
2019-05-05 15:11:58,267 ERROR WireMock:
Request was not matched
=====
-----
44 |
45 |
46 |
47 |-----
48 | Closest stub | Request |
49 |-----
50 |
51 | GET | GET |
52 | /new | /favicon.ico | <<<<< URL doe
53 |
```

Мониторинг с Zabbix

The screenshot displays the Apache JMeter 2.11 interface. The window title is "IntPlatformTestBARForPrez.jmx (F:\IntPlatformJMTTest\IntPlatformTestBARForPrez.jmx) - Apache JMeter (2.11 r1554548)". The menu bar includes File, Edit, Search, Run, Options, and Help. The toolbar contains various icons for file operations and execution. The left sidebar shows a tree view of the test plan:

- Тест для проверки интеграционной платформы
 - Общие настройки
 - Thread Group
 - Отправка сообщения
 - Получение сообщения
 - Проверка выполнения
 - Расчет времени выполнения
 - Отправка времени выполнения на сервер**
 - Результаты транзакции
- WorkBench

The main panel shows the configuration for the selected "OS Process Sampler":

- Name:** Отправка времени выполнения на сервер
- Comments:**
- Command to Execute**
 - Command:** zabbix_sender
 - Working directory:**
- Command parameters**

	Value
-Z	
192.186.16.53	
-s	
- Environment Variables**

Name:	Value
-------	-------

Buttons for "Detail", "Add", "Add from Clipboard", "Delete", and "Up" are visible below the command parameters table.

Мониторинг с Zabbix

Command to Execute

Command: Working directory:

Command parameters

	Value
-z	
	192.186.16.53
-s	
	WMQ03
-k	
	mq.test.time
-o	
	\${durationTime}

C:\> Командная строка

```
C:\>zabbix_sender -z 192.168.16.53 -s WMQ03 -k mq.test.time -o 30000_
```


CI

```
./jmeter.sh -n -t ELKTest.jmx \  
-l reports/$(date -d "today" +"%%Y%%m%%d_%%H%%M%%S").log \  
-e -o reports/$(date -d "today" +"%%Y%%m%%d_%%H%%M%%S")
```

```
2/2: Run jmeter chain test (Command Line) (8s)  
Step 2/2] Starting: /buildAgent/temp/agentTmp/custom_script4993191551230247798  
Step 2/2] in directory: /buildAgent/work/530983db73e292e0/jmeter/apache-jmeter-4.0/bin  
Step 2/2] Creating summariser <summary>  
Step 2/2] Created the tree successfully using ../../ELKTest_staging_sysmsk.jmx  
Step 2/2] Starting the test @ Thu Oct 11 19:11:31 YEKT 2018 (1539267091335)  
Step 2/2] Waiting for possible Shutdown/StopTestNow/Heapdump message on port 4445  
Step 2/2] summary +      1 in 00:00:00 =   4.3/s Avg:   94 Min:   94 Max:   94 Err:    0 (0.00%) Active: 1 Started: 1 Finished: 0  
Step 2/2] 722536772  
Step 2/2] 722536772  
Step 2/2] summary +      5 in 00:00:05 =   1.0/s Avg:  193 Min:    2 Max:  847 Err:    4 (80.00%) Active: 0 Started: 1 Finished: 1  
Step 2/2] summary =      6 in 00:00:05 =   1.1/s Avg:  177 Min:    2 Max:  847 Err:    4 (66.67%)  
Step 2/2] Tidying up ... @ Thu Oct 11 19:11:37 YEKT 2018 (1539267097491)  
Step 2/2] ... end of run  
Step 2/2] Process exited with code 0
```



```
KT 2018 (1539267091335)
```

```
Heapdump message on port 4445
```

```
g: 94 Min: 94 Max: 94 Err: 0 (0.00%) Active: 1
```

```
g: 193 Min: 2 Max: 847 Err: 4 (80.00%) Active: 0
```

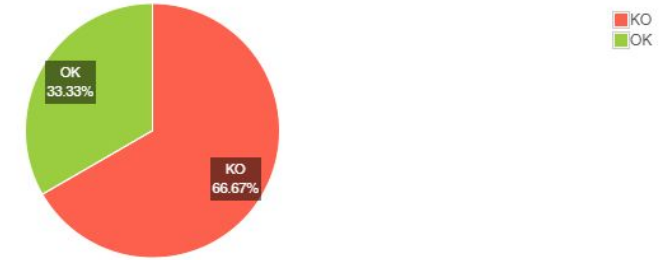
```
g: 177 Min: 2 Max: 847 Err: 4 (66.67%)
```

```
KT 2018 (1539267097491)
```

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.250	500 ms	1 sec 500 ms	Total
0.000	500 ms	1 sec 500 ms	Post log to elastic adapter 2018.10.11
0.000	500 ms	1 sec 500 ms	Ping gate
0.000	500 ms	1 sec 500 ms	Get end offset
0.000	500 ms	1 sec 500 ms	Get log from elastic
0.500	500 ms	1 sec 500 ms	Get start offset
1.000	500 ms	1 sec 500 ms	Ping elk-adapter

Requests Summary



Statistics

Requests Label	Executions			Response Times (ms)						Network (KB/sec)		
	#Samples	KO	Error %	Average	Min	Max	90th pct	95th pct	99th pct	Throughput	Received	Sent
Total	6	4	66.67%	177.00	2	847	847.00	847.00	847.00	1.17	0.49	0.15
Get end offset	1	1	100.00%	73.00	73	73	73.00	73.00	73.00	13.70	0.33	0.00
Get log from elastic	1	1	100.00%	23.00	23	23	23.00	23.00	23.00	43.48	9.38	9.04
Get start offset	1	0	0.00%	847.00	847	847	847.00	847.00	847.00	1.18	0.03	0.00
Ping elk-adapter	1	0	0.00%	94.00	94	94	94.00	94.00	94.00	10.64	1.03	1.26
Ping gate	1	1	100.00%	2.00	2	2	2.00	2.00	2.00	500.00	1004.88	0.00
Post log to elastic adapter 2018.10.11	1	1	100.00%	23.00	23	23	23.00	23.00	23.00	43.48	5.01	19.28

Parameters	Description
------------	-------------

Fail build if text matching	<code>Err:\s*[1-9][0-9]*</code> regex appears in build log
-----------------------------	--

Additional Failure Conditions

In this section you can configure build failure depending on various metrics. ⓘ

+ Add failure condition

Type	Parameters Description
Fail build on specific text in build log	Fail build if text matching <code>Err:\s*[1-9][0-9]*</code> regexp appears in build log with message: Some error find

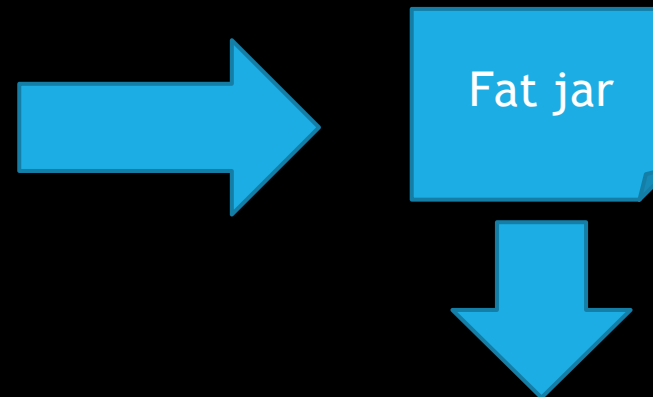
Build number	Status	Changes
#19	❌ Some error find (new) ▾	No changes
#18	✅ Success ▾	No changes
#17	❌ Some error find ▾	No changes
#16	❌ Some error find ▾	Changes (1) ▾
#15	❌ Some error find (new) ▾	Changes (4) ▾
#14	✅ Success ▾	No changes

Запуск кода

```
import ru.kontur.vostok.hercules.protocol.{Event, Variant}
import ru.kontur.vostok.hercules.protocol.encoder.{Encoder, EventWriter}
import ru.kontur.vostok.hercules.protocol.util.EventBuilder
import ru.kontur.vostok.hercules.util.time.TimeUtil
import scala.util.Random

object EventsGenerator {
  def generateEventGroup(count: Int): Array[Byte] = {
    val events = for (_ <- 1 to count) yield generateEvent // generateEvent
    val eventWriter = new EventWriter()
    val stream = new ByteArrayOutputStream
    val encoder = new Encoder(stream)
    encoder.writeInteger(events.length)
    events.foreach(x => eventWriter.write(encoder, x))
    stream.toByteArray
  }

  // Событие размером в 1 КБ (1024 байт)
  def generateEvent: Event = {
    new EventBuilder()
      .setVersion(1)
      .setTimestamp(TimeUtil.millisToTicks(System.currentTimeMillis()))
      .setRandom(UUID.randomUUID())
      .setTag("someRandomString", Variant.ofString(Random.alphanumeric.take(702).mkString))
      .setTag("someString", Variant.ofString("12345"))
      .setTag("someInt", Variant.ofInteger(12345))
  }
}
```



s-gatling-jmeter-tests > jmeter > apache-jmeter-4.0 > lib > ext

Имени

- hercules-protocol-0.20.1-SNAPSHOT.jar
- hercules-util-0.10.1-SNAPSHOT.jar
- scala-hercules-event-builder-assembly-0.1.jar
- ApacheMeter_2.11-1.1.1-SNAPSHOT.jar
- jmeter-plugins-casutg-2.6.jar
- jmeter-plugins-fifo-0.2.jar
- jmeter-plugins-tst-2.5.jar
- jmeter-plugins-ffw-2.0.jar
- jmeter-plugins-functions-2.1.jar
- jmeter-plugins-perfmon-2.1.jar
- jmeter-plugins-graphs-additional-2.0.jar

Запуск кода

```
1 s = EventGenerator.generateEventGroup(2000)
2
3 new File('bd.dat').withOutputStream
4 {
5     it.write(s)
6 }
```

Swagger/Openapi

The screenshot shows the Swagger Editor interface at <https://editor.swagger.io>. The interface is divided into two main sections: a code editor on the left and a client library selection grid on the right.

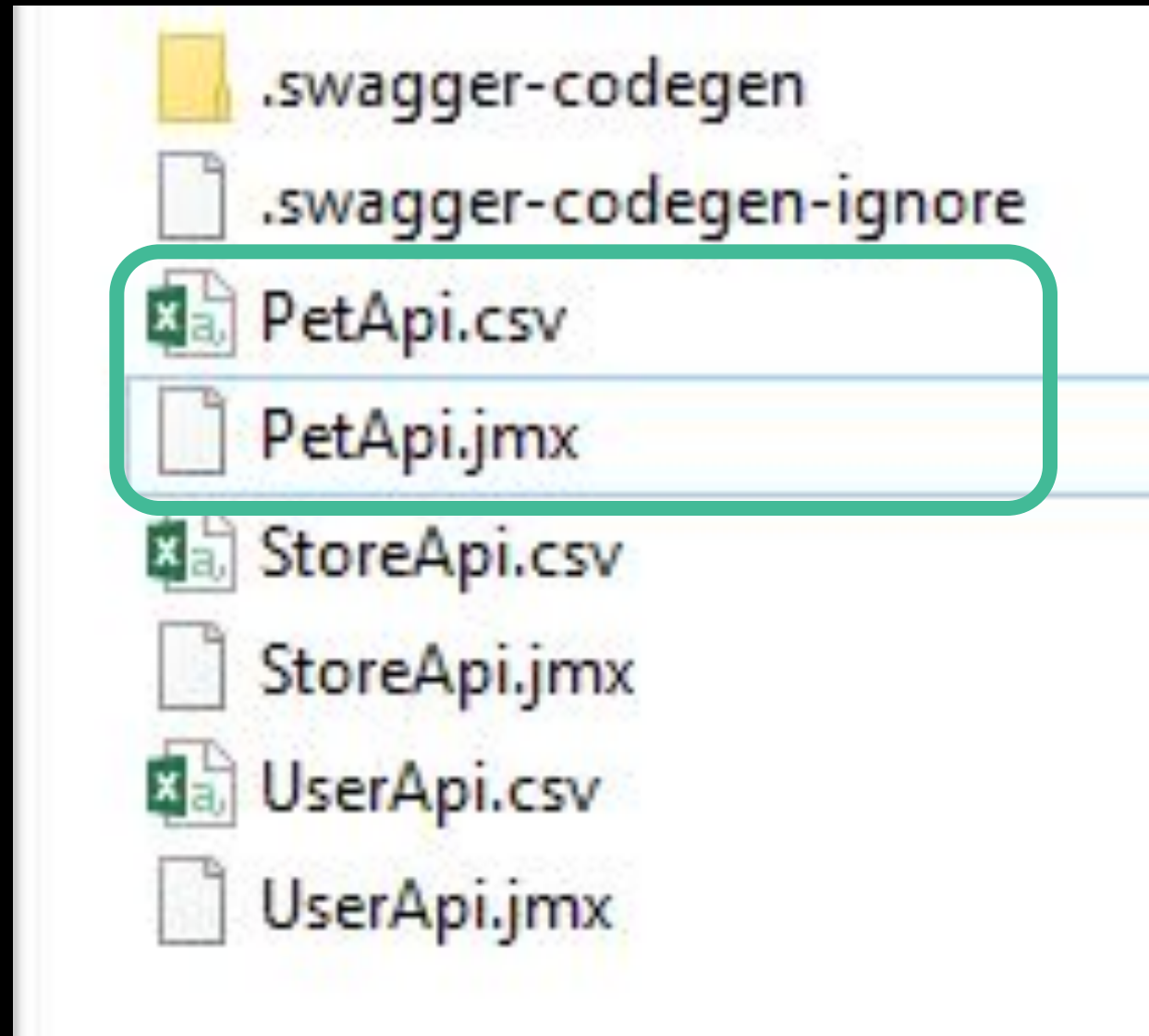
Code Editor (Left): Displays OpenAPI JSON snippets. The visible text includes:

```
in: "path"
description: "ID of pet to fetch"
required: true
type: "integer"
format: "int64"
responses:
  "200":
    description: "pet response"
    schema:
      $ref: "#/definitions/Pet"
  default:
    description: "unexpected error"
    schema:
      $ref: "#/definitions/ModelError"
description: "deletes a single pet based on ID supplied"
operationId: "deletePet"
parameters:
```

Client Library Selection Grid (Right): A grid of client libraries for various languages and frameworks. The 'jmeter' option is highlighted with a red box.

ada	elixir	jmeter	scalaz
akka-scala	elm	kotlin	swagger
android	erlang-client	lua	swagger-yaml
apex	flash	objc	swift
bash	go	perl	swift3
clojure	groovy	php	swift4
cpprest	haskell-http-client	powershell	tizen
csharp	html	python	typescript-angular
csharp-dotnet2	html2	qt5cpp	typescript-angularjs

Swagger/Openapi



Swagger/Openapi

PetApi.jmx (D:\Преза\SqaDays май 2019\jmeter-client-generated\jmeter-client\PetApi.jmx) - Apache JMeter (4.0 r1823414)

File Edit Search Run Options Help

00:00:00 0 0/0

PetApi Test Plan

- User Defined Variables
- HTTP Request Defaults
- Thread Group - addPet
 - HTTP Header Manager
 - addPet - \${testCase}
 - Load CSV Test Data - addPet
 - HTTP Status Assertion
- Thread Group - deletePet
- Thread Group - findPetsByStatus
- Thread Group - findPetsByTags
- Thread Group - getPetById
 - HTTP Header Manager
 - getPetById - \${testCase}
 - HTTP Status Assertion
- Thread Group - updatePet
- Thread Group - updatePetWithForm
- Thread Group - uploadFile
- View Results Tree

User Defined Variables

Name: User Defined Variables

Comments:

Name:	Value	Description
threads	\${_P(threads, 1)}	
rampup	\${_P(rampup, 1)}	
duration	\${_P(duration, 1)}	
testCases	\${_P(testCases, 10)}	
host	\${_P(host, localhost)}	
port	\${_P(port, 8080)}	
testData.addPetFile	\${_P(testData.addPetFile, PetApi.csv)}	
testData.deletePetFile	\${_P(testData.deletePetFile, PetApi.csv)}	
testData.findPetsByStatusFile	\${_P(testData.findPetsByStatusFile, PetApi.csv)}	
testData.findPetsByTagsFile	\${_P(testData.findPetsByTagsFile, PetApi.csv)}	
testData.getPetByIdFile	\${_P(testData.getPetByIdFile, PetApi.csv)}	
testData.updatePetFile	\${_P(testData.updatePetFile, PetApi.csv)}	
testData.updatePetWithFormFile	\${_P(testData.updatePetWithFormFile, PetApi.c...}	
testData.uploadFileFile	\${_P(testData.uploadFileFile, PetApi.csv)}	

Detail Add Add from Clipboard Delete Up Down

Swagger/Openapi

Name:	Value
threads	<code>\${_P(threads,1)}</code>
rampup	<code>\${_P(rampup,1)}</code>
duration	<code>\${_P(duration,1)}</code>
testCases	<code>\${_P(testCases,10)}</code>
host	<code>\${_P(host,localhost)}</code>
port	<code>\${_P(port,8080)}</code>
testData.addPetFile	<code>\${_P(testData.addPetFile,PetApi.csv)}</code>
testData.deletePetFile	<code>\${_P(testData.deletePetFile,PetApi.csv)}</code>
testData.findPetsByStatusFile	<code>\${_P(testData.findPetsByStatusFile,PetApi.csv)}</code>
testData.findPetsByTagsFile	<code>\${_P(testData.findPetsByTagsFile,PetApi.csv)}</code>
testData.getPetByIdFile	<code>\${_P(testData.getPetByIdFile,PetApi.csv)}</code>
testData.updatePetFile	<code>\${_P(testData.updatePetFile,PetApi.csv)}</code>
testData.updatePetWithFormFile	<code>\${_P(testData.updatePetWithFormFile,PetApi.c...}</code>
testData.uploadFileFile	<code>\${_P(testData.uploadFileFile,PetApi.csv)}</code>

Swagger/Openapi

```
PetApi.csv x
1 testCase,httpStatusCode,body,petId,apiKey,status,tags,petId,
2 Success,200,0,0,0,0,0,0,0,0,0,0,0,0,0
```

Swagger/Openapi

HTTP Request

Name:

Comments: Find pet by ID Returns a single pet

Basic

Web Server

Protocol [http]: Server Name or IP:

HTTP Request

Method: Path:

Redirect Automatically Follow Redirects Use KeepAlive

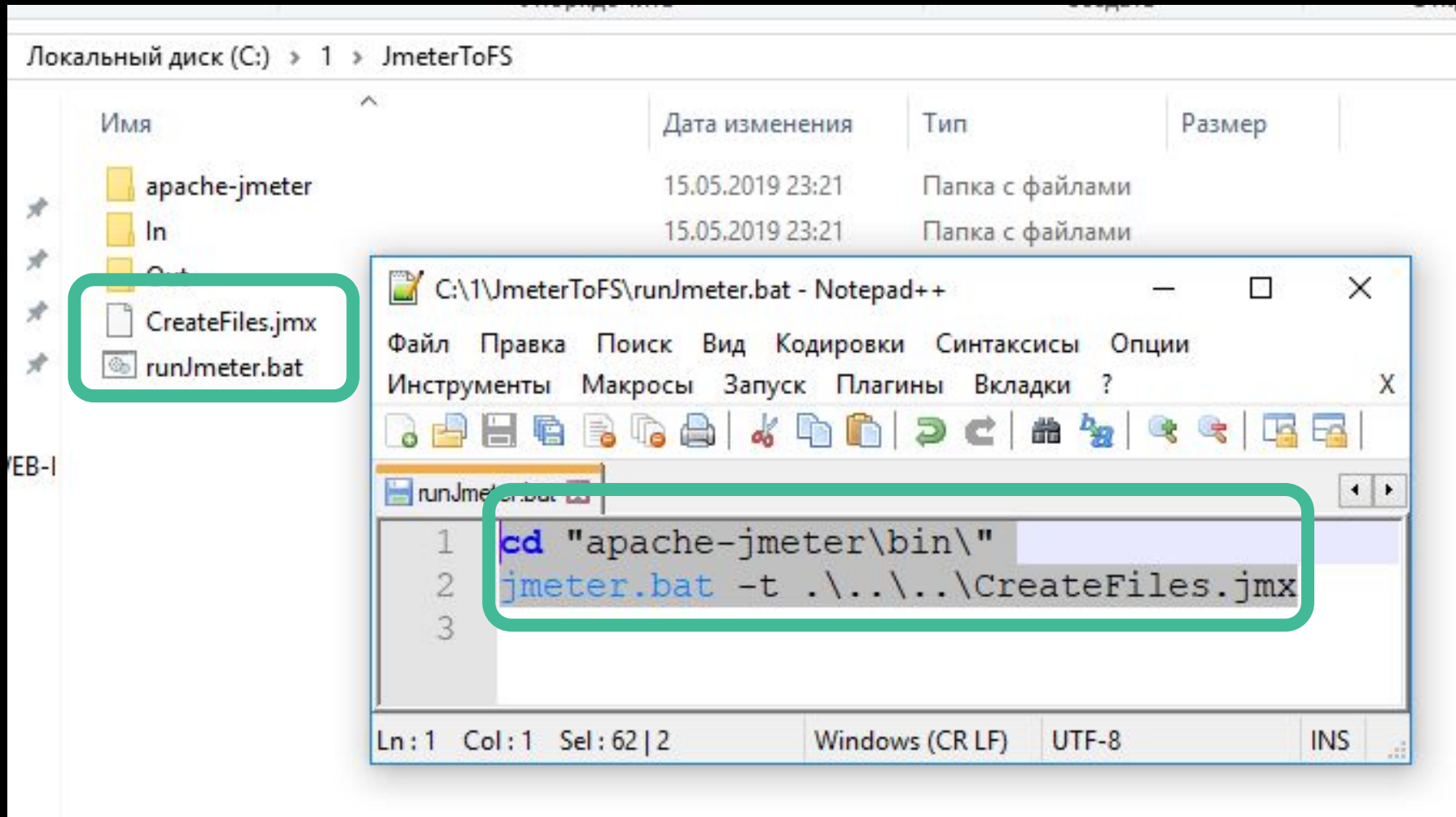
Еще используем для работы с

- ▶ Чтением-записью файлов
- ▶ JDBC
- ▶ JMS / AMQP

Еще классные особенности

- ▶ Кроссплатформенность
- ▶ Установка копированием
- ▶ Быстрый старт

Запуск конкретного сценария

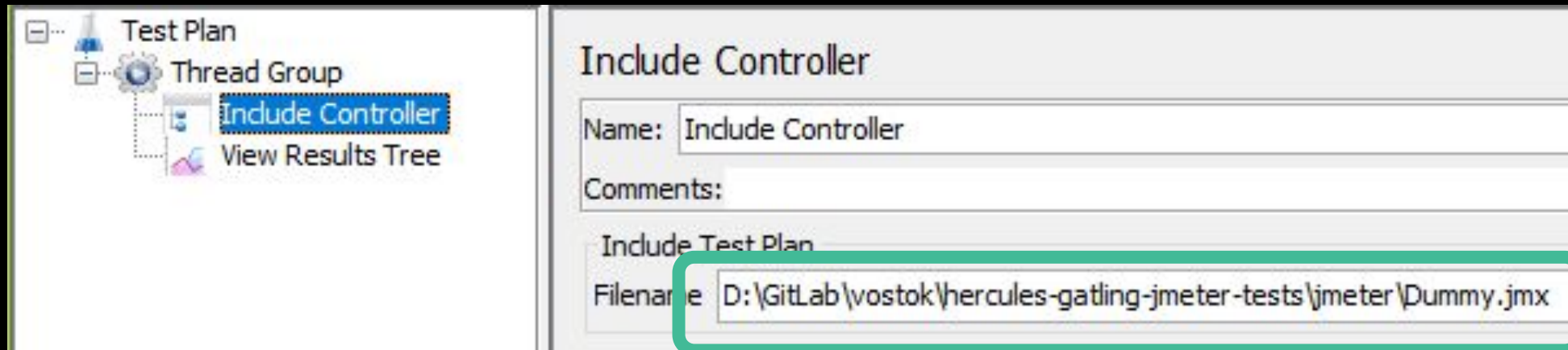
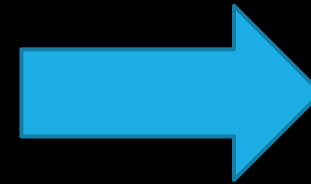
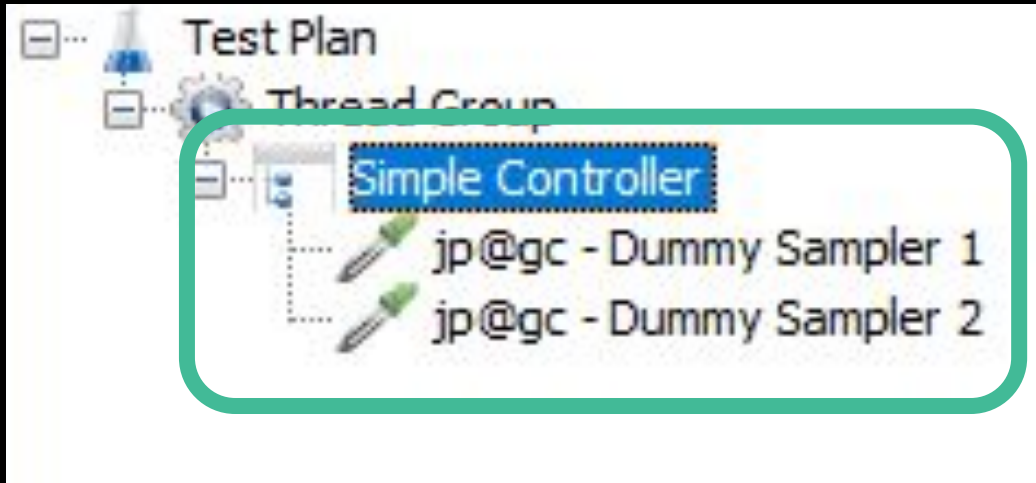


Запуск конкретного сценария

The screenshot shows the Apache JMeter 2.11.1 interface. The title bar indicates the file path: `(C:\1\JmeterToFS\apache-jmeter\bin\..\..\CreateFiles.jmx)`. The menu bar includes **File**, **Edit**, **Search**, **Run**, **Options**, and **Help**. The toolbar contains icons for file operations and execution. The left sidebar shows a tree view with the following elements: **Генерация проезда** (selected), **Переменные**, **Thread Group**, **Counter**, **Генерация переменных** (highlighted), **Генерация переменных**, **Запись сообщения \${file}**, **View Results Tree**, **Temp**, and **WorkBench**. The main panel displays the **User Parameters** configuration for the selected element. It includes a **Name** field with the value "Генерация переменных (Динамика)", a **Comments** field, and an unchecked **Update Once Per Iteration** checkbox. Below this is a **Parameters** table:

Name:	
IDBetamount	<code>\${__BeanShell(System.currentTim</code>
ExcessFactDate	<code>\${__BeanShell(new java.text.Simp</code>
fileName	<code>\${__BeanShell(new java.text.Simp</code>

Повторное использование блоков



Повторное использование блоков

The screenshot displays the JMeter GUI. On the left, the Test Plan tree shows a Thread Group containing an Include Controller and a View Results Tree. The View Results Tree is highlighted with a blue dashed border. On the right, the configuration pane for the View Results Tree is shown. It includes a Name field with the value 'View Results Tree', a Comments field, and a section for 'Write results to file / Read from file' with a Filename field and a 'Browse...' button. Below this is a Search field and a 'Text' section containing a list of results:

- jp@gc - Dummy Sampler 1
- jp@gc - Dummy Sampler 2

The list of results is enclosed in a green rounded rectangle.

Повторное использование блоков

The image displays the JMeter GUI interface, illustrating the reuse of blocks. On the left, a Test Plan contains a Thread Group with two Module Controller blocks. The right panel shows the configuration for a Module Controller, with the 'Module To Run' section containing a Test Plan with a Thread Group containing an Include Controller block.

Test Plan Structure (Left Panel):

- Test Plan
 - Thread Group
 - Include Controller
 - Module Controller
 - Module Controller
 - View Results Tree

Module Controller Configuration (Right Panel):

Module Controller

Name: Module Controller

Comments:

Find target element

Module To Run

- Test Plan
 - Thread Group
 - Include Controller

Повторное использование блоков

The image displays the JMeter GUI interface. On the left, a tree view shows a Test Plan containing a Thread Group with two Module Controller blocks and a View Results Tree block. The top Module Controller block is highlighted with a green rounded rectangle. On the right, the 'Module Controller' configuration panel is shown. It includes a 'Name' field with the value 'Module Controller', a 'Comments' field, and a 'Find target element' button. Below this, the 'Module To Run' section shows a preview of the Test Plan structure, with the Thread Group and its Include Controller block highlighted by a green rounded rectangle.

Повторное использование блоков

The screenshot displays the JMeter GUI. On the left, the Test Plan tree shows a Thread Group containing four elements: Include Controller, Module Controller, Module Controller, and View Results Tree. The View Results Tree element is highlighted. On the right, the View Results Tree configuration pane is shown, including a search field and a list of results. The results list is highlighted with a green rounded rectangle and contains the following entries:

- ✓ jp@gc - Dummy Sampler 1
- ✓ jp@gc - Dummy Sampler 2
- ✓ jp@gc - Dummy Sampler 1
- ✓ jp@gc - Dummy Sampler 2
- ✓ jp@gc - Dummy Sampler 1
- ✓ jp@gc - Dummy Sampler 2

Командная работа

- ▶ ~ 262 jmx
- ▶ ~ 5337 Test cases (xml)
- ▶ Описанная структура тестов
- ▶ Регламент создания новых и изменения текущих тестов
- ▶ Инструкции для запуска



Минусы и проблемы

- ▶ Сценарий - xml файл
- ▶ При работе с GIT сложно мержить изменения
- ▶ Переменные - строки
- ▶ Неудобно работать с бинарными http протоколами
- ▶ Иногда требуется понимание JVM
- ▶ Нельзя отменить изменения ctrl-z
- ▶ Scala в JSR223 работает плохо
- ▶ ...

Спасибо за внимание! Остались вопросы?

- ▶ Махетов Сергей
- ▶ E-mail: Profitfx@mail.ru
- ▶ Telegram: @Mahetovs
- ▶ <https://tech.kontur.ru/>

