

# JMeter入门指引

# 内容大纲

- 理论基础
  - 不同角度看待性能测试
  - 性能测试的类型、术语
  - JMeter与其他性能测试工具的比较
- JMeter的使用
  - JMeter目录结构、属性配置
  - 其他插件/工具
  - 测试SQL Query
  - 测试Web页面
  - 分析JMeter的运行结果

# 从不同角度理解软件性能

- 用户
- 系统管理员
- 开发人员

# 软件性能的认识 – 用户角度

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- 响应时间
  - 2/5/10原则（很好/还行/忍受极限）
- 稳定性

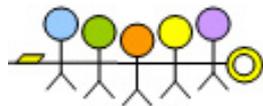
# 软件性能的认识 – 系统管理员角度



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- 并发压力
- 网络带宽占用情况
- 服务器端资源使用情况

# 软件性能的认识 – 开发人员角度



- 架构设计
- 数据库设计
- 代码是否需要优化，比如sql语句

# 性能/负载/压力测试

- 性能测试：主要是**正常**使用场景下的测试，验证是否满足需求。为了系统保持一定的扩展空间，会进行一些超出**正常**范围的测试。
- 负载测试：通过不断给被测系统施压，来了解当前的各项性能指标。
- 压力测试：通过确定一个系统的瓶颈或者不能接受的性能点，来了解系统所能提供的最大服务级别的测试。

# 还可能有哪些类型？

- 大数据量测试
- 疲劳强度测试
- 失败恢复测试
- ..... .....

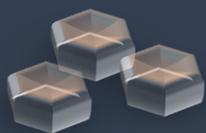
# 软件性能测试术语

- 并发用户数 **不等于** 在线用户数
- 响应时间
- 吞吐量
- 资源利用率（内存、CPU等利用率）

# 与其他工具的比较

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- Load Runner
- Web Application Stress Tool
- Grinder - nGrinder



# JMeter的使用

# JMeter下载与运行

1. 确认工作机上已安装Java运行环境
2. 下载:[http://jmeter.apache.org/download\\_jmeter.cgi](http://jmeter.apache.org/download_jmeter.cgi)

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

## Apache JMeter 2.12 (Requires Java 6 or later)

### Binaries

[apache-jmeter-2.12.tgz](#) [md5](#) [pgp](#)  
[apache-jmeter-2.12.zip](#) [md5](#) [pgp](#)

# 目录结构



Data (D:) > 01-TestSkill > [JMeter] > apache-jmeter-2.12 >

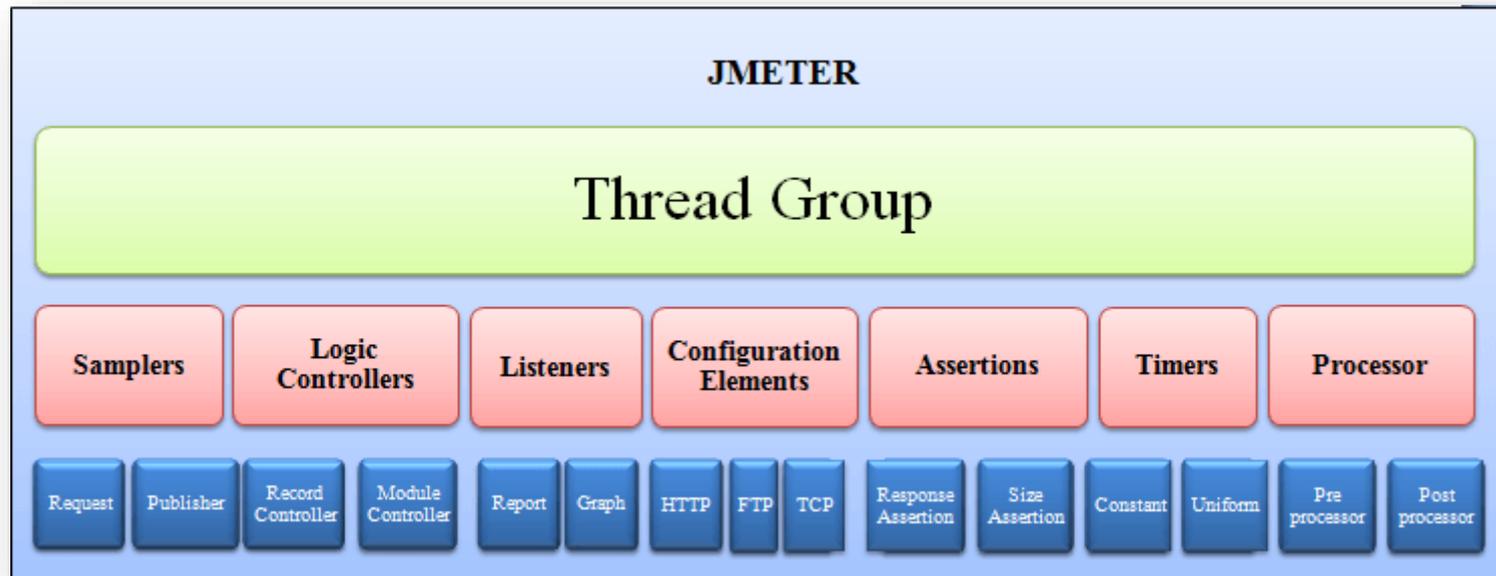
名称		类型	大小
<code>jmeter.properties; jmeter.log...</code>			
 bin	2014/12/16 22:49	文件夹	
 docs	2014/12/7 23:24	文件夹	
 extras	2014/12/7 23:25	文件夹	
 lib	2014/12/16 22:47	文件夹	
 licenses	2014/12/7 23:25	文件夹	
 printable_docs	2014/12/7 23:25	文件夹	
 LICENSE	2014/12/7 23:22	文件	11 KB
 NOTICE	2014/12/7 23:22	文件	1 KB
 README	2014/12/7 23:22	文件	7 KB

<http://jmeter.apache.org/usermanual/index.html>

## Section Summary

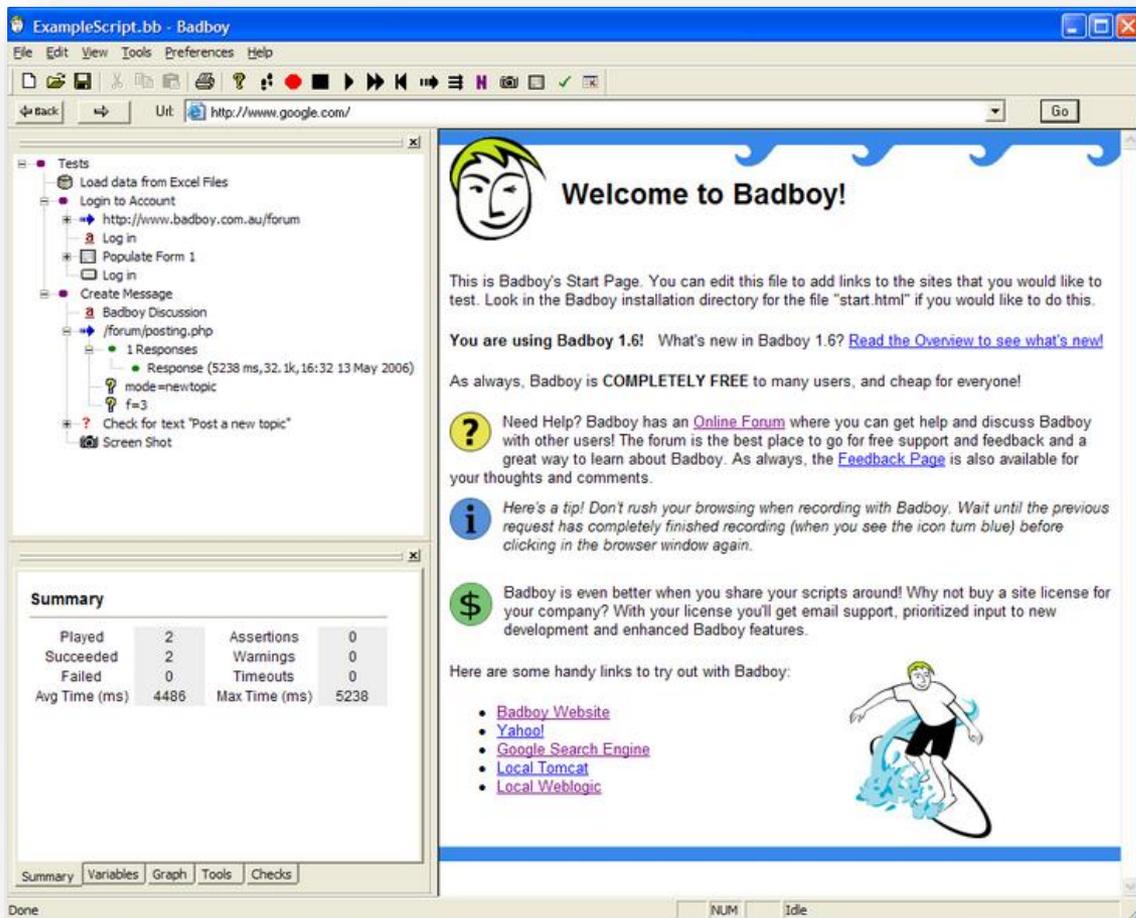
- [Changes](#)
- +... [1. Introduction](#)
- +... [2. Getting Started](#)
- +... [3. Building a Test Plan](#)
- +... [4. Elements of a Test Plan](#)
- +... [5. Building a Web Test Plan](#)
- +... [6. Building an Advanced Web Test Plan](#)
- +... [7. Building a Database Test Plan](#)
- +... [8. Building an FTP Test Plan](#)
- +... [9a. Building an LDAP Test Plan](#)
- +... [9b. Building an Extended LDAP Test Plan](#)
- +... [10. Building a Webservice Test Plan](#)
- +... [11. Building a JMS Point to point Test Plan](#)
- +... [12. Building a JMS Topic Test Plan](#)
- +... [13. Building a Monitor Test Plan](#)
- +... [14. Listeners](#)
- +... [15. Remote Testing](#)
- +... [16. Best Practices](#)
- +... [17. Help! My boss wants me to load test our web app!](#)
- +... [18. Component Reference](#)
- +... [19. Functions](#)
- +... [20. Regular Expressions](#)
- +... [21. Hints and Tips](#)
- +... [22. Glossary](#)

# JMeter Elements



# 其他插件/工具

## • BadBoy (15天试用版)



The screenshot shows the Badboy application window titled "ExampleScript.bb - Badboy". The interface includes a menu bar (File, Edit, View, Tools, Preferences, Help), a toolbar with various icons, and a browser address bar showing "http://www.google.com/".

On the left, a "Tests" tree view lists several test steps, including "Load data from Excel Files", "Login to Account", "Create Message", and "Check for text 'Post a new topic'". Below the tree is a "Summary" window with the following data:

Summary			
Played	2	Assertions	0
Succeeded	2	Warnings	0
Failed	0	Timeouts	0
Avg Time (ms)	4486	Max Time (ms)	5238

The main content area displays a "Welcome to Badboy!" page with a cartoon character. The page text includes:

This is Badboy's Start Page. You can edit this file to add links to the sites that you would like to test. Look in the Badboy installation directory for the file "start.html" if you would like to do this.

You are using Badboy 1.6! What's new in Badboy 1.6? [Read the Overview to see what's new!](#)

As always, Badboy is COMPLETELY FREE to many users, and cheap for everyone!

**?** Need Help? Badboy has an [Online Forum](#) where you can get help and discuss Badboy with other users! The forum is the best place to go for free support and feedback and a great way to learn about Badboy. As always, the [Feedback Page](#) is also available for your thoughts and comments.

**i** Here's a tip! Don't rush your browsing when recording with Badboy. Wait until the previous request has completely finished recording (when you see the icon turn blue) before clicking in the browser window again.

**\$** Badboy is even better when you share your scripts around! Why not buy a site license for your company? With your license you'll get email support, prioritized input to new development and enhanced Badboy features.

Here are some handy links to try out with Badboy:

- [Badboy Website](#)
- [Yahoo!](#)
- [Google Search Engine](#)
- [Local Tomcat](#)
- [Local Weblog](#)

At the bottom of the window, there are tabs for "Summary", "Variables", "Graph", "Tools", and "Checks". The status bar at the very bottom shows "Done", "NUM", and "Idle".

# 其他插件/工具

- BadBoy
- jmeter-plugins ( 开源免费 )

## Standard Set

Basic plugins for everyday needs. Does not require additional libs to run.

[Download](#) | [Installation](#) | [Package Contents](#)



## Extras Set

Additional plugins for extended and complex testing. Does not require additional libs to run.

[Download](#) | [Installation](#) | [Package Contents](#)



## Extras with Libs Set

Additional plugins that *do require* additional libs to run.

[Download](#) | [Installation](#) | [Package Contents](#)



## WebDriver Set

Selenium/WebDriver testing ability.

[Download](#) | [Installation](#) | [Package Contents](#)



## Hadoop Set

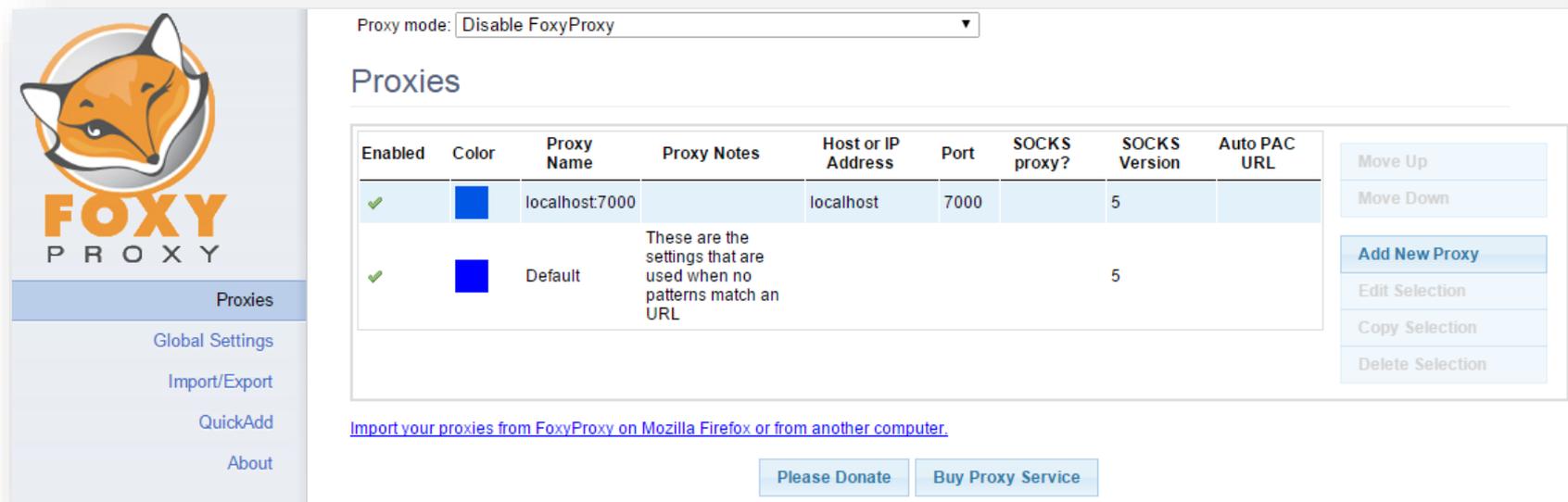
Hadoop/HBase testing plugins.

[Download](#) | [Installation](#) | [Package Contents](#)



# 其他插件/工具

- BadBoy
- jmeter-plugins ( 开源免费 )
- FoxyProxy



Proxy mode:

## Proxies

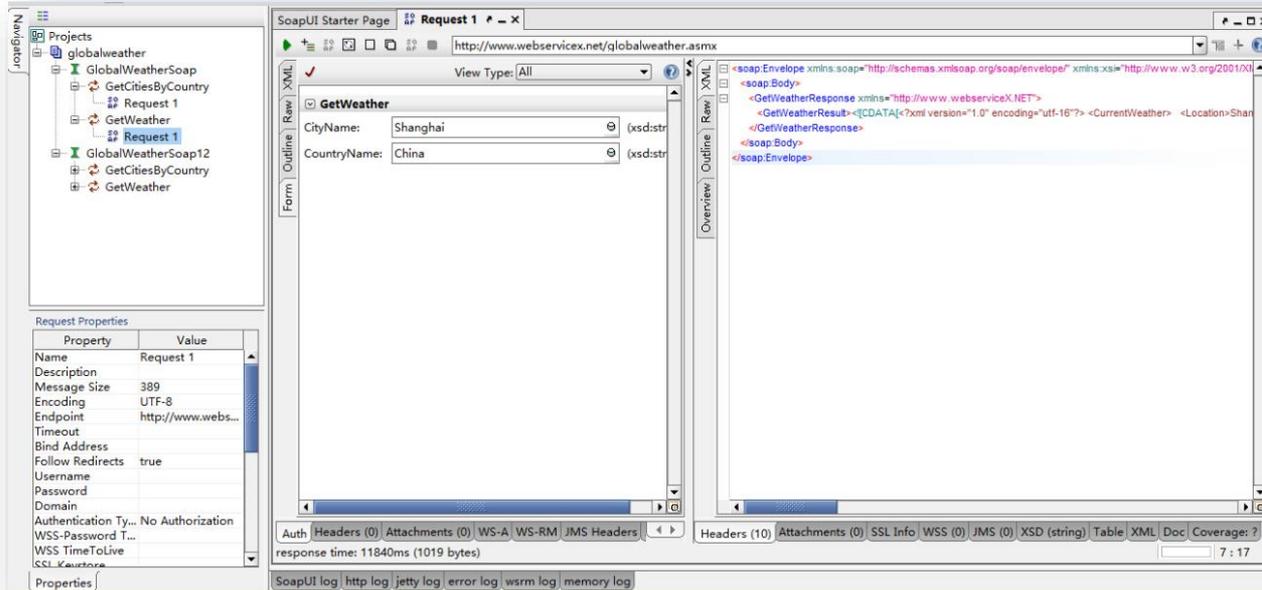
Enabled	Color	Proxy Name	Proxy Notes	Host or IP Address	Port	SOCKS proxy?	SOCKS Version	Auto PAC URL	
✓	■	localhost:7000		localhost	7000		5		Move Up Move Down
✓	■	Default	These are the settings that are used when no patterns match an URL				5		Add New Proxy Edit Selection Copy Selection Delete Selection

[Import your proxies from FoxyProxy on Mozilla Firefox or from another computer.](#)

Please Donate Buy Proxy Service

# 其他插件/工具

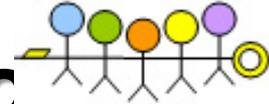
- BadBoy
- jmeter-plugins ( 开源免费 )
- FoxyProxy
- SoapUI ( 试用版 )



# 演示JMeter

1. 测试SQL Query - SQL Server 2008
2. 测试Web页面

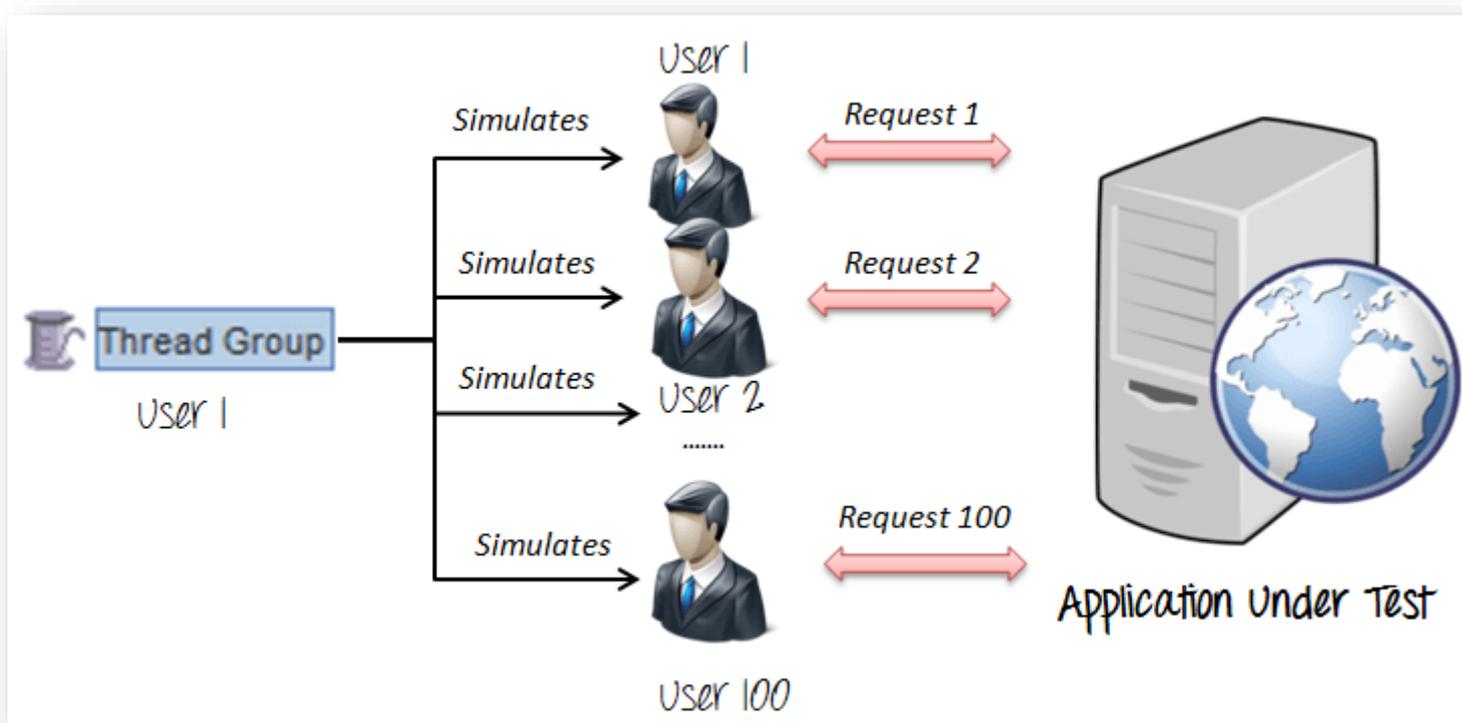
# JDBC Connection Configuratic



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<b>Datebase</b>	<b>Driver class</b>	<b>Database URL</b>
MySQL	com.mysql.jdbc.Driver	jdbc:mysql://host:port/{dbname}
PostgreSQL	org.postgresql.Driver	jdbc:postgresql:{dbname}
Oracle	oracle.jdbc.driver.OracleDriver	jdbc:oracle:thin:user/pass@//host:port/service
Ingres (2006)	ingres.jdbc.IngresDriver	jdbc:ingres://host:port/db[;attr=value]
MSSQL	com.microsoft.sqlserver.jdbc.SQLServerDriver 或者 net.sourceforge.jtds.jdbc.Driver	jdbc:sqlserver://IP:1433;databaseName=DBname 或者 jdbc:jtds:sqlserver://localhost:1433/"+"library"

# 回顾



# 分析JMeter的运行结果

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- Summary Report
- Graph Results
- View Results in Tree
- View Results in Table

# Summary Report

可以另存为csv文件

### Summary Report

Name:

Comments:

Write results to file / Read from file

Filename   Log/Display Only:  Errors  Successes

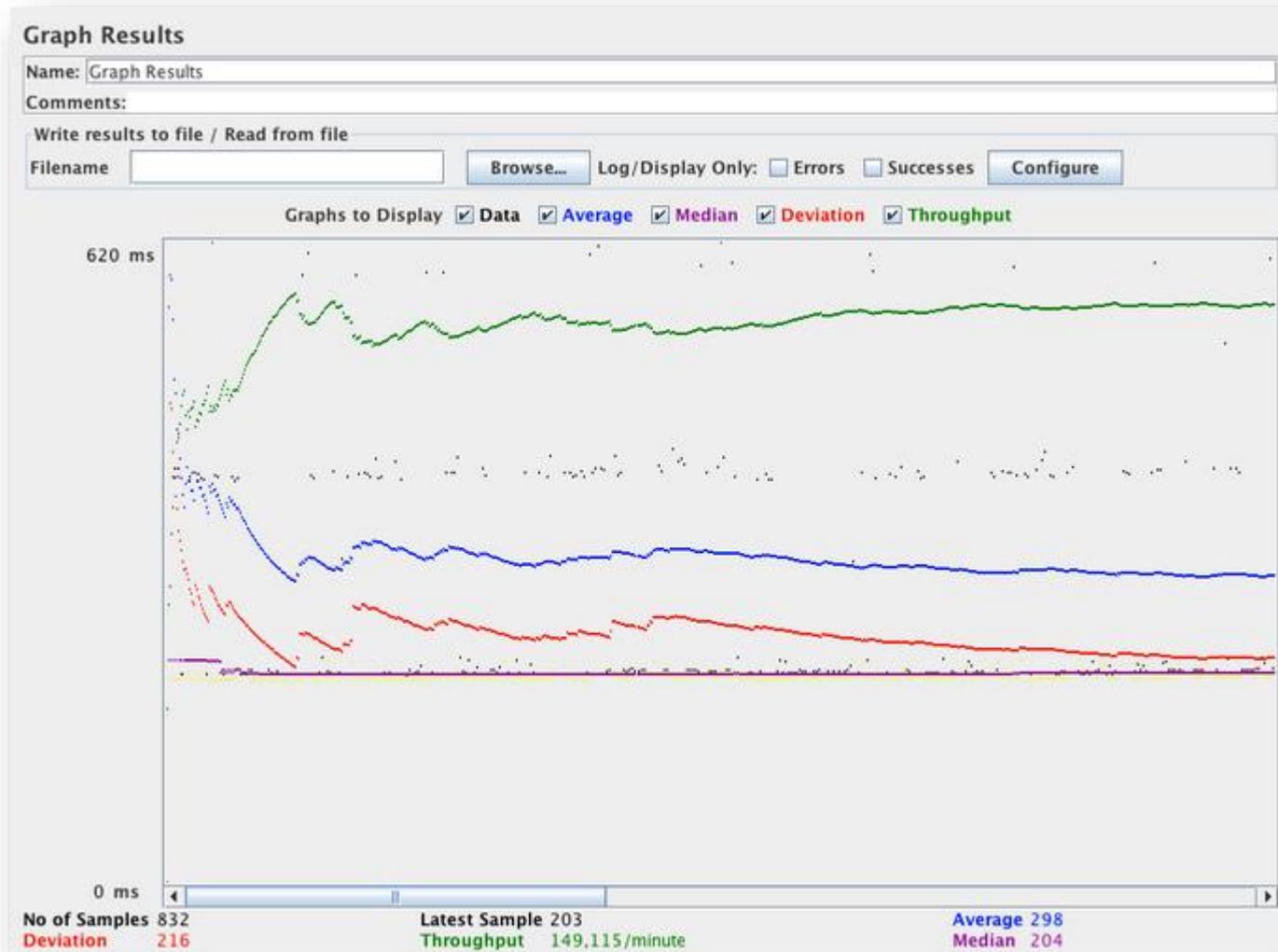
Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	KB/sec	Avg. Bytes
Java1	220	214	93	344	71.93	6.36%	30.9/sec	0.00	.0
Java2	220	348	203	454	72.28	10.45%	30.1/sec	0.00	.0
TOTAL	440	281	93	454	98.16	8.41%	58.7/sec	0.00	.0

Include group name in label?

Std. Dev - standard deviation 标准方差，即方差的平方根

标准方差= $\{\sum (X_n - \bar{X})^2 / n\}^{(1/2)}$ 的平方根,( $\bar{X}$ 表示这组数据的平均数)

# Graph Results



# View Results in Tree

The screenshot shows the 'View Results Tree' window in Apache JMeter. The window title is 'View Results Tree'. It has a 'Name' field containing 'View Results Tree' and a 'Comments' field. Below these is a section for 'Write results to file / Read from file' with a 'Filename' input field, a 'Browse...' button, and checkboxes for 'Log/Display Only: Errors' and 'Successes', along with a 'Configure' button.

The main area is divided into two panes. The left pane shows a tree view of test results. The root is 'HTTP Request', which contains several sub-items: 'http://jmeter.apache.org', 'http://www.apache.org', and another 'HTTP Request' node. This second 'HTTP Request' node is expanded, showing 'http://jmeter.apache.org', 'http://www.apache.org', and 'Duration Assertion'. The 'Duration Assertion' node is highlighted with a red triangle icon.

The right pane shows the 'Response data' for the selected 'Duration Assertion'. It displays the Apache Software Foundation logo and the Apache JMeter logo. Below the logos, there is an 'About' section with a list of links: Overview, Changes, Subscribe to What's New, Issues, License, and Contributors. There is also a 'Download' section with links for Download Releases, Developer (Nightly) Builds, and Documentation. A search bar at the bottom contains the text 'java' and has buttons for 'Find next', 'Case sensitive', and 'Regular exp.'.

# View Results in Table

View Results in Table

Name:

Comments:

Write results to file / Read from file

Filename   Log/Display Only:  Errors  Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Latency
1	22:57:03.674	Thread Group 1-2	HTTP Request	291		9873	260
2	22:57:03.339	Thread Group 1-1	HTTP Request	633		9873	599
3	22:57:03.992	Thread Group 1-2	HTTP Request	234		9873	202
4	22:57:04.008	Thread Group 1-1	HTTP Request	477		9873	447
5	22:57:04.074	Thread Group 1-3	HTTP Request	630		9873	596
6	22:57:04.510	Thread Group 1-1	HTTP Request	345		9873	315
7	22:57:04.253	Thread Group 1-2	HTTP Request	661		9873	626
8	22:57:04.729	Thread Group 1-3	HTTP Request	245		9873	216
9	22:57:04.880	Thread Group 1-1	HTTP Request	292		9873	262
10	22:57:04.996	Thread Group 1-3	HTTP Request	561		9873	530
11	22:57:04.937	Thread Group 1-2	HTTP Request	679		9873	664
12	22:57:05.197	Thread Group 1-1	HTTP Request	545		9873	515
13	22:57:05.654	Thread Group 1-3	HTTP Request	341		9873	311
14	22:57:05.761	Thread Group 1-1	HTTP Request	389		9873	359
15	22:57:05.649	Thread Group 1-2	HTTP Request	727		9873	694
16	22:57:06.032	Thread Group 1-3	HTTP Request	353		9873	314
17	22:57:06.413	Thread Group 1-3	HTTP Request	452		9873	421
18	22:57:06.393	Thread Group 1-2	HTTP Request	483		9873	445
19	22:57:06.169	Thread Group 1-1	HTTP Request	720		9873	675
20	22:57:06.957	Thread Group 1-1	HTTP Request	262		9873	233
21	22:57:07.241	Thread Group 1-1	HTTP Request	161		9873	130
22	22:57:06.935	Thread Group 1-3	HTTP Request	478		9873	441
23	22:57:06.977	Thread Group 1-2	HTTP Request	437		9873	403
24	22:57:07.421	Thread Group 1-1	HTTP Request	593		9873	562
25	22:57:07.462	Thread Group 1-2	HTTP Request	562		9873	532
26	22:57:07.481	Thread Group 1-3	HTTP Request	940		9873	910
27	22:57:08.082	Thread Group 1-2	HTTP Request	422		9873	392
28	22:57:08.533	Thread Group 1-3	HTTP Request	399		9873	370
29	22:57:08.540	Thread Group 1-2	HTTP Request	454		9873	412
30	22:57:08.954	Thread Group 1-3	HTTP Request	527		9873	497

Scroll automatically?  Child samples? No of Samples 30 Latest Sample 527 Average 476 Deviation 172