JMeter Performance Test Plan
for Incentivio

Revision History

Revision	Author	Date	Description
V1.0	Vikum Warnakula	11/08/2020	Jmeter Test Plan

Note:

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1. Introduction to JMeter

1.1   What is JMeter?

JMeter is a software that can perform load test, performance-oriented business functional test, regression test, etc., on protocols and technologies.

JMeter is a java desktop application with a graphical interface that uses the Swing graphical API. It can therefore run on any environment / workstation that accepts a java virtual machine for example – Windows, Linux, Mac etc.

The protocols supported by JMeter are –

- Web − HTTP, HTTPS sites 'web 1.0' web 2.0 ajax, flexandflex − ws – amf
- Web Services − SOAP / XML-RPC
- Database via JDBC drivers
- Directory – LDAP
- Messaging Oriented service via JMS
- Service − POP3, IMAP, SMTP
- FTP Service

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1.2 JMeter Features

- Being an open source software, it is freely available.

- It has a simple and intuitive GUI.

- JMeter can conduct load and performance test for many different server types − Web - HTTP,HTTPS, SOAP, Database via JDBC, LDAP, JMS, Mail - POP3, etc.

- It is a platform-independent tool. On Linux/Unix, JMeter can be invoked by clicking on JMeter shell script. On Windows, it can be invoked by starting the jmeter.bat file.

- JMeter store its test plans in XML format. This means you can generate a test plan using a text editor.

- Its full multi-threading framework allows concurrent sampling by many threads and simultaneous sampling of different functions by separate thread groups.

- It is highly extensible.

- It can also be used to perform automated and functional testing of the applications.

1.3 JMeter Installation

1. Verify java Installation

First of all, verify whether you have Java installed in your system. Open your console and execute one of the following java commands based on the operating system you are working on.

OS	Task	Command
Windows	Open Command Console	c:\> java -version
Linux	Open Command Terminal	$ java -version
Mac	Open Terminal Machine	~ joseph$ java -version

2. Set Java Environment
3. Download JMeter

Download the latest version of JMeter from http://jmeter.apache.org/download_jmeter.cgi. copy it into C:\>JMeter folder.
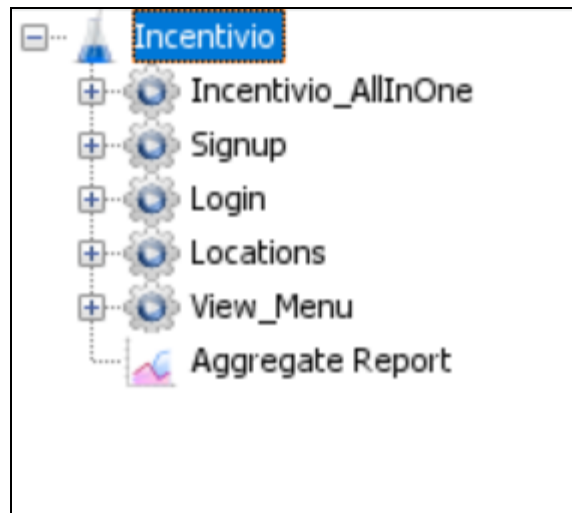
4. Run JMeter

After downloading JMeter, go to the bin directory. Directory : Apache JMeter\apache-jmeter-5.3\bin Click on related file.

OS	Output
Windows	jmeter.bat
Linux	jmeter.sh
Mac	jmeter.sh

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2. Incentivio Test Plan

2.1 Project Structure

Project consists of several thread groups in which one thread group (Incentivio_AllInOne) is a request flow that one customer may proceed. All other thread groups are allocated for individual end points.

2.2 Guidelines

- Dummy email address has been created for testplan use. (aetincentivioperformance@gmail.com) Same email is used to create users for signup endpoint by adding "+" mark end of the username Ex: aetincentivioperformance+1000000@gmail.com
- "Counter" Config element is used to produce new email addresses for each iteration.
- "CSV Data Set Config" is used to generate test data from a CSV file.
- "Random Variable" Config element is used to randomize email address input for login endpoint.
- Listeners specially "View Results Tree" and Debug Samplers should be disabled when running load test since they consume considerable weight of time.

2.3 Perform Load Test

1. Setup a Performance environment which has same hardware and Release version as Production environment or scaled down to production environment.
2. Open .jmx project from JMeter.
3. Click on Test Plan and change {ServerIP} variable value to relevant Performance environment IP.
4. Define a range for email address and run Signup request. (Please change counter values). These generated email addresses are used for **login** endpoint.
5. ${__Random(0,10, MYVAR)}function has been used to generate random email addresses for Signup endpoints. Change function min max values according to the project requirement.
6. Run some sample requests and check whether environment is working fine.
7. Run thread groups parallelly or individually.
8. Monitor real time "Aggregate Report" Results.

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2.4 Performance Metrices

1. Percentiles

A percentile is a very useful performance testing metric that gives a measure under which a percentage of the sample is found. For example, the 90th percentile (abbreviated as p90) indicates that 90% of the sample is below that value and the rest of the values (that is, the other 10%) are above it.

2. Average

To calculate the average, simply add up all the values of the samples and then divide that number by the number of samples. Let's say I do this and my resulting average is 3 seconds. The problem with this is that, at face value, it gives you a false sense that all response times are about three seconds, some a little more and some a little less, but that might not be the case.

3. Throughput

indicates the number of transactions per second an application can handle, the amount of transactions produced over time during a test.

4. Medians

Medians are often confused with average. Unlike average where we take from the rich and give to the poor, the median examines the amount that the middle member participant has. To determine the median, line up the members from minimum to maximum, mark the member in the middle and see what his amount is.

2.5 Sample Results

Label	# Samples	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Throughput	Received KB...	Sent KB/sec
POST_LoginRQ	1448	5171	3507	10582	14037	22055	12	251678	1.45%	3.8/sec	5.00	1.58
POST_SignupRQ	119	6331	2826	5561	9170	121999	1206	243068	2.52%	18.8/min	0.39	0.21
GET_LocationsRQ	578	11150	7267	22787	29456	64661	1047	162555	3.46%	1.5/sec	53.59	0.50
GET_ViewMenuRQ	263	36588	21269	91321	125986	170242	1391	240076	11.41%	43.3/min	259.31	0.30
TOTAL	2408	10095	4477	19354	33174	119325	12	251678	3.07%	6.3/sec	307.98	2.58

Note: Results given above were run for dev environment.