OTUS

ОНЛАЙН-ОБРАЗОВАНИЕ

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

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. Ultimate thread group
2. Arrival thread group
3. Timers for pacing (Throughput shaping, JSR223, Constant throughput)
4. Web sockets
5. JDBC Connection & Requests
6. Testing with different bandwidths
7. Sharing data between threads
8. Jmeter as Java code deploy as jar
9. Develop Jmeter plugins
10. Run Jmeter in Docker
11. Run Jmeter from K8s

Цели вебинара | После занятия вы

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

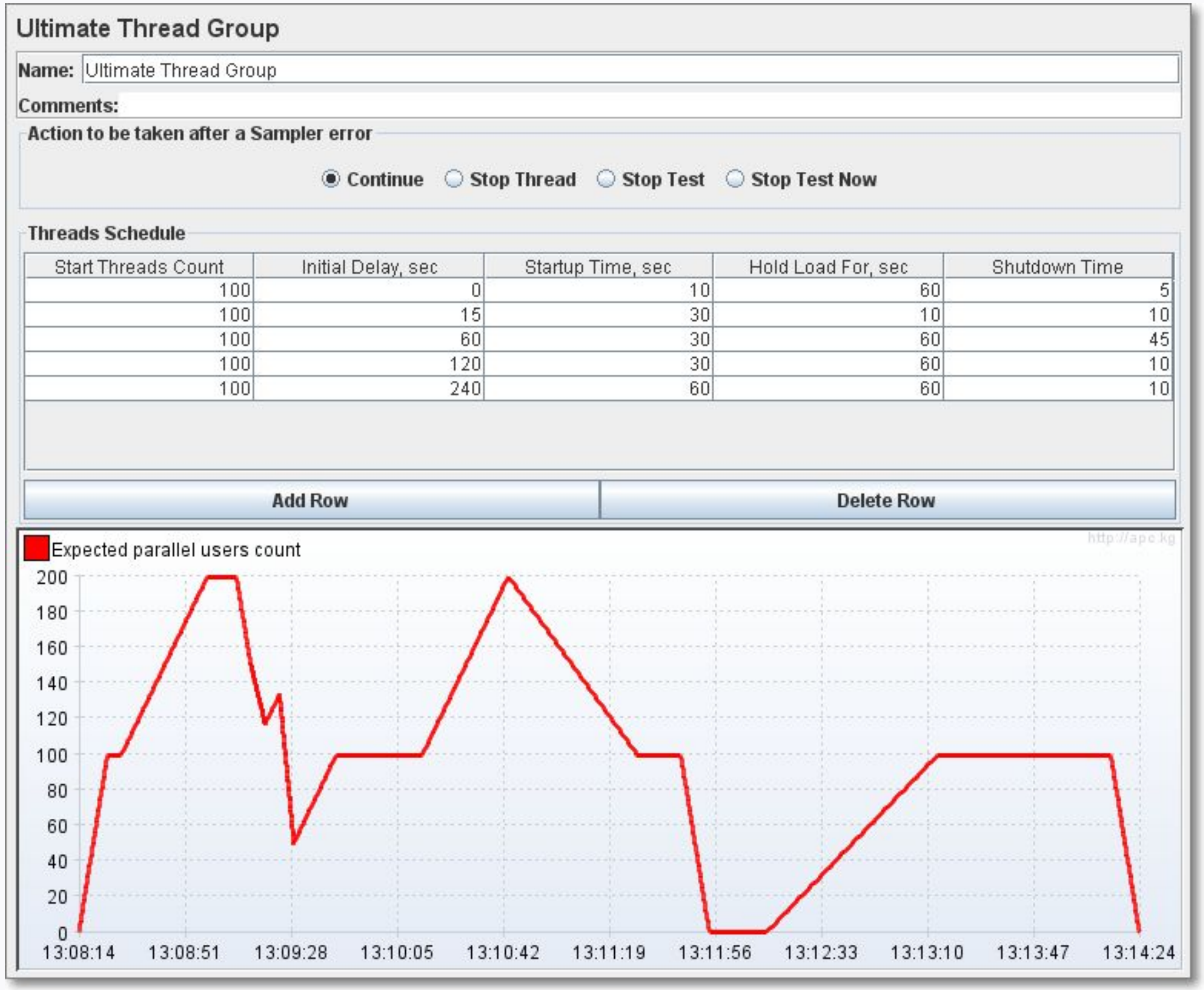
2 *Будете знать основные принципы разработки в gui интерфейсе Jmeter, уметь применять компоненты*

3 *Сформируете фундамент для применения нагрузочного тестирования в своей работе*

Ultimate Thread Group

Ultimate thread group

https://jmeter-plugins.org/wiki/UltimateThreadGroup/



Ultimate Thread Group

Name: Ultimate Thread Group

Comments:

Action to be taken after a Sampler error

[● Continue] ○ Stop Thread ○ Stop Test ○ Stop Test Now

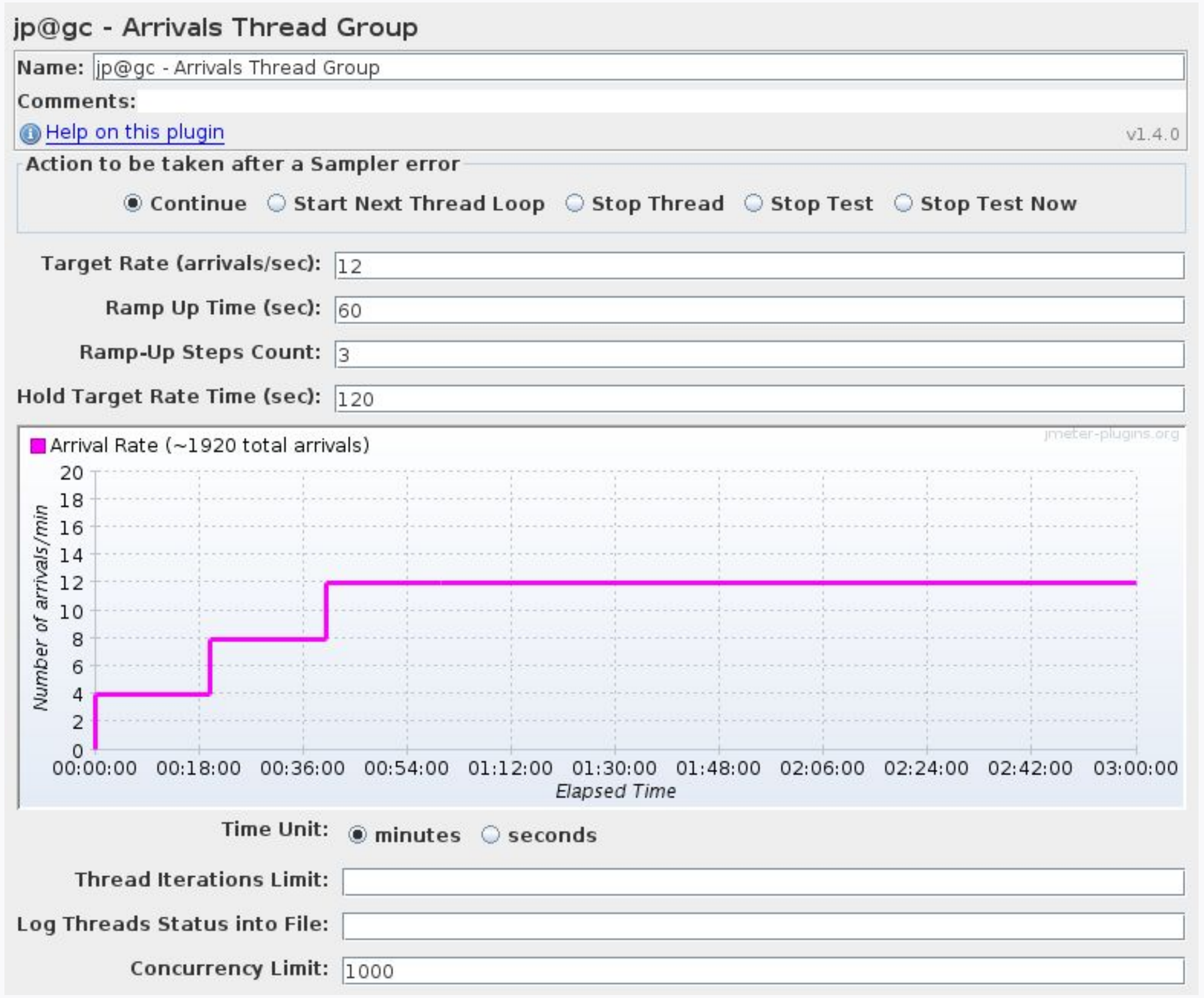
Threads Schedule

Start Threads Count	Initial Delay, sec	Startup Time, sec	Hold Load For, sec	Shutdown Time
100	0	10	60	5
100	15	30	10	10
100	60	30	60	45
100	120	30	60	10
100	240	60	60	10

Arrival Thread Group

Arrival thread group

https://jmeter-plugins.org/wiki/ArrivalsThreadGroup/



jp@gc - Arrivals Thread Group

Name: jp@gc - Arrivals Thread Group

Comments:

Help on this plugin v1.4.0

Action to be taken after a Sampler error

[✓ Continue] Start Next Thread Loop Stop Thread Stop Test Stop Test Now

Target Rate (arrivals/sec): 12

Ramp Up Time (sec): 60

Ramp-Up Steps Count: 3

Hold Target Rate Time (sec): 120

Time Unit: [✓ minutes] seconds

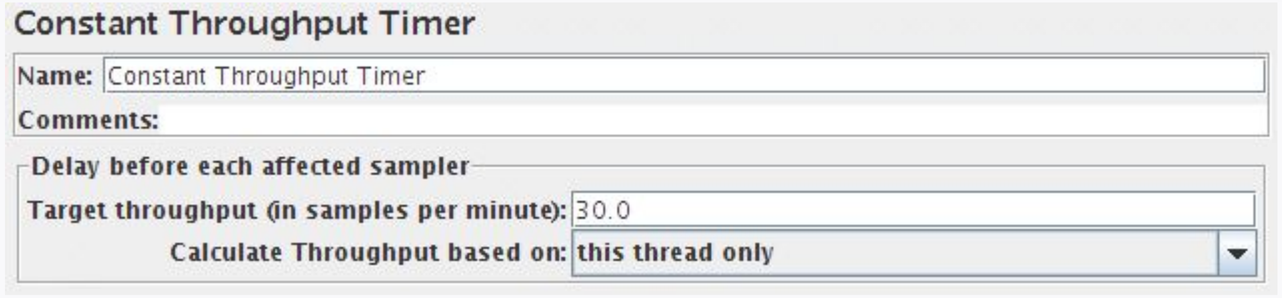
Thread Iterations Limit:

Log Threads Status into File:

Concurrency Limit: 1000

Timers for pacing

Timers for pacing


Constant Throughput Timer

Name: Constant Throughput Timer

Comments:

Delay before each affected sampler

Target throughput (in samples per minute): 30.0

Calculate Throughput based on: this thread only

JSR 223 Timer

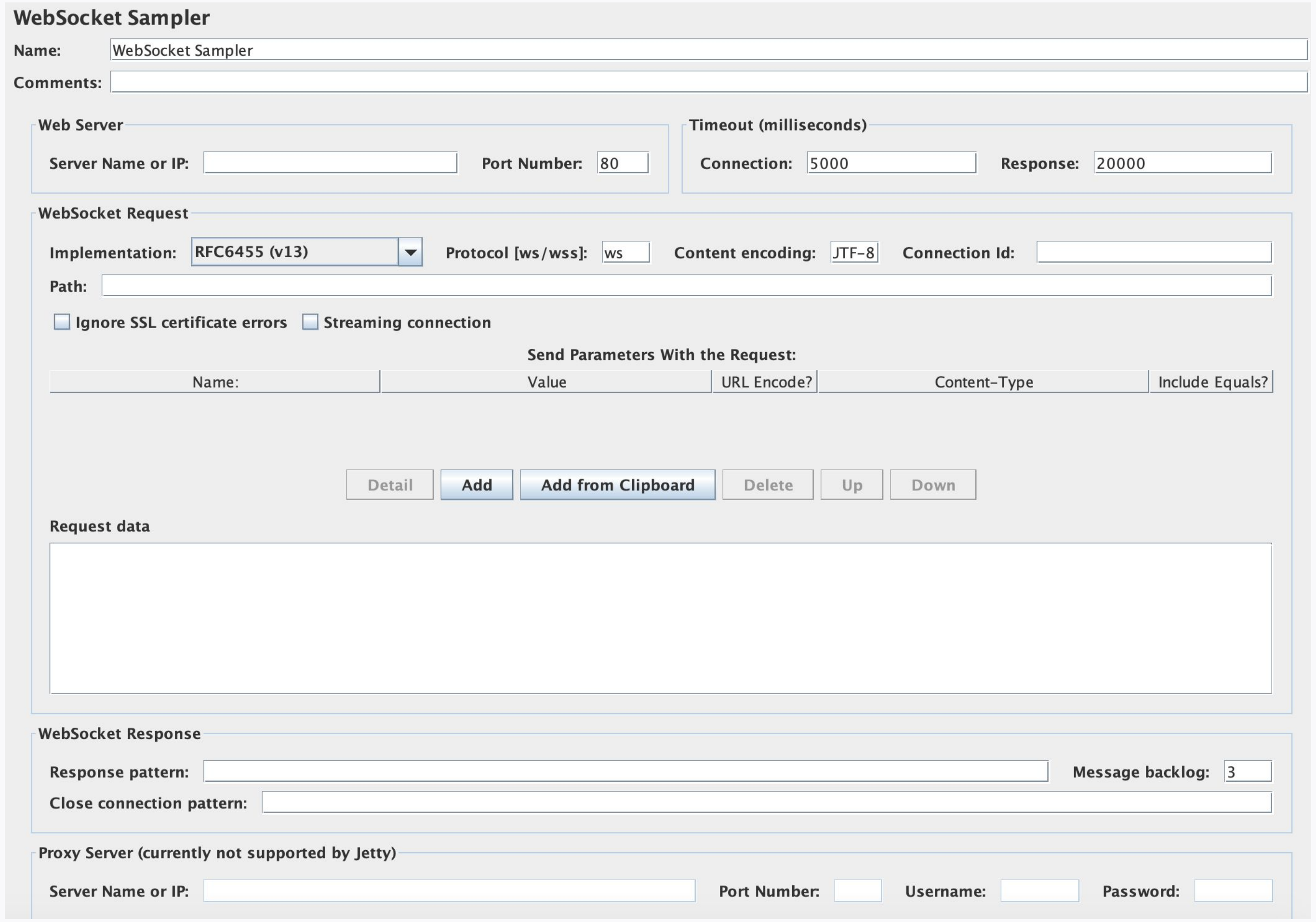
```
/Sets the pacing length based on the last requests response time. 4500 is the time in ms
Long pacing = 4500 - prev.getTime();

//If the response time is less than 4500 ms, set the delay value to myDelay
if ( pacing > 0 )
{
        //iPacing is equal to the int value of pacing if pacing is not equal to null, otherwise iPacing is null
        Integer iPacing = pacing != null ? pacing.intValue() : null;
        log.info(String.valueOf(iPacing));
        vars.put("myDelay", String.valueOf(iPacing));
        return iPacing;
}
//The response time is greater than or equal to 4500 ms, set myDelay to 0
else
{
        vars.put("myDelay", "0");
        return 0;
}
```

Web Sockets

Web sockets

https://tools.ietf.org/pdf/rfc6455.pdf



WebSocket Sampler

Name: WebSocket Sampler

Comments:

Web Server

Server Name or IP: Port Number: 80

Timeout (milliseconds)

Connection: 5000 Response: 20000

WebSocket Request

Implementation: RFC6455 (v13) Protocol [ws/wss]: ws Content encoding: UTF-8 Connection Id:

Path:

☐ Ignore SSL certificate errors ☐ Streaming connection

Send Parameters With the Request:

Name:	Value	URL Encode?	Content-Type	Include Equals?

Request data

WebSocket Response

Response pattern: Message backlog: 3

Close connection pattern:

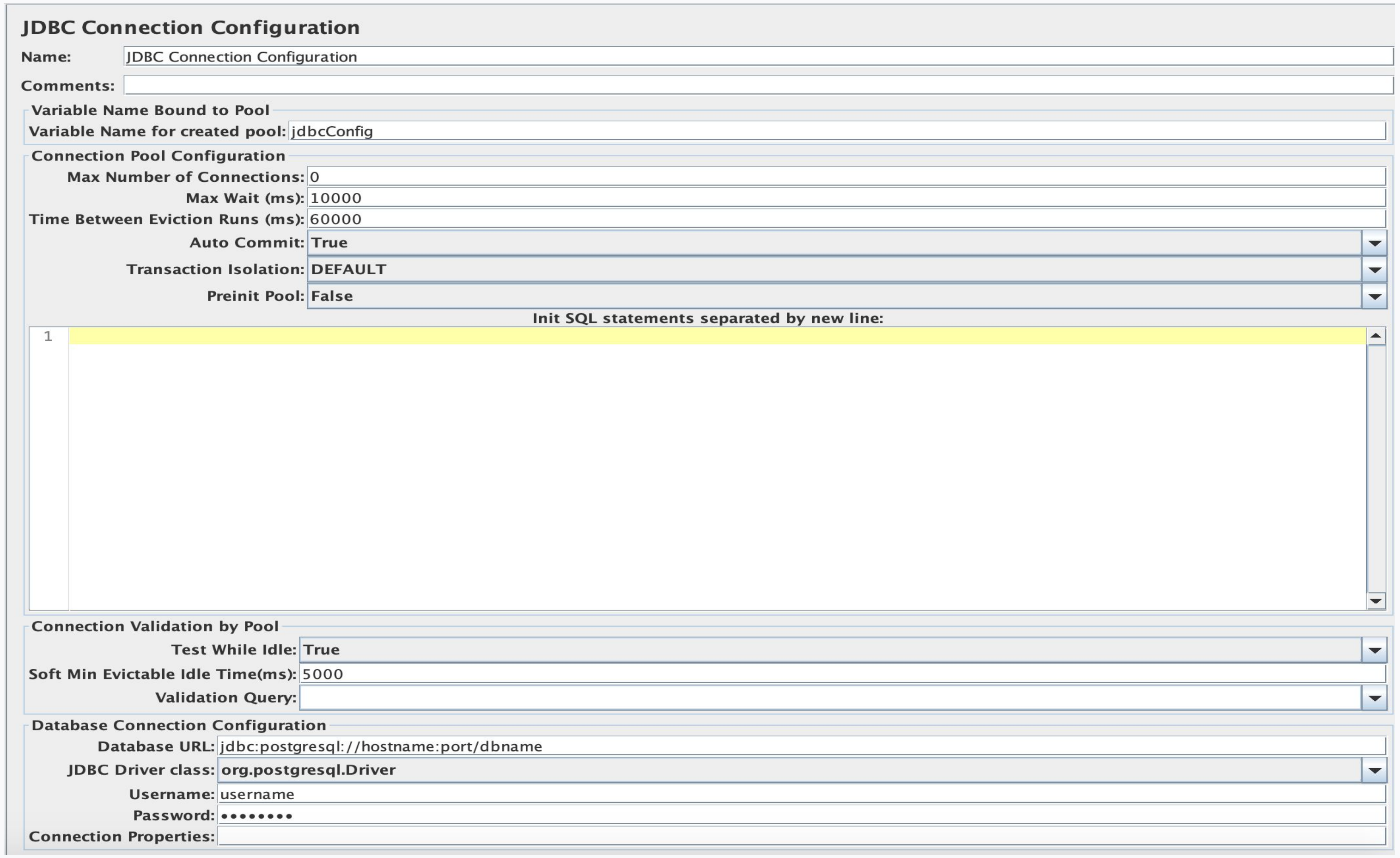
Proxy Server (currently not supported by Jetty)

Server Name or IP: Port Number: Username: Password:

JDBC Connections

JDBC Connection

- Добавьте driver to jmeter/lib
- Укажите host, port, username и password в JDBC Configuration



JDBC Connection Configuration

Name:	JDBC Connection Configuration
Comments:	

Variable Name Bound to Pool

Variable Name for created pool:	jdbcConfig

Connection Pool Configuration

Max Number of Connections:	0
Max Wait (ms):	10000
Time Between Eviction Runs (ms):	60000
Auto Commit:	True
Transaction Isolation:	DEFAULT
Preinit Pool:	False

Init SQL statements separated by new line:

Connection Validation by Pool

Test While Idle:	True
Soft Min Evictable Idle Time(ms):	5000
Validation Query:	

Database Connection Configuration

Database URL:	jdbc:postgresql://hostname:port/dbname
JDBC Driver class:	org.postgresql.Driver
Username:	username
Password:	••••••••
Connection Properties:	

Bandwidth

Bandwidth

- $JMETER_HOME/bin/user.properties.
- httpclient.socket.http.cps=0
- httpclient.socket.https.cps=0
- jmeter -Jhttpclient.socket.http.cps=21888 -Jhttpclient.socket.https.cps=21888 -t /path/to/your/testplan.jmx

cps = (target bandwidth in kbps * 1024) / 8

GPRS (171 Kbits/second downstream) = 21888

Sharing Data Between Threads

Sharing Data Between Threads

Syncronized вызовы

```
def key_set_add(key_name, key_value) {
   if (props.get(key_name) == null) {
       props.put(key_name, new HashSet<String[]>())
   }
   synchronized (props.get(key_name)) {
       props.get(key_name).add(key_value)
   }
}
```

Concurrent Типы

JSR-223 с ConcurentBlockingQueue

Jmeter as code

Jmeter as code

Jmeter - это Java приложение, причем исходники нам доступны. Значит можно работать как с кодом.

Минимальный набор для запуска

1. StandardJMeterEngine - The main class that which configures the Test Plan and executes it.
2. HashTree - A special collection that holds Test Plan elements.
3. A minimum of JMeter Controllers necessary to run the test:

- TestPlan - The root container for all below plus the place where all test properties can be specified
- ThreadGroup - A pool of users to execute the test. A test must have at least one Thread Group with at least one thread and one loop.
- LoopController - Since you must have at least one loop, it’s essential to have a Loop Controller instance set as a main Sampler controller for a Thread Group.
- A Sampler to do the actual work.

Сборку рекомендую делать через Maven

Jmeter Plugins

Jmeter Plugins

https://jmeter.apache.org/extending/jmeter_tutorial.pdf

The CustomSampler class extends the **AbstractJavaSamplerClient** class and invokes the testFunction.
By overriding the getDefaultParameters function, we can apply default parameters that can be used with the request.

http://svn.apache.org/repos/asf/jmeter/trunk/src/protocol/java/org/apache/jmeter/protocol/java/test/SleepTest.java

Jmeter in Docker

Jmeter in Docker

```
FROM  openjdk:14-alpine
ARG JMETER_VERSION="apache-jmeter-5.2.1"
ARG JMETER_SOURCE="https://archive.apache.org/dist/jmeter/binaries/apache-jmeter-5.2.1.tgz"
ARG
JMETER_PLUGIN_LIST="jpgc-graphs-basic=2.0,jpgc-graphs-additional=2.0,jpgc-csl=0.1,jpgc-functions=2.1,jpgc-casutg=2.9,jpgc-graphs-dist=2.0,jpgc-graphs-vs=2.0,jpgc-prmctl=0.4,jpgc-re
dis=0.3,jpgc-csvars=0.1"

RUN apk --no-cache add curl ca-certificates
RUN apk --no-cache add freetype-dev
RUN apk --no-cache add ttf-dejavu

RUN curl ${JMETER_SOURCE} > $HOME/${JMETER_VERSION}.tgz \
   && tar -xvzf $HOME/${JMETER_VERSION}.tgz -C /usr/local/bin \
   && curl -L https://jmeter-plugins.org/get/ > /usr/local/bin/${JMETER_VERSION}/lib/ext/plugins-manager.jar \
   && curl -L http://search.maven.org/remotecontent?filepath=kg/apc/cmdrunner/2.2/cmdrunner-2.2.jar > /usr/local/bin/${JMETER_VERSION}/lib/cmdrunner-2.2.jar \
   && ln -s /usr/local/bin/${JMETER_VERSION}/bin/jmeter /bin/jmeter  \
   && mkdir /jmeter && mkdir /jmeter/test_plans

RUN java -cp /usr/local/bin/${JMETER_VERSION}/lib/ext/plugins-manager.jar org.jmeterplugins.repository.PluginManagerCMDInstaller

RUN  /usr/local/bin/${JMETER_VERSION}/bin/PluginsManagerCMD.sh install ${JMETER_PLUGIN_LIST}

COPY your_folder /jmeter/your_folder
ENV PATH $PATH:$JMETER_BIN

WORKDIR /jmeter

ENTRYPOINT ["/bin/jmeter"]
```

Jmeter in Docker

```
docker run \
--name jmeter \
--sysctl=net.ipv4.tcp_tw_reuse=1 \
--sysctl=net.ipv4.tcp_tw_recycle=1 \
--sysctl=net.ipv4.tcp_max_tw_buckets=30000 \
--rm \
--network host \
-e HEAP='-Xms10g -Xmx10g -XX:MaxMetaspaceSize=5g' \
образ -Dhttpclient4.validate_after_inactivity=50000 -Dhttpclient4.time_to_live=60000
-Dhttpclient.reset_state_on_thread_group_iteration=false -n -t %YourTestPlan%
```

Jmeter in K8s

Jmeter in k8s

https://minikube.sigs.k8s.io/docs/

docker image → kubernetes job → kubernetes pods

kubernetes

Рефлексия

★ Отметьте 3 пункта, которые вам запомнились с вебинара

? Что вы будете применять в работе из сегодняшнего вебинара?

Заполните, пожалуйста, опрос о занятии по ссылке в чате

Спасибо за внимание!
Приходите на следующие вебинары