



ОНЛАЙН-ОБРАЗОВАНИЕ

Нагрузочное тестирование Скрипты и сценарии НТ - 2: Jmeter часть 1/2

Проверить, идет ли запись!





Меня хорошо видно и слышно?

Ставьте ☐, если всё плохо
Напишите в чат, если есть проблемы

Преподаватели урока



Железняков Евгений

- 5 лет опыта в области нагрузочного тестирования
- Организация и проведение НТ в Банках, Телекоме, QSR
- ATP Loadrunner v12
- linkedin.com/in/eszheleznyakov

Правила вебинара



Активно участвуем



Задаем вопрос в чат / голосом в конце блоков-тем



Off-topic обсуждаем в slack #канал группы или #general



Вопросы вижу в чате, отвечаю в конце блоков-тем

План занятия

1. **User Interface Jmeter** - Run, Clear, Plugin Manager, Errors, Function helper
2. **Components** - Test Plan, Thread Group, Sampler, Listener
3. **Thread Group** - SetUp TG, Number, Ramp-up, Loop Count and Duration
4. **HTTP request Sampler** - Basic/Advanced settings
5. **Config Elements** - CSV Data Set config, User defined variables, HTTP Cookie Manager, HTTP Header Manager
6. **Feeding data into a script (CSV Data set config)**
7. **Recording a script via HTTP(S) Test Script Recorder**
8. **HAR files**
9. **Variables and Properties**
10. **Using timers for think time**
11. **Extractors** - Regular expression extractor, CSS Extractor, XPath Extractor
12. **XML/JSON/HTML Response extracting**
13. **Using Response Assertion**
14. **Loop/ While/ Foreach controllers**
15. **Console run and generate report**



Цели вебинара | После занятия вы

1


Сможете разрабатывать нагрузочные тесты на Jmeter, запускать их, генерировать отчеты

2

Будете знать основные принципы разработки в gui интерфейсе Jmeter, уметь применять компоненты

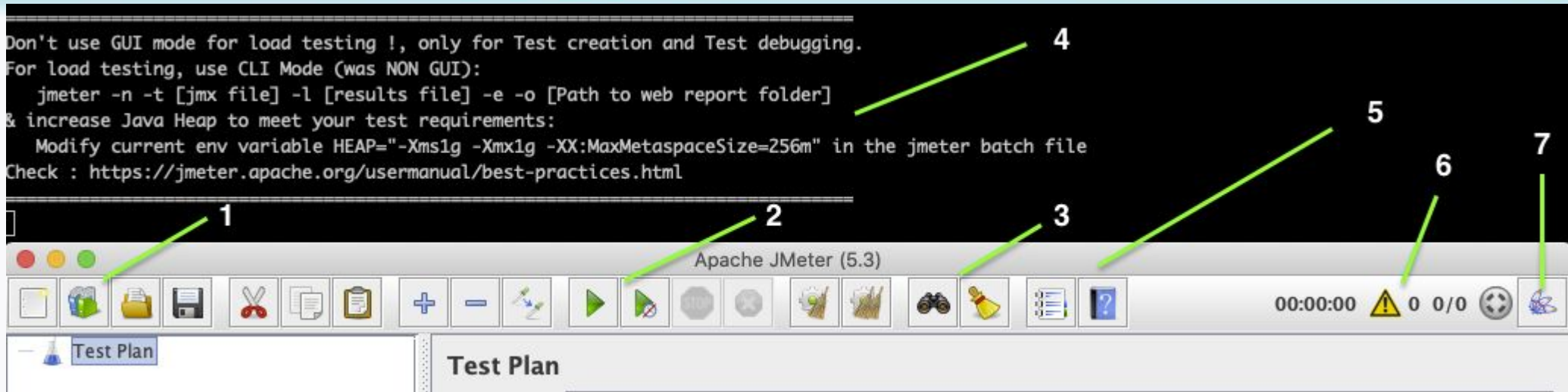
3

Сформируете фундамент для применения нагрузочного тестирования в своей работе

The background of the slide is a high-angle, blue-tinted aerial photograph of a dense urban skyline, likely New York City. Overlaid on this image is a semi-transparent blue band that contains the title text. This band features a subtle, glowing network pattern of interconnected lines and dots, suggesting a digital or technological theme.

User Interface / Пользовательский интерфейс

User Interface



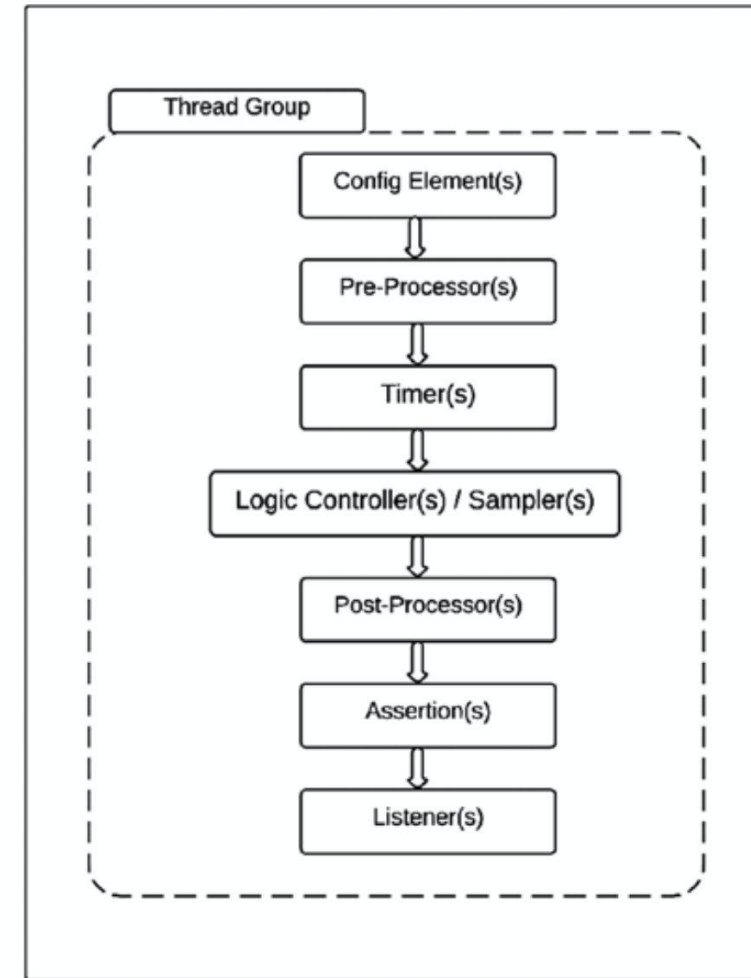
1. Шаблоны проектов - позволяют быстро настроить проект и ничего не забыть
2. **Start** - запуск теста; Start no pauses - запуск **теста без таймеров**
3. **Search/Clear** - поиск по всему проекту, использовать аккуратно
4. Никогда не запускайте боевые тесты из GUI! Об этом предупреждают разработчики инструмента и дают подсказку для запуска и коррекцию параметров HEAP
5. **Functional helper** - из коробки облегчает жизнь с генерацией данных
6. Просмотр логов Jmeter в формате log4j
7. **Plugin Manager** - установка сторонних плагинов

The background of the slide is a blue-tinted aerial photograph of a dense city skyline, likely New York City. Overlaid on this is a semi-transparent network pattern consisting of light blue lines connecting various points, creating a web-like structure. The text is centered within a horizontal band that transitions from a lighter blue on the left to a darker blue on the right.

Components / Основные компоненты

Components

1. **Test Plan** - корневой элемент теста
2. **Thread Group** - ключевой элемент тест плана, в нем должны содержаться исполняемые семплы, контроллеры. Тред группа позволяет управлять количеством и поведением “тредов” aka виртуальных пользователей - определяет их количество и время исполнения
3. **Sampler’ы** - позволяют отправлять запросы на сервер в рамках тред группы
4. **Controllers** - управляют логикой сэмплеров
5. **Listener** - запись данных во время тестирования



The image features a high-angle, blue-tinted aerial photograph of a dense urban skyline, likely New York City, with numerous skyscrapers and buildings. A semi-transparent blue band with a white geometric network pattern of dots and lines runs horizontally across the center of the image. The text "Thread group" is centered within this band in a white, italicized serif font.

Thread group

Thread group

org.apache.jmeter.threads

Class ThreadGroup

```
java.lang.Object
  org.apache.jmeter.testelement.AbstractTestElement
    org.apache.jmeter.threads.AbstractThreadGroup
      org.apache.jmeter.threads.ThreadGroup
```

All Implemented Interfaces:

Serializable, Cloneable, Controller, Searchable, TestElement, JMeterThreadMonitor, TestCompilerHelper

Direct Known Subclasses:

PostThreadGroup, SetupThreadGroup

```
public class ThreadGroup
  extends AbstractThreadGroup
```

ThreadGroup holds the settings for a JMeter thread group. This class is intended to be ThreadSafe.

See Also:

Serialized Form

org.apache.jmeter.threads

Class JMeterThread

```
java.lang.Object
  org.apache.jmeter.threads.JMeterThread
```

All Implemented Interfaces:

Runnable, Interruptible

```
public class JMeterThread
  extends Object
  implements Runnable, Interruptible
```

The JMeter interface to the sampling process, allowing JMeter to see the timing, add listeners for sampling events and to stop the sampling process.

The background of the slide features an aerial view of a city skyline, likely New York City, with numerous skyscrapers. The image is overlaid with a semi-transparent blue layer. A network diagram, consisting of interconnected nodes and lines, is visible across the blue layer, particularly concentrated around the central text.

HTTP request Sampler

HTTP REQUEST SAMPLER

Java

uses the HTTP implementation provided by the JVM. This has some limitations in comparison with the HttpClient implementations - see below.

HttpClient4

uses Apache HttpComponents HttpClient 4.x.

Blank Value

does not set implementation on HTTP Samplers, so relies on HTTP Request Defaults if present or on `jmeter.httpsampler` property defined in `jmeter.properties`

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Config Elements

Config elements

HTTP Header Manager

Name: HTTP Header Manager

Comments:

Headers Stored in the Header Manager

Name:	Value
User-Agent	Mozilla/5.0 (Macintosh; Intel Mac OS X 10.6; rv:15.0) Gecko/20100101 Firefox/15.0.1
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language	fr,fr-fr;q=0.8,en-us;q=0.5,en;q=0.3
Accept-Encoding	gzip, deflate

Add

Add from Clipboard

Delete

Load

Save

HTTP Cookie Manager

Name: HTTP Cookie Manager

Comments:

Options

☐ Clear cookies each iteration?

Implementation: HC4CookieHandler **Cookie Policy:** standard

User-Defined Cookies

Name:	Value	Domain	Path:	Secure
-------	-------	--------	-------	--------

Add

Delete

Load

Save

The image features a blue-tinted aerial view of a city skyline, likely New York City, with numerous skyscrapers. A semi-transparent network pattern of white lines and dots is overlaid on the image, particularly prominent in the center. The text "Feeding data into script" is written in a white, italicized serif font, centered horizontally and partially overlaid by the network pattern.

Feeding data into script

CSV Data set config

CSV Data Set Config

Name: CSV Data Set Config

Comments:

Configure the CSV Data Source

Filename: filename.csv

Browse...

File encoding: UTF-8

Variable Names (comma-delimited): a,b,c

Ignore first line (only used if Variable Names is not empty): False

Delimiter (use '\t' for tab): ,

Allow quoted data?: False

Recycle on EOF?: True

Stop thread on EOF?: False

Sharing mode: All threads

The image features a blue-tinted aerial photograph of a dense city skyline, likely New York City, with numerous skyscrapers. A semi-transparent network of white lines and dots is overlaid on the image, creating a digital or data-driven aesthetic. The text "Feeding data into script" is centered in a white, italicized serif font.

Feeding data into script

CSV Data set config

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Configure the CSV Data Source

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Запись трафика через HTTP(S) Test Script Recorder

Запись трафика через HTTP(S) Test Script Recorder

https://jmeter.apache.org/usermanual/jmeter_proxy_step_by_step.pdf

HTTP(S) Test Script Recorder

Name: HTTP(S) Test Script Recorder

Comments:

State



Global Settings

Port: 8888

HTTPS Domains:

Test Plan Creation

Requests Filtering

Test plan content

Target Controller: Use Recording Controller

Grouping: Put each group in a new transaction controller

☒ Capture HTTP Headers

☐ Add Assertions

☒ Regex matching

HTTP Sampler settings

Transaction name

Create new transaction after request (ms):

Recording's default encoding

UTF-8

☐ Retrieve All Embedded Resources

☐ Redirect Automatically

☒ Use KeepAlive

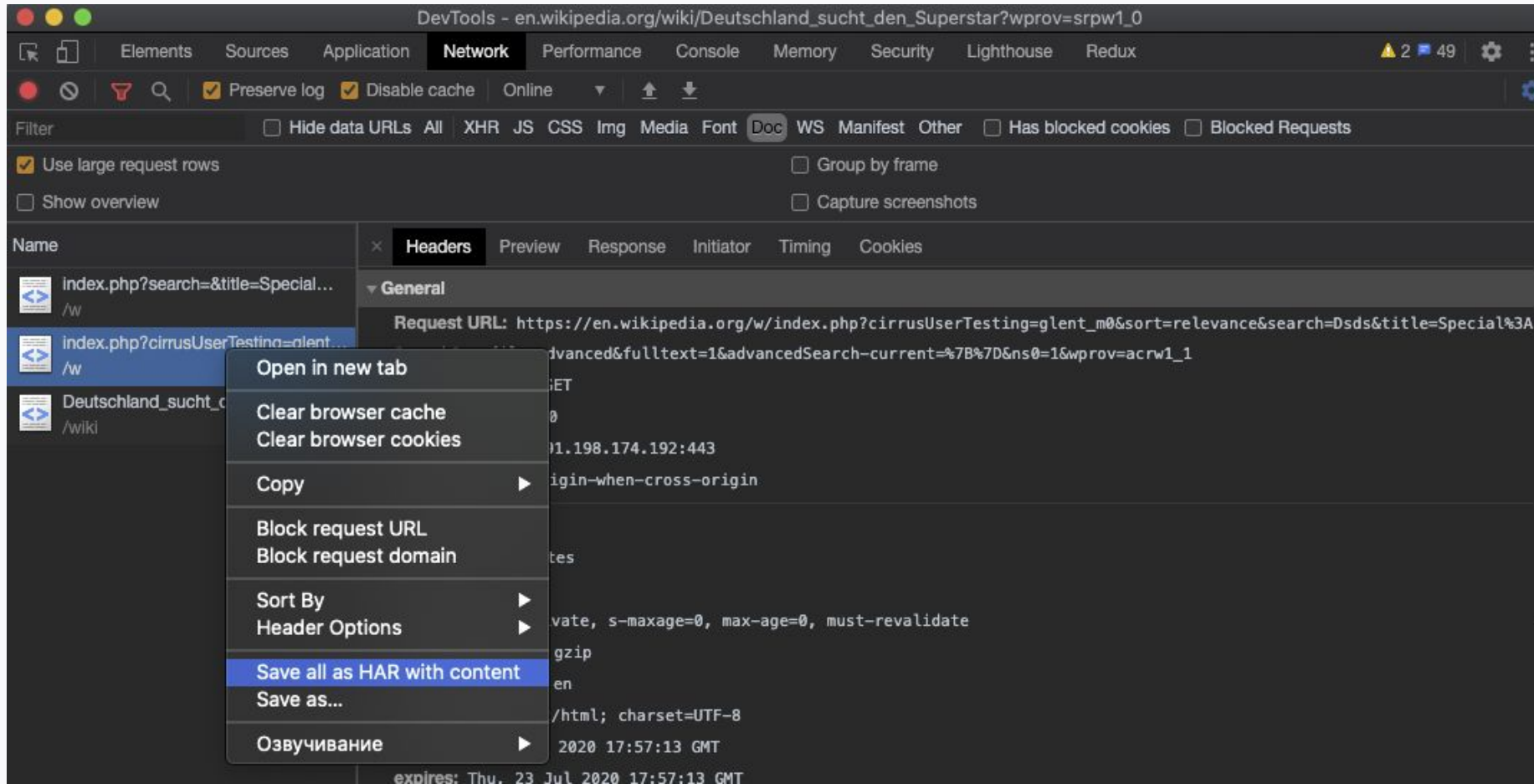
☒ Follow Redirects

Type:



Запись трафика через HAR файлы

Запись трафика через HAR файлы



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Variables and Properties

Variables and properties

Переменная - живет внутри области видимости. Если вы определили переменную внутри одной thread group, в другой ее использовать **не получится**.

Ссылаться на переменную в тестовых элементах нужно через конструкцию `${ переменная }`.

Свойства - в Jmeter это java.util.Properties, есть системные, есть пользовательские, добавлять можно через ключ -J

Использовать в разных thread группах можно

`${__property(Свойство)}` - получить значение свойства

JSR223 Sampler

```
vars.get("VAR1");
```

```
vars.put("VAR2","value");
```

```
vars.remove("VAR3");
```

```
vars.putObject("OBJ1",new Object());
```

```
props.get("START.HMS");
```

```
props.put("PROP1","1234");
```


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Think time timers

Gaussian random timer

Задержка распределенная по Гауссу в заданном диапазоне для каждого запроса

Test Action

Фиксированная пауза



Extractors

Находятся в Post-Processors

RegExp, XPath, CSS, Boundary, JSONPath, JSR223

The background of the slide is a high-angle, blue-tinted aerial photograph of a dense urban skyline, likely New York City. Overlaid on this image is a semi-transparent blue band across the middle, which contains the title text. A faint, white network of lines and dots is visible across the entire slide, particularly prominent in the blue band.

XML/JSON/HTML Response extracting

Extractors pt2

1. XML Response - XPATH

https://www.w3schools.com/xml/xpath_intro.asp

2. JSON Response - JsonPath

https://www.w3schools.com/js/js_json_intro.asp

3. HTML Response - CSS

https://www.w3schools.com/cssref/css_selectors.asp

Для всего остального - регулярки :)

<https://regex101.com/>

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Assertions

Assertions

Response Assertion

Name: Response Assertion

Comments:

Apply to:

☐ Main sample and sub-samples

☒ Main sample only

☐ Sub-samples only

☐ JMeter Variable Name to use

Field to Test

☒ Text Response

☐ Response Code

☐ Response Message

☐ Response Headers

☐ Request Headers

☐ URL Sampled

☐ Document (text)

☐ Ignore Status

☐ Request Data

Pattern Matching Rules

☐ Contains

☐ Matches

☐ Equals

☒ Substring

☐ Not

☐ Or

Patterns to Test

Patterns to Test

Add

Add from Clipboard

Delete

Custom failure message

1

3
5

The background of the slide is a high-angle, blue-tinted aerial photograph of a dense urban skyline, likely New York City. Overlaid on this image is a semi-transparent network pattern consisting of numerous small dots connected by thin, light-blue lines, creating a web-like structure across the center of the slide. The text "Loop Controller" is centered within this network area.

Loop Controller

Loop Controller

-Loop Counter

```
${__jm__LC__idx}
```

...

-Flow Control Action

```
${JMeterThread.last_sample_ok}
```


The background of the entire image is an aerial photograph of a dense city skyline, likely New York City, with numerous skyscrapers. The image is overlaid with a semi-transparent blue gradient. A network of thin, light blue lines connects various points across the image, creating a digital or data network aesthetic. The text "Console Run" is centered in the middle of the image.

Console Run

Console run

1. All report generator properties can be found in file `reportgenerator.properties`. To customize these properties, you should copy them in `user.properties` file and modify them.
2. `jmeter -n -t <path_to.jmx> -l <log.jtl> -e -o <dashboard_folder>`

Рефлексия



Отметьте 3 пункта, которые вам запомнились с вебинара



Что вы будете применять в работе из сегодняшнего вебинара?

The background of the image is an aerial photograph of a dense city skyline, likely New York City, with numerous skyscrapers. The image is overlaid with a semi-transparent blue layer that features a white network pattern of interconnected dots and lines, resembling a digital or social network. The text is centered within this blue layer.

Заполните, пожалуйста,
опрос о занятии по ссылке в чате



Спасибо за внимание!
Приходите на следующие вебинары