Jmeter ZerotoHero for Production Scale (Day 1)

Outline

- Workshop and Lab Guide
  - Application Assumption
    - Mobile/Web first seen page within 3 seconds
    - Full detail on first page within 5 seconds
    - Any request view page that response more than 5.4 seconds will be skip by user
    - Error return to client less than 5% for all test scenario
    - 20,000 users access per day
    - Concurrent 2,000 users concurrent
    - Workload Behavior (Benchmark)
      - Read/Write Ratio is on 80/20
      - All Scenario Active User 10%
  - MEAN Database Assumption
    - 80:20 is ratio for average all transaction ratio between read:write
    - Operate with MongoDB for MEAN.JS

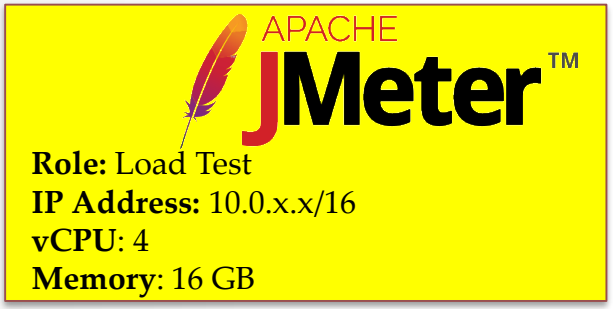
Lab Guide

- Workshop and Lab Guide
  - Application component
    - Frontend module
    - Backend module
    - Database module

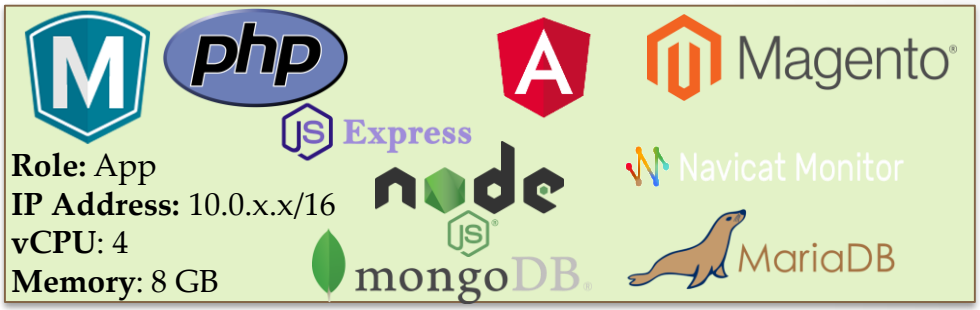
  - Lab Guide
    - Putty / SSH will use for connect lab environment
    - Lab machine for operate
      - Load test machine (1 Unit)
      - Application machine (1 Unit)
    - All testing will operate within AWS zone
    - Load testing from public internet will prohibit and may blocked via AWS itself
    - Test duration is 5 min

Lab Guide

Machine: LoadTest-XX



Machine: Application-XX



Role: Client

amazon web services

LabSheet: https://bit.ly/2T403vI

JMeter Benchmark for Production Scale

APACHE JMeter™

Outline Day 1

- Application UX and Pain Point
- Performance test principle
  - Benchmark vs Baseline
  - Performance testing type
  - Performance test tool comparison
  - Selenium vs JMeter
- Introduction to JMeter
  - What is JMeter ?
  - Jmeter Major Component
  - MEAN Stack
  - Magento Stack
- JMeter's elements part 1 (Basic)
  - Test Plan
  - Thread Group
  - Sampler
  - Listener
  - Assertion
- Full Load Test Part 1 (Simple Load Test)

Outline Day 2

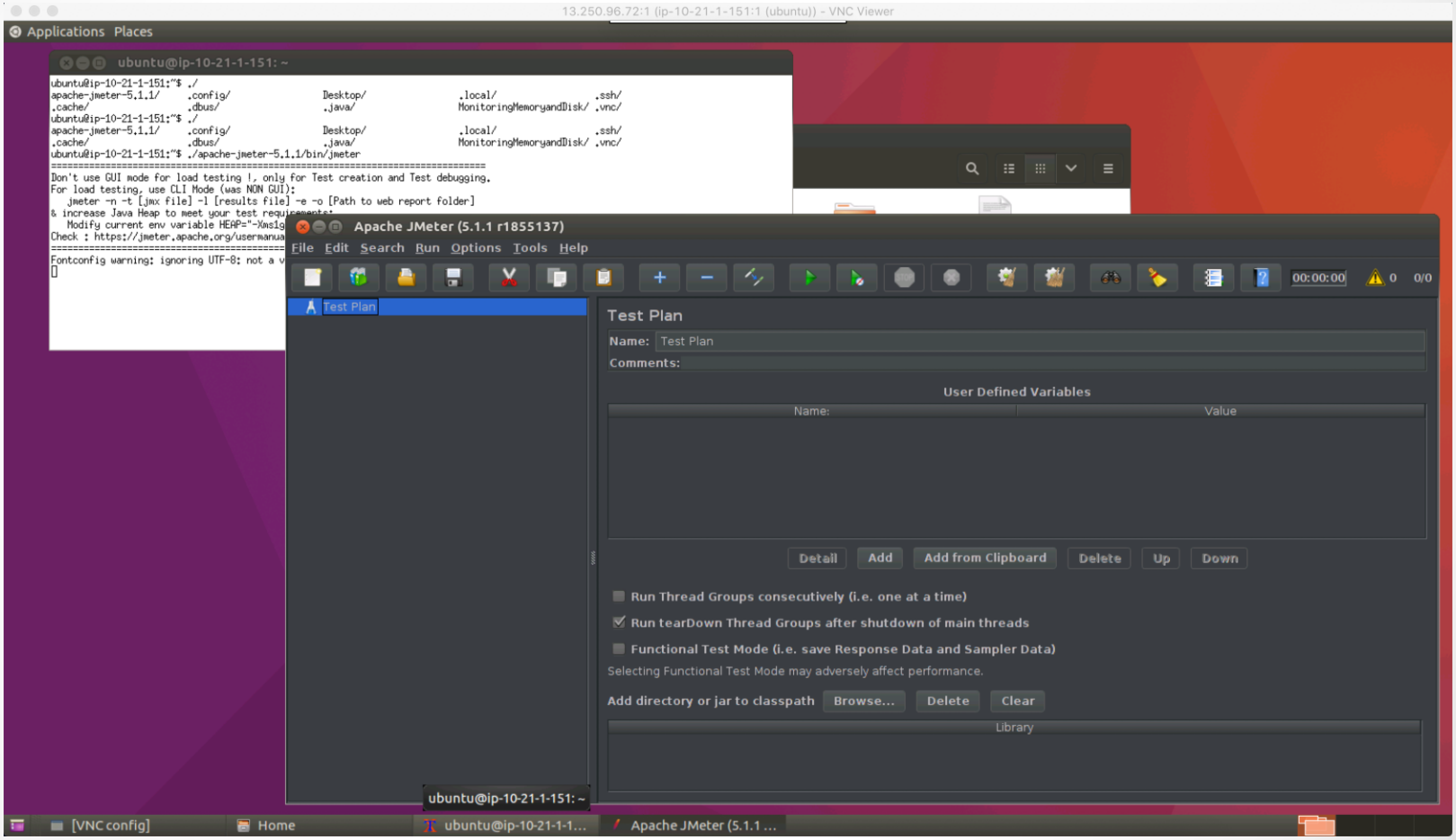
- JMeter's elements part 2 (Advance)
  - Config Element and Parameter
  - Logical Controller
  - Pre/Post Processors
  - Timer
- Full Load Test Part 2 (Complex Load Test)
- Jmeter's for production
  - Testing with plugin
  - Non-GUI mode
  - Distributed Load Model
  - Record Performance Test
  - Best Practice for Jmeter

Prerequisite

- Windows (64 bit)/ Mac / Linux (64 bit)machine (ubuntu / alpine prefer)
- JMeter Application (Provided on Lab)
- VNCViewer for XWindows
- Basic understand for linux operate
- Basic text editor skill (vim prefer) and linux structure
- Internet for download / upload image

WorkShop: 1-1 Install JMeter

- Setup JMeter and Xwindows (UltraVNC) for operate



Application UX and Pain Point

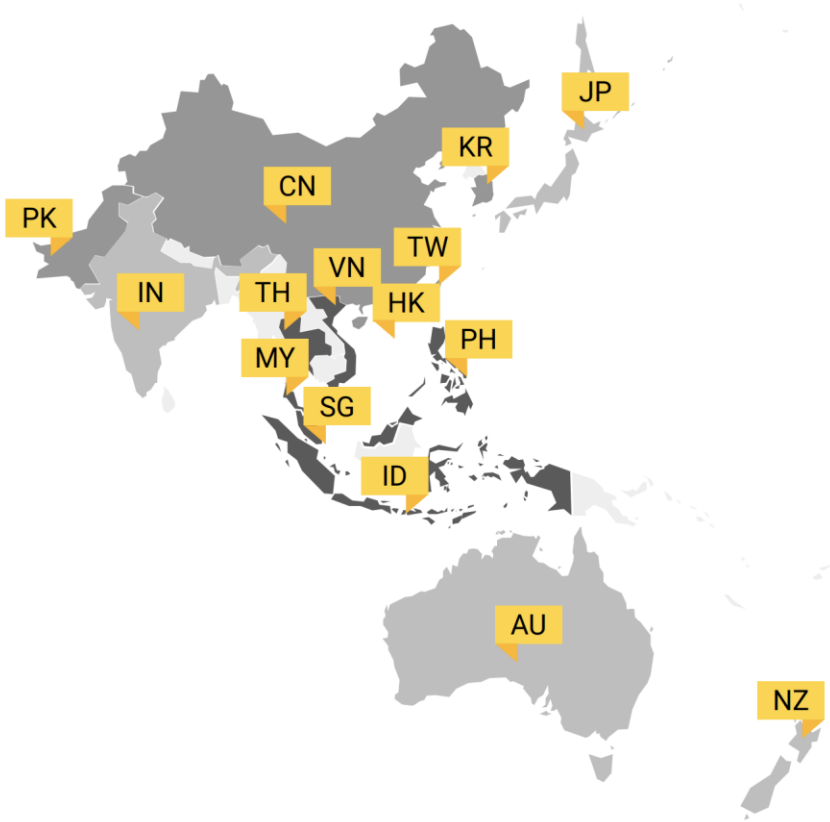
JMeter Benchmark for Production Scale

APACHE JMeter™

Application UX and Pain Point

WHY THIS RESEARCH?

To help brands elevate their mobile site experience, Google commissioned Accenture Interactive to seek out the top-performing mobile sites in financial services, retail and commerce, and travel across Asia Pacific and to celebrate what make these sites great.



SCALE OF THIS RESEARCH:

- **720+** mobile sites assessed
- **15** countries in **5** sub-regions covered
- **80** UX industry best practice guidelines used
- **45** specialists and engineers involved

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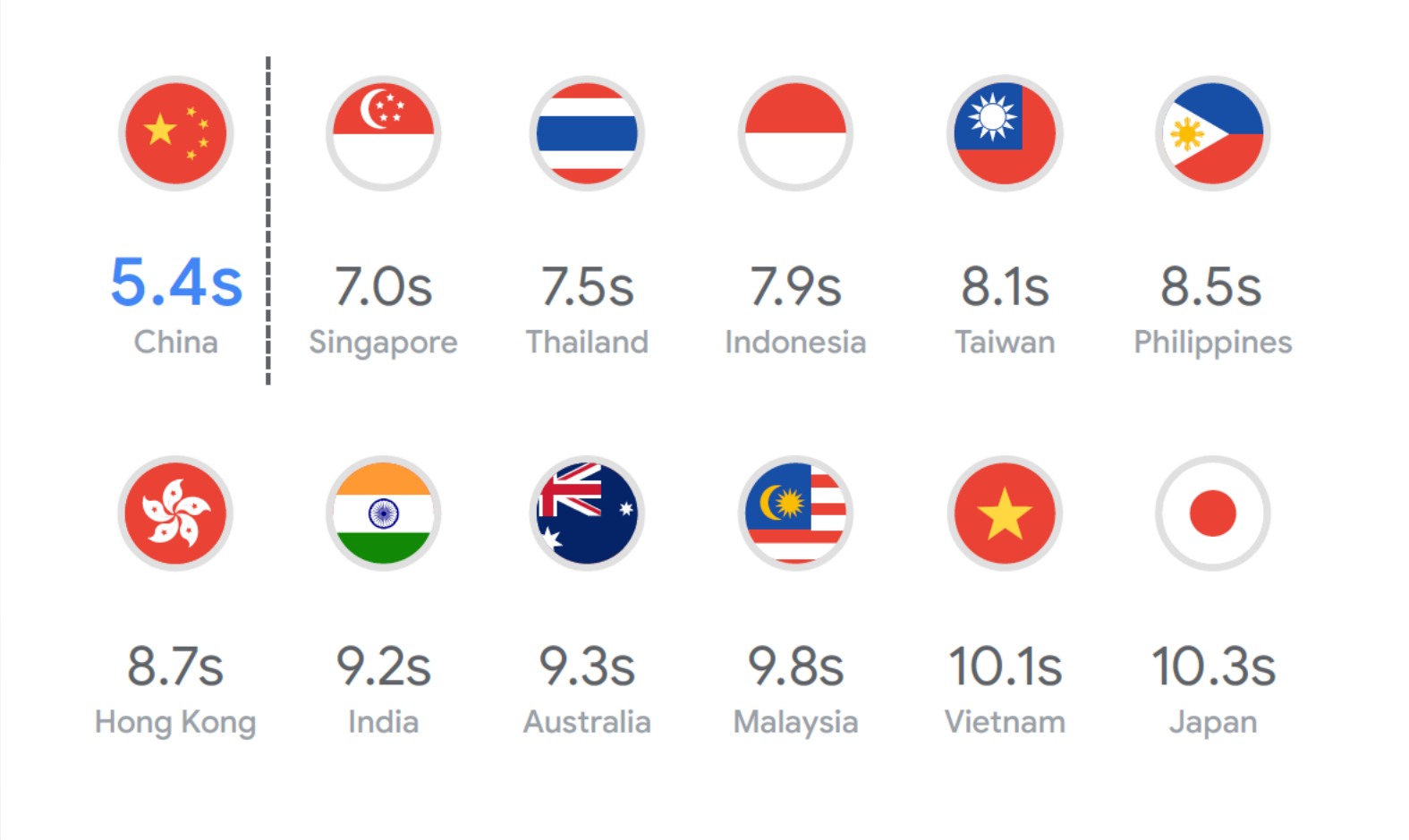
http://think.storage.googleapis.com/docs/Masters%20of%20Mobile%20APAC%20Summary%20Report%20%20(1).pdf?_ga=2.268379918.-1622446982.1552576348

JMeter Benchmark for Production Scale

Application UX and Pain Point



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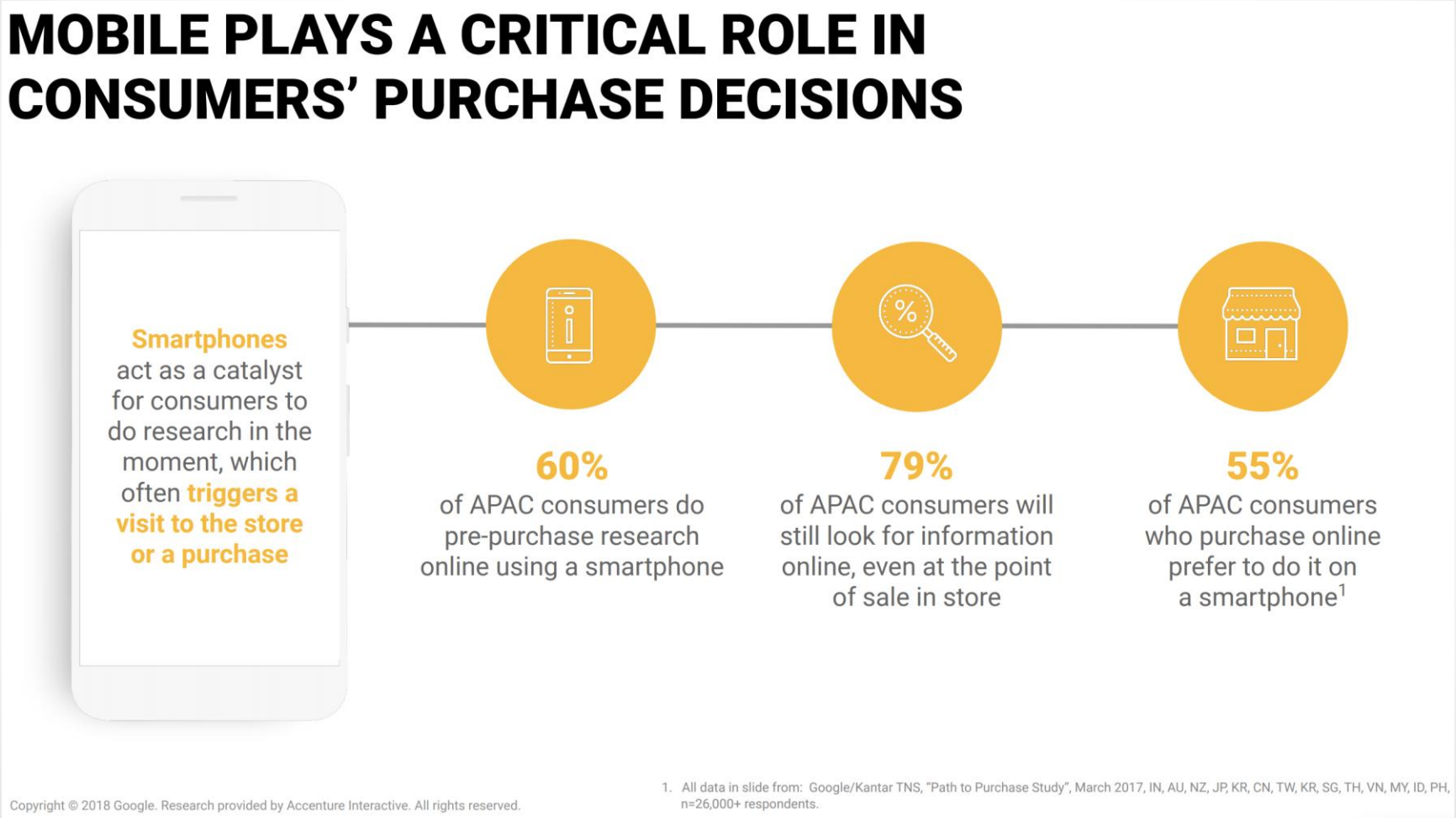
Application UX and Pain Point



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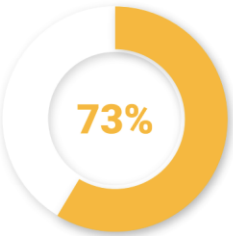
Application UX and Pain Point

AS A RESULT, CONSUMERS HAVE HIGH EXPECTATIONS FOR MOBILE SITES

Brands that do not prioritise great mobile experience risk poor conversions.

of consumers will leave a mobile site that takes longer than **three seconds to load**

drop in conversions experienced for **every second of delay** in mobile page load time[1]



of consumers in APAC are more likely to purchase from mobile sites that **make it easy to purchase or find answers**[2]

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1. Google Research, Webpagetest.org, sampled 11M global mWeb domains loaded using a globally representative 4G connection, Jan. 2018.
2. Google/Kantar TNS, "Path to Purchase Study", March 2017, IN, AU, NZ, JP, KR, CN, TW, KR, SG, TH, VN, MY, ID, PH, n=26,000+ respondents.

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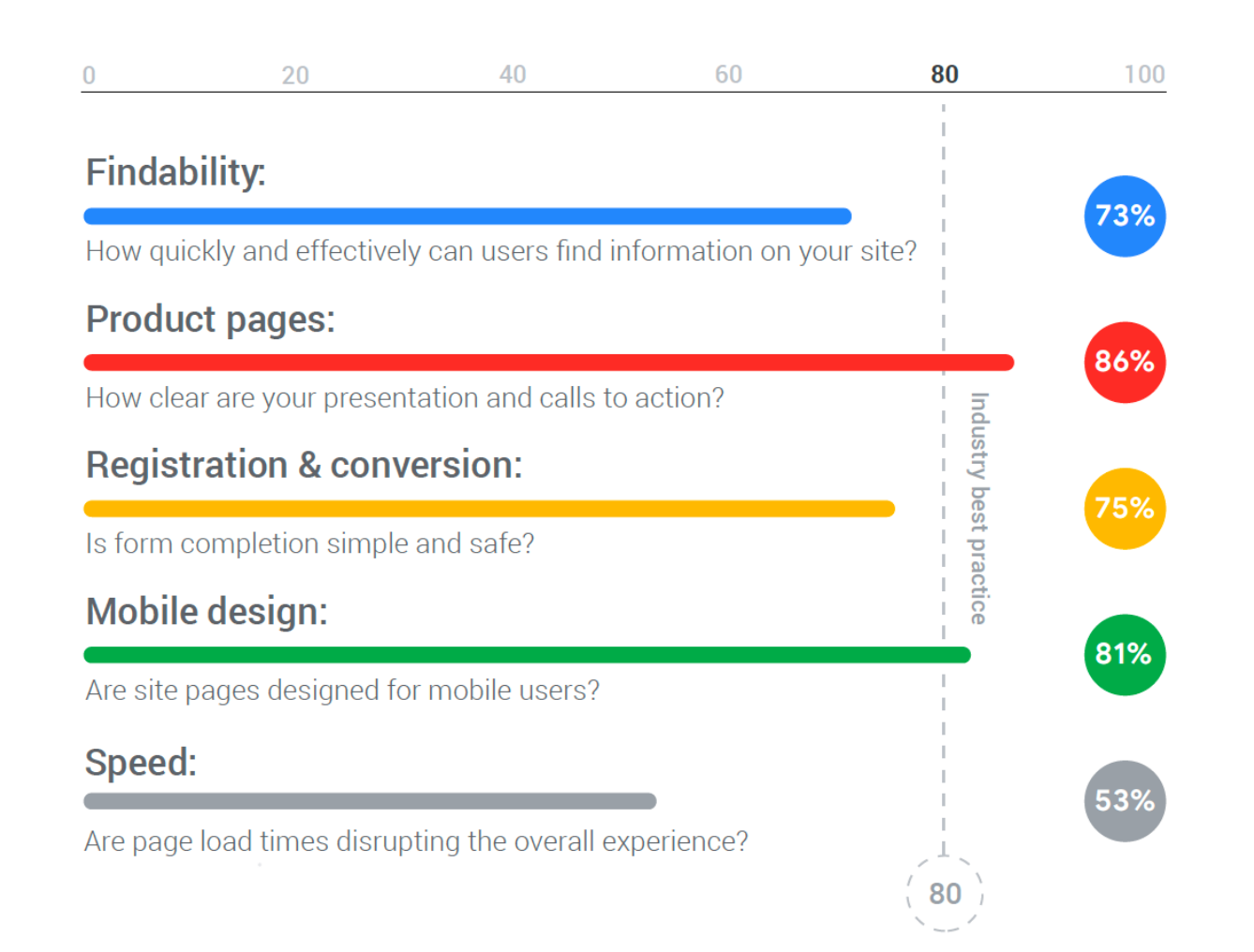
Application UX and Pain Point



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Application UX and Pain Point

HOW TO IMPROVE SPEED

Our top speed recommendations for APAC

83% of mobile sites surveyed can improve their speed this way:

Ensure textual and image contents are compressed

- Use gzip compression for transferring compressable responses
- Compress and pick the right settings for your images including format, quality and size and more
- Use Progressive JPEGs to improve perceived performance

67% of mobile sites surveyed can improve their speed this way:

Enable caching on the browser side

- All server responses should specify a caching policy to help the client determine if and when it can reuse a previously fetched response

59% of mobile sites surveyed can improve their speed this way:

Identify and fix backend bottlenecks

- Inspect existing infrastructure using application performance management tools
- Fix performance bottlenecks
- Implement a monitoring solution to alert for any anomalies

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Application UX and Pain Point

- Identified the real application pain point with metric that we can measure and evaluation
  - Network component (Input/Output)
    - DNS queries
    - Network connectivity between client 🡐 🡒 application
    - Miss configure for load balance / firewall module
    - Regional root path problem
    - Traffic Spike
  - Coding component (Process)
    - Loading page delay
    - Dependence external component (Database, Other RestFul)
    - Poor design (memory leak, ineffecient, synchronize issue)
    - Lack of minification (CSS, Javascript etc)

Application UX and Pain Point

- Identified the real application pain point
  - Resource component (Process)
    - Memory
    - CPU
    - Disk I/O
    - Network I/O
    - Share host limit resource
  - OS limitation was reached (Process)
    - Number of open file per process (ulimit)
    - Number of maximum file (file-max)
    - Number of maximum inode (inode-max, nr_inodes, nr_free_inodes)
    - Number of network connection in port range (ip_local_port_range)
    - Number of keep-alive time (tcp_keepalive_time, tcp_keepalive_intvl, tcp_keepalive_probes)

Application UX and Pain Point

- Identified the real application pain point (Process)
  - Application reach maximum capacity
    - Base on load/capacity testing (Not guess)
    - Unacceptable response time for business
    - Success/Failure ratio is unacceptable in range

Application UX and Pain Point

neustar // UltraTools — Free Domain, DNS, WHOIS and IP Tools

Email Address | Remember me | Forgot your password? | Login

Home | Domain Health Report | WHOIS+ | Monitoring | UltraTools | Statistics | UltraTools Mobile | Create Free Account

DNS Tools | Email Tools | IP Tools | IPv6 Tools | Website Tools | Tracing Tools | Informational Tools

DNS Tools
- DNS Hosting Speed
- DNS Lookup
- DNS Query Estimator
- DNS Traversal
- Zone File Dump
- DNS Root Server Speed

Email | Share

DNS Speed Test

The DNS hosting speed tool will give you valuable DNS performance information for each level in the DNS tree to assist with performance evaluations and performance troubleshooting.

Enter a host name or domain name:

www.pdamobiz.com | Go »

Related Tools: Zone File Dump | DNS Query Estimator | DNS Lookup | DNS Traversal | Traceroute

www.pdamobiz.com

Name Server	A	TXT	SOA	SRV	SPF	CNAME	MX	AAAA
dns2.name-services.com.	2	3	2	2	2	3	2	2
dns5.name-services.com.	73	73	72	77	72	73	69	69
dns3.name-services.com.	72	77	76	76	73	70	72	72
dns4.name-services.com.	2	2	3	3	3	2	2	2
dns1.name-services.com.	73	69	71	72	73	70	73	77
Min. Time(ms)	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Max. Time(ms)	**73**	**77**	**76**	**77**	**73**	**73**	**73**	**77**
Avg. Time(ms)	**44**	**44**	**44**	**46**	**44**	**43**	**43**	**44**

TLD Servers

j.gtld-servers.net.	69 ms
d.gtld-servers.net.	2 ms
g.gtld-servers.net.	27 ms
m.gtld-servers.net.	25 ms
e.gtld-servers.net.	25 ms
i.gtld-servers.net.	69 ms
h.gtld-servers.net.	69 ms
l.gtld-servers.net.	25 ms
b.gtld-servers.net.	32 ms
c.gtld-servers.net.	3 ms

neustar // UltraTools — Free Domain, DNS, WHOIS and IP Tools

REGISTERED USERS: 48,601

Email Address | Remember me | Forgot your password? | Login

Home | Domain Health Report | WHOIS+ | Monitoring | UltraTools | Statistics | UltraTools Mobile | Create Free Account

DNS Tools | Email Tools | IP Tools | IPv6 Tools | Website Tools | Tracing Tools | Informational Tools

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Enter a host name or domain name:

www.facebook.com | Go »

Related Tools: Zone File Dump | DNS Query Estimator | DNS Lookup | DNS Traversal | Traceroute

www.facebook.com

Name Server	A	TXT	SOA	SRV	SPF	CNAME	MX	AAAA
a.ns.facebook.com.	7	7	7	7	8	7	7	7
b.ns.facebook.com.	2	2	2	2	2	2	2	2
Min. Time(ms)	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Max. Time(ms)	**7**	**7**	**7**	**7**	**8**	**7**	**7**	**7**
Avg. Time(ms)	**4**	**4**	**4**	**4**	**5**	**4**	**4**	**4**

facebook.com.

a.ns.facebook.com.	6 ms
b.ns.facebook.com.	1 ms

Min. Time: **1 ms** Max. Time: **6 ms** Avg. Time: **3 ms**

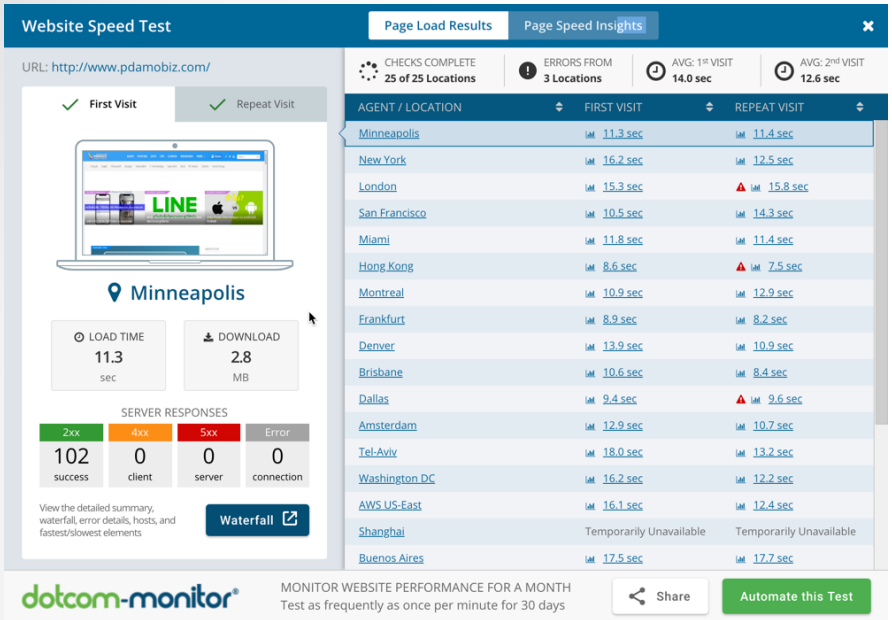
TLD Servers

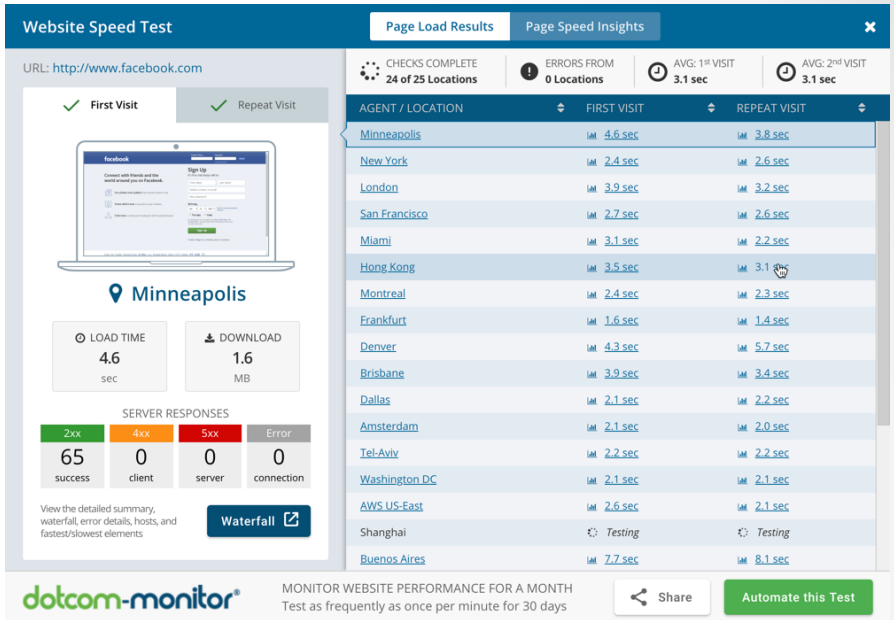
i.gtld-servers.net.	67 ms
c.gtld-servers.net.	4 ms
f.gtld-servers.net.	27 ms
e.gtld-servers.net.	25 ms
b.gtld-servers.net.	31 ms
g.gtld-servers.net.	29 ms
j.gtld-servers.net.	69 ms

JMeter Benchmark for Production Scale

APACHE JMeter™

Application UX and Pain Point





JMeter Benchmark for Production Scale

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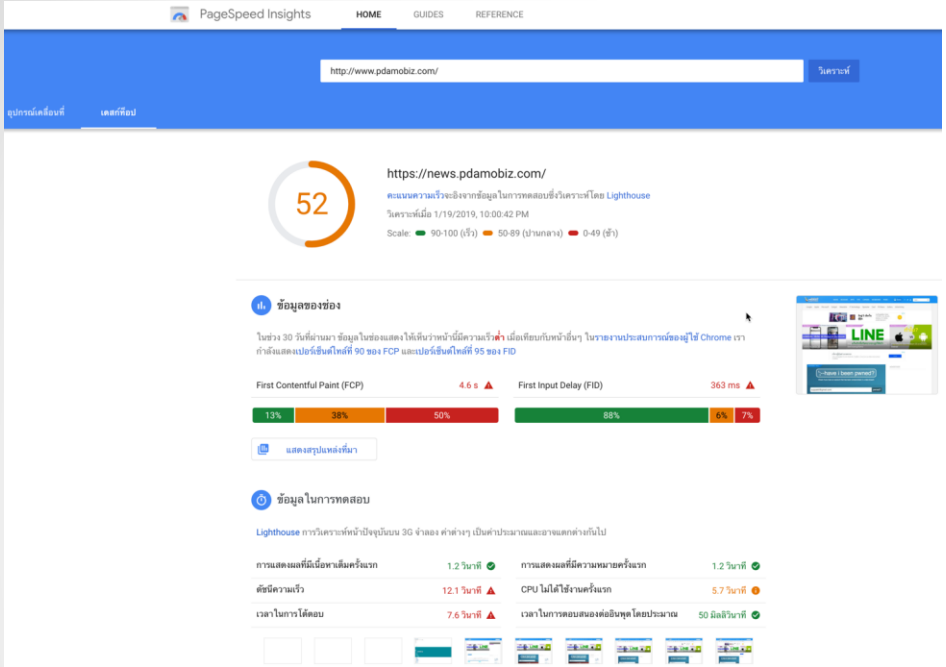
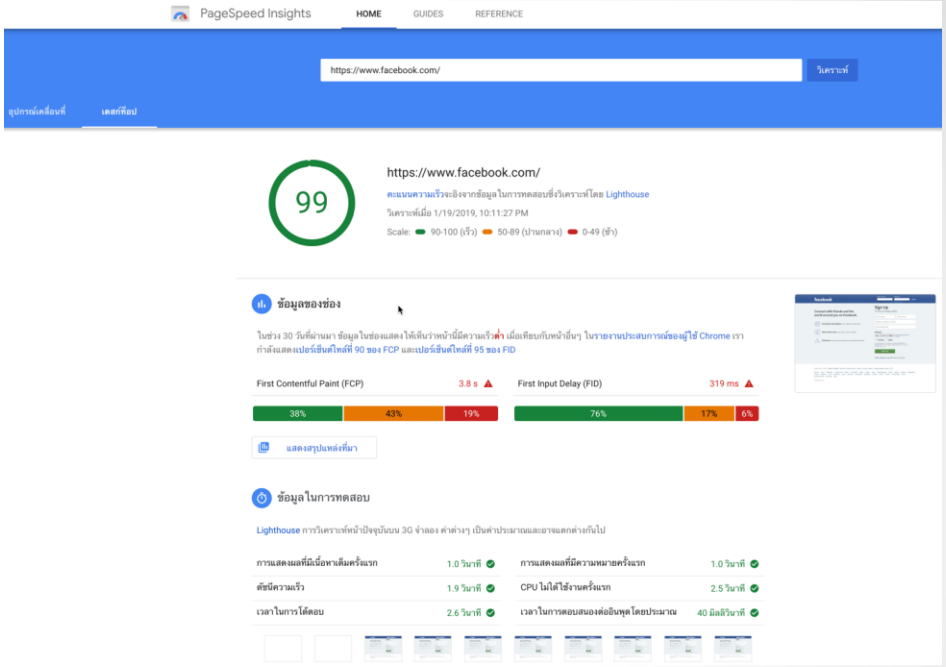
Application UX and Pain Point





JMeter Benchmark for Production Scale

Application UX and Pain Point

aws Services Resource Groups Singapore Support

EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Launch Templates
Spot Requests
Reserved Instances
Dedicated Hosts
Capacity Reservations
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
Lifecycle Manager
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups
AUTO SCALING
Launch Configurations
Auto Scaling Groups
SYSTEMS MANAGER SERVICES
Run Command
State Manager
Configuration

Launch Instance | Connect | Actions

Filter by tags and attributes or search by keyword

1 to [redacted]

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 IPs
[redacted]		m5.large	ap-southeast-1a	running	2/2 checks passed	None		-	-

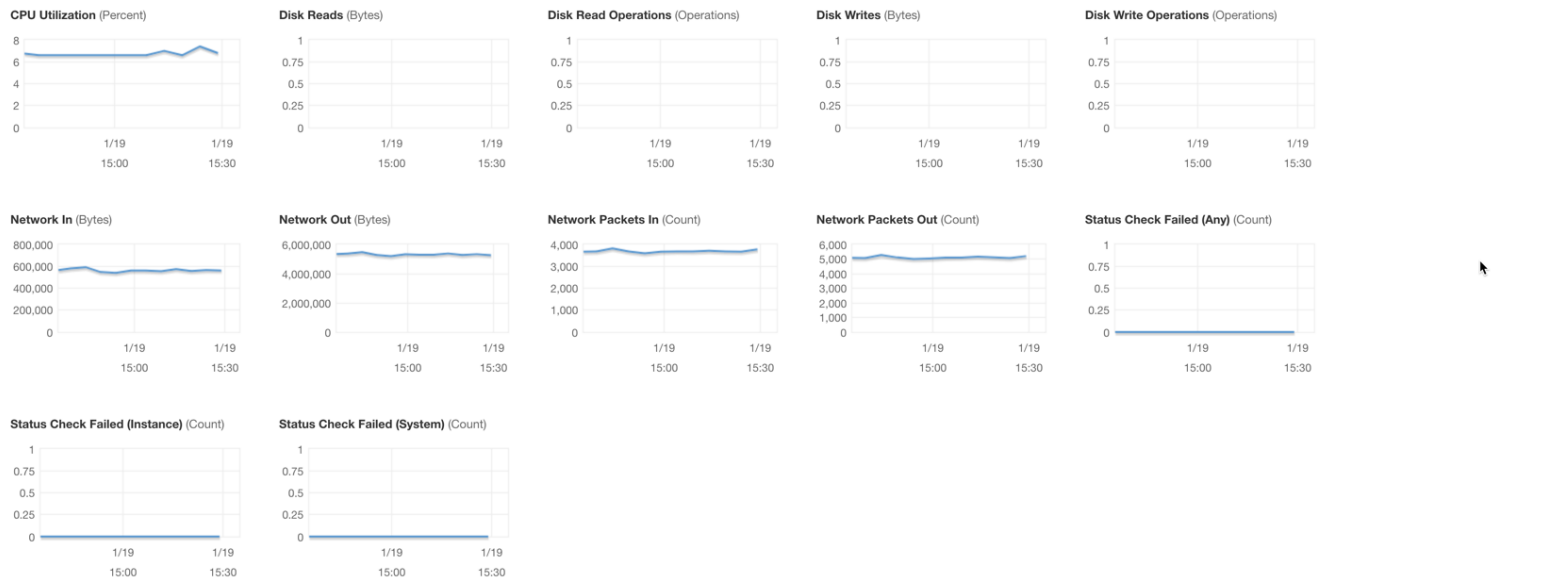
Instance: i-040ca83c91d3876a9 (aws-dev-KubernetesAPICONNECT-Master) Private IP: [redacted]

Description | Status Checks | Monitoring | Tags

CloudWatch alarms: No alarms configured — Create Alarm

CloudWatch metrics: Detailed monitoring. Disable Detailed Monitoring — Showing data for: Last Hour

Below are your CloudWatch metrics for the selected resources (a maximum of 10). Click on a graph to see an expanded view. All times shown are in UTC. View all CloudWatch metrics



JMeter Benchmark for Production Scale

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Application UX and Pain Point

```
CPU[||                                                                    1.5%]   Tasks: 29, 33 thr; 1 running
Mem[||||||
```

Application UX and Pain Point

```
:~$ ss -ln4
Netid  State   Recv-Q  Send-Q  Local Address:Port  Peer Address:Port
udp    UNCONN  23040   0       127.0.0.53%lo:53    0.0.0.0:*
udp    UNCONN  0       0       10.21.219.48%eth0:68  0.0.0.0:*
tcp    LISTEN  0       128     127.0.0.53%lo:53    0.0.0.0:*
tcp    LISTEN  0       128     0.0.0.0:22          0.0.0.0:*
:~$
:~$ ss -ln4
Netid  State   Recv-Q  Send-Q  Local Address:Port  Peer Address:Port
udp    UNCONN  23040   0       127.0.0.53%lo:53    0.0.0.0:*
udp    UNCONN  0       0       10.21.219.48%eth0:68  0.0.0.0:*
tcp    LISTEN  0       128     127.0.0.53%lo:53    0.0.0.0:*
tcp    LISTEN  0       128     0.0.0.0:22          0.0.0.0:*
:~$ netstat -na4
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
tcp        0    316 10.21.219.48:22         10.21.219.92:39370      ESTABLISHED
udp    23040      0 127.0.0.53:53           0.0.0.0:*
udp        0      0 10.21.219.48:68         0.0.0.0:*
:~$ netstat -i4
Kernel Interface table
Iface      MTU    RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
eth0      9001 13629462      0      0 0       3555709      0      0      0 BMRU
lo       65536     2502      0      0 0          2502      0      0      0 LRU
```

JMeter Benchmark for Production Scale

Application UX and Pain Point

```
nmon-16g———66666666666——Hostname=ip-10-21-219-Refresh= 2secs ——15:42.28-2222222222222222222222

For help type H or ...
 nmon -?  - hint
 nmon -h  - full details

To stop nmon type q to Quit

Use these keys to toggle statistics on/off:
  c = CPU          l = CPU Long-term     - = Faster screen updates
  C = " WideView   U = Utilisation       + = Slower screen updates
  m = Memory       V = Virtual memory    j = File Systems
  d = Disks        n = Network           . = only busy disks/procs
  r = Resource     N = NFS               h = more options
  k = Kernel       t = Top-processes     q = Quit
```

```
nmon-16g———[H for help]——Hostname=ip-10-21-219-Refresh= 2secs ——15:45.35-33333
CPU +---Long-Term--------User%-----System%------Wait%-----Steal%-------------+
100%-|
 95%-|
 90%-|
 85%-|
 80%-|
 75%-|
 70%-|
 65%-|
 60%-|
 55%-|
 50%-|
 45%-|
 40%-|
 35%-|
 30%-|
 25%-|
 20%-|
 15%-|
 10%-|
  5%-|
```

```
nmon-16g-ggggg[H for help]gggHostname=ip-10-21-219-Refresh= 2secs ——15:46.42-8
Memory and Swap
PageSize:4KB   RAM-Memory  Swap-Space      High-Memory     Low-Memory
Total (MB)        983.9        0.0        - not in use    - not in use
Free  (MB)        451.8        0.0
Free Percent       45.9%       0.0%
Linux Kernel Internal Memory (MB)
                          Cached=     293.7     Active=     344.1
Buffers=      75.0 Swapcached=        0.0  Inactive =      73.9
Dirty  =       0.0 Writeback =        0.0  Mapped   =      48.9
Slab   =      82.6 Commit_AS =      456.0 PageTables=        3.9
```

```
nmon-16g-ggggg-11111111111gggHostname=ip-10-21-219-Refresh= 2secs ——15:47.33-77777
Virtual Memory
nr_dirty     =        0 pgpgin      =       0                High Normal    DMA
nr_writeback=         0 pgpgout     =       0  alloc            0      0      0
nr_unstable =         0 pgpswpin    =       0  refill           0      0      0
nr_table_pgs=       987 pgpswpout   =       0  steal            0      0      0
nr_mapped    =    12518 pgfree      =       3  scan_kswapd      0      0      0
nr_slab      =       -1 pgactivate  =       0  scan_direct      0      0      0
                        pgdeactivate=        0
allocstall   =        0 pgfault     =       0  kswapd_steal     =      0
pageoutrun   =        0 pgmajfault  =       0  kswapd_inodesteal=      0
slabs_scanned=        0 pgrotated   =       0  pginodesteal     =      0
```

```
nmon-16g-ggggg-88888888888gggHostname=ip-10-21-219-Refresh= 2secs ——15:48.40-00
Disk I/O ——/proc/diskstats———mostly in KB/s———Warning:contains duplicates-ss
DiskName Busy  Read WriteKB|0          |25         |50         |75       100|
loop0      0%    0.0    0.0|>                                                |
loop1      0%    0.0    0.0|>disk busy not available                        |
loop2      0%    0.0    0.0|>                                                |
loop3      0%    0.0    0.0|>                                                |
loop4      0%    0.0    0.0|>                                                |
loop5      0%    0.0    0.0|>disk busy not available                        |
xvda       0%    0.0    0.0|>                                                |
xvda1      0%    0.0    0.0|>                                                |
Totals Read-MB/s=0.0      Writes-MB/s=0.0      Transfers/sec=0.0
```

JMeter Benchmark for Production Scale

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Application UX and Pain Point

```
nmon-16g────────66666666666──Hostname=ip-10-21-219-Refresh= 2secs ───15:42.28-22222222222222222222222

  ──────────────────────────
   _ __  _ __ ___   ___  _ __
  | '_ \| '_ ` _ \ / _ \| '_ \
  | | | | | | | | | (_) | | | |
  |_| |_|_| |_| |_|\___/|_| |_|
  ──────────────────────────

                                 For help type H or ...
                                  nmon -?  - hint
                                  nmon -h  - full details

                                 To stop nmon type q to Quit


  Use these keys to toggle statistics on/off:
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    r = Resource    N = NFS               h = more options
    k = Kernel      t = Top-processes     q = Quit
-tttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttt
```
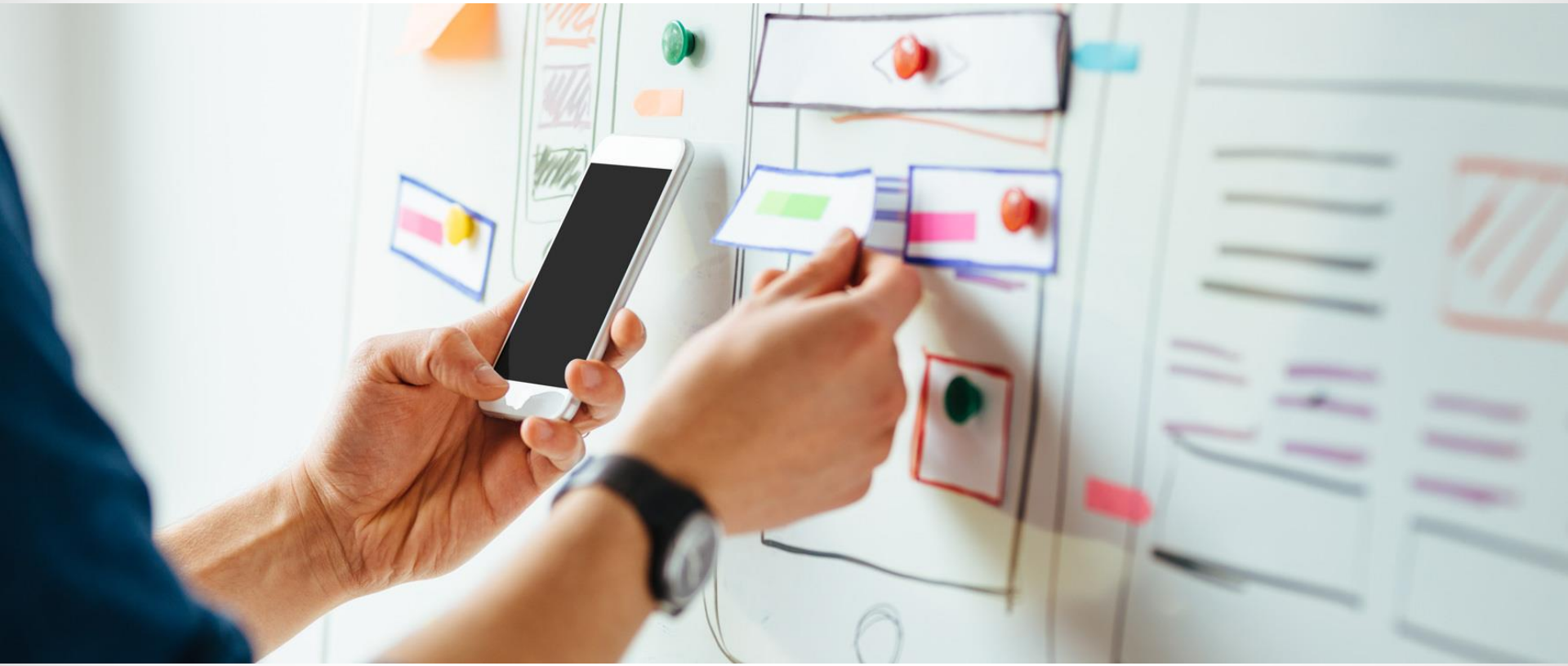

```
 Network I/O ─
I/F Name Recv=KB/s Trans=KB/s packin packout insize outsize Peak->Recv Trans
      lo      0.0       0.0       0.0    0.0     0.0    0.0        0.0      0.0
    eth0      1.3       1.7       8.5    9.5   159.1  188.4        2.0     21.7
 Network Error Counters ─
I/F Name iErrors iDrop iOverrun iFrame oErrors   oDrop oOverrun oCarrier oColls
      lo       0       0       0       0       0       0       0       0       0
    eth0       0       0       0       0       0       0       0       0       0
-0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

JMeter Benchmark for Production Scale

Performance test principle



Performance test principle

- Performance Test Process

  - Identify Test Environment: Know your environment
  - Determine Performance Criteria: What is success criteria for testing (Response time / Throughput / Resource etc)
  - Plan and Design: How to be like user behavior ?
  - Configure Test Environment: Environment Preparation
  - Implement Test Design: Develop Test Plan
  - Run Test: Execute and Monitoring
  - Analyze finetune and Re-test: Consolidate, analyze and share result for resolve and (May) re-test.

Performance test principle

- Benchmark vs Baseline ?
- Both are performance measurement for application with difference view
  - Benchmark is compare with standard (As design was expect, usually compare with other company for make best in market or upon business requirement).
  - Baseline is ingrained since start project (Basis for implementation, usually compare with historical performance of application on previous version).
- For application scale design we usually consider both
  - We will use baseline for indicate minimum performance along with baseline for prevent over-engineering / over expensive investment for business viewpoint
  - At the same time benchmark was used to improve application capability to beat competitor company / best in market / great ux for customer etc

Performance test principle

- Performance testing type
  - 5 majority type of master test
  - 3 type for next generation application

Load/Capacity Testing

Stress Testing

Volume Testing

Endurance/Soak Testing

Spike Testing

Ref: https://en.wikipedia.org/wiki/Software_performance_testing
https://www.softwaretestingclass.com/what-is-performance-testing/

Performance test principle

- Load Test/Capacity Test
  - Purpose: Compare load test's result (response time) with design / Find out performance bottle neck or pain point of application stack
  - Action: Test generate workload (concurrent user/data/transaction) as design
  - Simplest performance testing
  - Control load test by "expected load" as SLA

Performance test principle

- Stress Test
  - Purpose: Find capacity limit of the application, Determine the system abnormal load than expect, Point in time application degrade/failure/recovery
  - Action: Generate extreme workload to application until failure (include slow response than acceptable range)
  - Collect result of any response from application return to client side
  - Determine how application going/robustness behavior during extreme load

Performance test principle

- Volume Test/Flood Test
  - Purpose: Find system limitation during process huge data
  - Action: Generate volume of data to process via application within design/above design until failure (include slow response than acceptable range)
  - This test will show indicate application stability/degrade when process data load

Performance test principle

- Endurance/Sock Test
  - Purpose: Check application's reliable for operate load as expect in long period
  - Action: Load test as design with long time period (Upon baseline) may varying time (10 – 20 hours or 5 days etc)
  - Control load test by "expected load" as SLA

Performance test principle

- Spike Test
  - Purpose: Verify application stability/degrade/failure during load dramatically change
  - Action: Increase workload to peak in specific time and decrease to normal workload
  - Monitor system performance in both increase workload status and decrease workload status

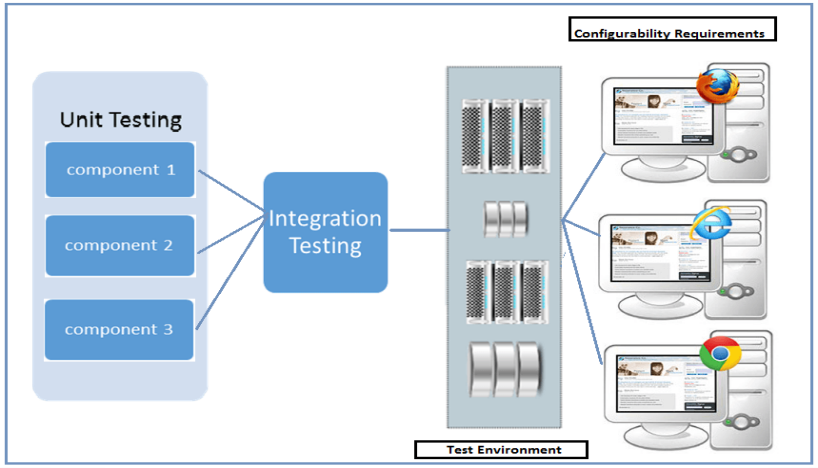
Performance test principle

- Configuration Testing (Next generation application)
  - Configuration testing was defined for support next generation application stack that have a lot of component to consideration
    - Frontend Feature
      - Device support (Mobile, PC/Labtop, IoT etc)
      - Browser support (Chrome, Firefox, Opera etc)
      - OS version support (Mac OSX, Windows, Android, IOS etc)
      - Hardware support
      - etc
    - Backend Feature
      - Restful support (SSLv3 ?, TLS1.0, TLS1.1, TLS1.2, TLS1.3)
      - Web service support ?
      - Callback ?
    - Hardware/Infrastructure Feature
      - Load balance distribute
      - Geolocation distribute
      - etc

Performance test principle

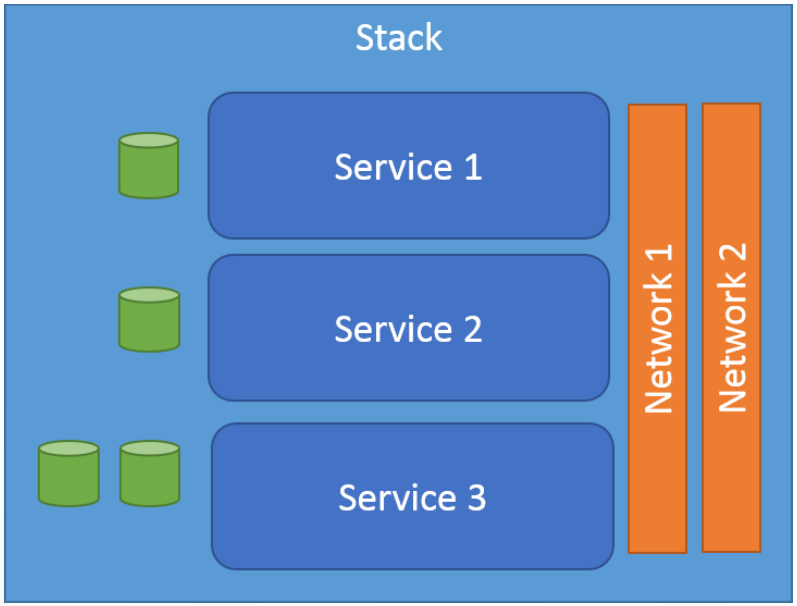
- Configuration Testing (Next generation application)

CLIENT\SERVER	2008 R2 x64	2003 sp2 x32	2008 sp2 x32	2003 sp2 x64	Vista sp2 x64	XP sp3 x32	Win7 ENT x32	Vista ENT sp2 x32	XP sp2 x64	Win7 ENT x64
Windows XP SP3 x32	1						3			
Windows 7 Enterprise Edition x32		2								
Windows Vista Enterprise Edition x32										4
Windows XP SP3 x64				5						
Windows 7 Enterprise Edition x64	6									
Windows Vista Enterprise Edition x64				7						
Windows XP SP2 x32			8							



Performance test principle

- Isolation Testing (Next generation application)
  - Initial isolation environment for this test type
  - Brake down application stack to various module
  - Find out by dig in to each module and check defect on isolation environment and confirm fail domain
  - Come with expensive cost for test
  - Usually test this per request. When the problem is not have periodic behavior to occur or hard to indicate by other method



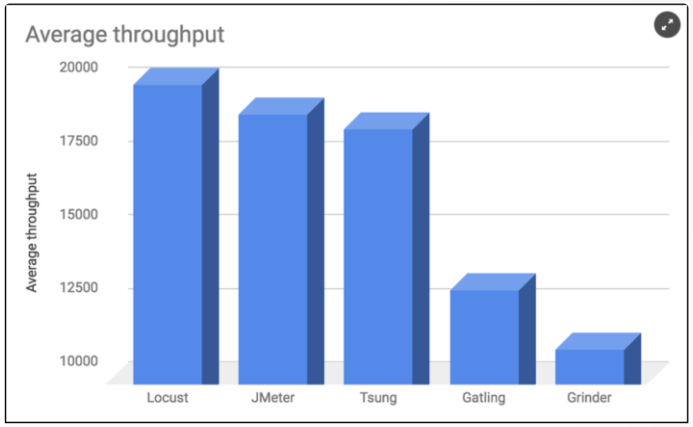
Performance test principle

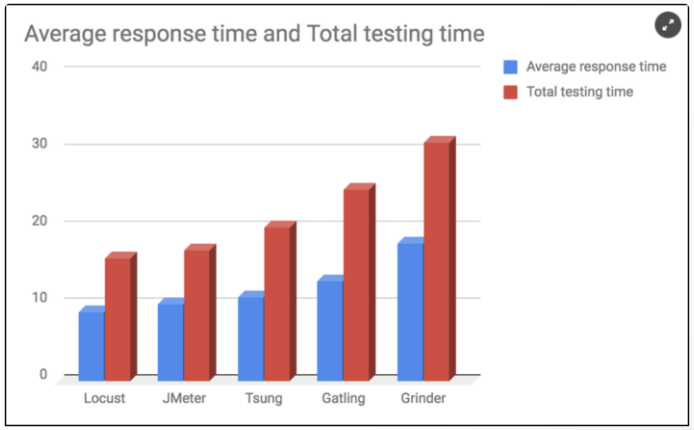
- Internet Testing (Internet application)
  - Purpose:
    - Test with global application (Such as facebook, wikipedia etc)
    - Integrate test scenario to close actual client facing
    - Simulate and recognition performance problem with end-to-end
  - Action: Start load test from internet location (Actual target location)

Performance test principle

- Performance test tool comparison

Feature	The Grinder	Gatling	Tsung	JMeter	Locust
OS	Any	Any	Linux/Unix	Any	Any
GUI	Console Only	Recorder Only	No	Full	No
Test Recorder	TCP (including HTTP)	HTTP	HTTP, Postgres	HTTP	No
Test Language	Python, Clojure	Scala	XML	XML	Python
Extension Language	Python, Clojure	Scala	Erlang	Java, Beanshell, Javascript, Jexl	Python
Load Reports	Console	HTML	HTML	CSV, XML, Embedded Tables, Graphs, Plugins	HTML
Protocols	HTTP SOAP JDBC POP3 SMTP LDAP JMS	HTTP JDBC JMS	HTTP WebDAV Postgres MySQL XMPP WebSocket AMQP MQTT LDAP	HTTP FTP JDBC SOAP LDAP TCP JMS SMTP POP3 IMAP	HTTP
Host monitoring	No	No	Yes	Yes with PerfMon plugin	No
Limitations	Python knowledge required for test development & editing. Reports are very plain and brief.	Limited support of protocols. Scala-based DSL language knowlegde required. Does not scale.	Tested and supported only on Linux systems.	Bundled reporting isn't easy to interpret.	Python knowledge required for test development & editing.



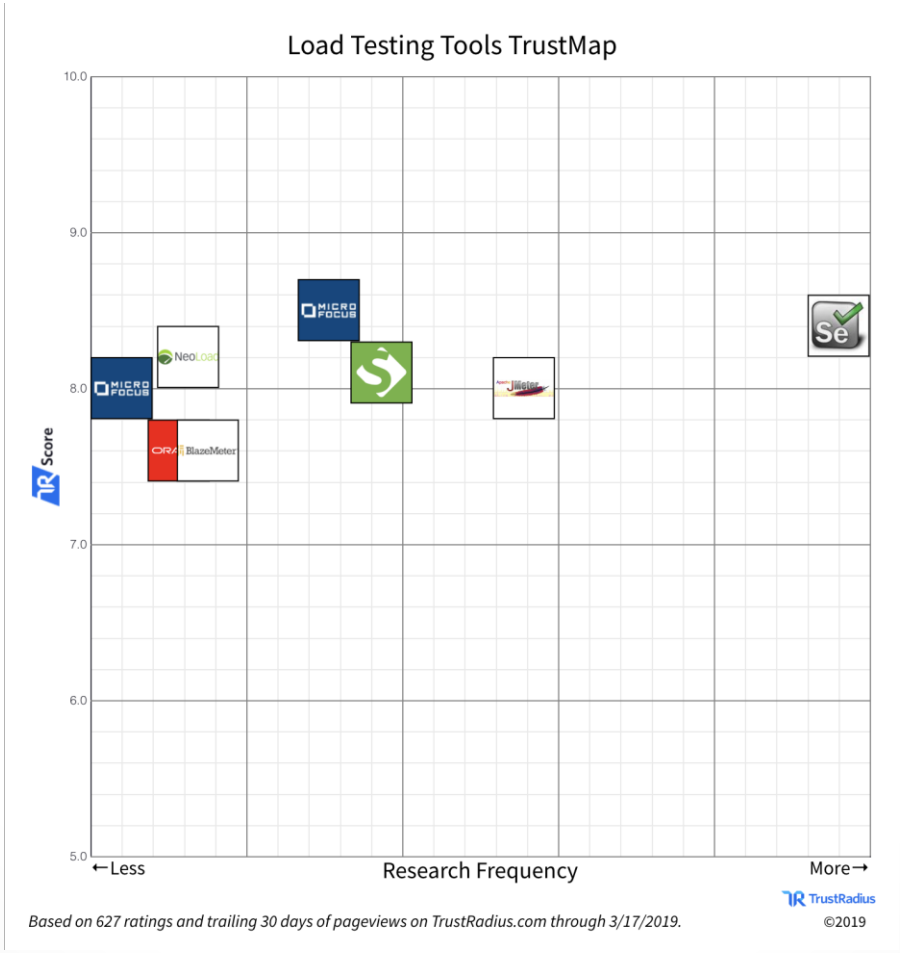


Ref: https://www.blazemeter.com/blog/open-source-load-testing-tools-which-one-should-you-use

JMeter Benchmark for Production Scale

Performance test principle

- Performance test tool comparison



Ref: https://www.trustradius.com/load-testing

JMeter Benchmark for Production Scale

Performance test principle

- Performance test tool comparison

15 BEST Performance Testing Tools (Load Testing Tools) in 2019

Last Updated: March 1, 2019

Detailed review and comparison of the top Performance and Load Testing Tools in 2019:

Below is a comprehensive list of the most widely used *performance testing tools* for measuring web application performance and load stress capacity. These load testing tools will ensure your application performance in peak traffic and under extreme stress conditions.

The list includes **open source as well as licensed performance testing tools**. But almost all the licensed tools have a free trial version so that you can get a chance to work hands-on before deciding which is the best tool for your needs.

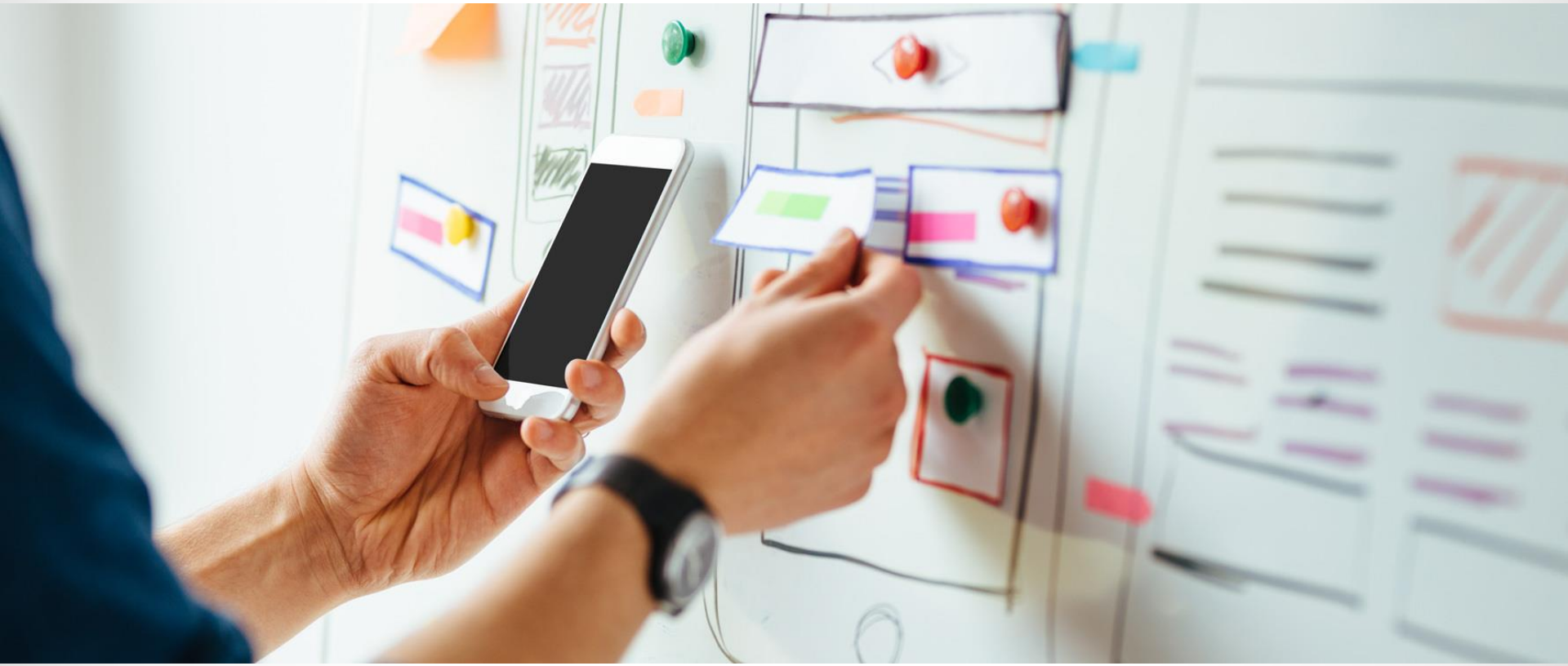
Top Performance Testing Tools (Latest Rankings)

We have done research for you. Here is the list of the best web application performance tools with the comparison:

- WebLOAD
- LoadNinja
- SmartMeter.io
- Tricentis Flood
- LoadView
- LoadUI NG Pro
- Apache JMeter
- LoadRunner
- Appvance
- NeoLoad
- LoadComplete
- WAPT
- Loadster
- LoadImpact
- Rational Performance Tester
- Testing Anywhere

Ref: https://www.softwaretestinghelp.com/performance-testing-tools-load-testing-tools/

Introduction to JMeter



JMeter Benchmark for Production Scale

APACHE JMeter™

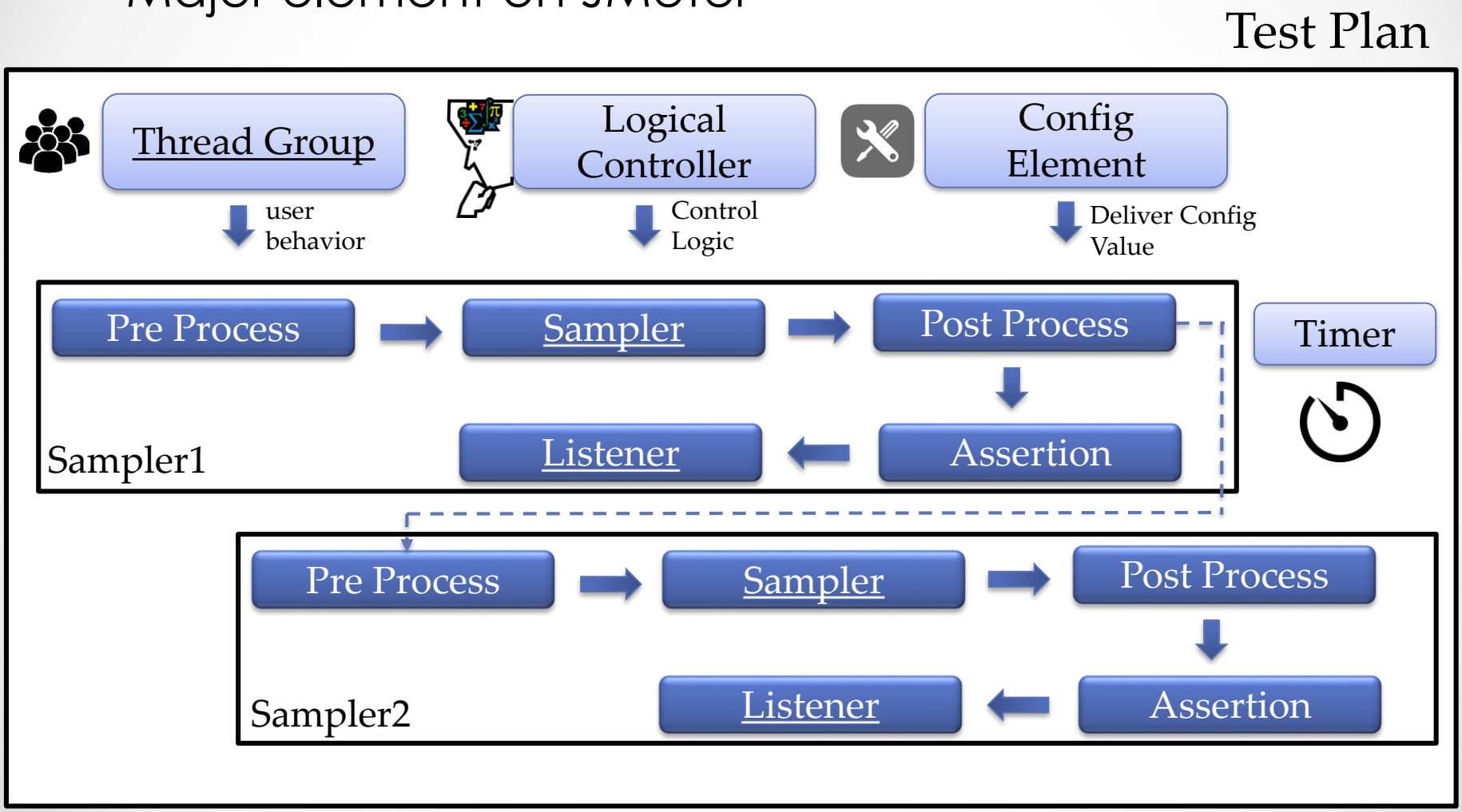
Introduction to JMeter

- Introduction
  - Why Jmeter ?
    - Open source Tools
    - Can load and performance test many different server types:
      - Web – HTTP, HTTPS (Java, NodeJS, PHP, ASP.Net etc)
      - SOAP / REST Webservices
      - Database (JDBC)
      - LDAP
      - JMS
      - MOM (Message-oriented middleware)
      - Mail (SMTP(S), POP3(S) and IMAP(S))
      - OS Command/Shell script
      - TCP
      - Java Object
    - GUI/CLI support
    - Run on everywhere (Java purity)
    - Full featured test IDE via test plan recording

APACHE JMeter™

Introduction to JMeter

- Major element on JMeter



Introduction to JMeter

52.221.241.207:1 (ip-10-21-1-27:1 (ubuntu)) - VNC Viewer

Applications Places

ubuntu@ip-10-21-1-27: ~/apache-jmeter-5.0/bin

```
BeanShellFunction.bshrc    jmeter-server       reportgenerator.properties
BeanShellListeners.bshrc   jmeter-server.bat   saveservice.properties
BeanShellSampler.bshrc     jmeter-t.cmd        shutdown.cmd
create-rmi-keystore.bat    jmeter.bat          shutdown.sh
create-rmi-keystore.sh     jmeter.properties   stoptest.cmd
examples                   jmeter.sh           stoptest.sh
hc.parameters              jmeterw.cmd         system.properties
heapdump.cmd               krb5.conf           templates
heapdump.sh                log4j2.xml          upgrade.properties
jaas.conf                  mirror-server       user.properties
jmeter                     mirror-server.cmd
ubuntu@ip-10-21-1-27:~/apache-jmeter-5.0/bin$ ./jmeter
================================================================================
Don't use GUI mode for load testing !, only for Test creation and Test debugging
.
For load testing, use NON GUI Mode:
   jmeter -n -t [jmx file] -l [results file] -e -o [Path to web report folder]
& increase Java Heap to meet your test requirements:
   Modify current env variable HEAP="-Xms1g -Xmx1g -XX:MaxMetaspaceSize=256m" in
 the jmeter batch file
Check : https://jmeter.apache.org/usermanual/best-practices.html
================================================================================
Fontconfig warning: ignoring UTF-8: not a valid region tag
```

Apache JMeter (5.0 r1840935)

File Edit Search Run Options Help

Test Plan
Test Plan
Test Plan

Add
Paste Ctrl-V
Open...
Merge
Save Selection As...
Save Node As Image Ctrl-G
Save Screen As Image Ctrl+Shift-G
Enable
Disable
Toggle Ctrl-T
Help

Test Plan

User Defined Variables

Name:	Value

Detail | Add | Add from Clipboard | Delete | Up | Down

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 | Browse... | Delete | Clear

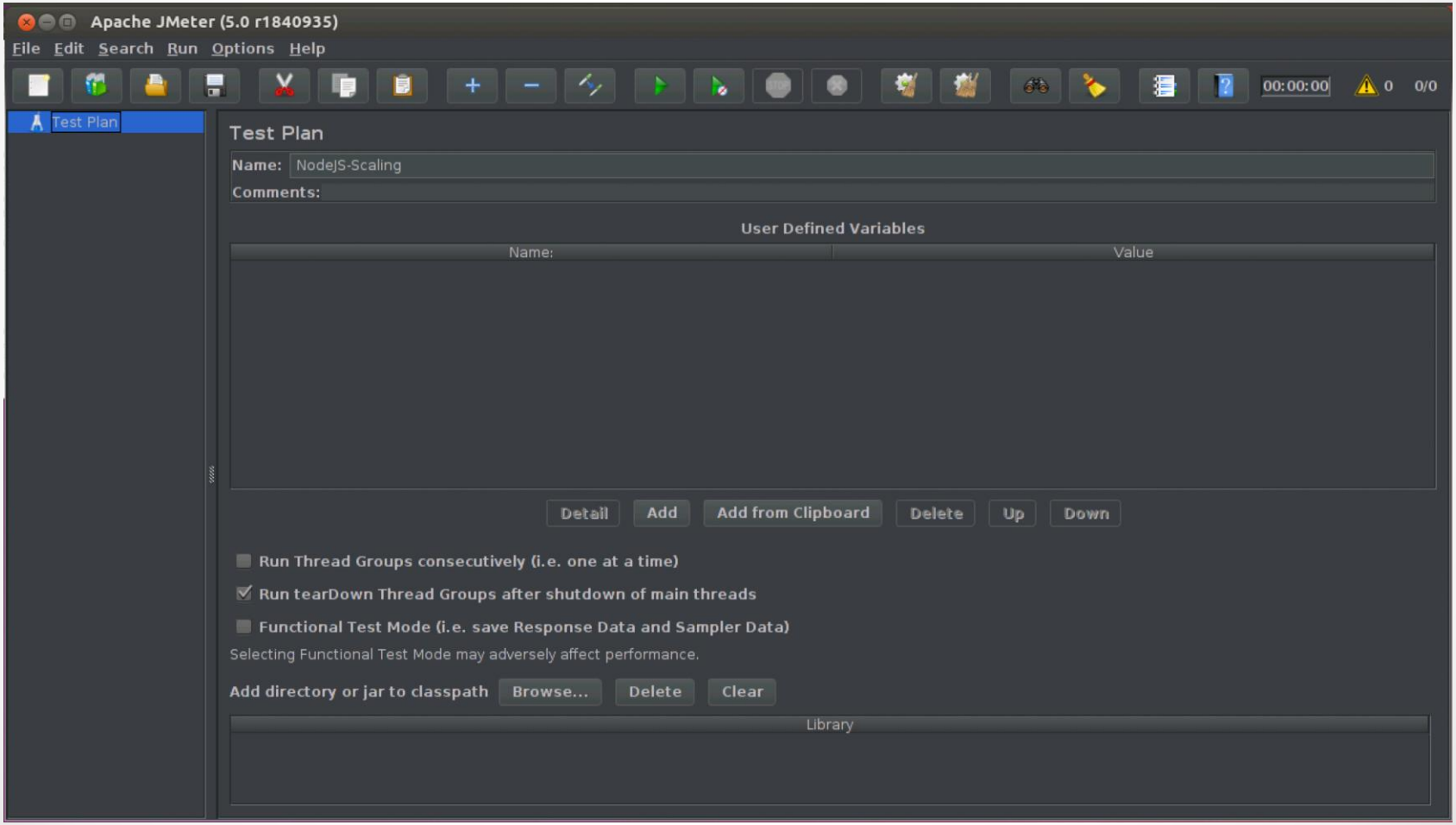
Library

[VNC config] | Home | ubuntu@ip-10-21-1-2... | Apache JMeter (5.0 r...

APACHE JMeter™

Introduction to JMeter

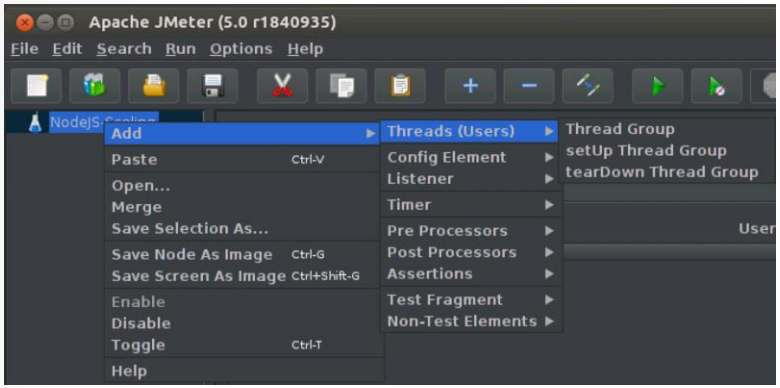
- Major element on Jmeter

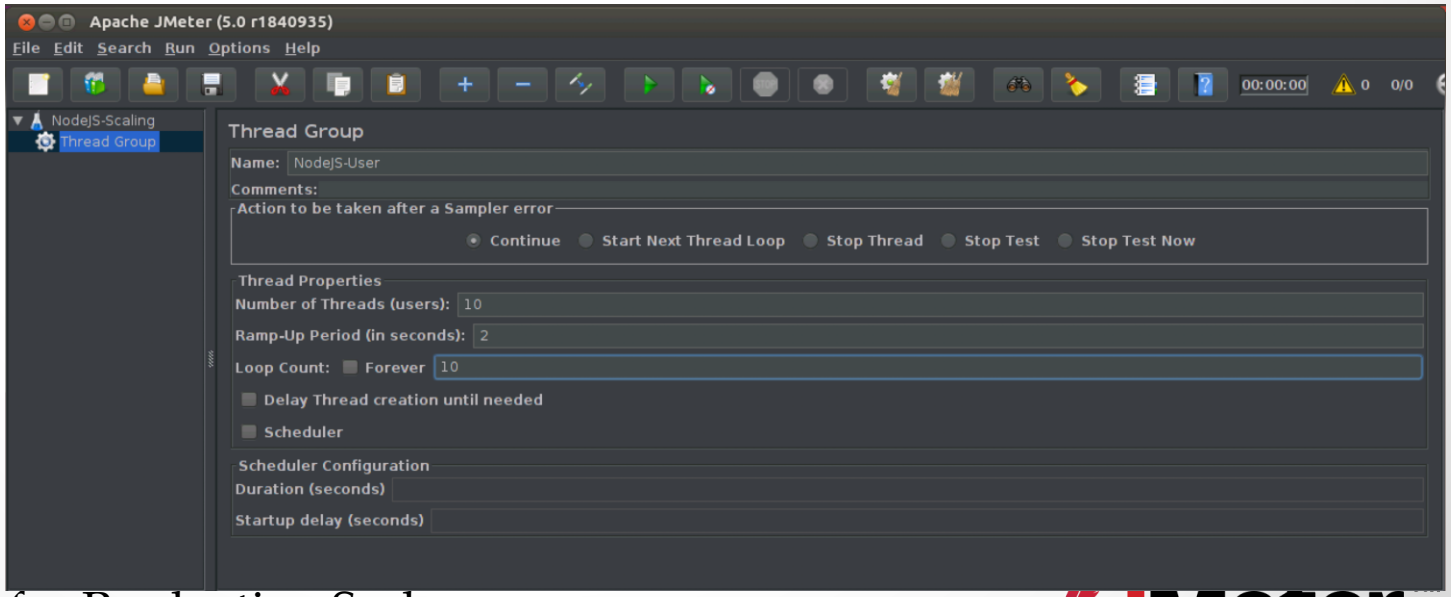


Ref: https://jmeter.apache.org/usermanual/component_reference.html

Introduction to JMeter

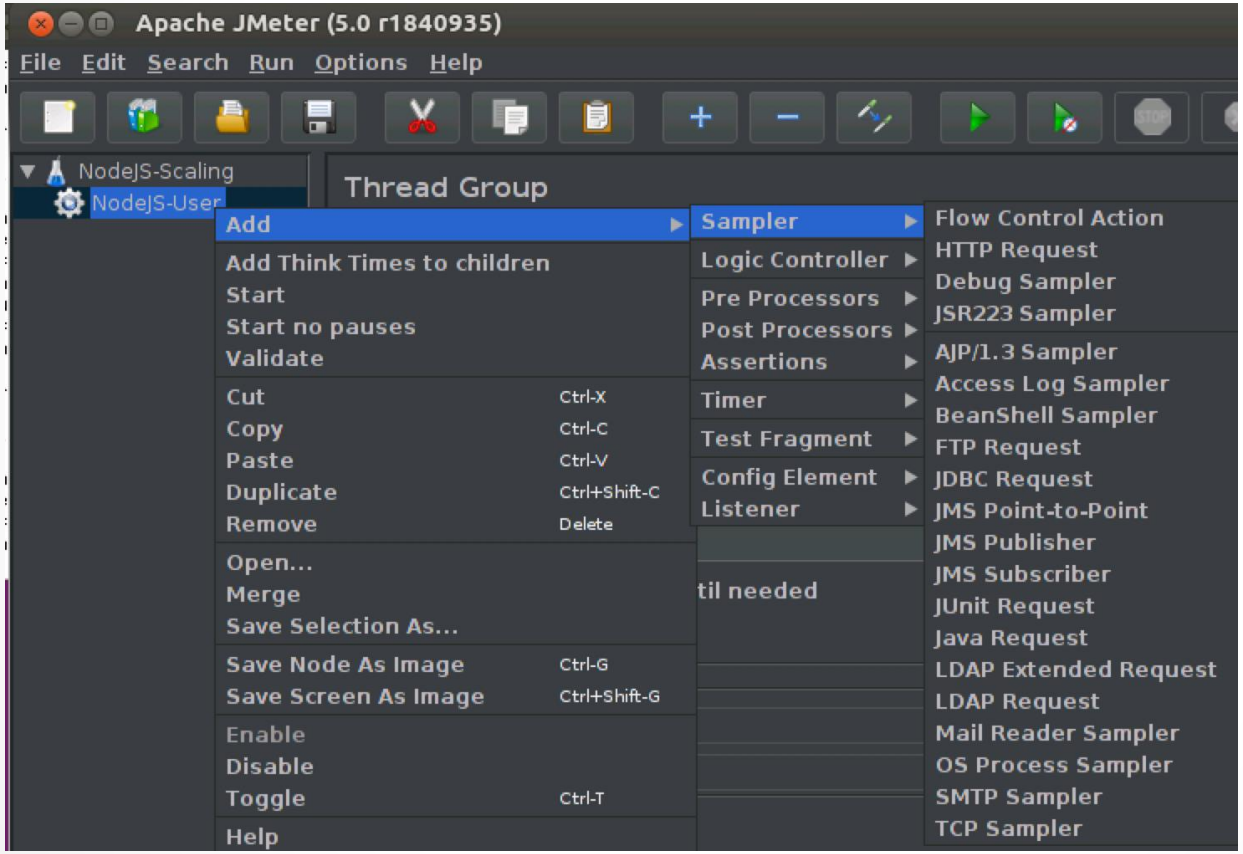
- Major element on Jmeter
  - Threads (Users): Define user behavior to simulate test





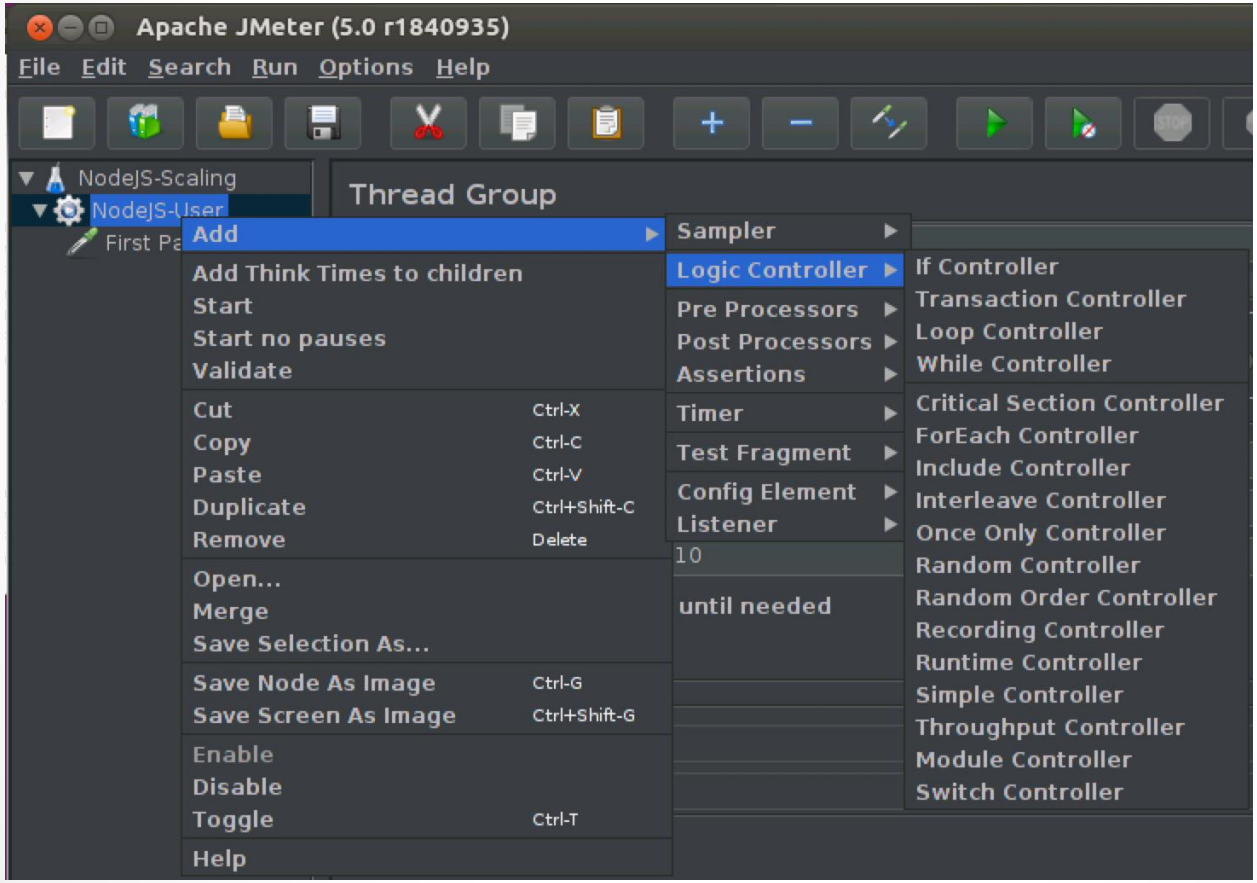
Introduction to JMeter

- Major element on Jmeter
  - Sampler (Under Thread Group): Define type of sampler to test



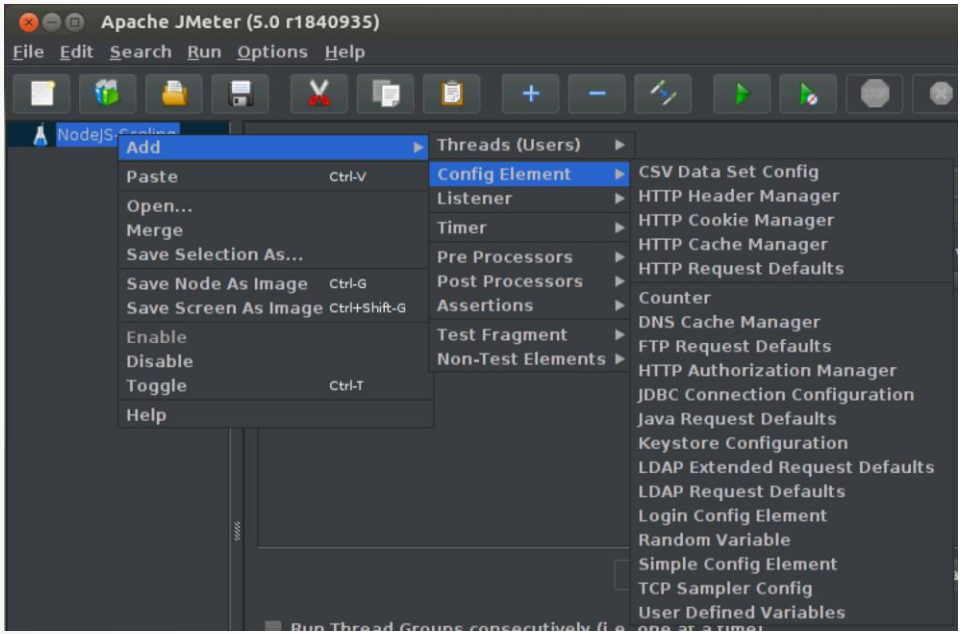
Introduction to JMeter

- Major element on Jmeter
  - Logic Controller: Define logic of testing



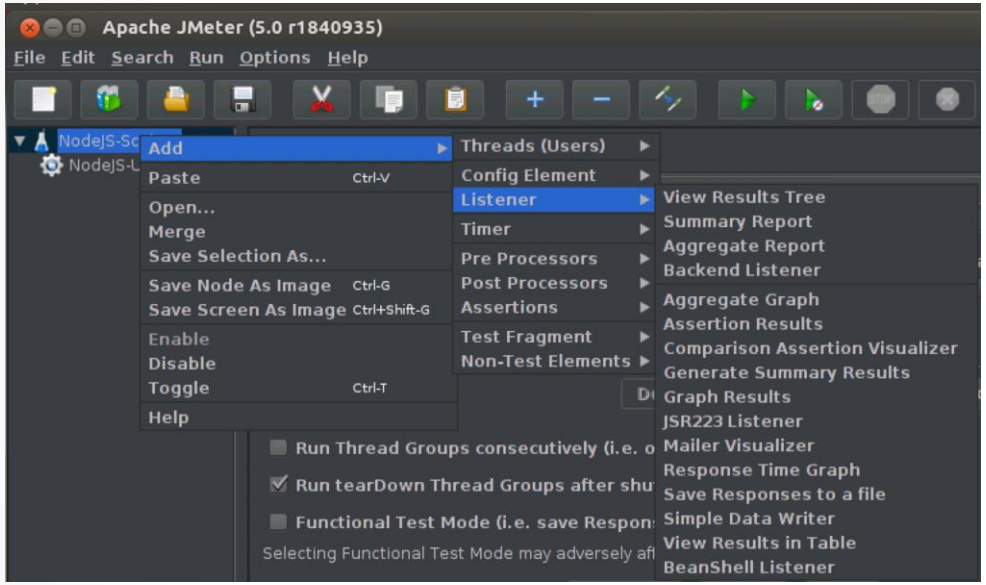
Introduction to JMeter

- Major element on Jmeter
  - Config Element: Define configurable value for test such as: CSV Data Set, Counter, Login Information, HTTP Header Manager, HTTP Cookie Manager etc



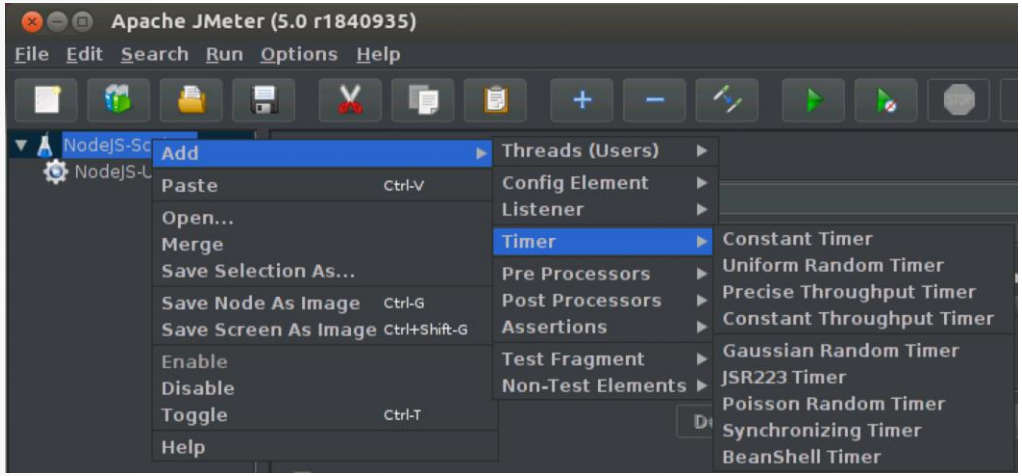
Introduction to JMeter

- Major element on Jmeter
  - Listener: Result collector for test's result



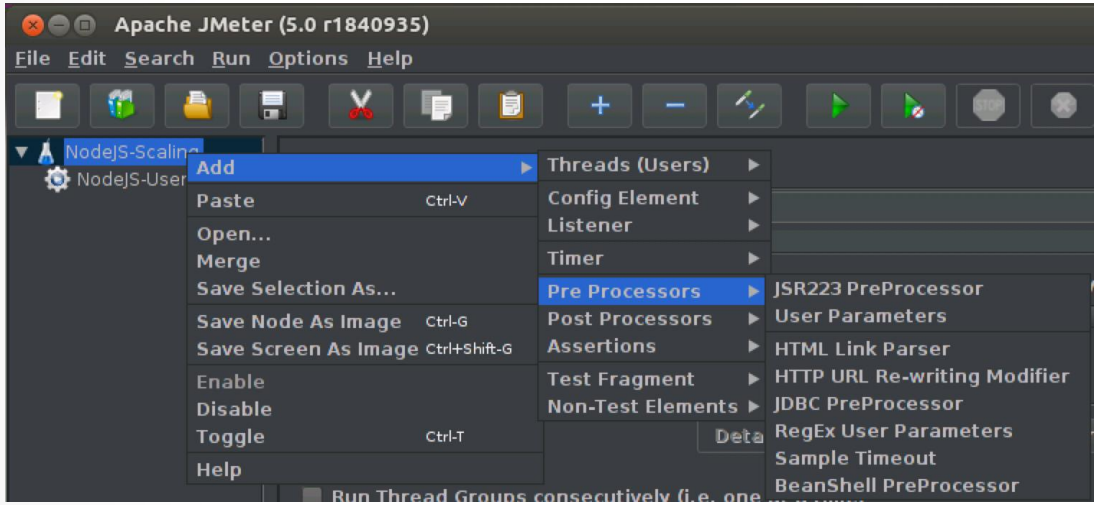
Introduction to JMeter

- Major element on Jmeter
  - Timer: Sampling behavior of time to operate load test



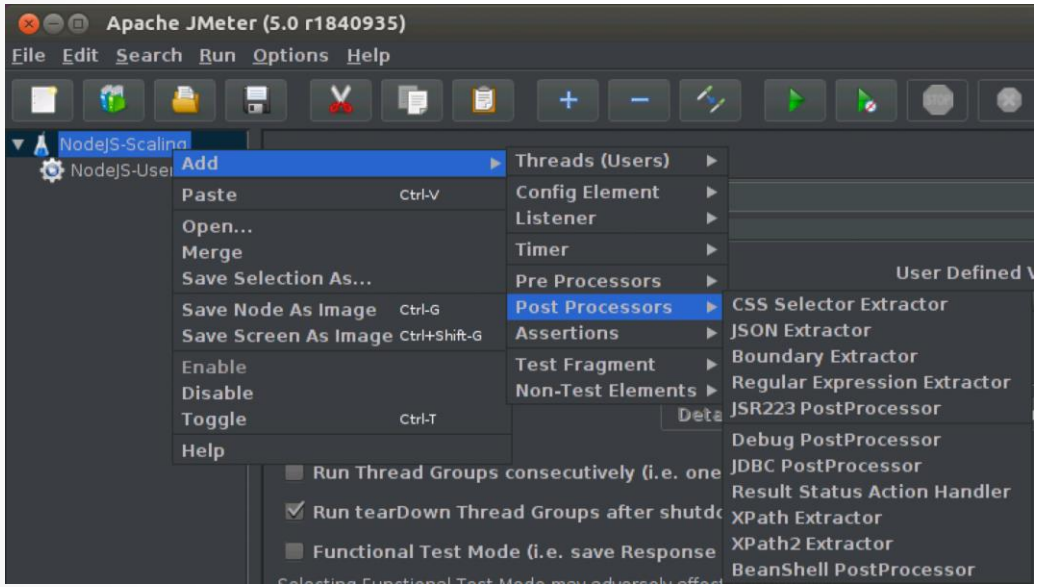
Introduction to JMeter

- Major element on Jmeter
  - Pre Processors: Modifier samplers data before sent to load test such as HTML Link Parses, URL Re-writing, User Parameters etc



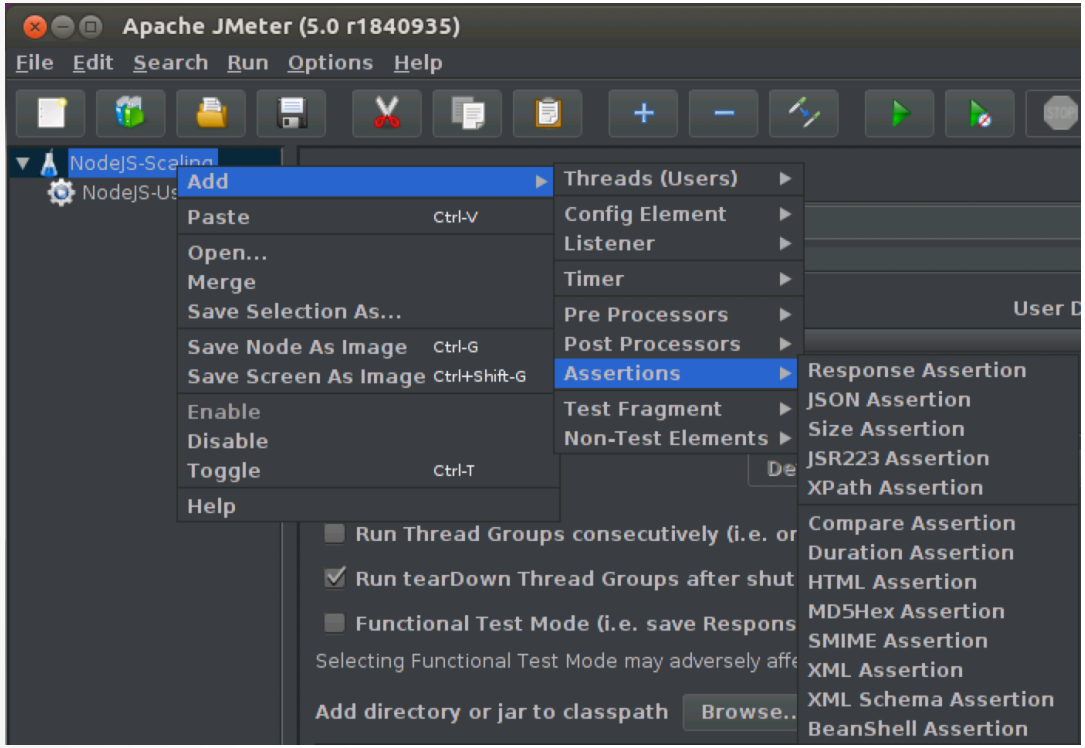
Introduction to JMeter

- Major element on Jmeter
  - Post Processors: Apply after loadtest process samplers data and before assertion such as CSS selector extractor, JSON extractor



Introduction to JMeter

- Major element on Jmeter
  - Assertions: Collection of test result from all test plan and compare for decision such as Response Assertions, Duration Assertion etc



Introduction to JMeter

- MEAN Stack
  - MEAN Stack is the framework that provide full-stack (End-to-End) for building dynamic web applications that made up of:
    - **M**ongo DB: Document database for store data as JSON (JavaScript Object Notation) document
    - **E**xpress (Express.js): Back-end web application framework (On-top) with NodeJS
    - **A**ngular (Angular.js): Front-end web application framework to run in client browser.
    - **N**odeJS: JavaScript runtime environment for implement application back-end in JavaScript

Introduction to JMeter

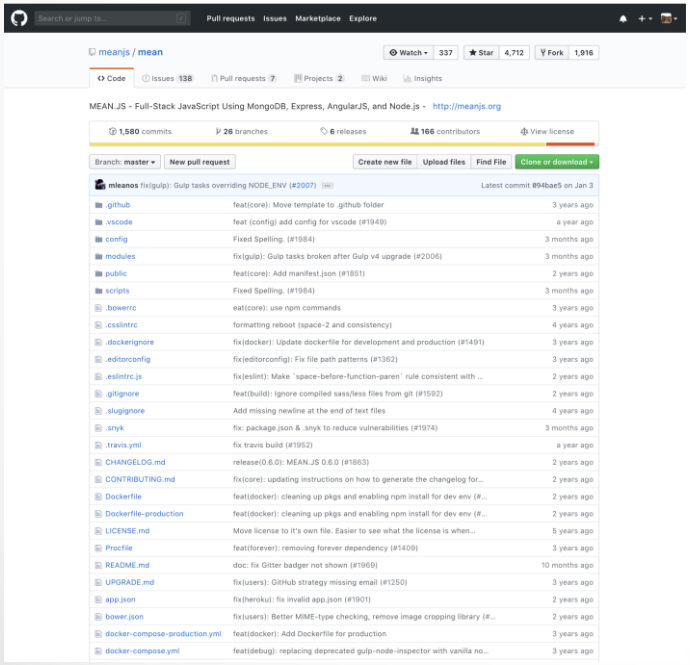
- Docker with MEAN Stack

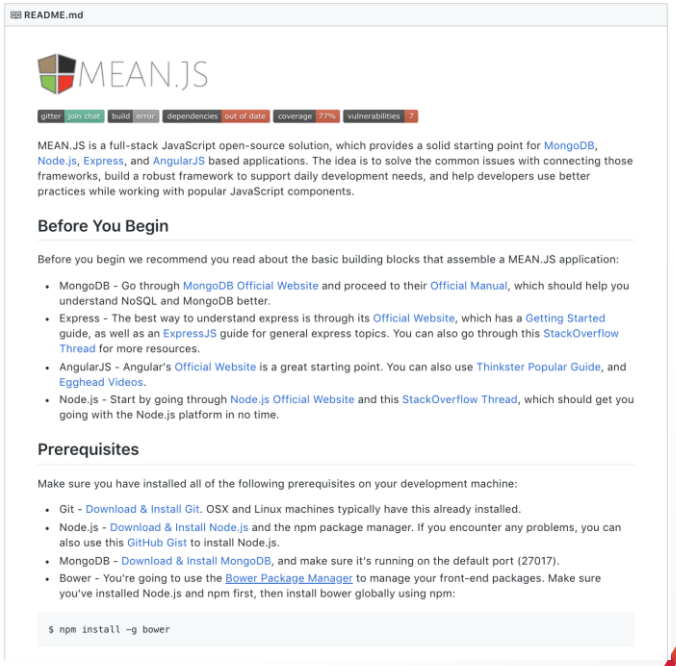
.ssh — ubuntu@ip-10-21-1-85: ~ — ssh -i lab_gluster.pem ubuntu@52.221.199.124 — 208×28

...Resouce/Terraform_Template/01_Docker_Teacher — Terminal MAC Pro — -bash | ...— ubuntu@ip-10-21-1-151: ~ — ssh -i lab_gluster.pem ubuntu@13.250.64.13 | ...ubuntu@ip-10-21-1-85: ~ — ssh -i lab_gluster.pem ubuntu@52.221.199.124

```
ubuntu@ip-10-21-1-85:~$ docker container ls
CONTAINER ID        IMAGE                    COMMAND                  CREATED             STATUS              PORTS                                                                                   NAMES
2c7e5491efc7        labdocker/cadvisor:latest "/usr/bin/cadvisor -…"  2 hours ago         Up 2 hours          0.0.0.0:8080->8080/tcp                                                                  cadvisor
a4e3dd1b8867        mongo-express:0.49       "tini -- /docker-ent…"   2 hours ago         Up 2 hours          0.0.0.0:8081->8081/tcp                                                                  webmongo
596100be6126        mean                     "/bin/sh -c 'npm ins…"   2 hours ago         Up 2 hours          80/tcp, 443/tcp, 8080/tcp, 0.0.0.0:35729->35729/tcp, 0.0.0.0:80->3000/tcp              mean
5a8ce8b4b0ed        mongo                    "docker-entrypoint.s…"   2 hours ago         Up 2 hours          0.0.0.0:27017->27017/tcp                                                                db
ubuntu@ip-10-21-1-85:~$
```

- GitHub



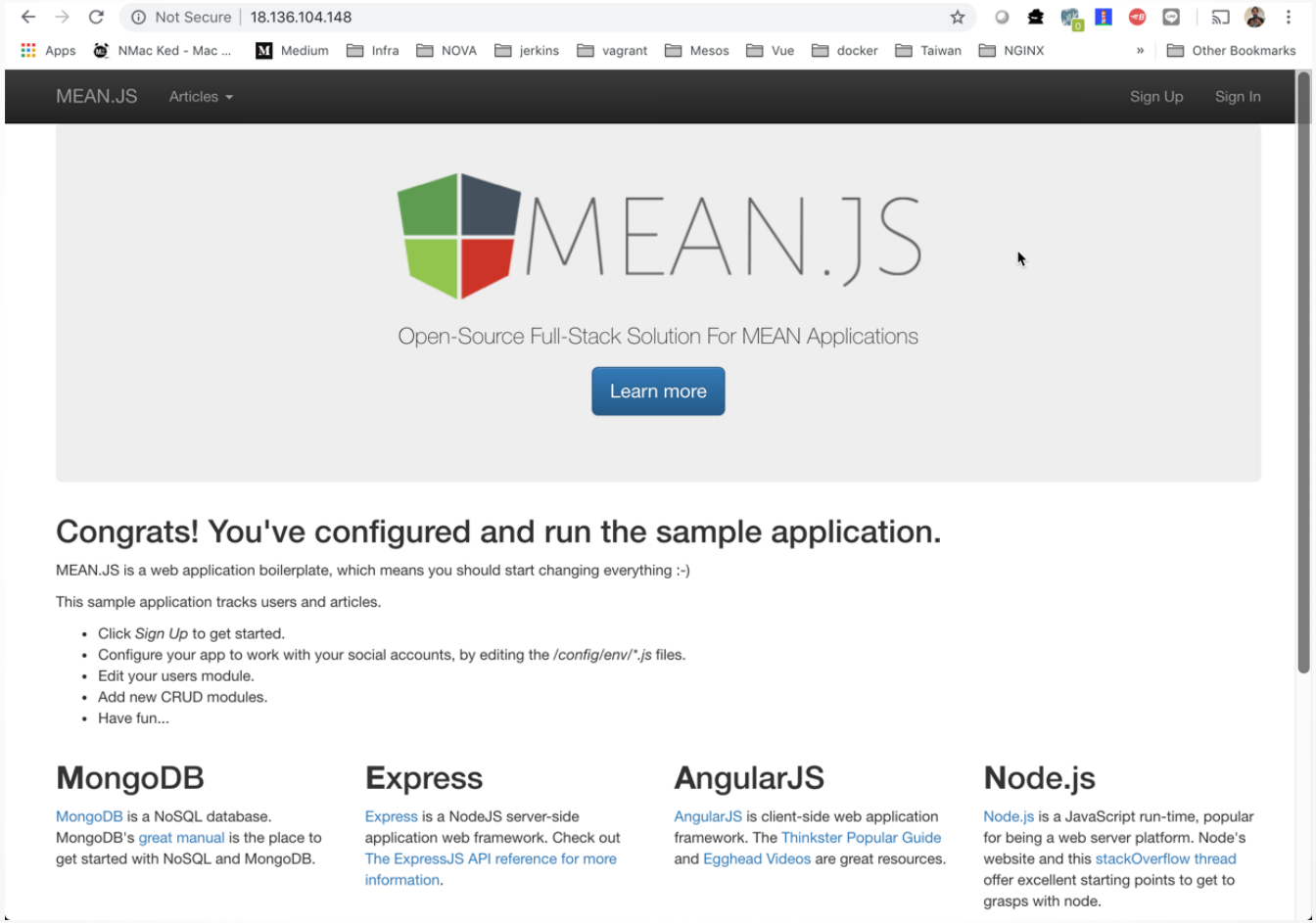


JMeter Benchmark for Production Scale

APACHE JMeter™

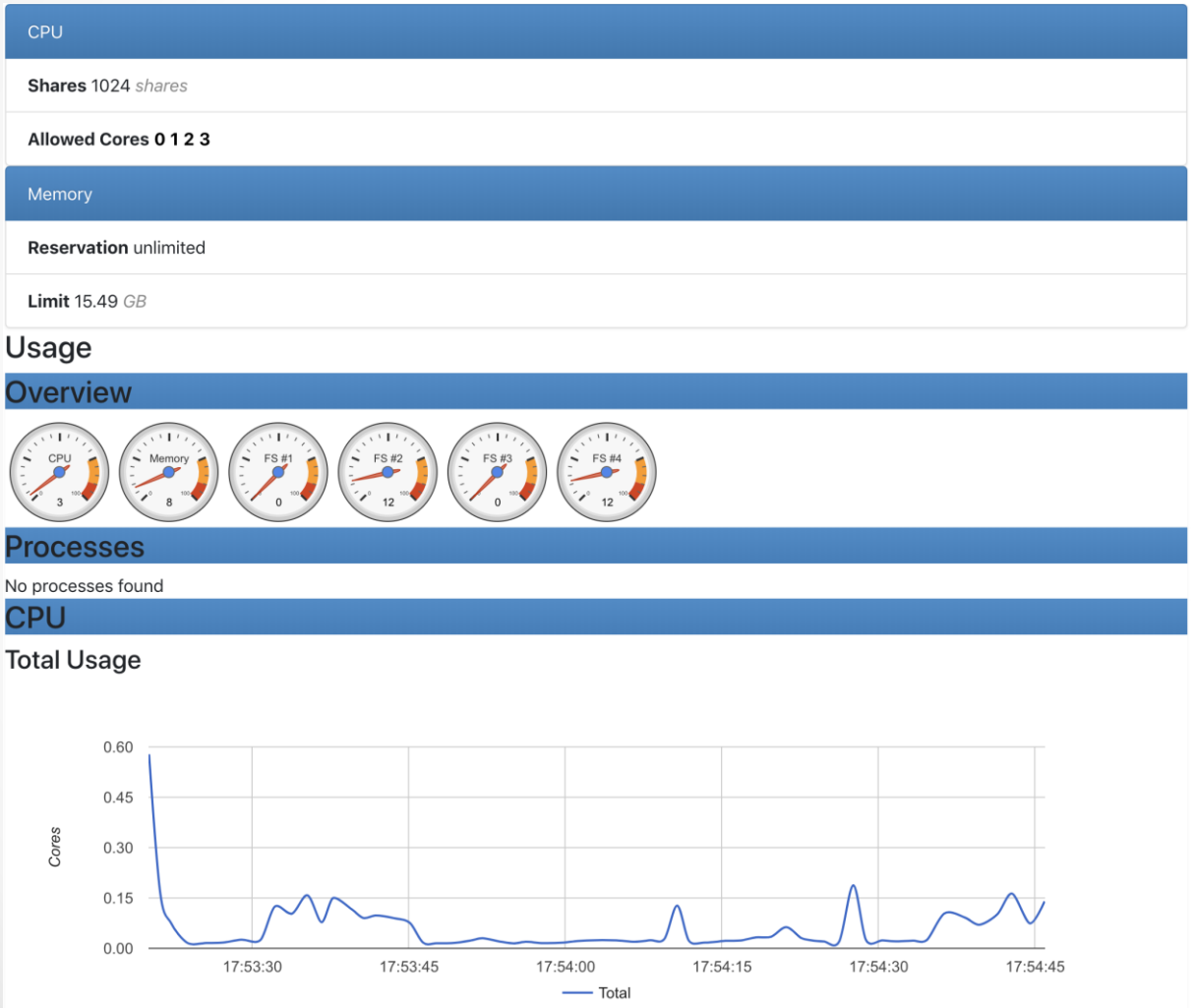
Introduction to JMeter

- MEAN Stack



Introduction to JMeter

- cAdvisor Host Monitor



Introduction to JMeter

- Manage/Monitoring MongoDB

Mongo Express Database

Mongo Express

Databases

Database Name | Create Database

View	admin	Del
View	config	Del
View	local	Del
View	mean-dev	Del

Server Status

Hostname	5a8ce8b4b0ed	**MongoDB Version**	4.0.7
Uptime	147 seconds	**Server Time**	Sun, 24 Mar 2019 10:53:34 GMT
Current Connections	6	**Available Connections**	838854
Active Clients	18	**Queued Operations**	0
Clients Reading	0	**Clients Writing**	0
Read Lock Queue	0	**Write Lock Queue**	0

APACHE JMeter™

Introduction to JMeter

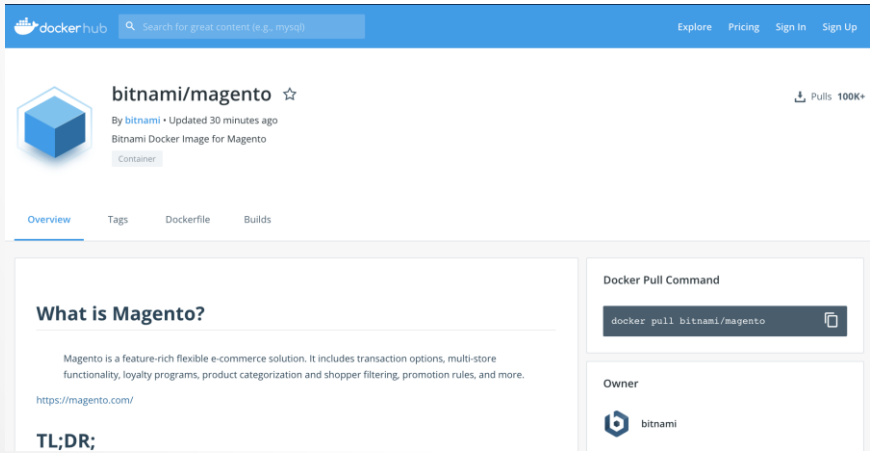
- Magento Stack (Reference Only)
  - Magento is open-source CMS (Content Management System) that specific for ecommerce system with rich function such as Catalogs, Customer, Marketing Price, Store, Sales Process and we can integrate magento with other social network such as "Google Analytics", "Payment integrate with PayPal", "Login via Facebook" etc. With 2 major module for Magentis is like below
    - PHP (PHP-FPM)
    - MariaDB for store all data inside

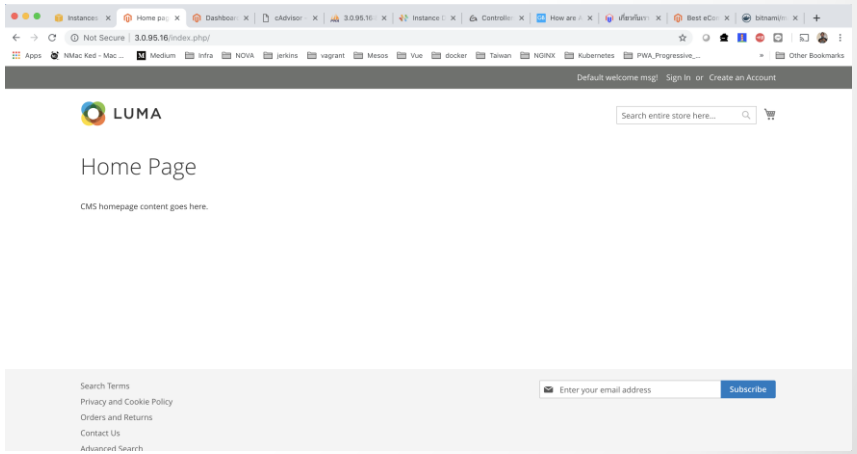
Introduction to JMeter

- Docker with Magento

```
ubuntu@ip-10-21-1-13:~$ docker container ls
CONTAINER ID        IMAGE                    COMMAND                  CREATED             STATUS              PORTS                          NAMES
3d59fd5f41ab        navicat/navicatmonitor   "/bin/sh -c /docker-…"   27 minutes ago      Up 27 minutes       0.0.0.0:8082->3000/tcp         navicat
4bdd8e1c4612        labdocker/cadvisor:latest "/usr/bin/cadvisor -…"  2 hours ago         Up 2 hours          0.0.0.0:8080->8080/tcp         cadvisor
64dd8b49bbe5        bitnami/phpmyadmin:latest "/app-entrypoint.sh …"  2 hours ago         Up 2 hours          443/tcp, 0.0.0.0:8081->80/tcp  phpmyadmin
e83cf564f43f        bitnami/magento:latest   "/app-entrypoint.sh …"   2 hours ago         Up 2 hours          0.0.0.0:80->80/tcp, 443/tcp    magento
f063a4f3e1a2        bitnami/mariadb:latest   "/entrypoint.sh /run…"   2 hours ago         Up 2 hours          0.0.0.0:3306->3306/tcp         mariadb
ubuntu@ip-10-21-1-13:~$
```

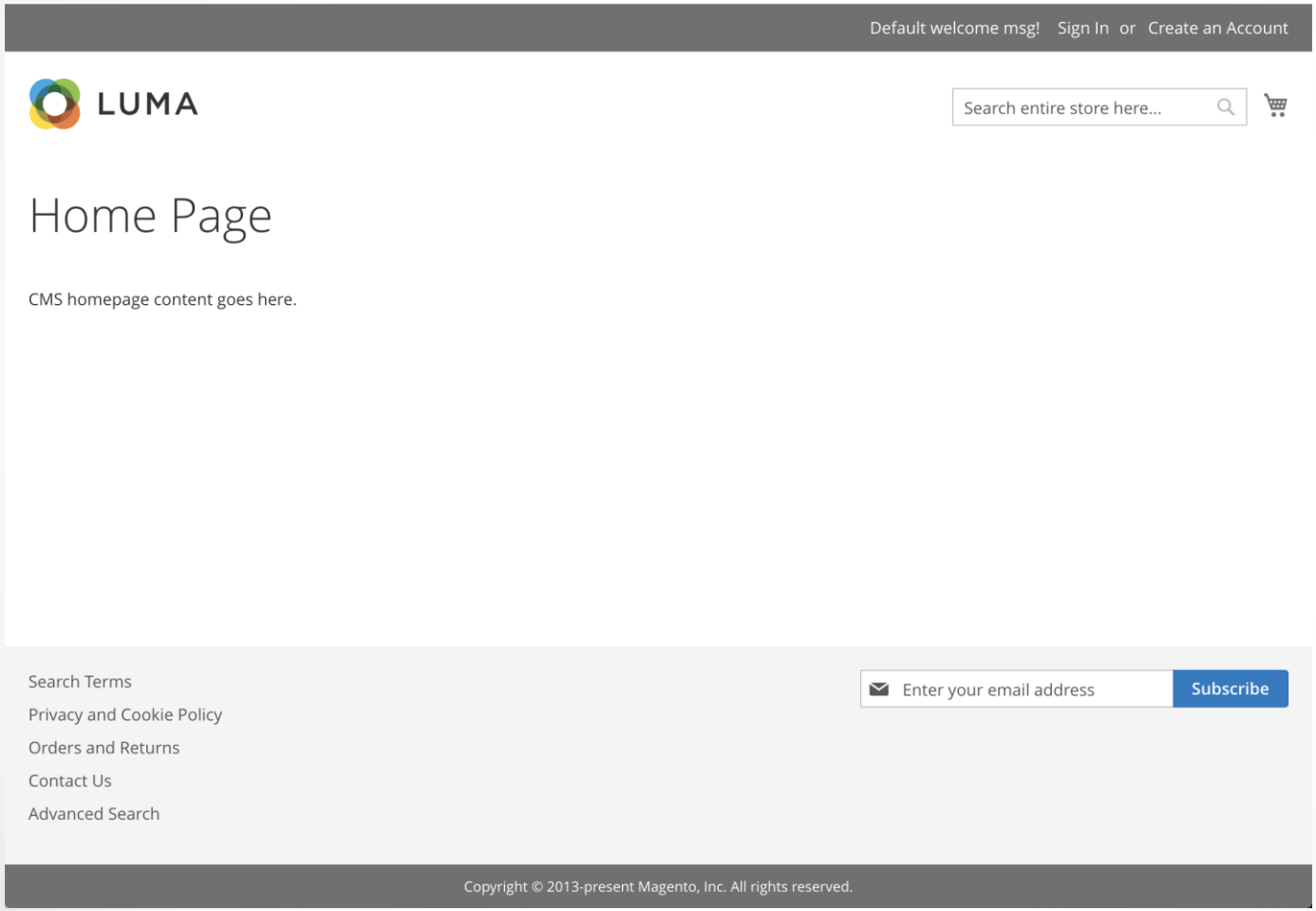
- Bitnami/Magento





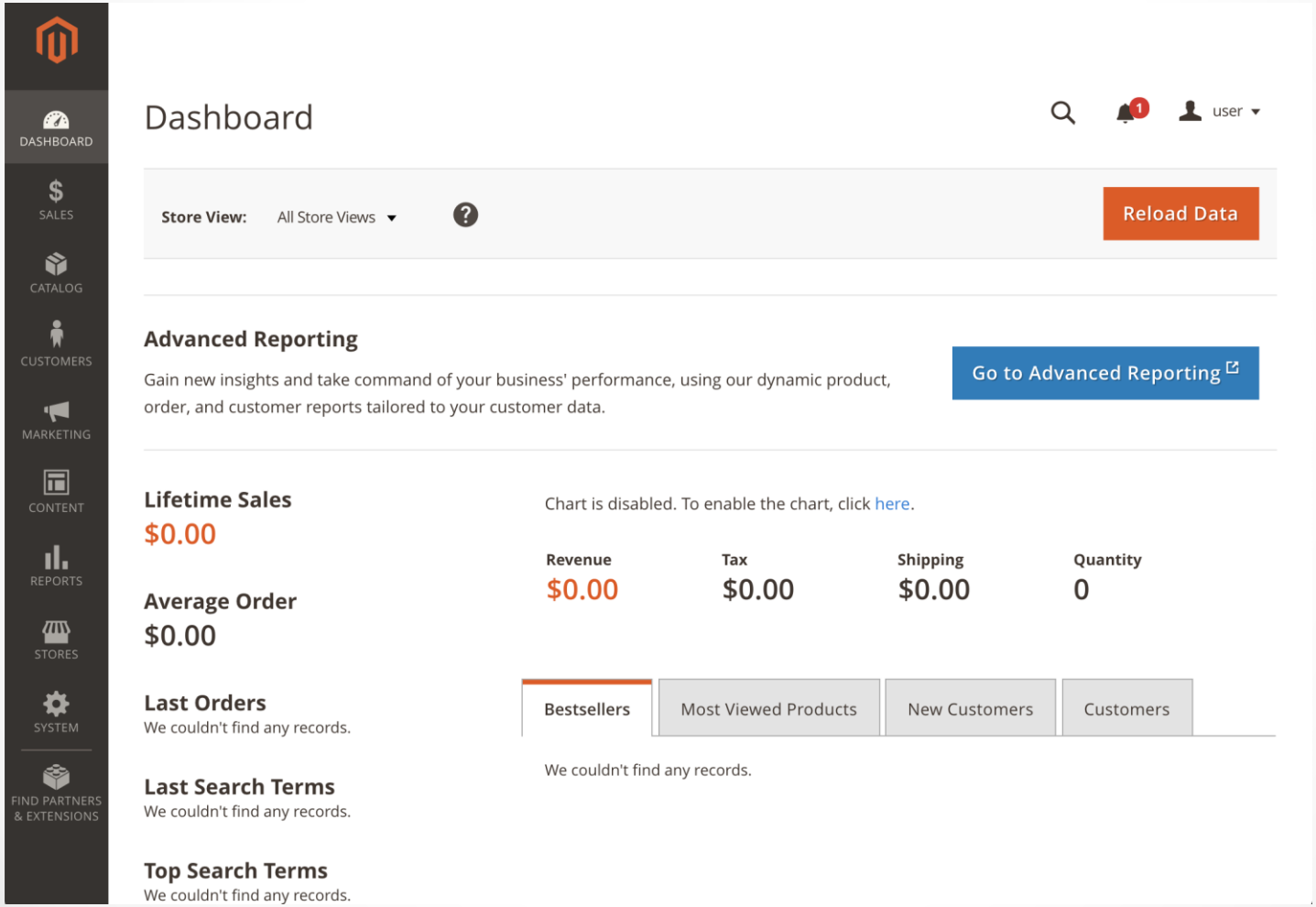
Introduction to JMeter

- Magento



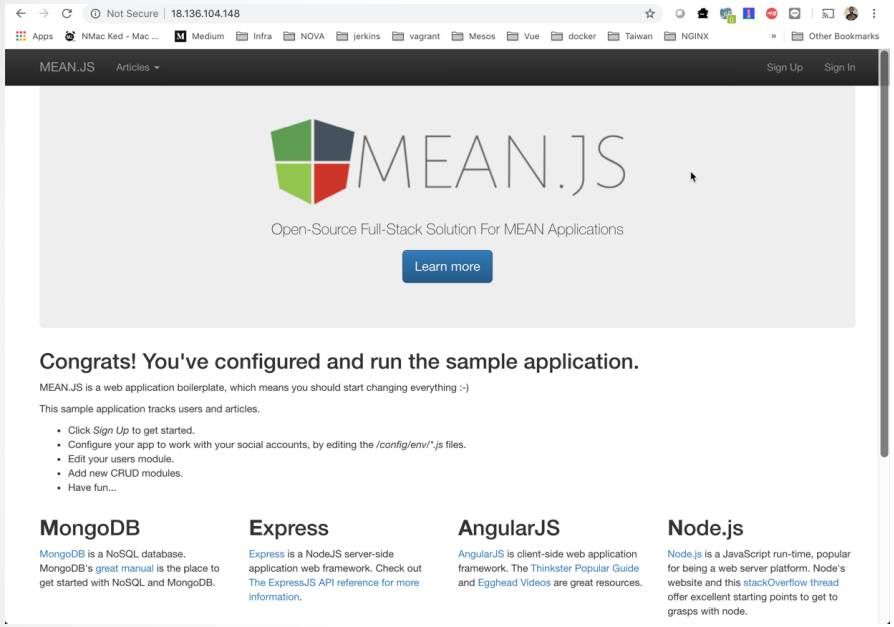
Introduction to JMeter

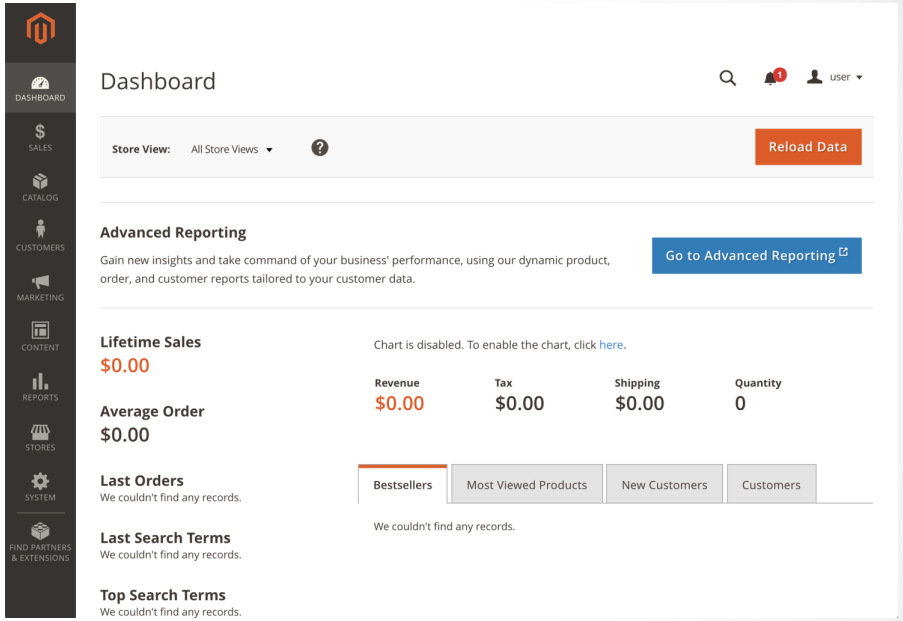
- Magento (Admin)



WorkShop: 1-2 MEAN and Magento

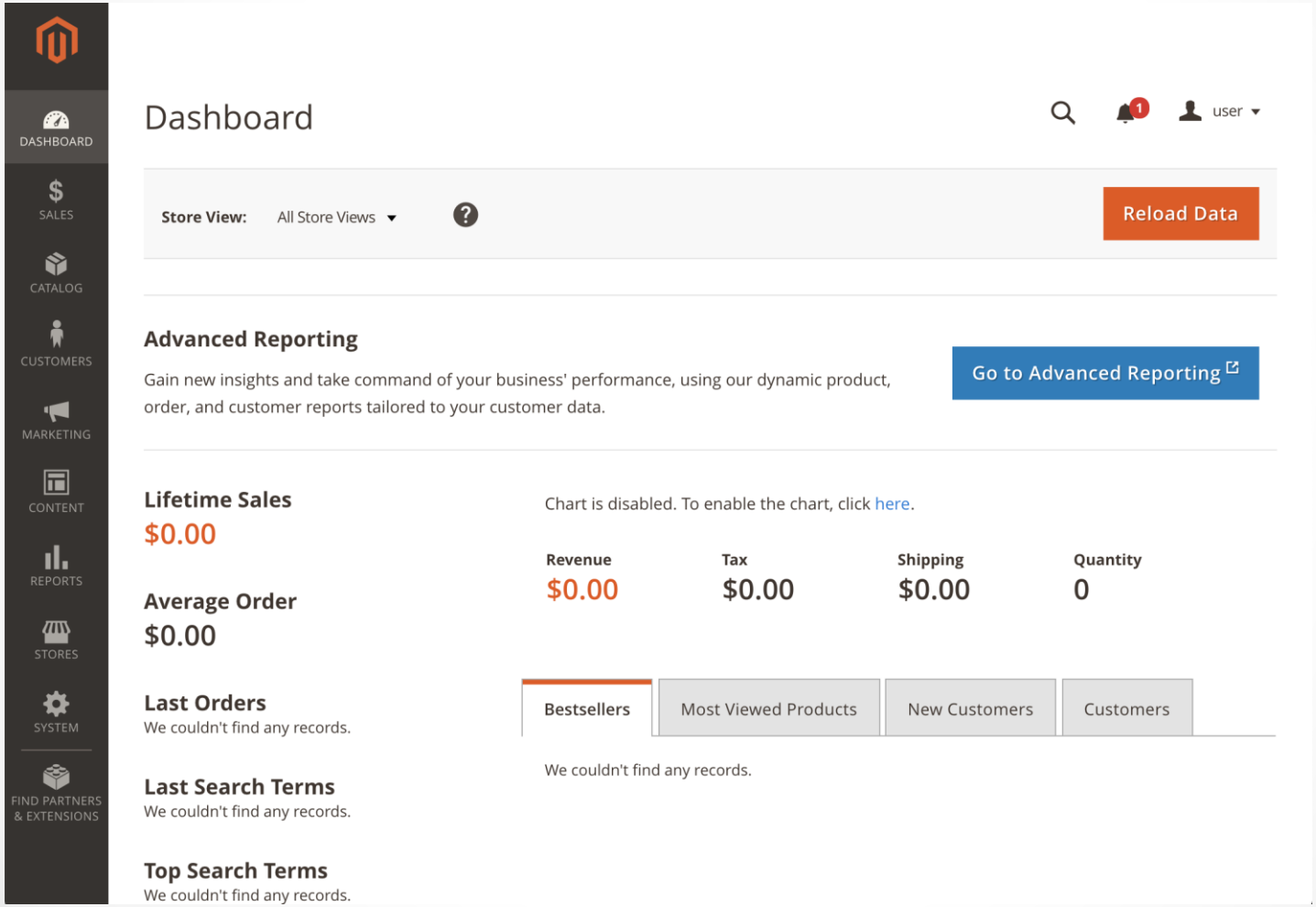
- Setup docker container for MEAN.JS and Magento



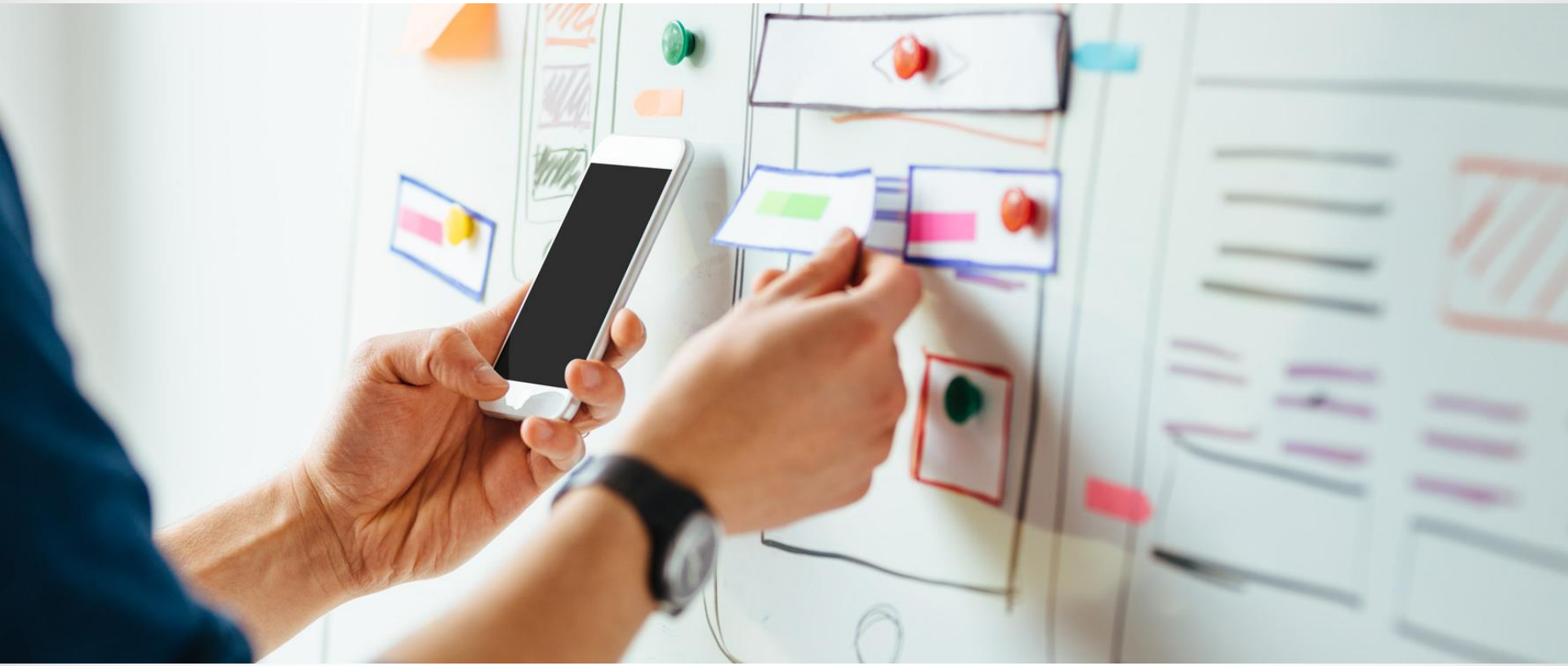


WorkShop: 1-2 MEAN and Magento

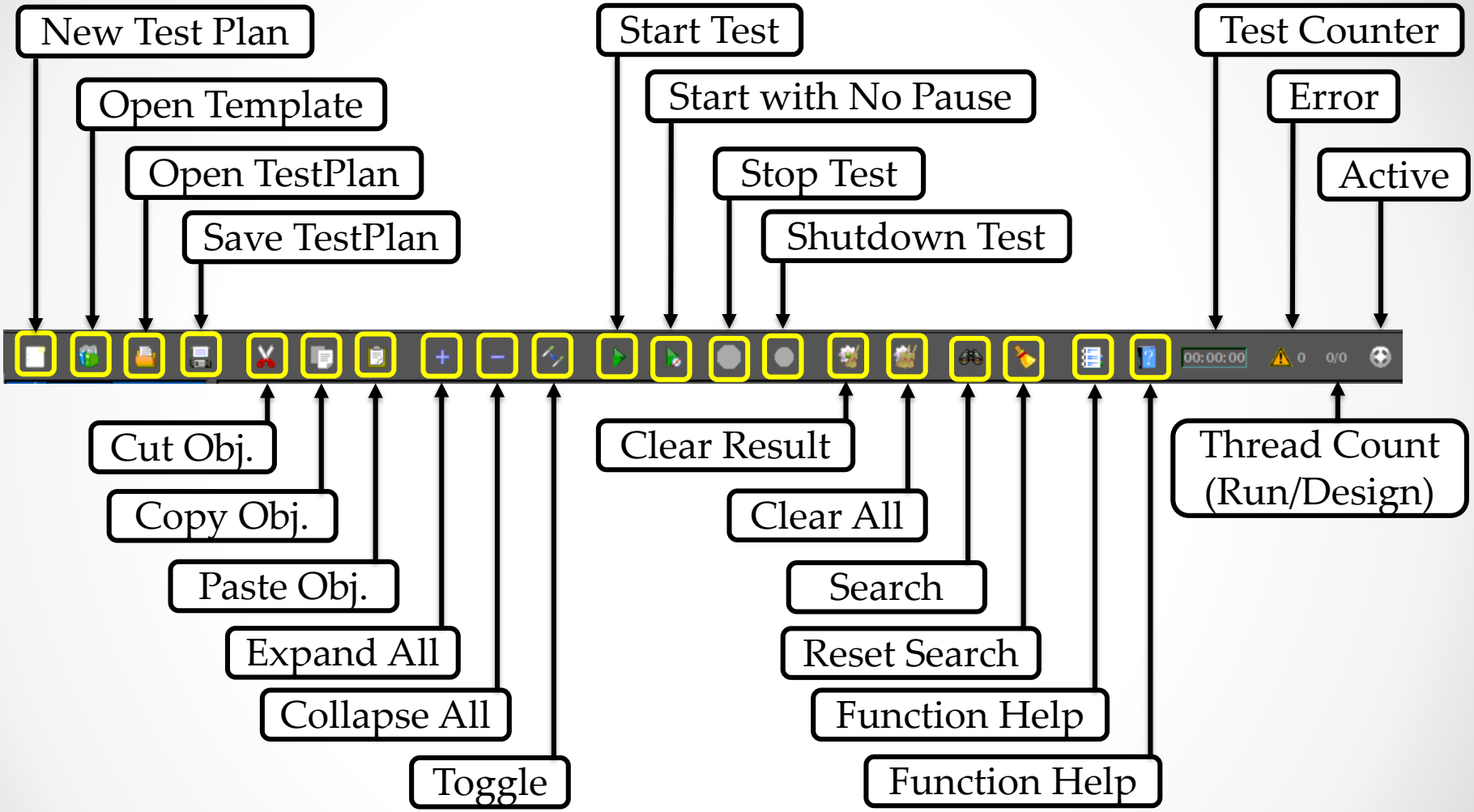
- Setup docker container for MEAN.JS and Magento



Jmeter's element part 1 (Basic)



Jmeter's element part 1 (Basic)



Jmeter's element part 1 (Basic)

Menu Bar

Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

Test Plan

Test Plan

Name: Test Plan

Comments:

User Defined Variables

Name: Value

Detail Add Add from Clipboard Delete Up Down

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 Browse... Delete Clear

Library

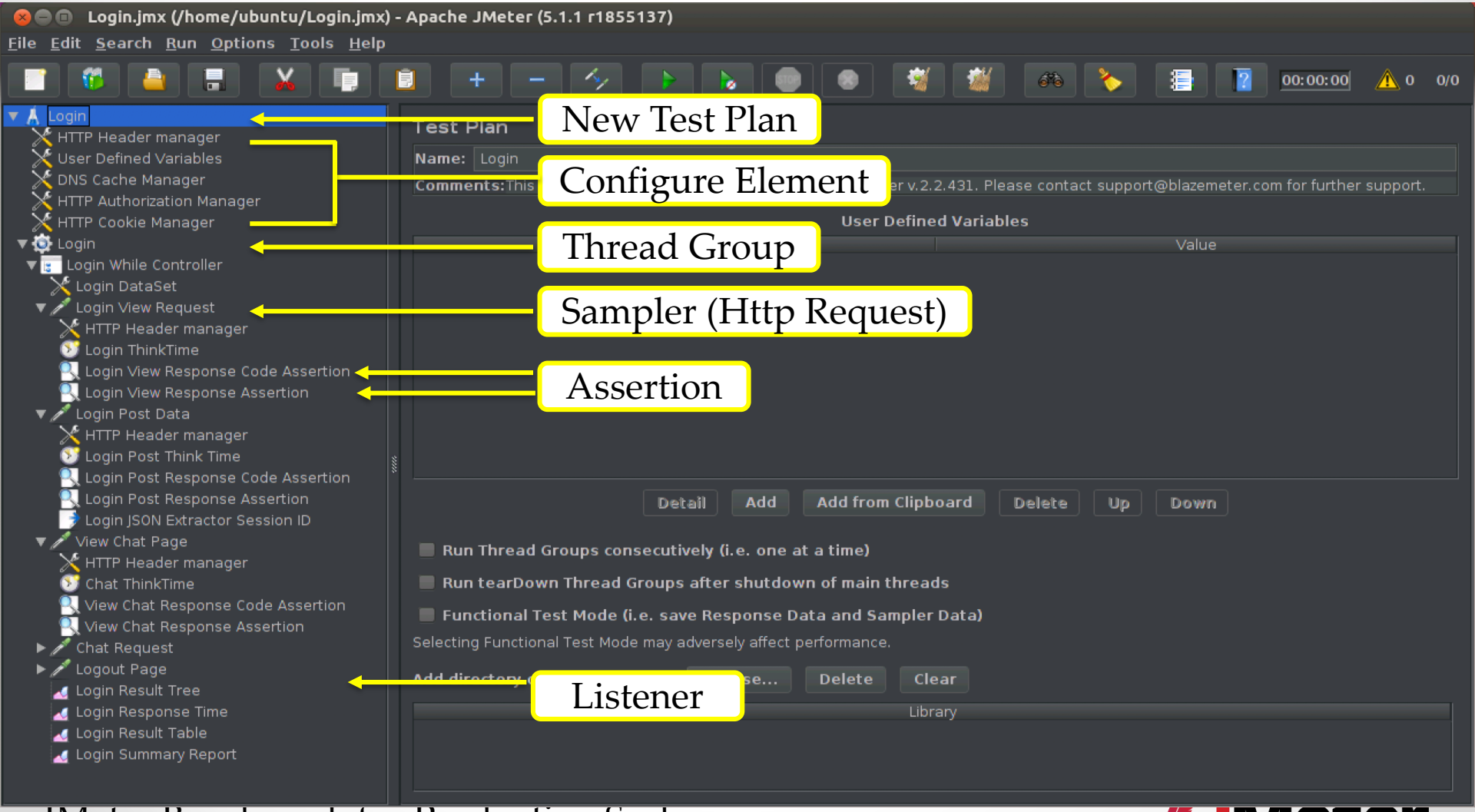
Object Tree

Object Property

APACHE JMeter™

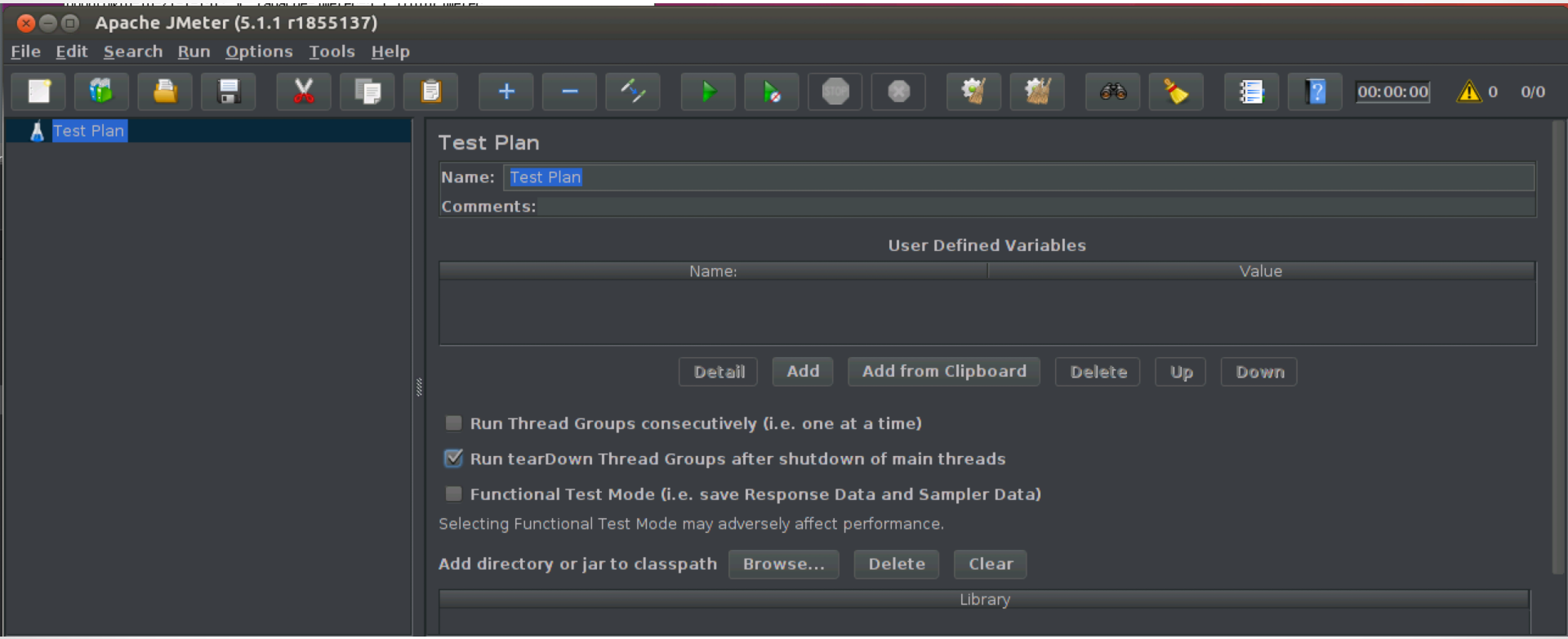
Jmeter's element part 1 (Basic)

- Example Test Plan



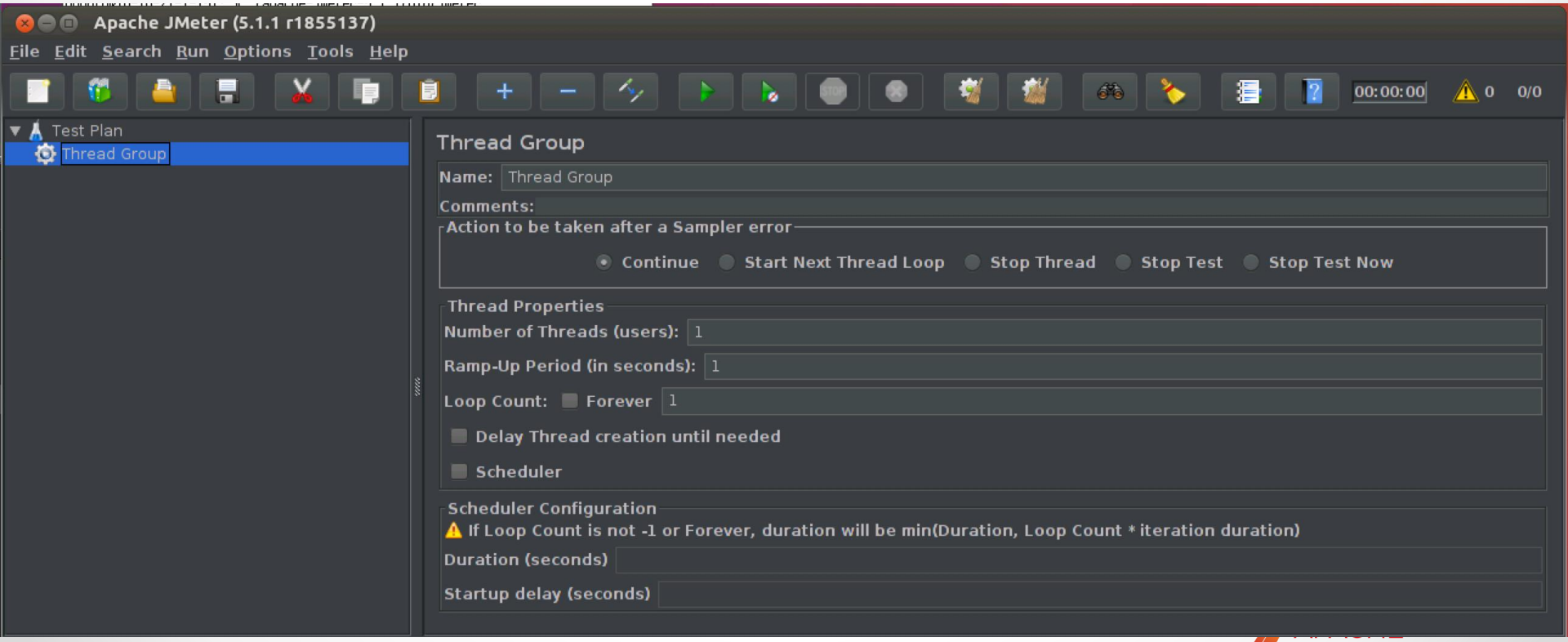
Jmeter's element part 1 (Basic)

- **Test Plan**
  - Test plan also can defined variable as global variable



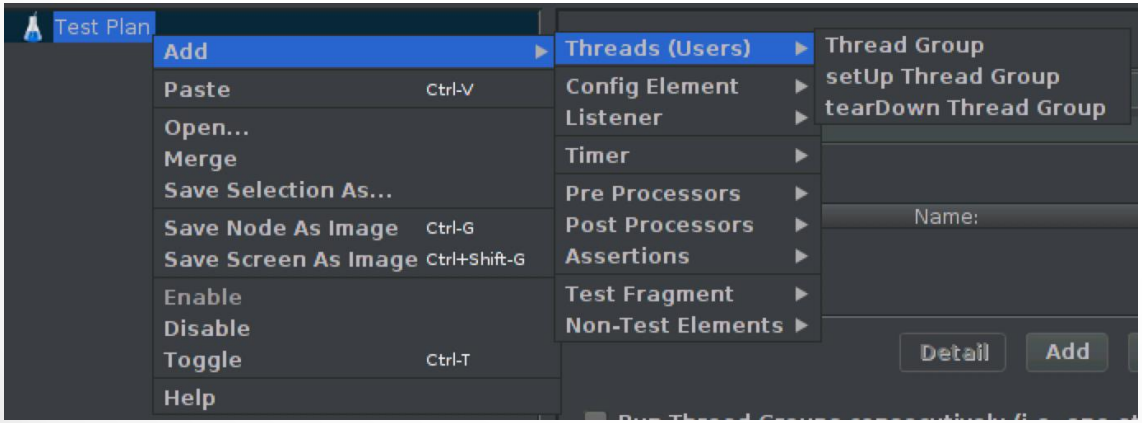
Jmeter's element part 1 (Basic)

- **Thread Group**
  - Thread group is primary object for all test activity. Normally we will defined user behavior (Total, Ramp-Up etc) in this object and contain all relate object below Thread Group.



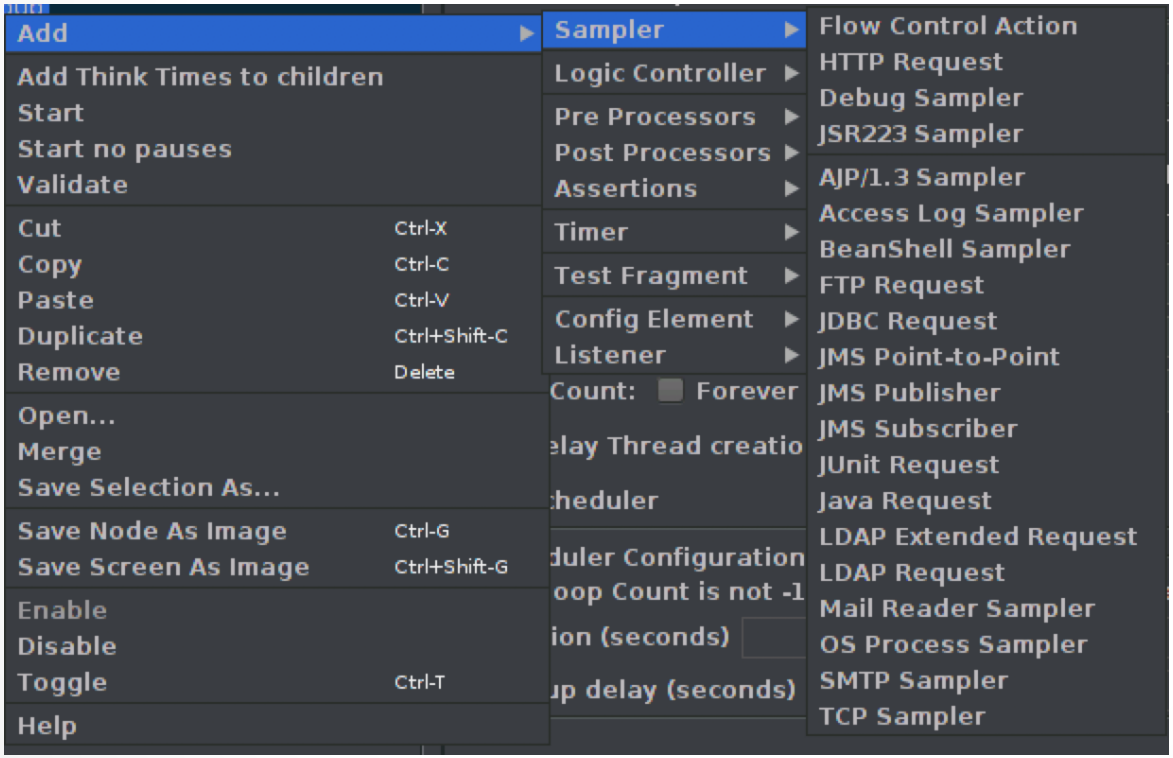
Jmeter's element part 1 (Basic)

- **Thread Group**
  - Thread Group (Normal):
    - Define user to operate for test
  - setUp Thread Group:
    - Define for distinguish all pre-test action from normal thread group. Jmeter will start setUp Thread Group before normal one.
      - Ex: (Step1) setup Thread Group: Import test data to database
      - Ex: (Step2) Thread Group: Start actual test
  - tearDown Thread Group:
    - Define for post process after test operate
      - Ex: (Step3) delete test data



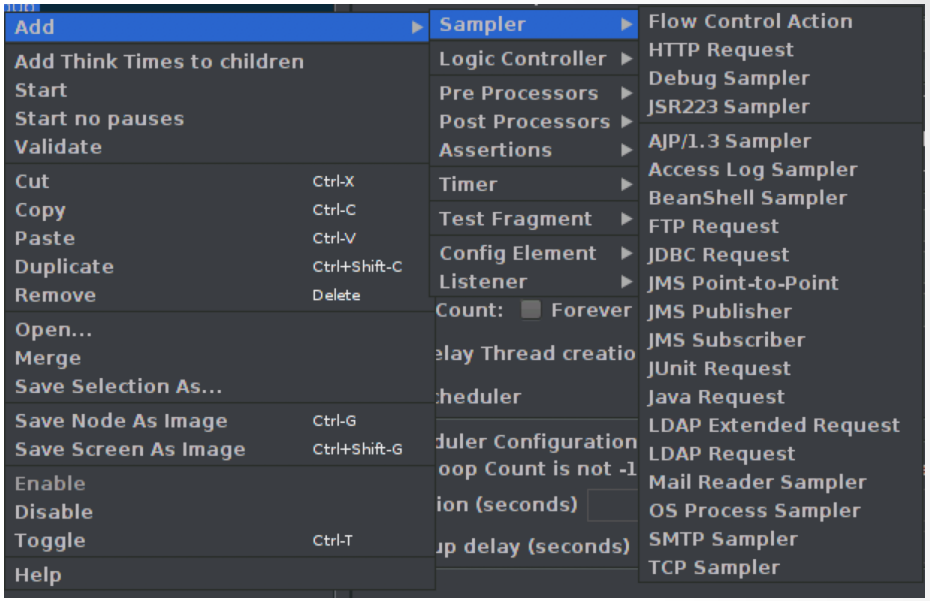
Jmeter's element part 1 (Basic)

- **Sampler**
  - Sampler will used to operate for actual test in each type. This depend on type of testing.



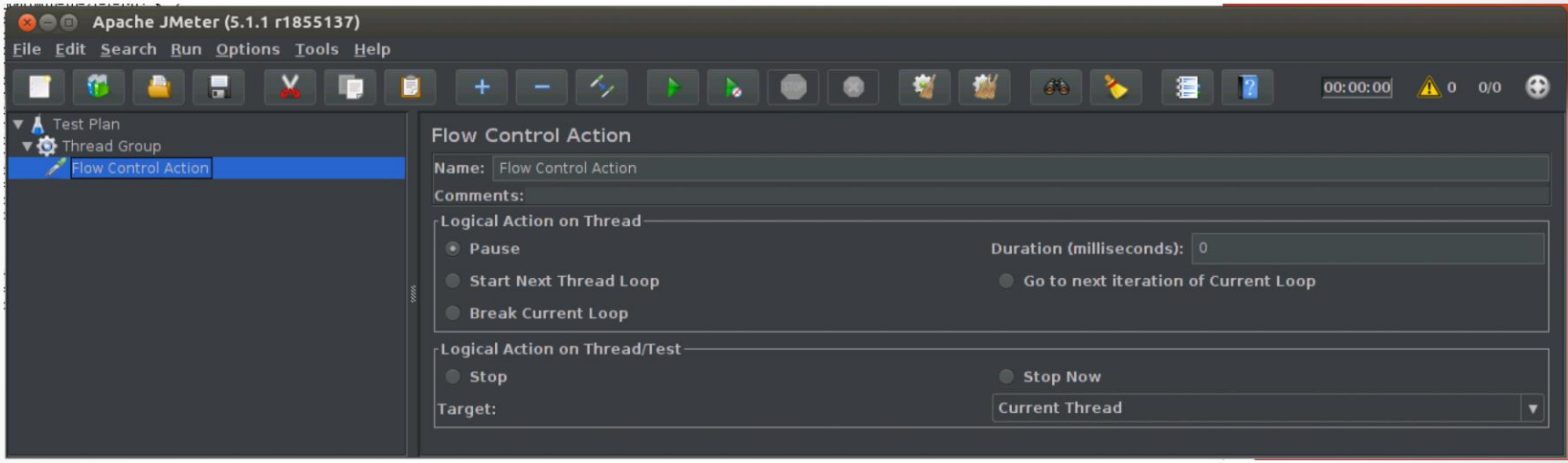
Jmeter's element part 1 (Basic)

- **<u>Sampler</u>**
  - **Flow Control Action:**
  - **HTTP Request:**
  - **Debug Sampler:**
  - JSR223 Sampler:
  - AJP/1.3 Sampler:
  - Access Log Sampler:
  - BeanShell Sampler:
  - FTP Request:
  - JDBC Request:
  - JMS Point-to-Point: ,JMS Publisher: ,JMS Subscriber:
  - JUnit Request:
  - Java Request:
  - LDAP Request:, LDAP Extended Request
  - Mail Reader Sampler:
  - **OS Process Sampler:**
  - SMTP Sampler:
  - **TCP Sampler:**



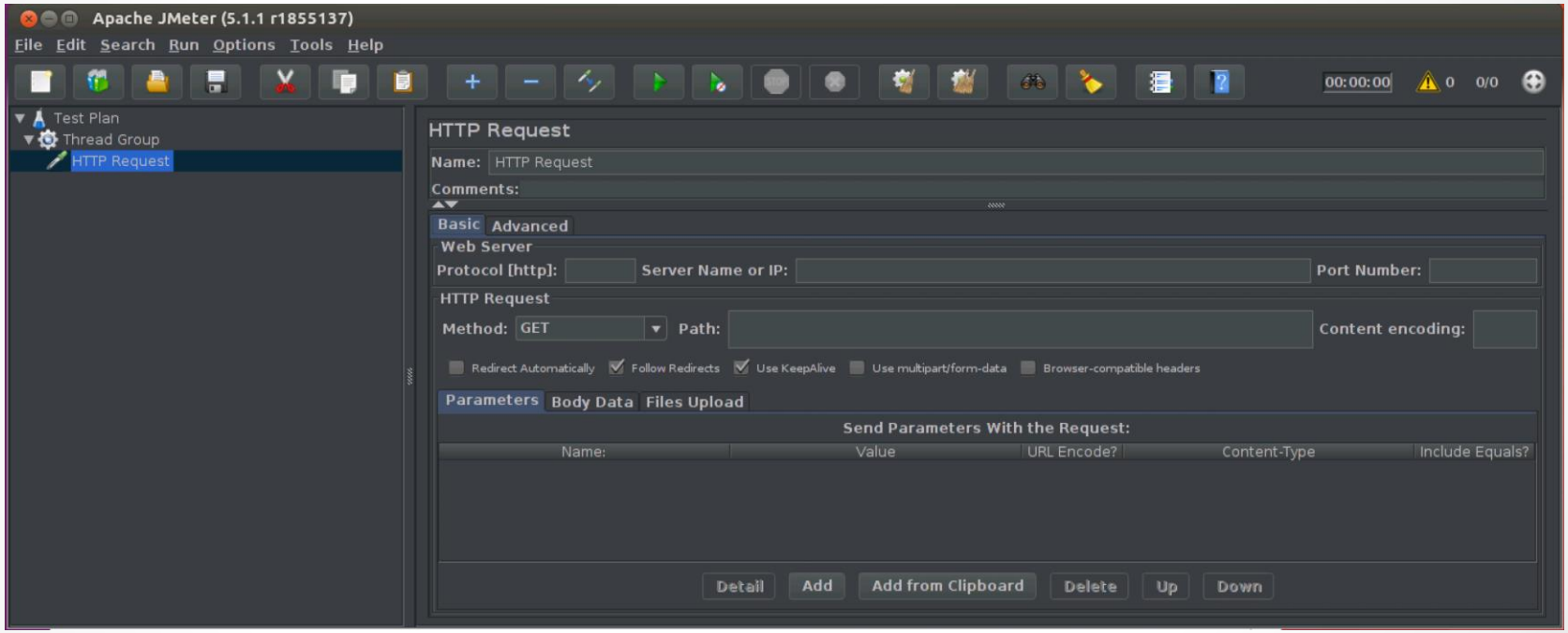
Jmeter's element part 1 (Basic)

- Sampler: Flow Control Action
  - Use for control condition for Add think time, Start Next Thread Loop, Next iTeration etc



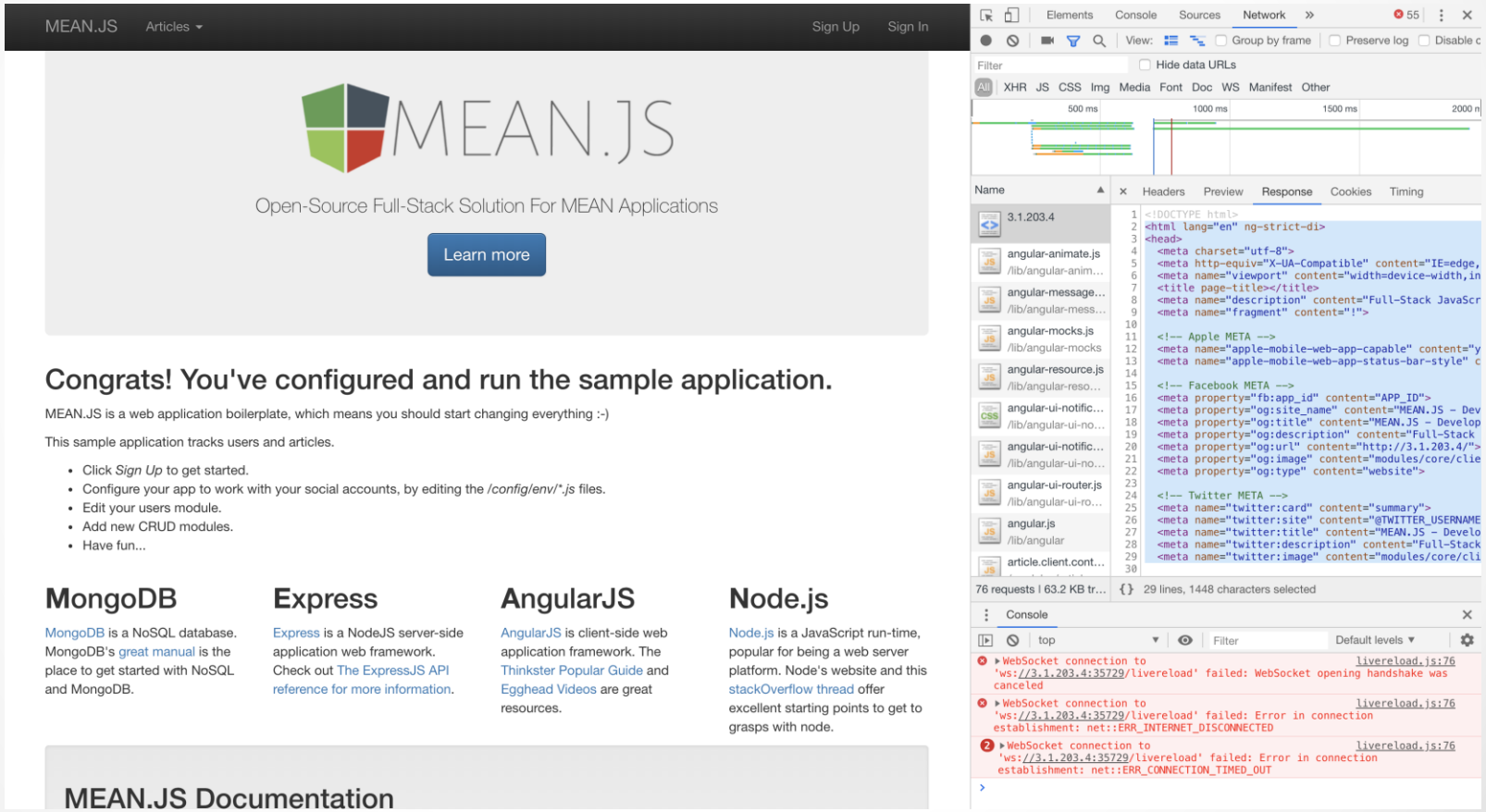
Jmeter's element part 1 (Basic)

- Sampler: HTTP Request
  - Use for test all http protocol, SOAP/REST web service.



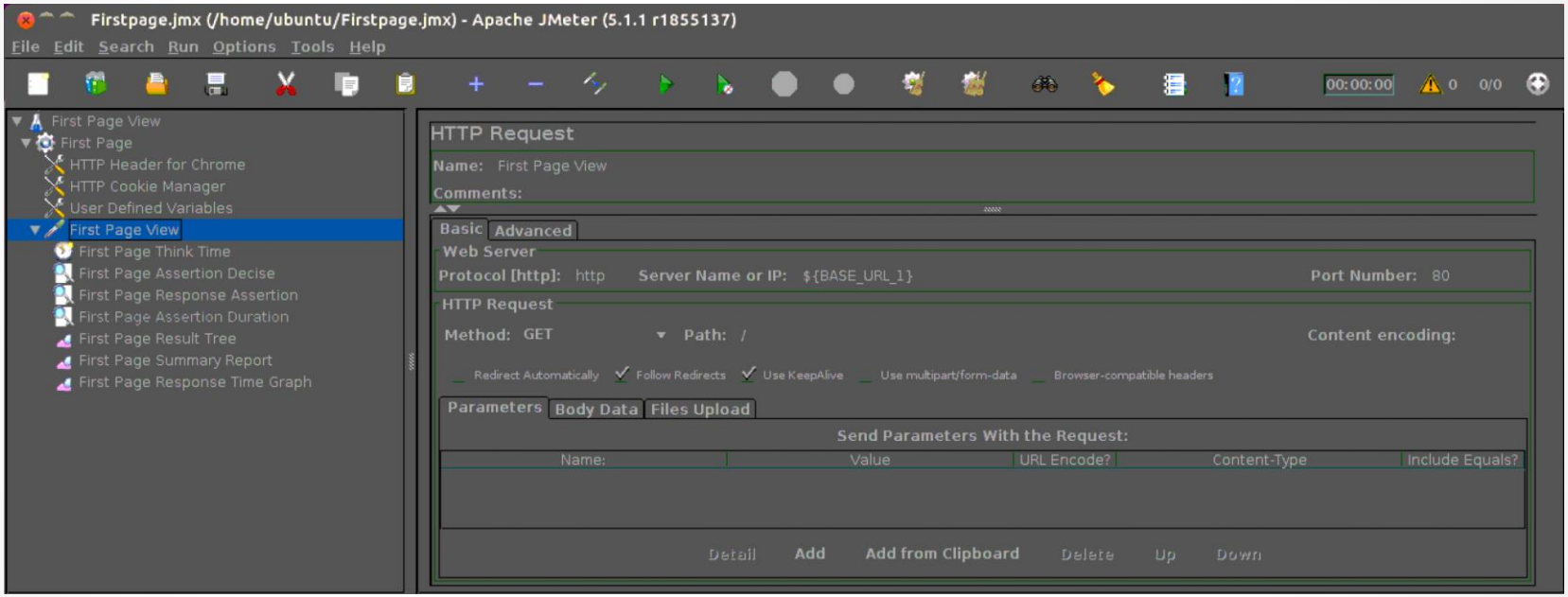
Jmeter's element part 1 (Basic)

- Sampler
  - Example: Get first page from MEAN.jS



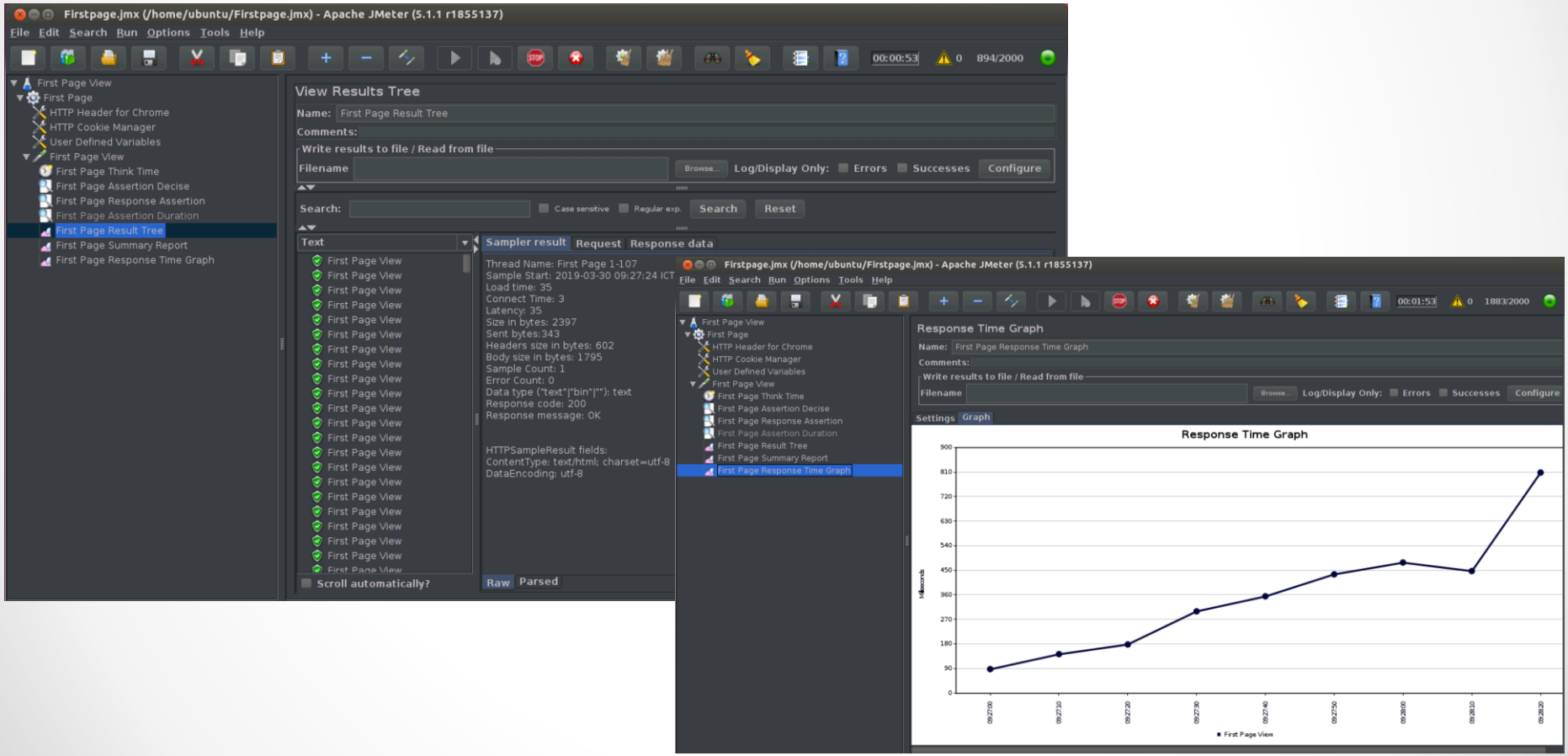
Jmeter's element part 1 (Basic)

- Sampler
  - Example: Get first page from MEAN.jS



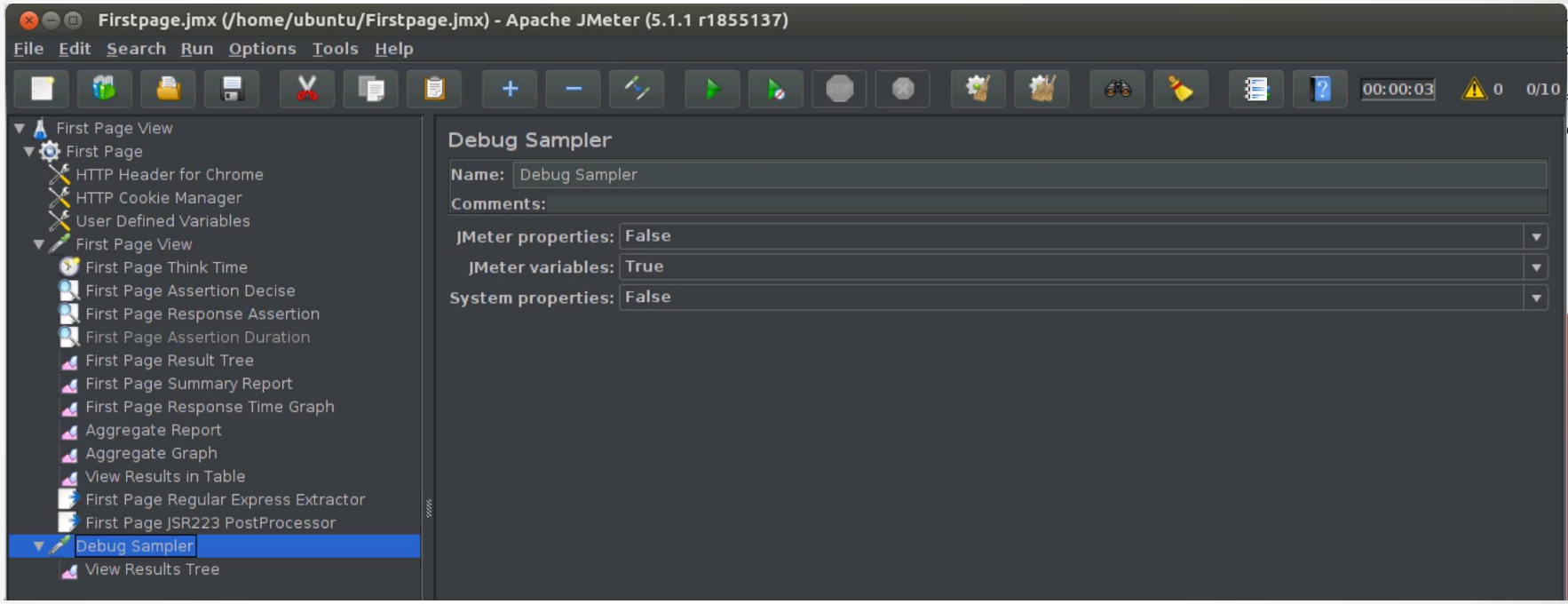
Jmeter's element part 1 (Basic)

- Sampler
  - Example: Get first page from MEAN.jS



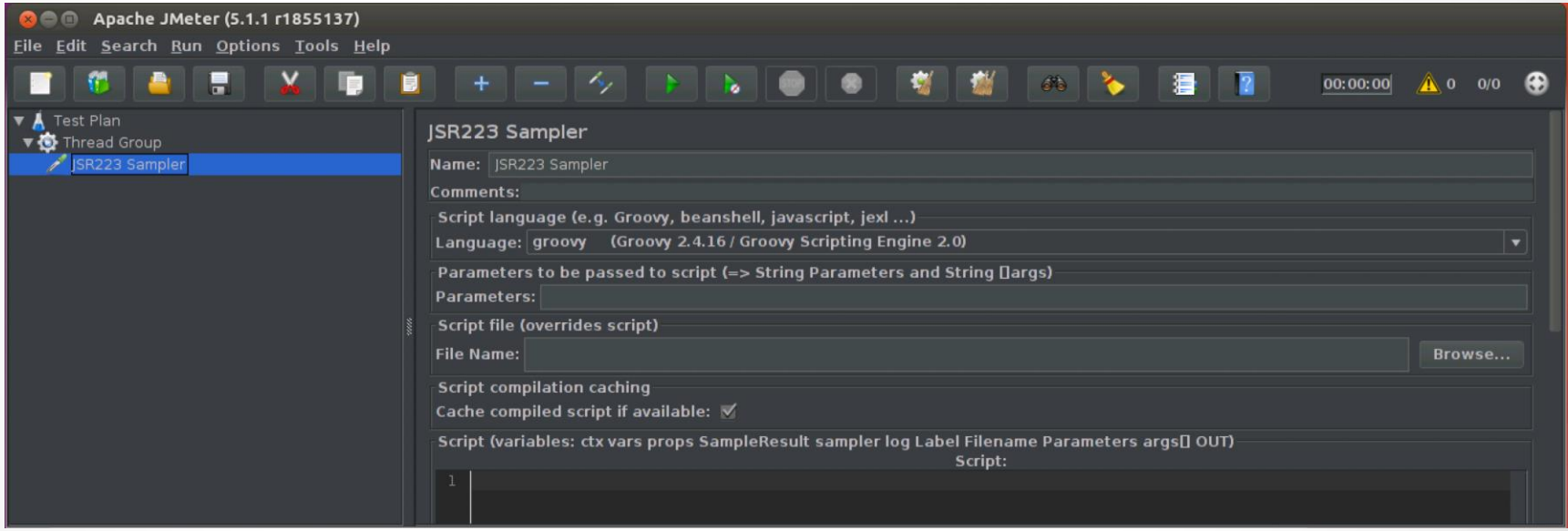
Jmeter's element part 1 (Basic)

- Sampler: Debug Sample
  - Debug Sample: Show sample of jmeter properties on test



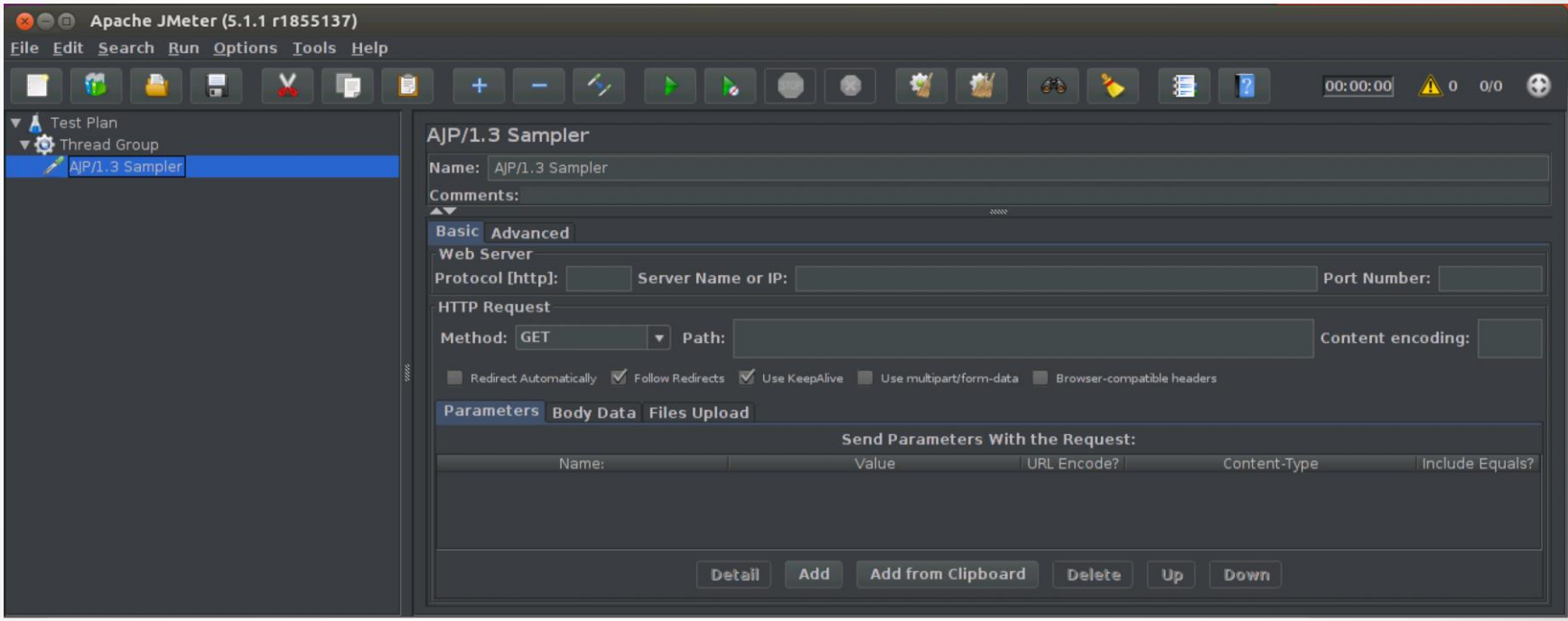
Jmeter's element part 1 (Basic)

- Sampler: JSR 233 Sampler
  - FreeForm testing base on "Apache Groovy" that allow us to develop free-form script. This was increase performance for testing



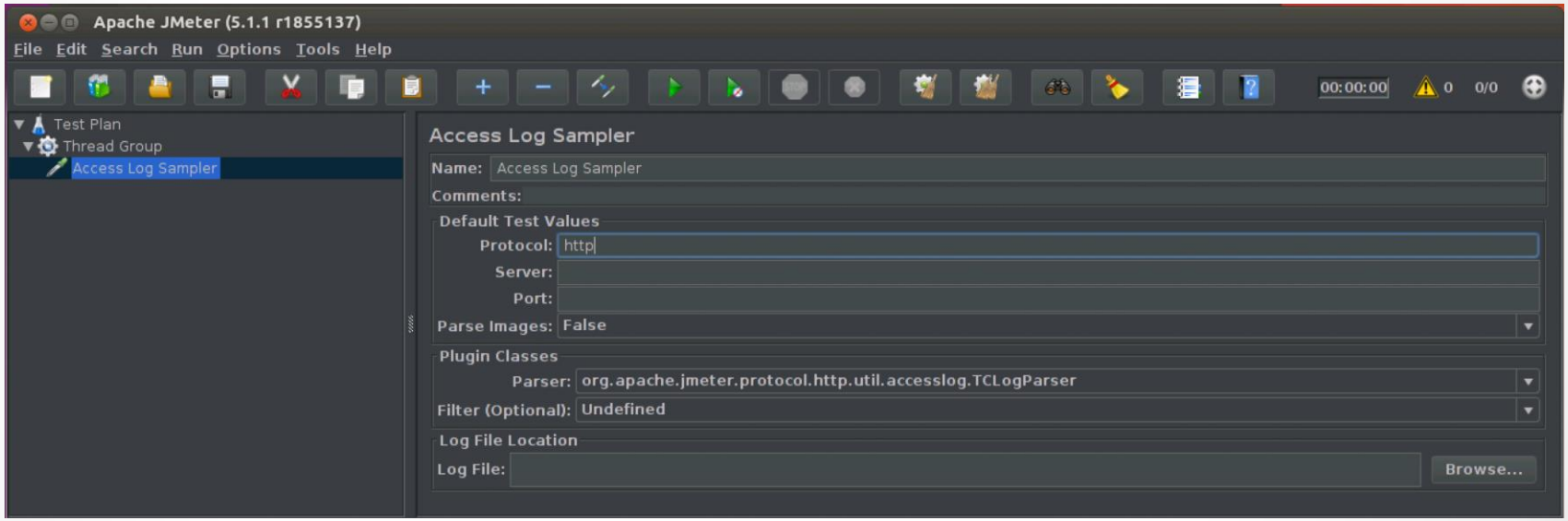
Jmeter's element part 1 (Basic)

- Sampler: AJP/1.3
  - Similar to HTTP request but it will test in Apache AJP mode without Apache httpd webserver (mod_jk)



Jmeter's element part 1 (Basic)

- Sampler: Access Log
  - Support to read access log from web server (Tomcat, Rasin, Weblogic, SunOne etc) and generate http request



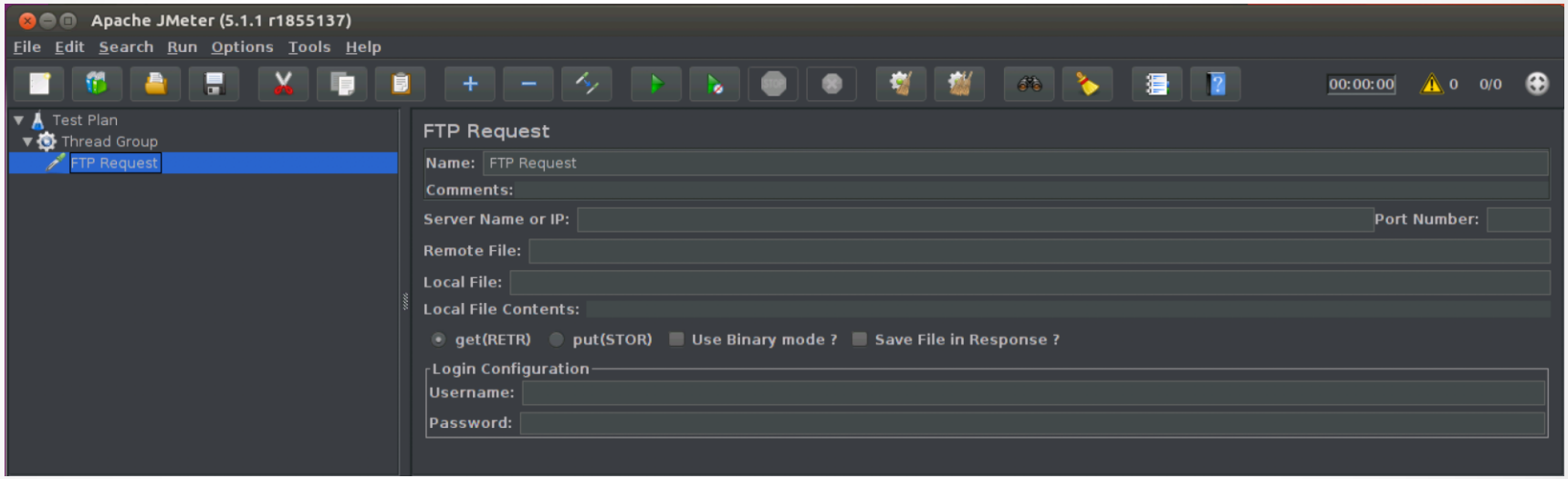
  - **EX: 127.0.0.1 - - [21/Oct/2003:05:37:21 -0500] "GET /index.jsp?%2Findex.jsp= HTTP/1.1" 200 8343**

Jmeter's element part 1 (Basic)

- Sampler: BeanShell
  - FreeForm testing base on "BeanShell" script language

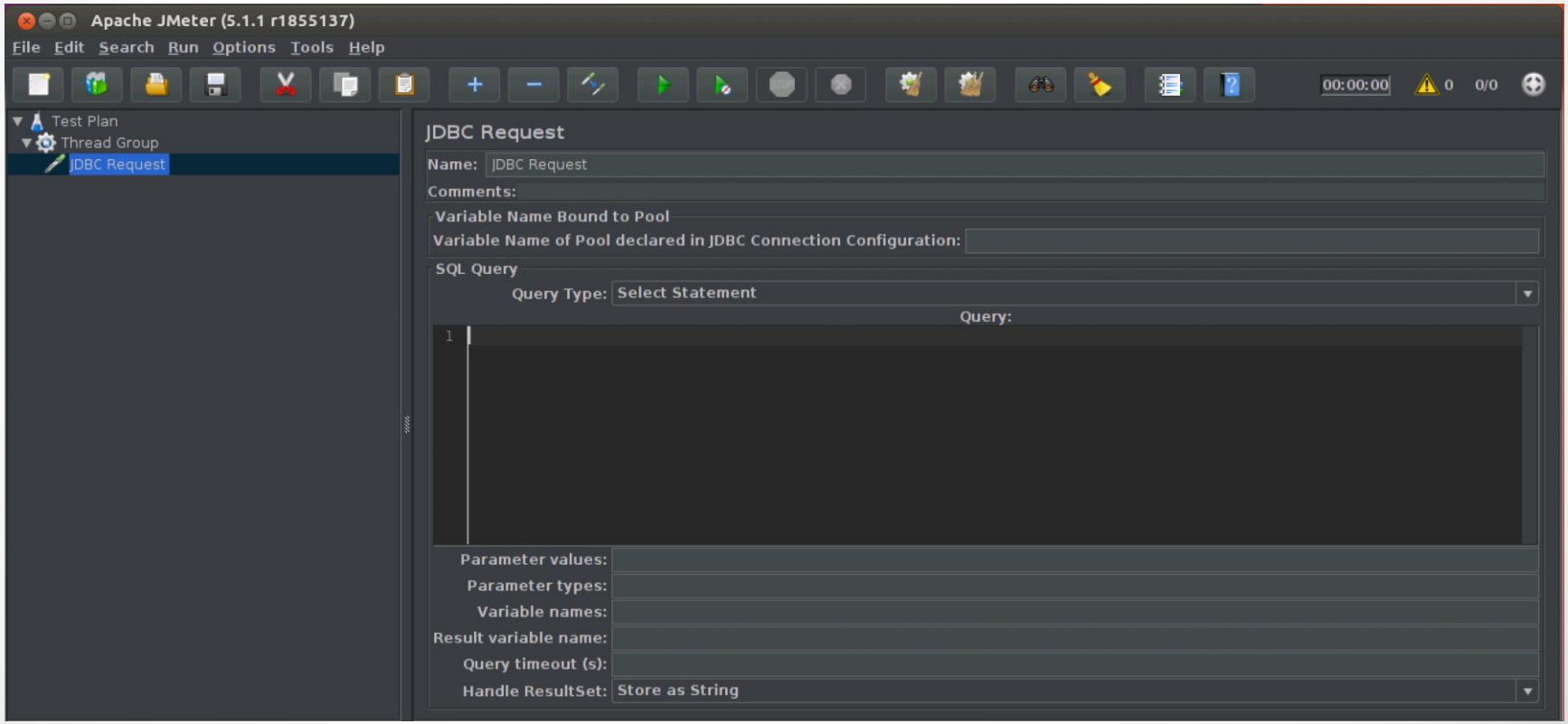
Jmeter's element part 1 (Basic)

- Sampler: FTP Request
  - FTP test GET/PUT via ftp protocol



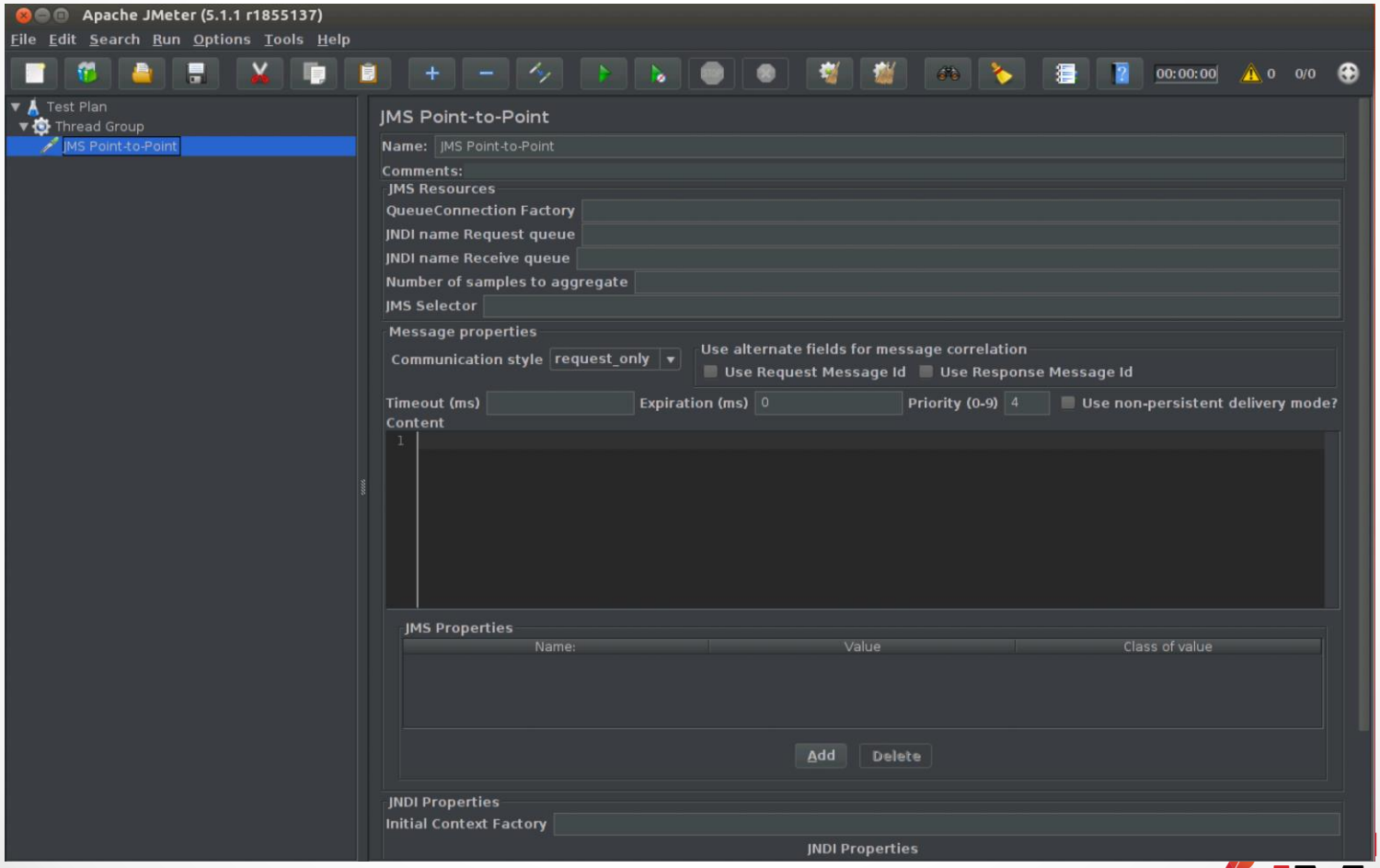
Jmeter's element part 1 (Basic)

- Sampler: JDBC Request
  - Test JDBC query (SQL) to a database (Need to setup JDBC Connection String)



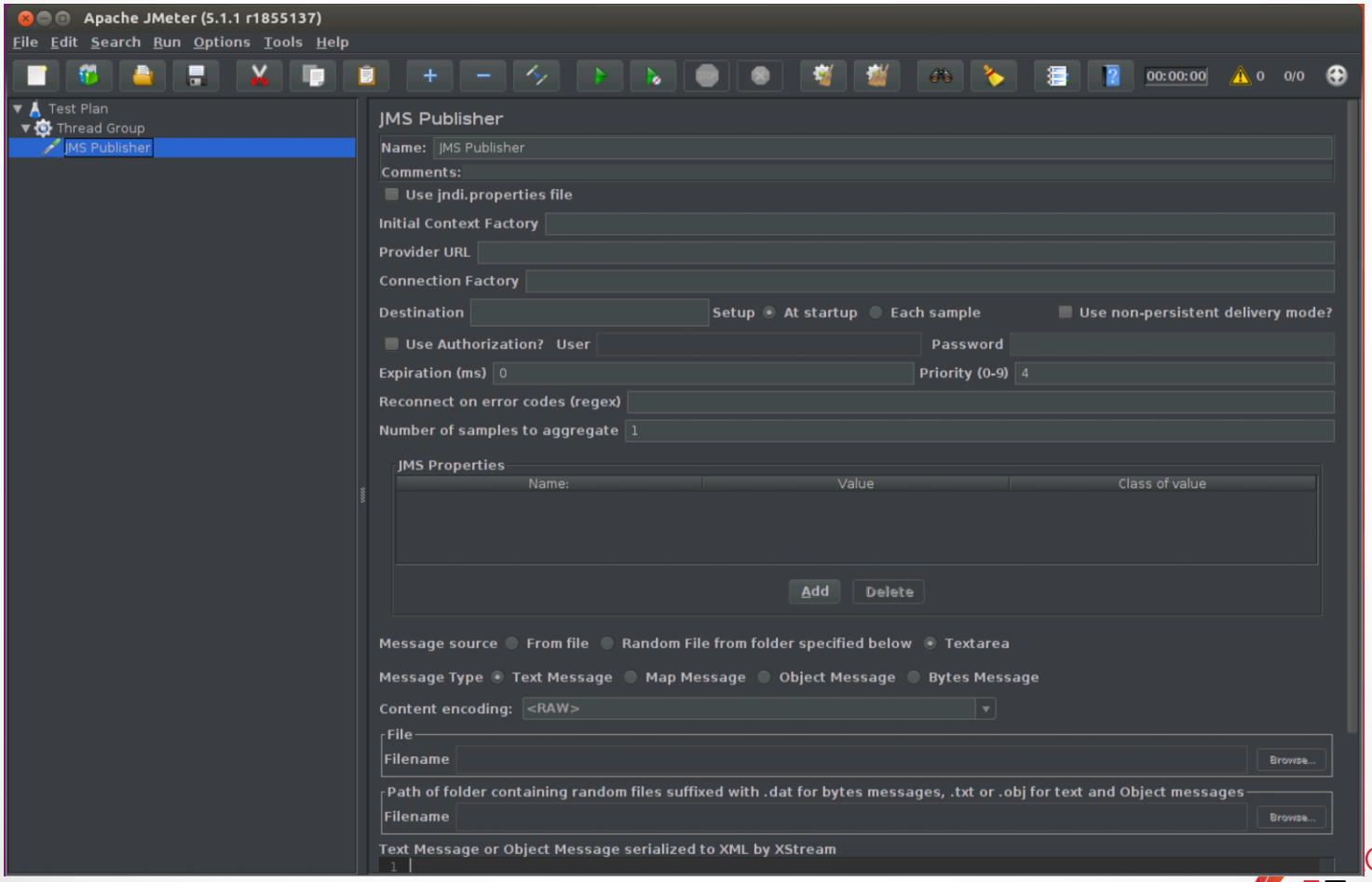
Jmeter's element part 1 (Basic)

- Sampler: JMS Point-to-Point
  - Test JMS message service (point-to-point)



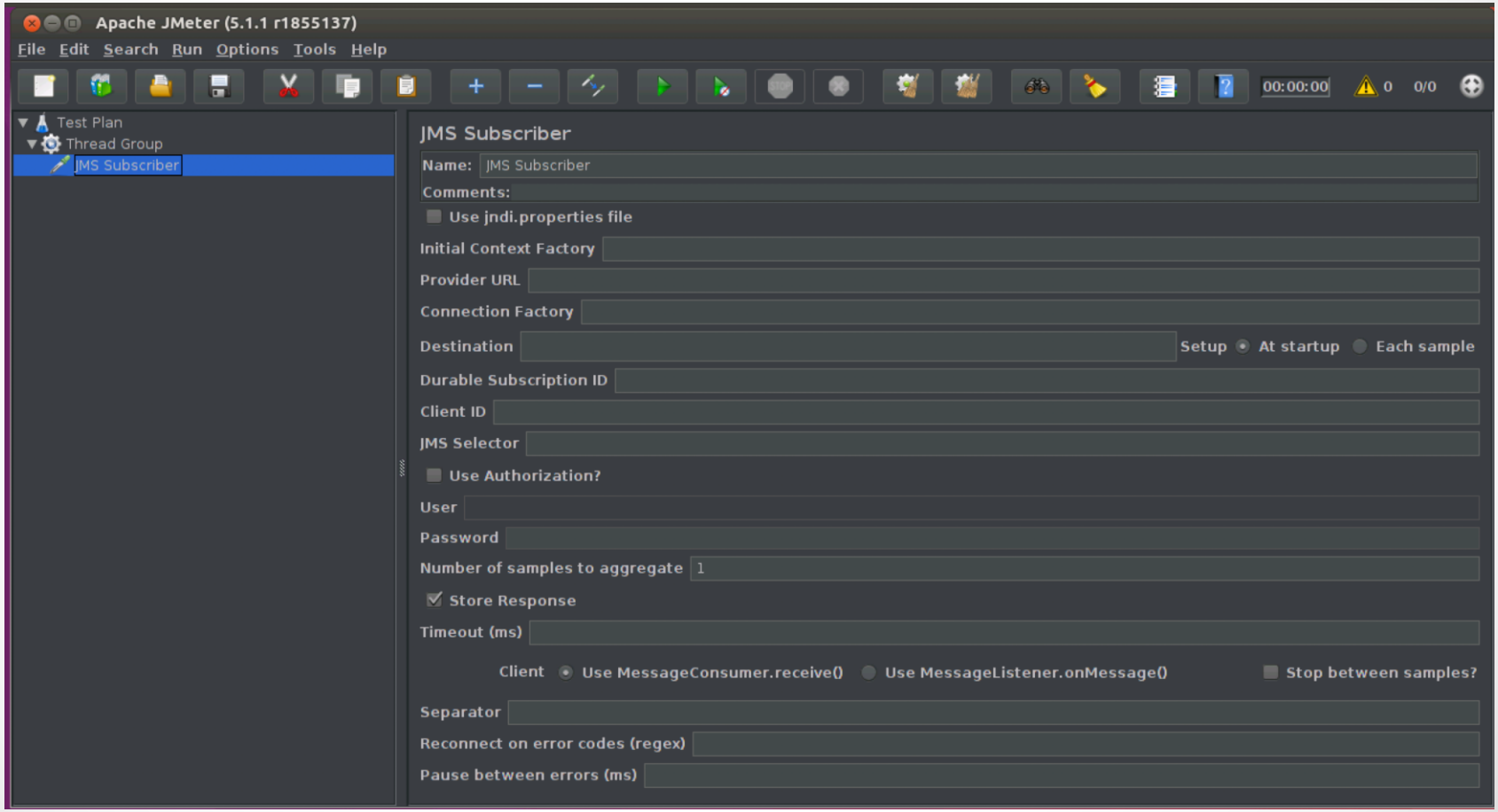
Jmeter's element part 1 (Basic)

- Sampler: JMS Publisher
  - Test JMS message service (Pub-Sub)



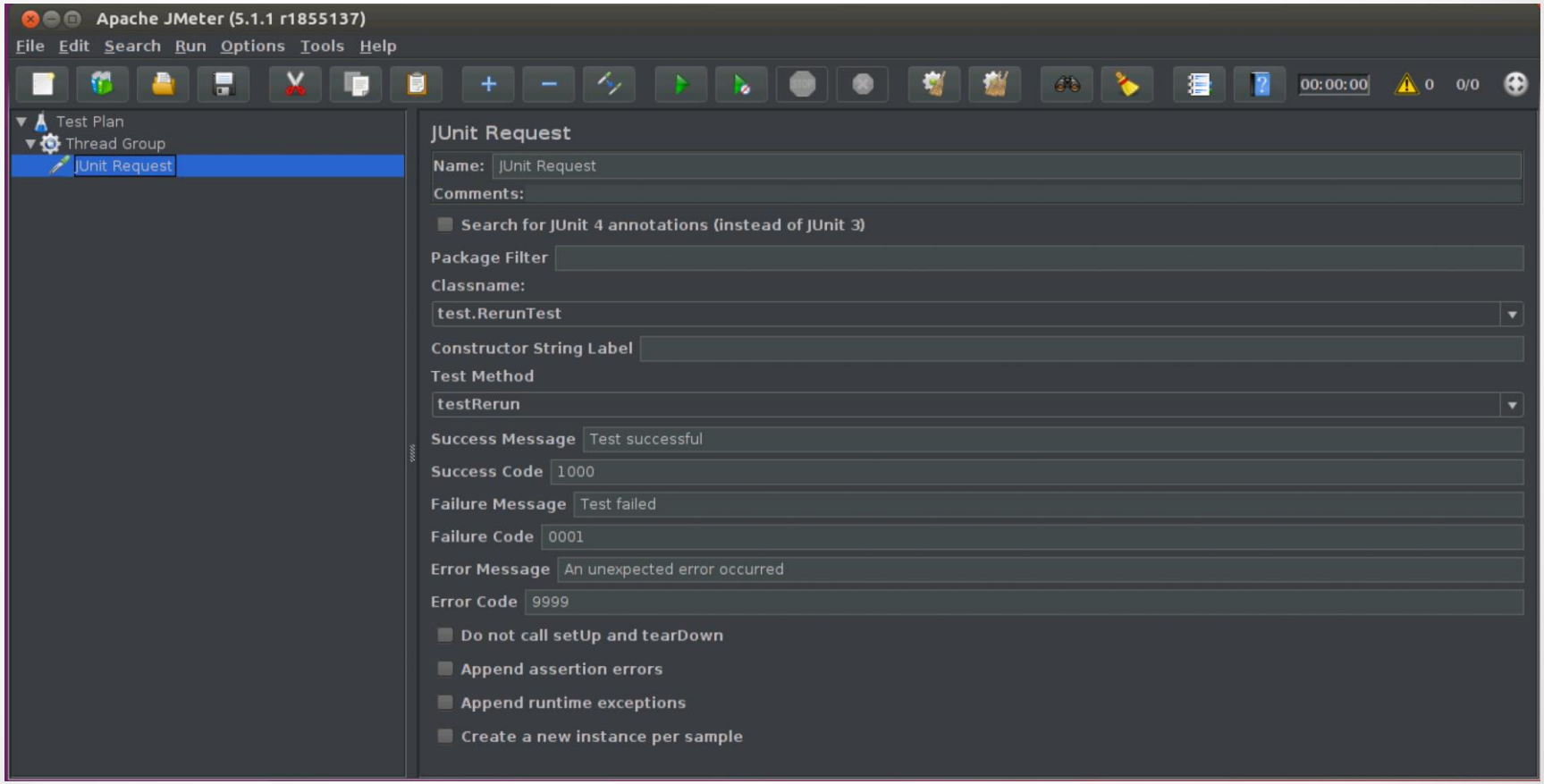
Jmeter's element part 1 (Basic)

- Sampler: JMS Subscriber
  - Test JMS message service (Pub-Sub)



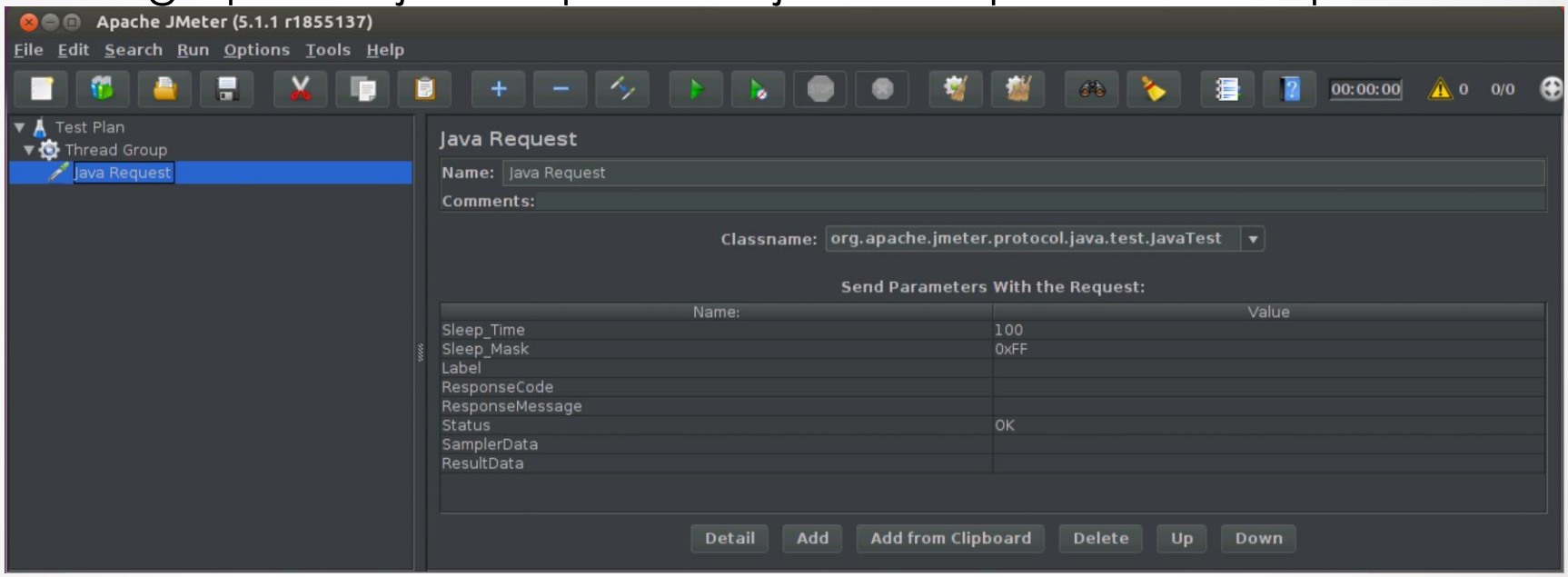
Jmeter's element part 1 (Basic)

- Sampler: jUnit
  - Compatible for test with "JUnit" framework



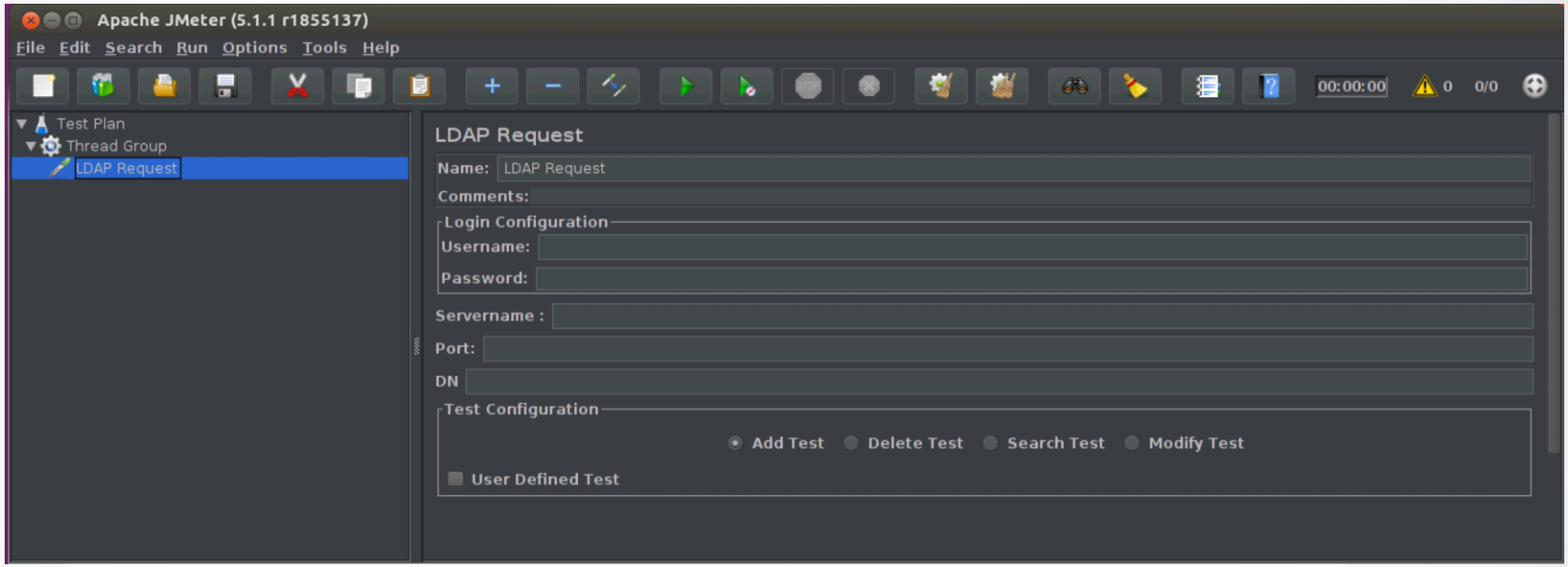
Jmeter's element part 1 (Basic)

- Sampler: Java Request
  - Control java class org.apache.jmeter.protocol.java.sampler.JavaSamplerClient



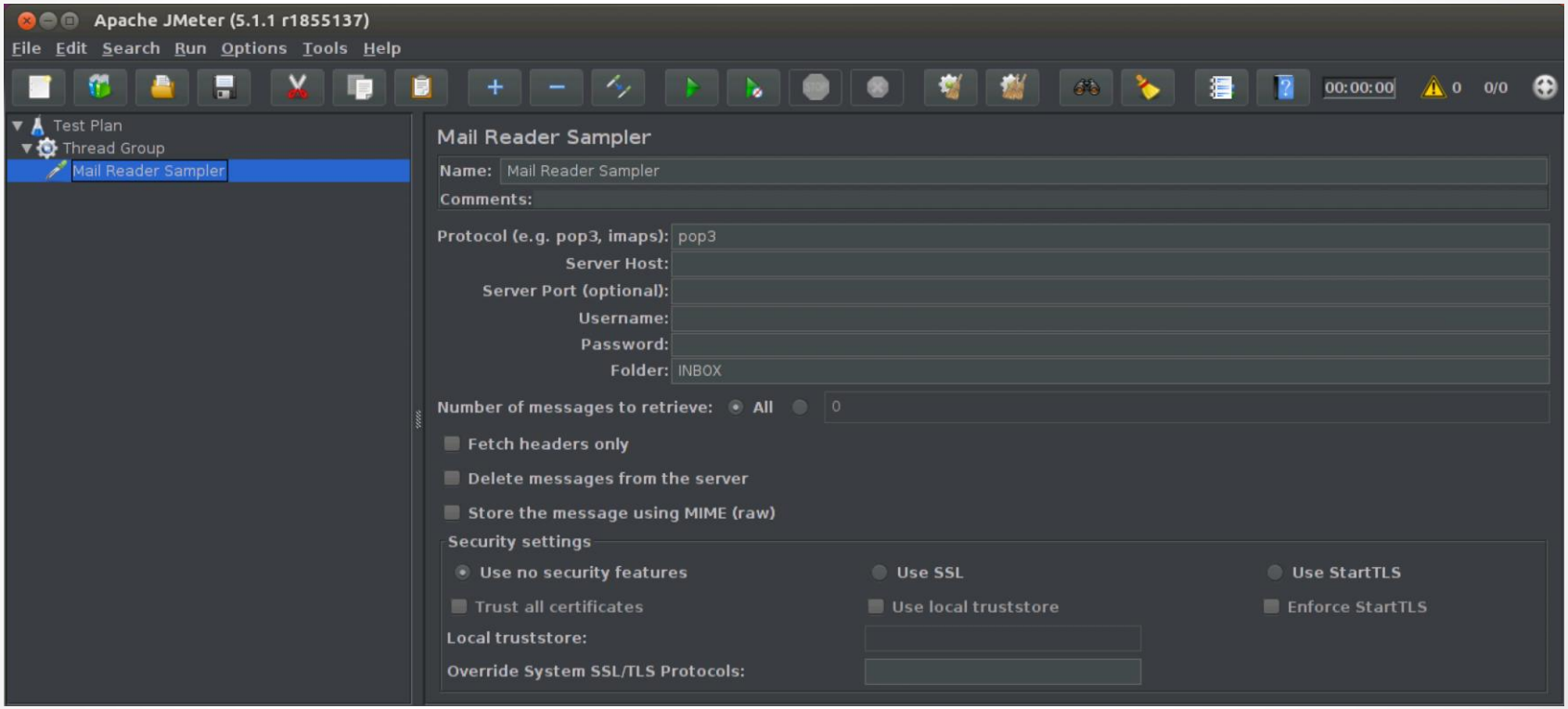
Jmeter's element part 1 (Basic)

- Sampler: LDAP Request



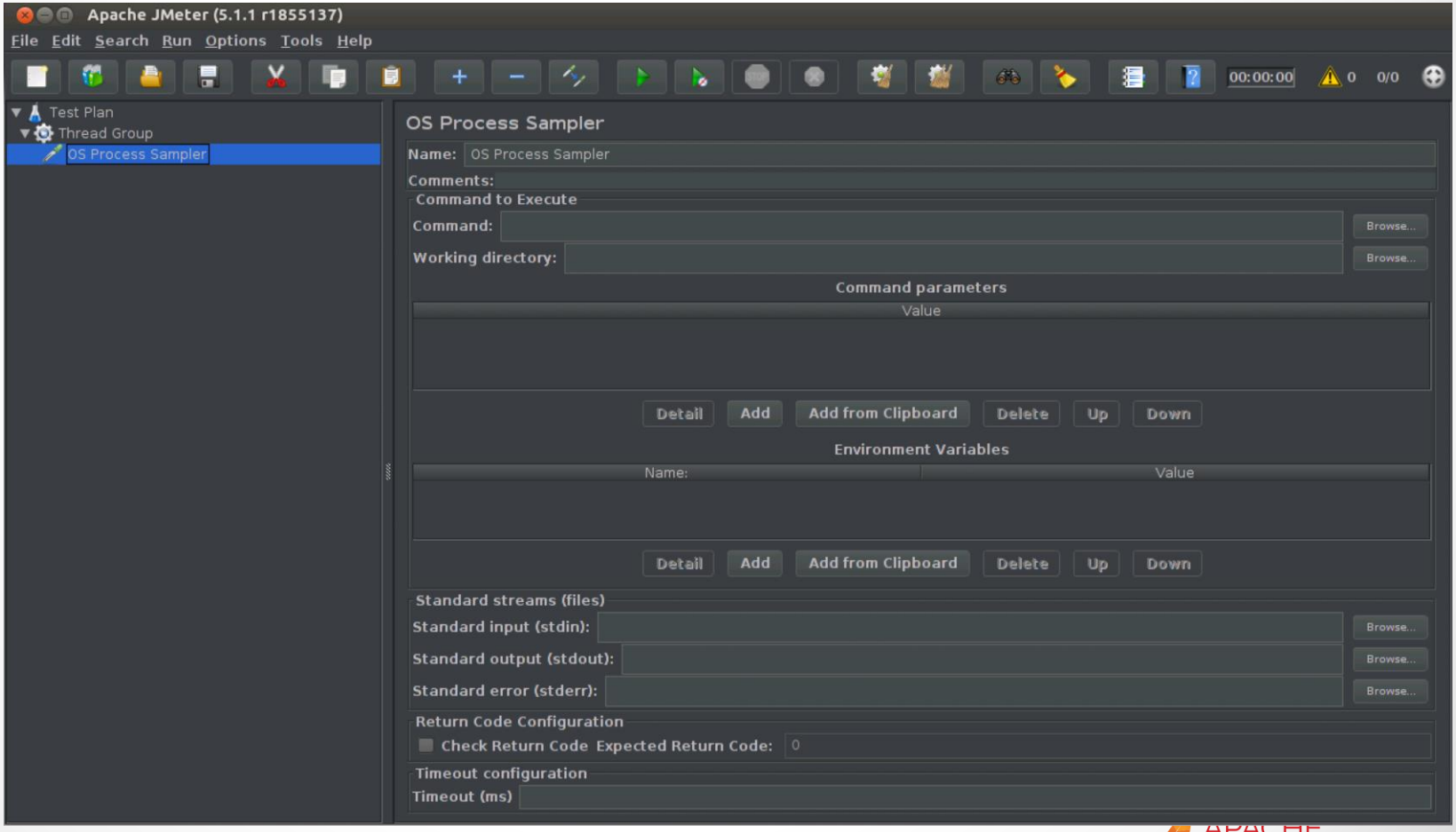
Jmeter's element part 1 (Basic)

- Sampler: Mail Reader
  - Support POP3 and IMAPS



Jmeter's element part 1 (Basic)

- Sampler: OS Process
  - Run script/command on local machine



Jmeter's element part 1 (Basic)

- Sampler: SMTP

Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

Test Plan
Thread Group
SMTP Sampler

SMTP Sampler

Name: SMTP Sampler
Comments:

Server settings
Server:
Port: (Defaults: SMTP:25, SSL:465, StartTLS:587)

Timeouts (milliseconds)
Connection timeout:
Read timeout:

Mail settings
Address From:
Address To:
Address To CC:
Address To BCC:
Address Reply-To:

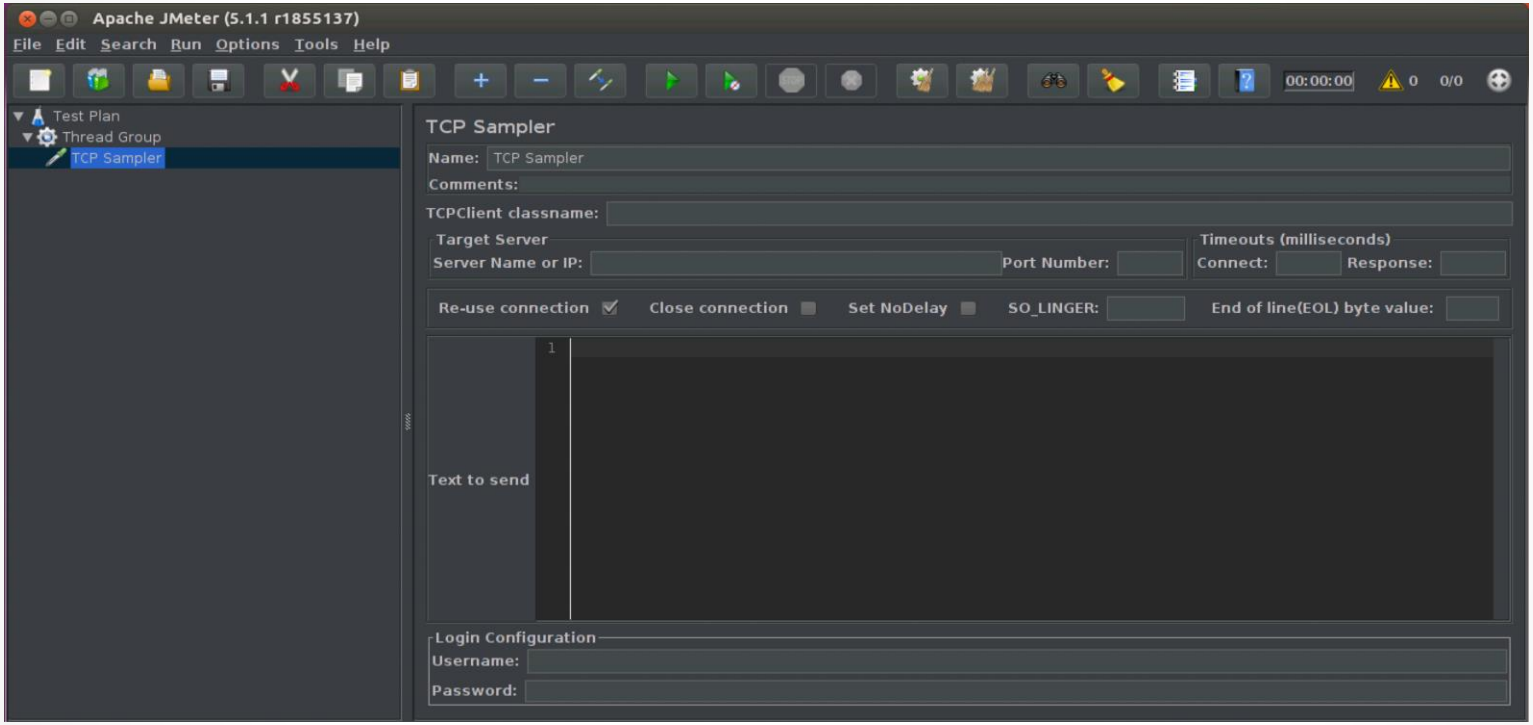
Auth settings
Use Auth
Username:
Password:

Security settings
Use no security features
Use SSL
Use StartTLS
Trust all certificates
Use local truststore
Enforce StartTLS
Local truststore:
Override System SSL/TLS Protocols:

Message settings
Subject:
Suppress Subject Header
Include timestamp in subject
Add Header
Message:
Send plain body (i.e. not multipart/mixed)
Attach file(s):
Browse...

Jmeter's element part 1 (Basic)

- Sampler: TCP
  - Send TCP connection, send some text and wait response



  - TCPClient classname:
    - TCPClientImpl (Text Mode),
    - BinaryTCPClientImpl (Binary Mode)
    - LengthPrefixedBinaryTCPClientImpl (Binary Mode + Prefix)

WorkShop: 1-3 Basic-Sampler

- Step 1: Create TestPlan and defined parameter

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:10 0 0/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

Test Plan

Name: WorkShop_1_3

Comments:

User Defined Variables

Name:	Value
BaseIP	10.21.1.93
MariaUserName	magento
MariaPassWord	magento
MariaPort	3306
MongoDBPort	27017
MeanPort	3000
MagentoPort	80

Detail Add Add from Clipboard Delete Up Down

☐ 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 Browse... Delete Clear

Library

APACHE JMeter™

WorkShop: 1-3 Basic-Sampler

- Step 2: Create and Setup Thread Group

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:10 0 0/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

Thread Group

Name: Thread Group

Comments:

Action to be taken after a Sampler error

Continue | Start Next Thread Loop | Stop Thread | Stop Test | Stop Test Now

Thread Properties

Number of Threads (users): 50

Ramp-Up Period (in seconds): 10

Loop Count: Forever 10

Delay Thread creation until needed

Scheduler

Scheduler Configuration

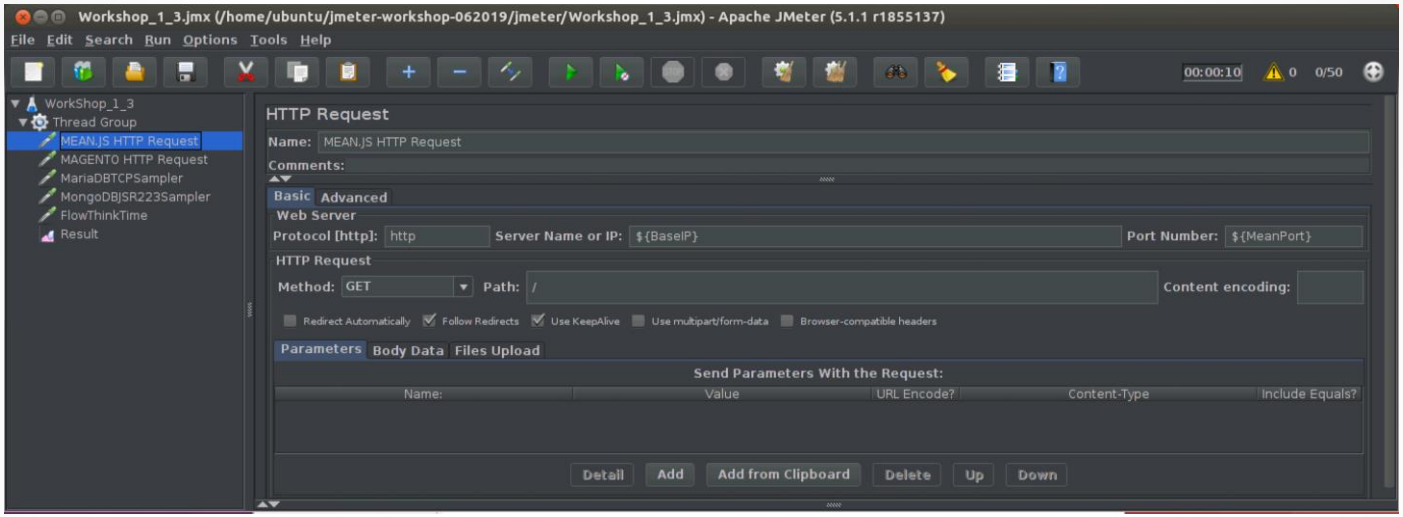
If Loop Count is not -1 or Forever, duration will be min(Duration, Loop Count * iteration duration)

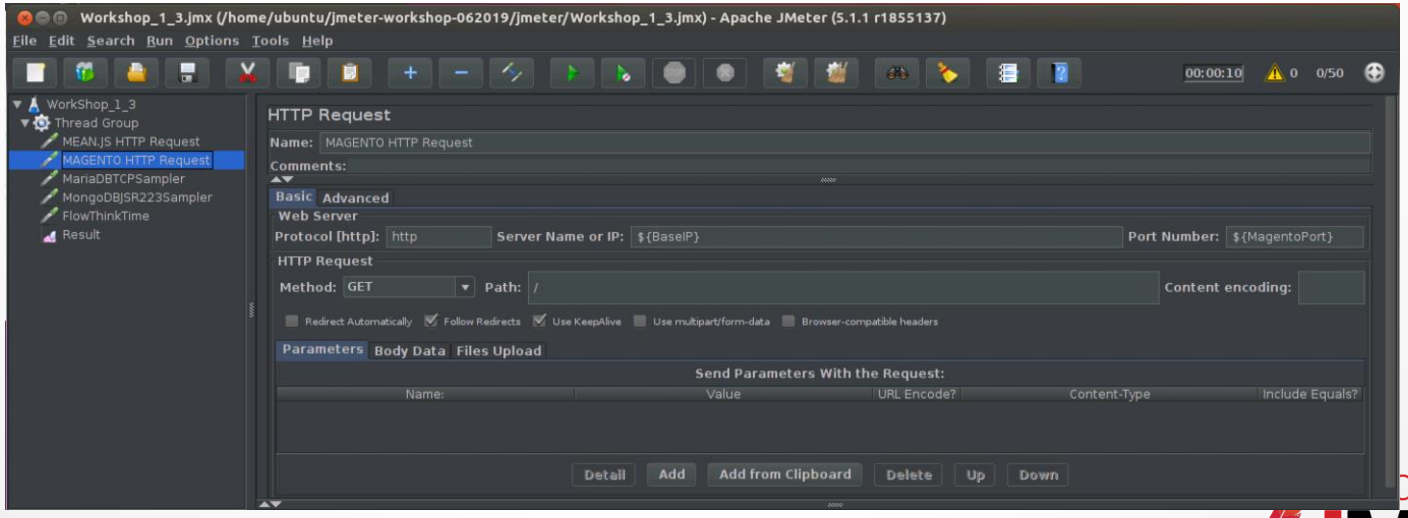
Duration (seconds)

Startup delay (seconds)

WorkShop: 1-3 Basic-Sampler

- Step 3: Create and Setup Sampler





WorkShop: 1-3 Basic-Sampler

- Step 3: Create and Setup Sampler

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:10 0 0/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

TCP Sampler

Name: MariaDBTCPSampler

Comments:

TCPClient classname:

Target Server

Server Name or IP: ${BaseIP} Port Number: aPort}

Timeouts (milliseconds)

Connect: 1000 Response: 1000

Re-use connection ☑ Close connection ☑ Set NoDelay ☐ SO_LINGER: End of line(EOL) byte value:

Text to send

```
1 Test
```

WorkShop: 1-3 Basic-Sampler

- Step 3: Create and Setup Sampler

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:10 0 0/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

Name: MongoDBJSR223Sampler

Comments:

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

Language: groovy (Groovy 2.4.16 / Groovy Scripting Engine 2.0)

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

Parameters:

Script file (overrides script)

File Name: Browse...

Script compilation caching

Cache compiled script if available: ☑

Script (variables: ctx vars props SampleResult sampler log Label Filename Parameters args[] OUT)

Script:

```
def sock = new Socket()
def host = "${BaseIP}"
def port = ${MongoDBPort}
def timeout = 1000
sock.setSoTimeout(1000)
sock.connect(new InetSocketAddress(host, port))

if (sock.isConnected()) {
    log.info('Connection established')
    SampleResult.setSuccessful(true)
}
else {
    log.info('Server is not listening')
    SampleResult.setSuccessful(false)
}
```


APACHE JMeter™

WorkShop: 1-3 Basic-Sampler

- Step 3: Create and Setup Sampler

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:10 0 0/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

Flow Control Action

Name: FlowThinkTime

Comments:

Logical Action on Thread

- Pause
- Start Next Thread Loop
- Break Current Loop

Duration (milliseconds): 200

- Go to next iteration of Current Loop

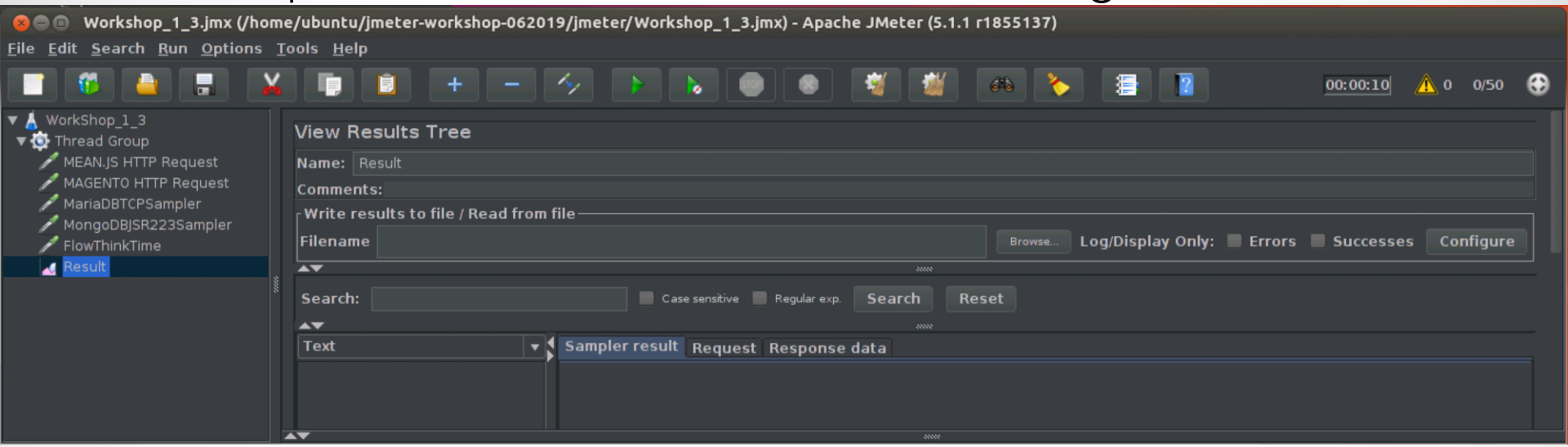
Logical Action on Thread/Test

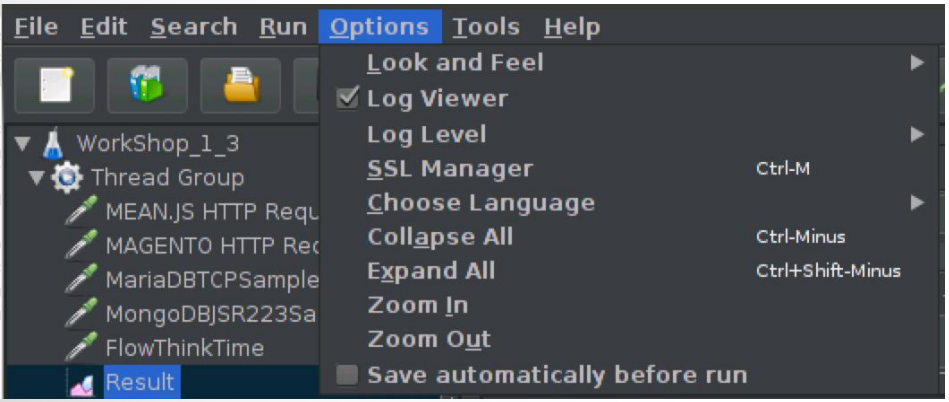
- Stop
- Stop Now

Target: Current Thread

WorkShop: 1-3 Basic-Sampler

- Step 4: Add Listener "View Result" and Log Viewer





WorkShop: 1-3 Basic-Sampler

- Step 5: Run Test Plan and Check Result

Workshop_1_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:48 0 50/50

- WorkShop_1_3
  - Thread Group
    - MEAN.JS HTTP Request
    - MAGENTO HTTP Request
    - MariaDBTCPSampler
    - MongoDBJSR223Sampler
    - FlowThinkTime
    - Result

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: Case sensitive Regular exp. Search Reset

Text

- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler

Sampler result | Request | Response data

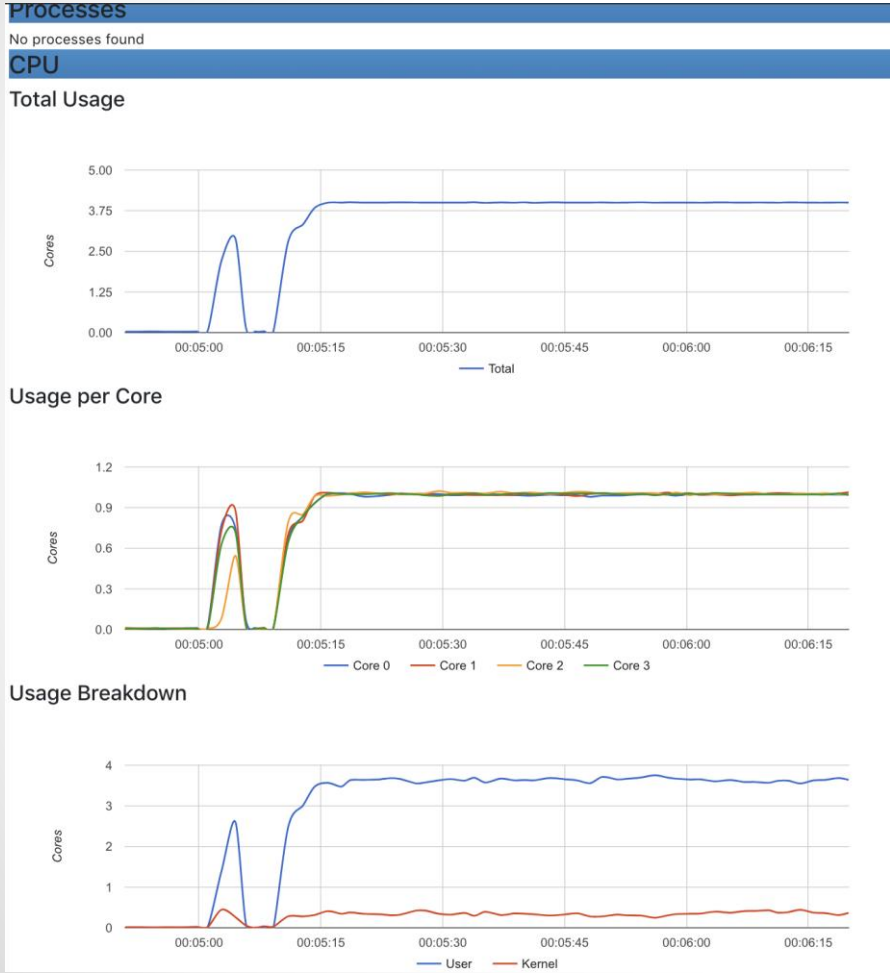
Thread Name: Thread Group 1-1
Sample Start: 2019-06-01 00:05:10 ICT
Load time: 12
Connect Time: 0
Latency: 0
Size in bytes: 0
Sent bytes:0
Headers size in bytes: 0
Body size in bytes: 0
Sample Count: 1
Error Count: 0
Data type ("text"|"bin"|""): text
Response code: 200
Response message: OK

SampleResult fields:
ContentType:
DataEncoding: null

```
2019-06-01 00:05:57,067 INFO o.a.j.p.j.s.J.MongoDBJSR223Sampler: Connection established
2019-06-01 00:05:57,361 INFO o.a.j.p.j.s.J.MongoDBJSR223Sampler: Connection established
2019-06-01 00:05:57,499 INFO o.a.j.p.j.s.J.MongoDBJSR223Sampler: Connection established
2019-06-01 00:05:57,616 INFO o.a.j.p.j.s.J.MongoDBJSR223Sampler: Connection established
2019-06-01 00:05:57,659 INFO o.a.j.p.j.s.J.MongoDBJSR223Sampler: Connection established
```

WorkShop: 1-3 Basic-Sampler

- Step 5: Run Test Plan and Check Result

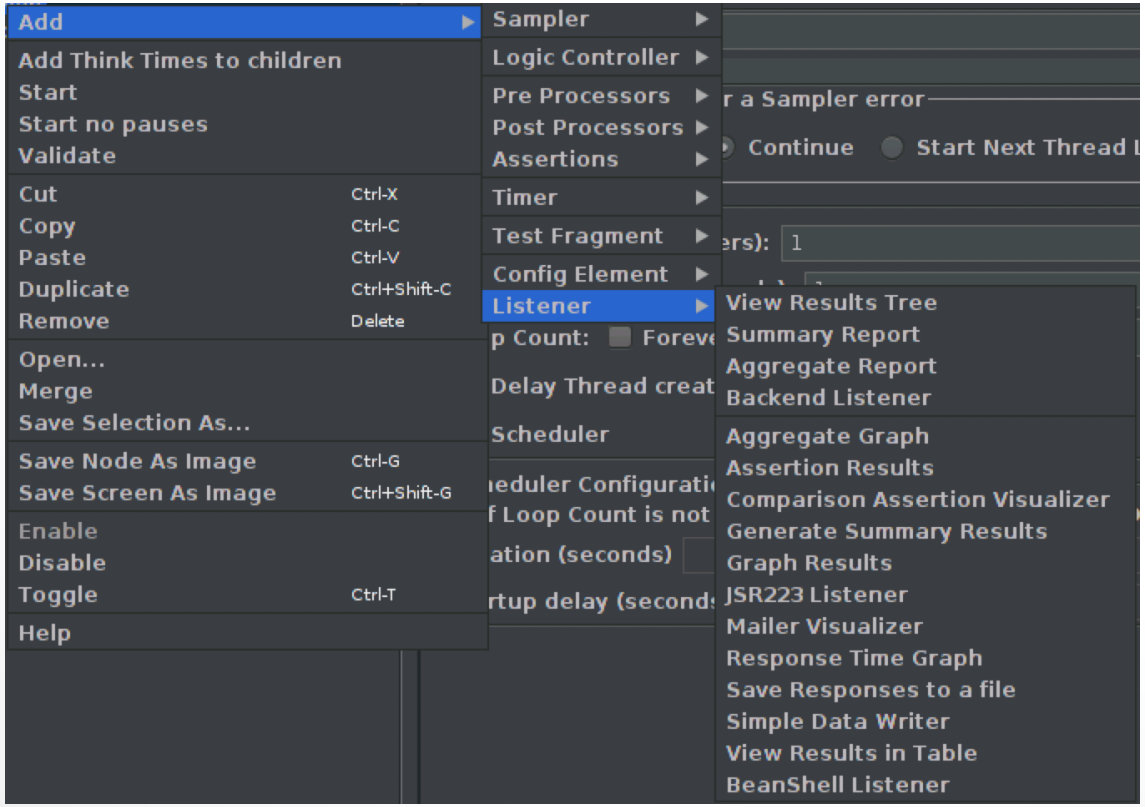


WorkShop: 1-3 Basic-Sampler

- Step 5: Run Test Plan and Check Result

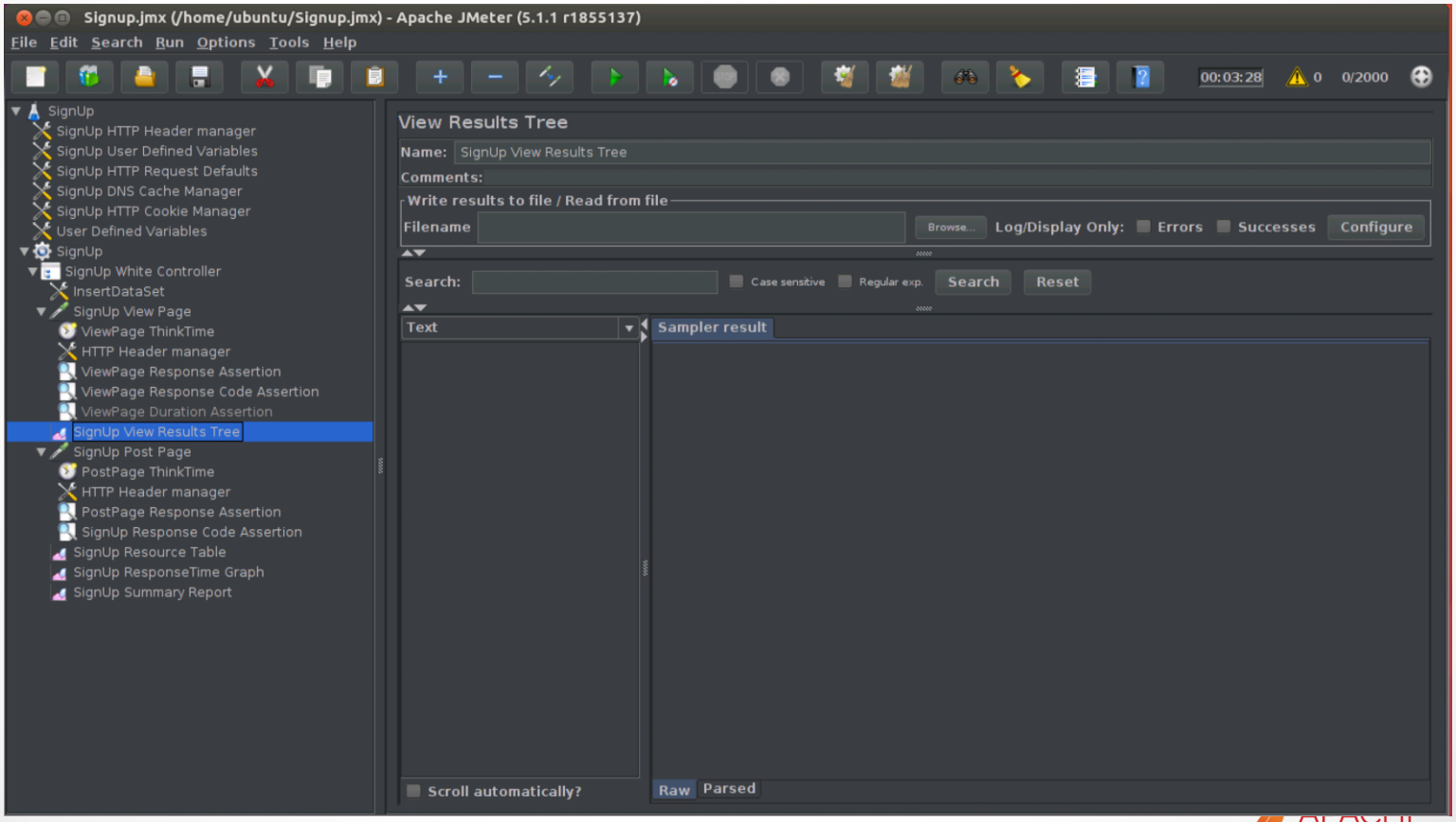
Jmeter's element part 1 (Basic)

- **Listener**
  - Listener will use to show result from samples. We usually monitor result from request sent to application and analyze (Normally with angle of time/capacity load etc)



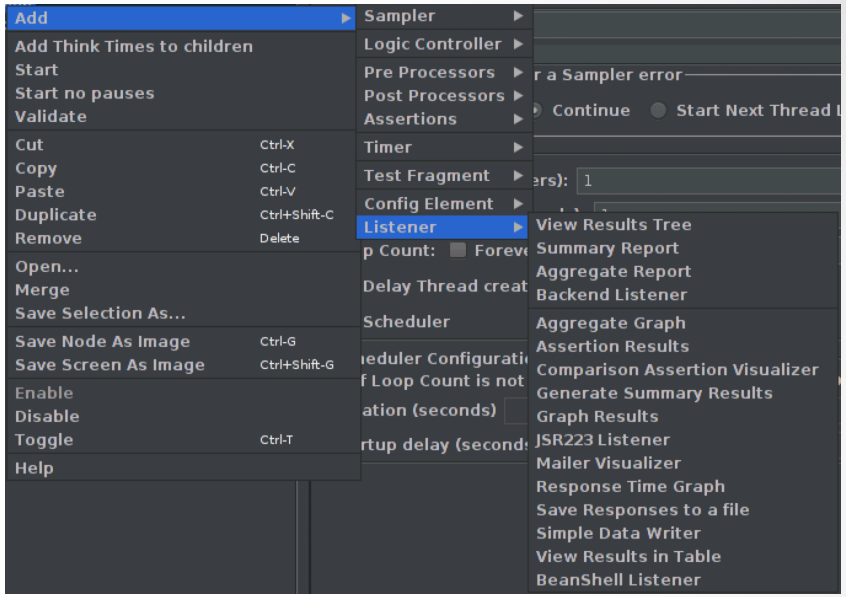
Jmeter's element part 1 (Basic)

- **Listener**
  - Listener will collect result from sampler in their tree. We can place many listener in point that we interest for monitoring



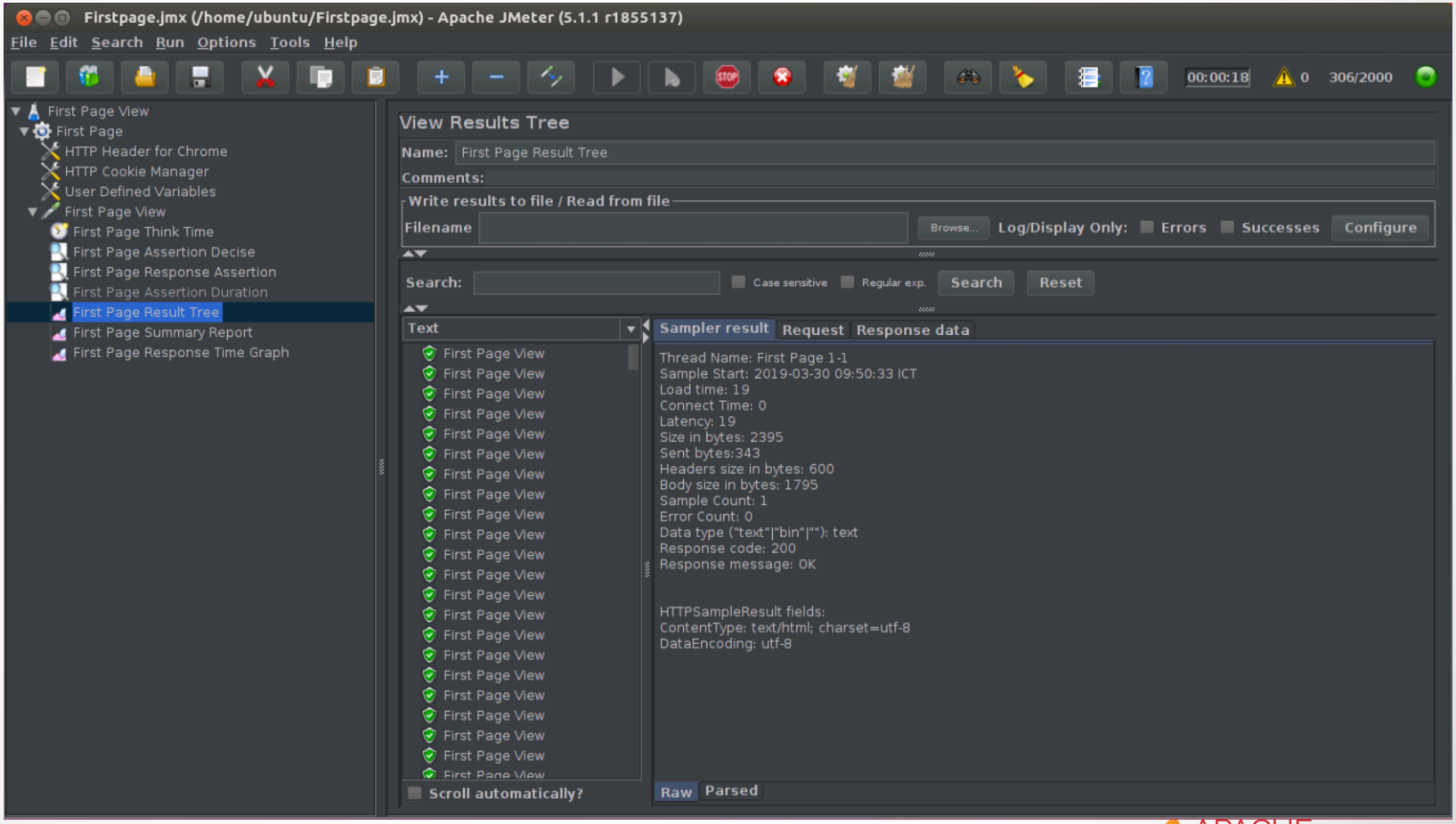
Jmeter's element part 1 (Basic)

- **Listener**
  - **View Result Tree:**
  - **Summary Report:**
  - **Aggregate Report:**
  - Backend Listener:
  - **Aggregate Graph:**
  - **Assertion Results:**
  - **Comparison Assert Visualizer:**
  - Generate Summary Results:
  - Graph Results:
  - JSR223 Listener:
  - Mailer Visulizer:
  - **Response Time Graph:**
  - Save Response to a file:
  - Simple Data Writer:
  - **View Result in Table:**



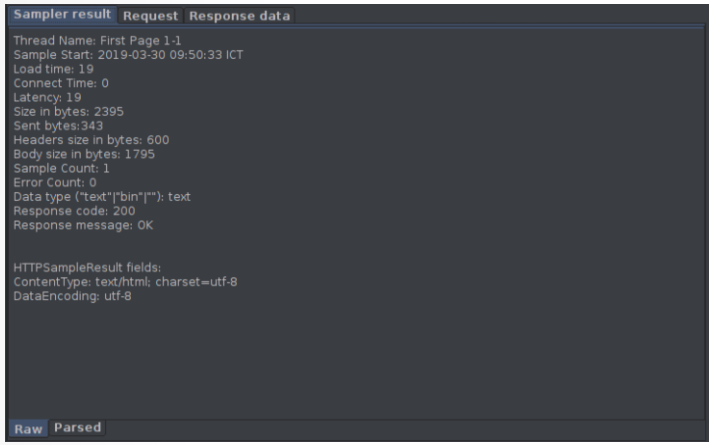
Jmeter's element part 1 (Basic)

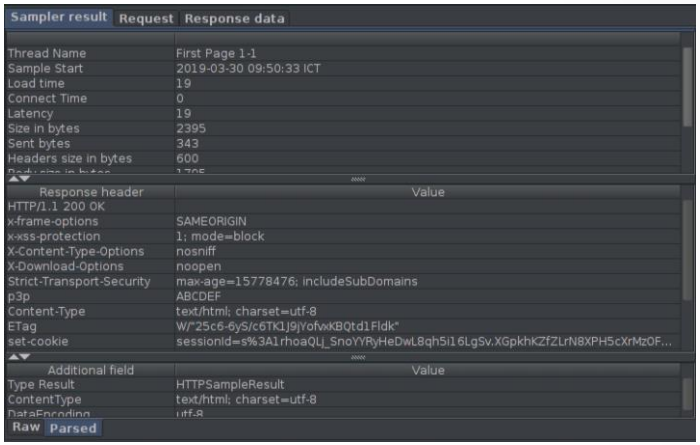
- Listener: Result Tree
  - Show response from test

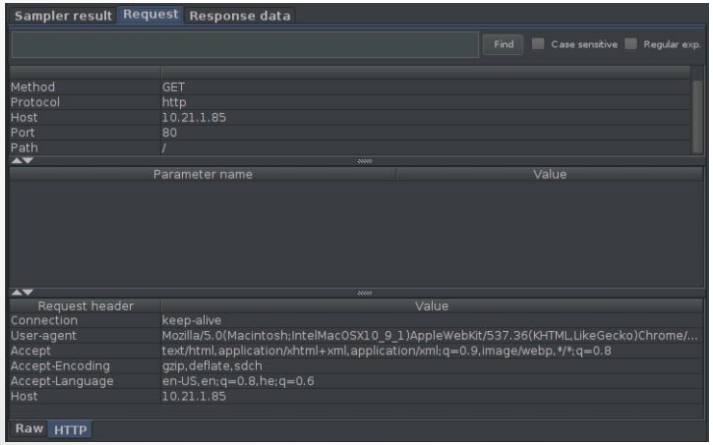


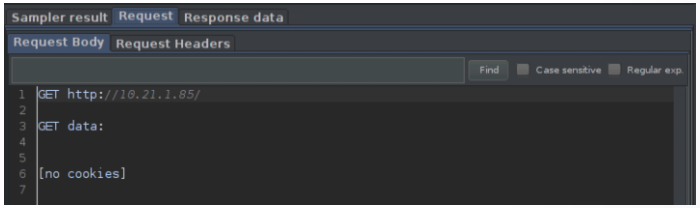
Jmeter's element part 1 (Basic)

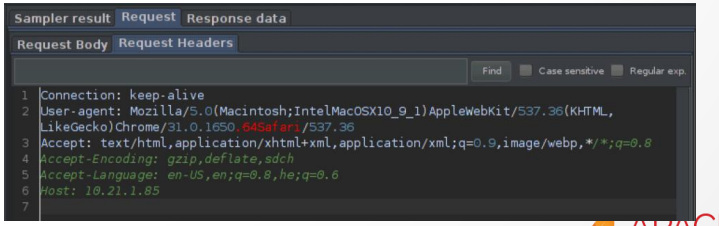
- Listener: Result Tree
  - Show response from test











Jmeter's element part 1 (Basic)

- Listener: Result Tree
  - Show response from test

Sampler result | Request | Response data

Request Body | Request Headers

Find | Case sensitive | Regular exp.

```
1 Connection: keep-alive
2 User-agent: Mozilla/5.0(Macintosh;IntelMacOSX10_9_1)AppleWebKit/537.36(KHTML,
  LikeGecko)Chrome/31.0.1650.64Safari/537.36
3 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
4 Accept-Encoding: gzip,deflate,sdch
5 Accept-Language: en-US,en;q=0.8,he;q=0.6
6 Host: 10.21.1.85
7
```

Sampler result | Request | Response data

Response Body | Response headers

Find | Case sensitive | Regular exp.

```
<!DOCTYPE html>
<html lang="en" ng-strict-di>
<head>
 <meta charset="utf-8">
 <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
 <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1">
 <title page-title></title>
 <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
 <meta name="fragment" content="!">

 <!-- Apple META -->
 <meta name="apple-mobile-web-app-capable" content="yes">
 <meta name="apple-mobile-web-app-status-bar-style" content="black">

 <!-- Facebook META -->
 <meta property="fb:app_id" content="APP_ID">
 <meta property="og:site_name" content="MEAN.JS - Development Environment">
 <meta property="og:title" content="MEAN.JS - Development Environment">
 <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
">
 <meta property="og:url" content="http://10.21.1.85/">
 <meta property="og:image" content="modules/core/client/img/brand/logo.png">
 <meta property="og:type" content="website">

 <!-- Twitter META -->
```

Jmeter's element part 1 (Basic)

- Listener: Summary Report
  - Show overall result with statistic data

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:16:56 0 0/2000

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph

Summary Report

Name: First Page Summary Report

Comments:

Write results to file / Read from file

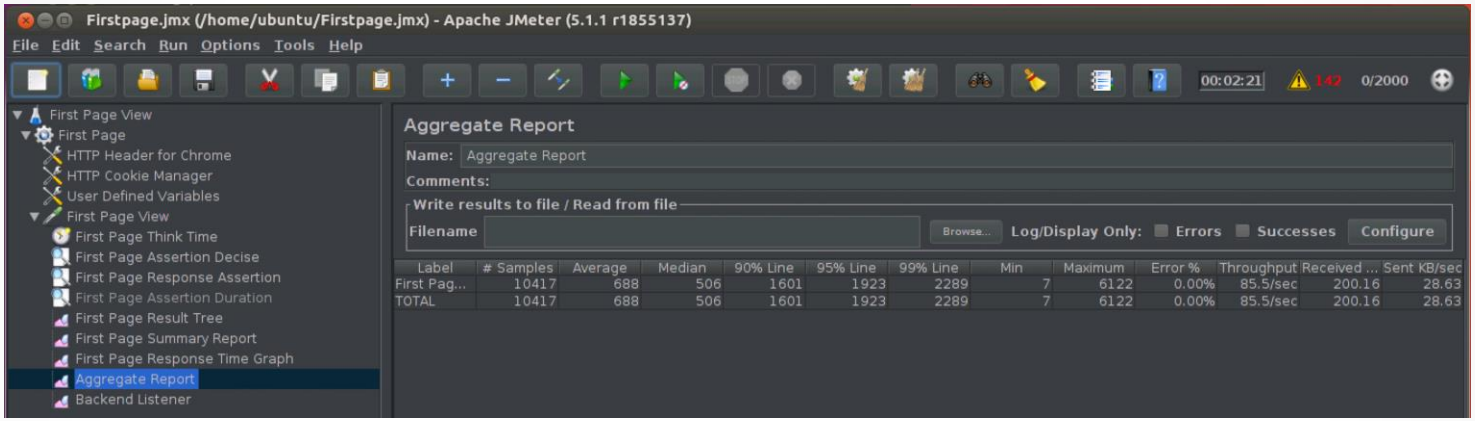
Filename Browse... Log/Display Only: Errors Successes Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received K...	Sent KB/sec	Avg. Bytes
First Page View	70269	649	6	5400	686.15	0.00%	70.5/sec	165.17	23.63	2397.6
TOTAL	70269	649	6	5400	686.15	0.00%	70.5/sec	165.17	23.63	2397.6

Include group name in label? Save Table Data Save Table Header

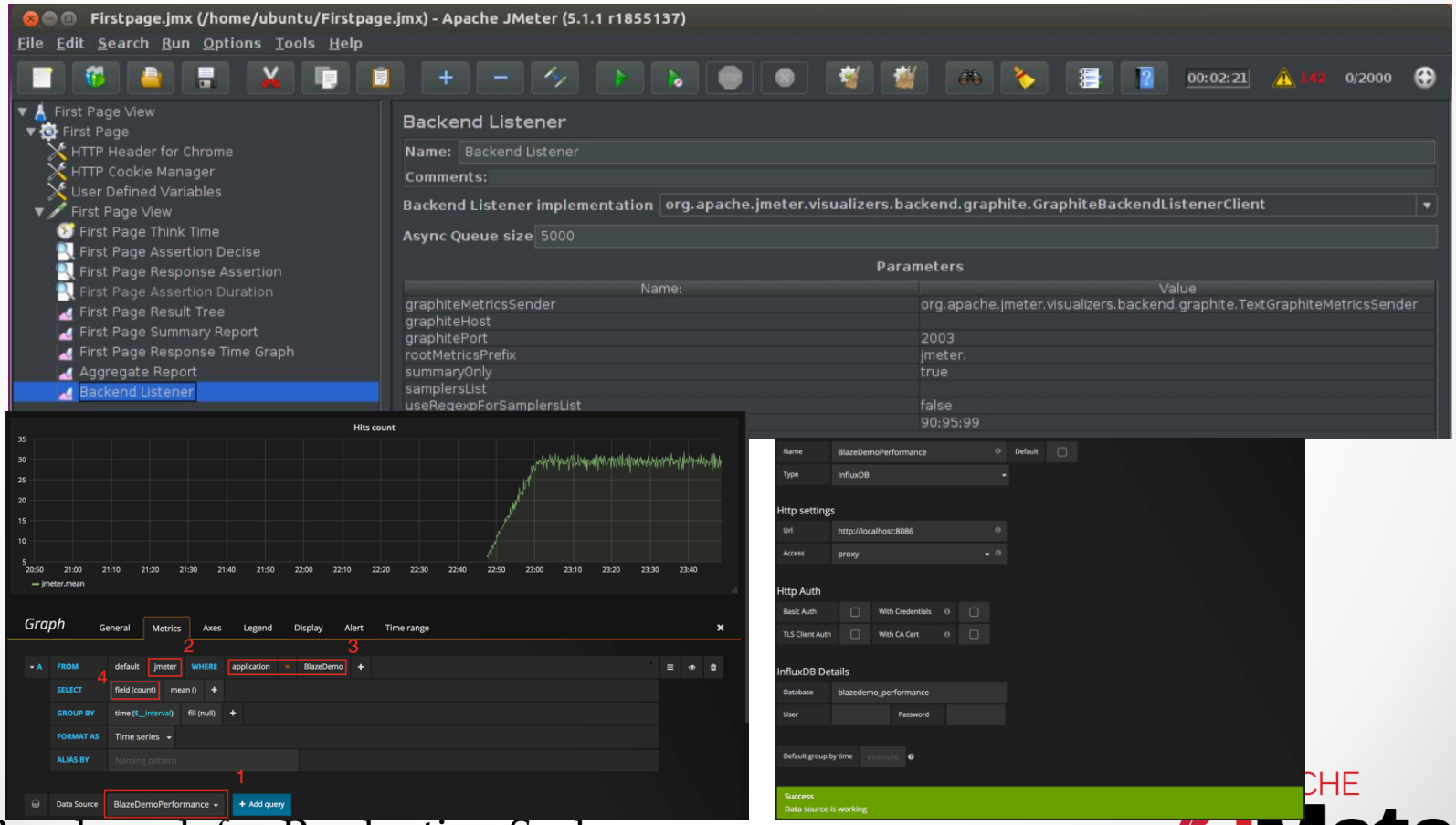
Jmeter's element part 1 (Basic)

- Listener: Aggregate Report



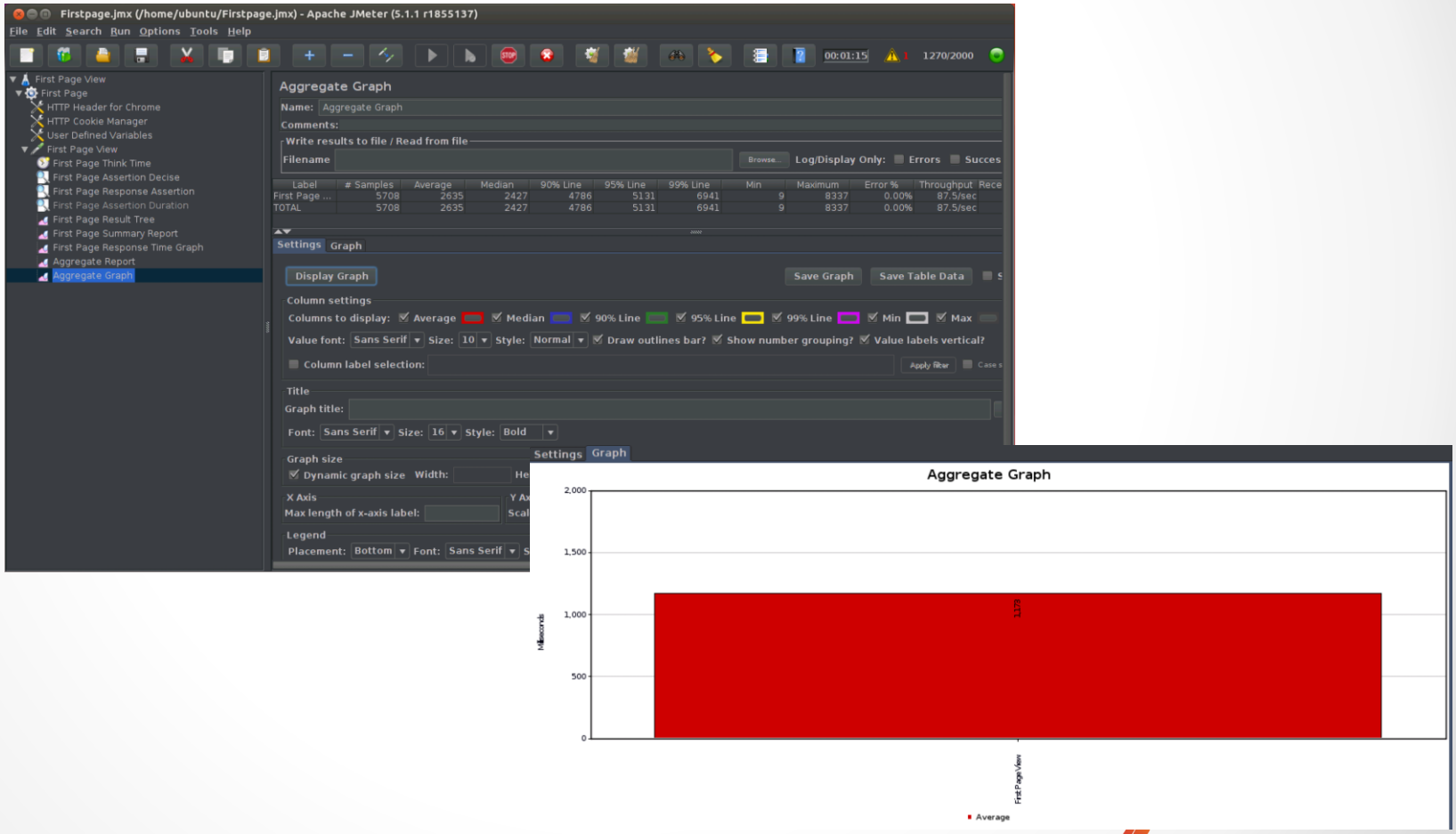
Jmeter's element part 1 (Basic)

- Listener: Backend Listener
  - Asynchonous listener for plugin 3rd party listener such as "Influxdb/grafana" etc



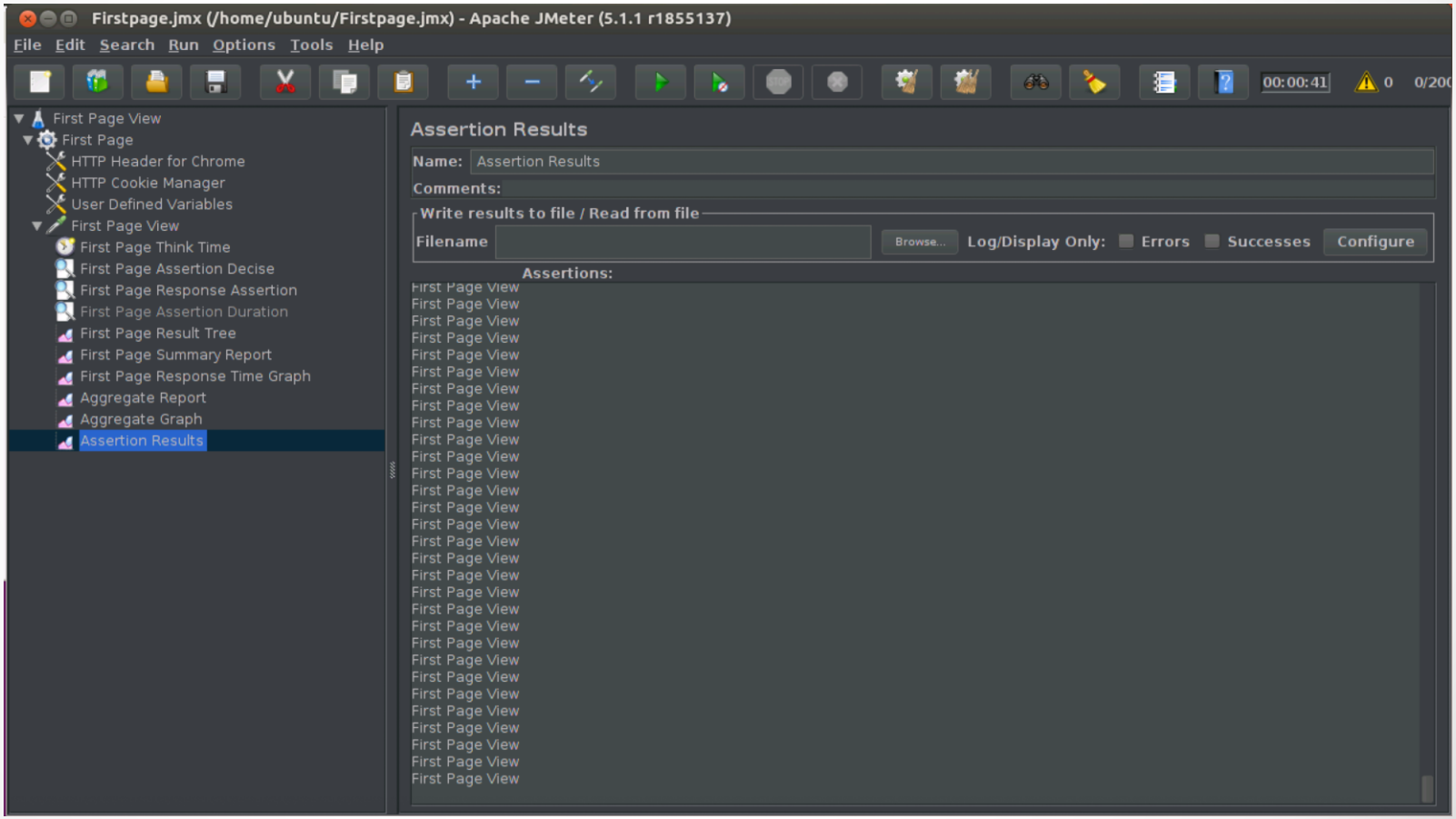
Jmeter's element part 1 (Basic)

- Listener: Aggregation Graph
  - Display statistic information on graph view



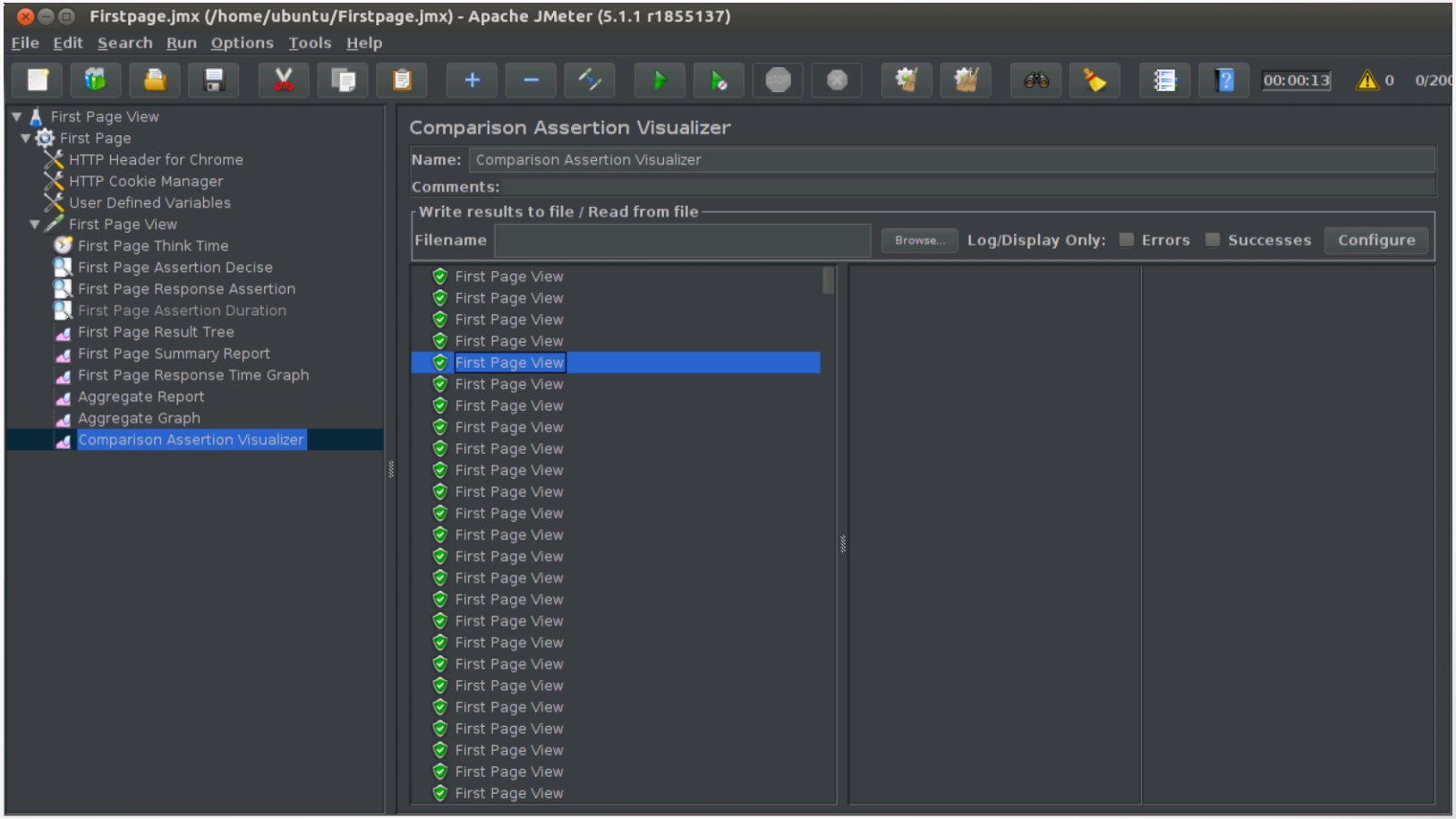
Jmeter's element part 1 (Basic)

- Listener: Assertion Result
  - Display detail for assertion for analysis



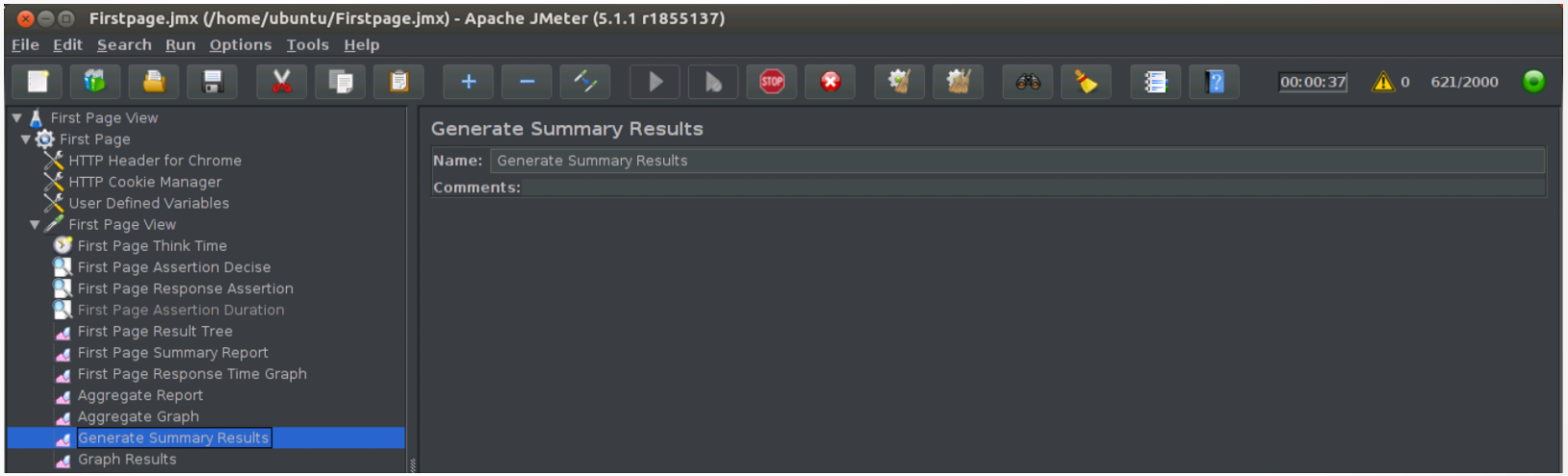
Jmeter's element part 1 (Basic)

- Listener: Comparison Assertion Visualizer
  - Compare assertion detail



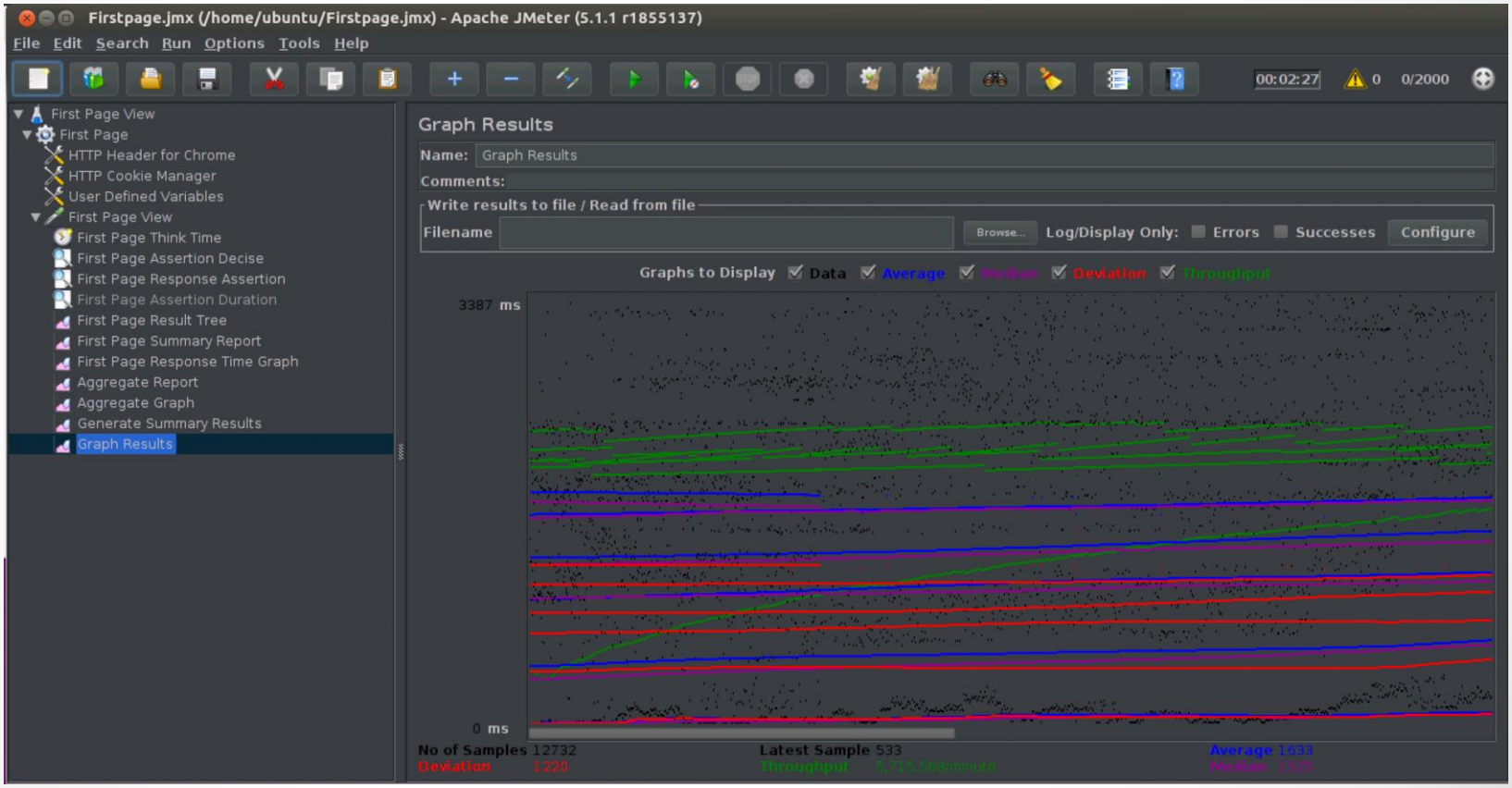
Jmeter's element part 1 (Basic)

- Listener: Generate Summary Result
  - Export summary result to log file or standard I/O



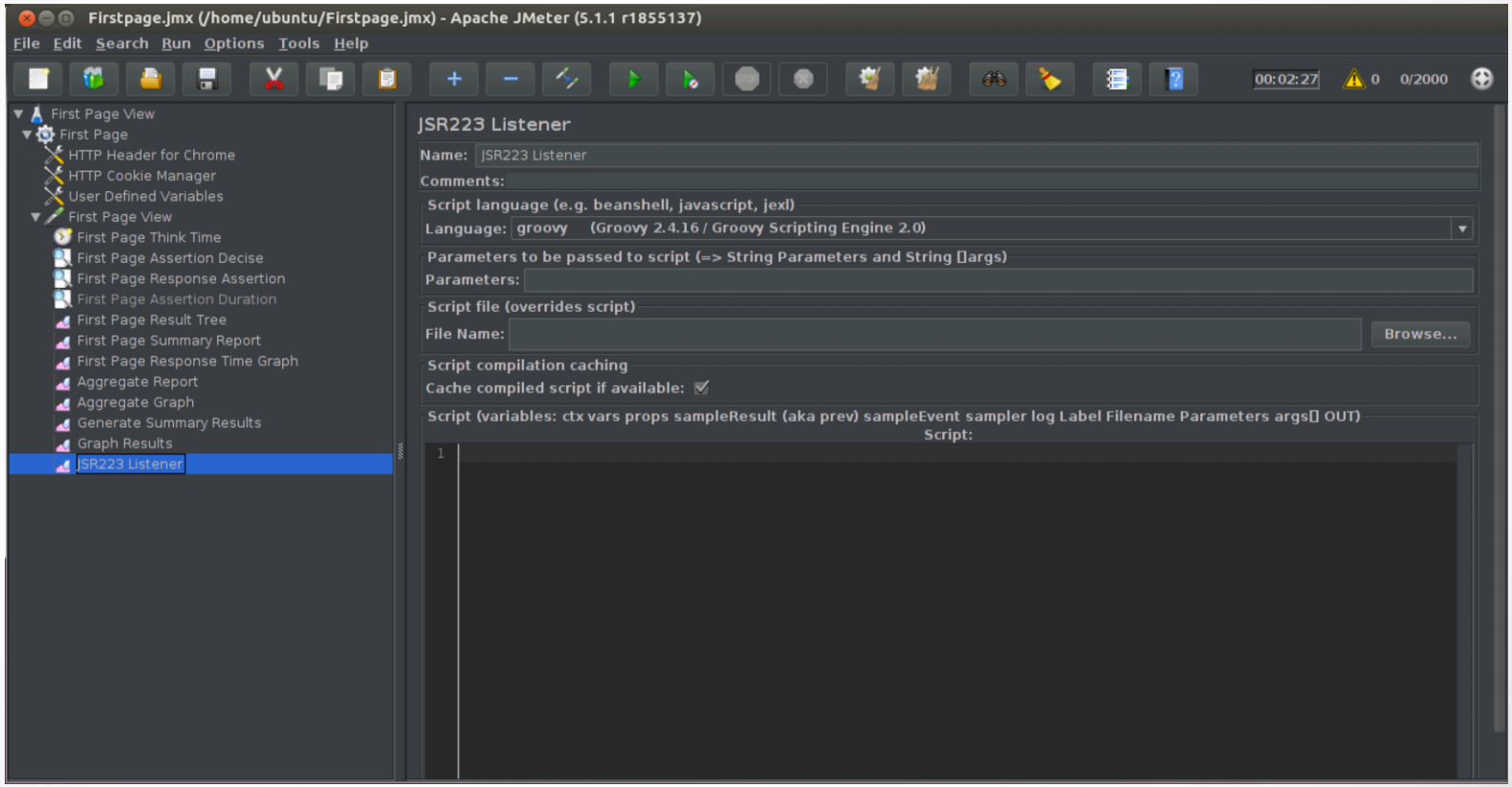
Jmeter's element part 1 (Basic)

- Listener: Graph Result
  - Show graph between time and sample test



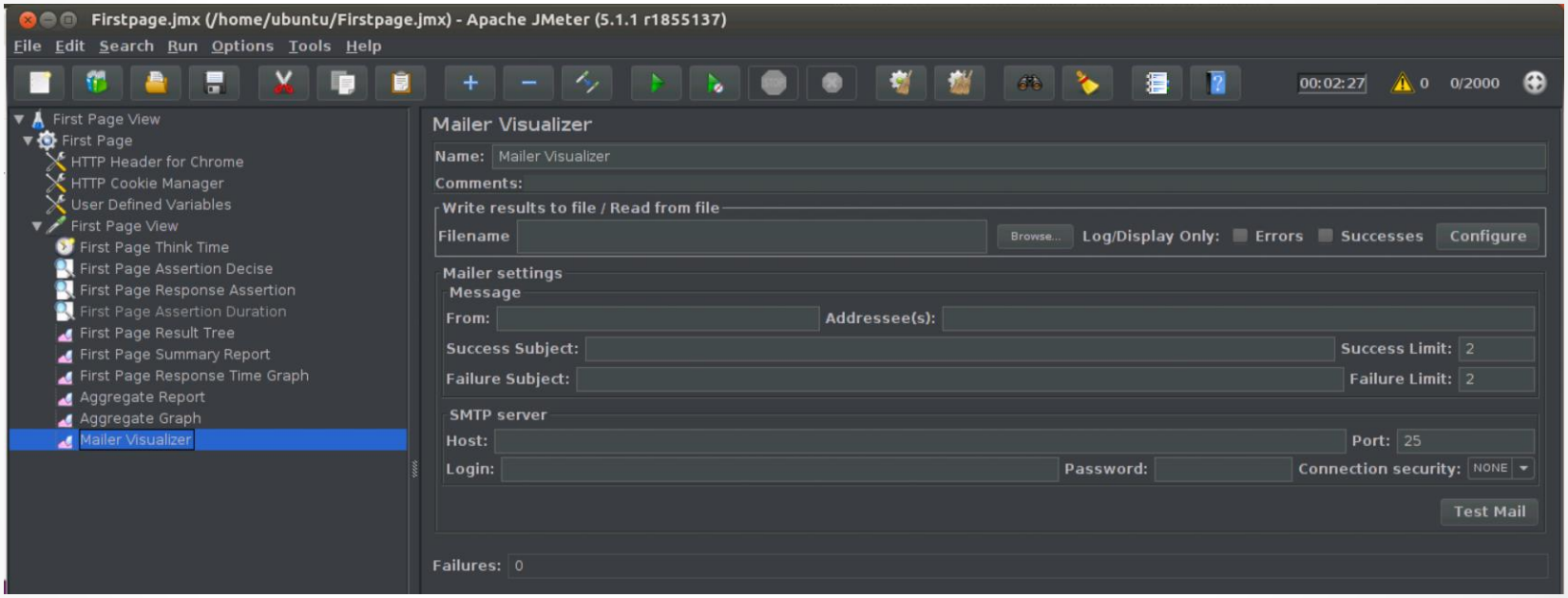
Jmeter's element part 1 (Basic)

- Listener: JSR223 Listener
  - Show result from sampler JSR223



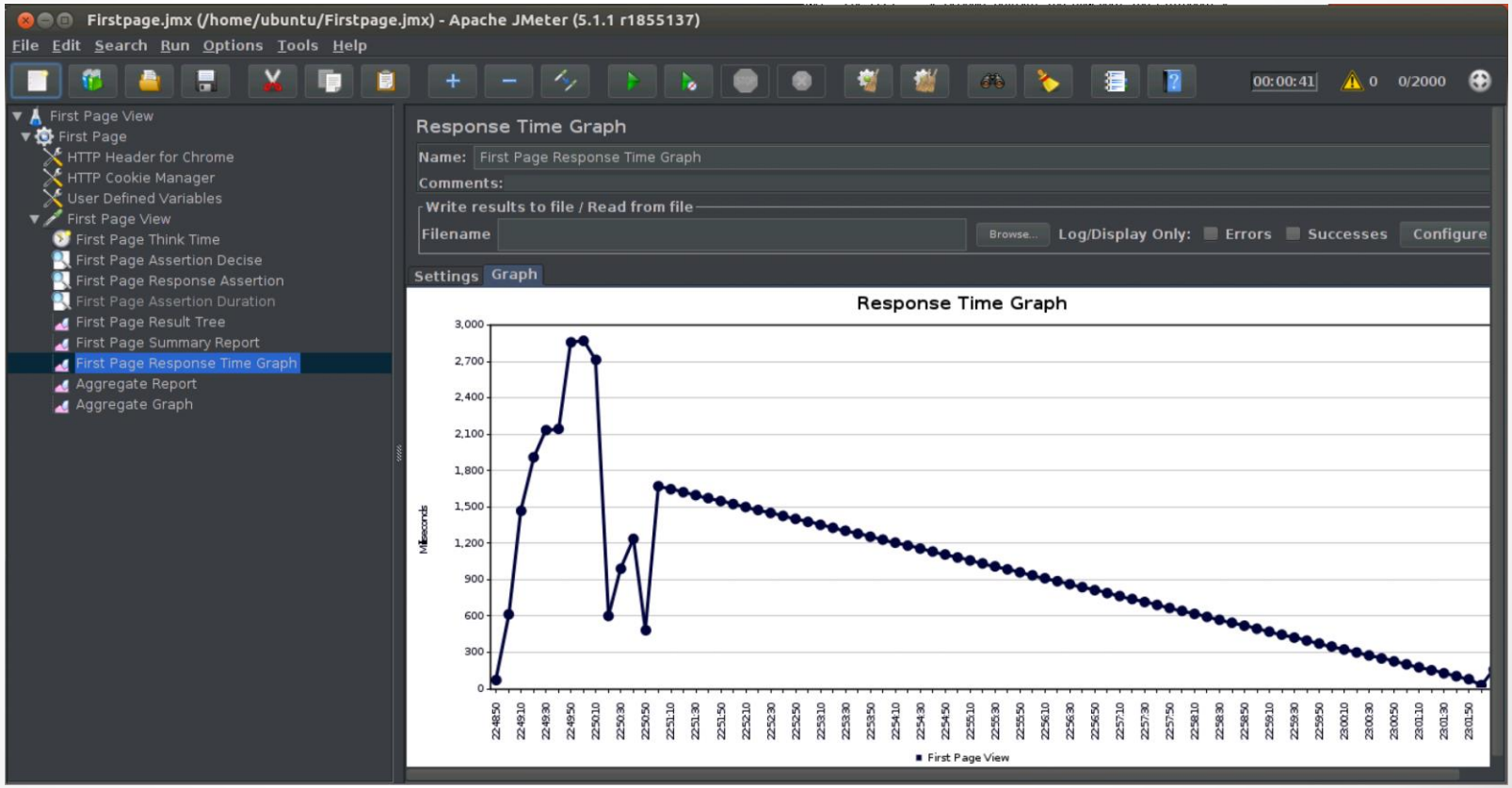
Jmeter's element part 1 (Basic)

- Listener: Mailer Visualization
  - Send mail when get many failure from test



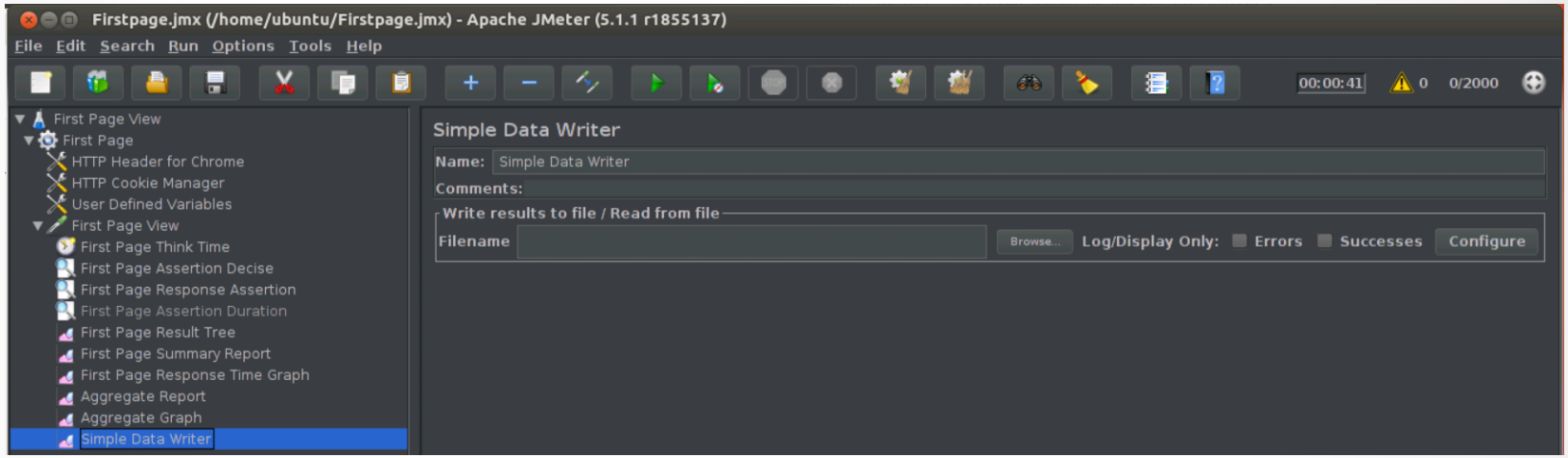
Jmeter's element part 1 (Basic)

- Listener: Response Time Graph
  - Show response time vs actual test time



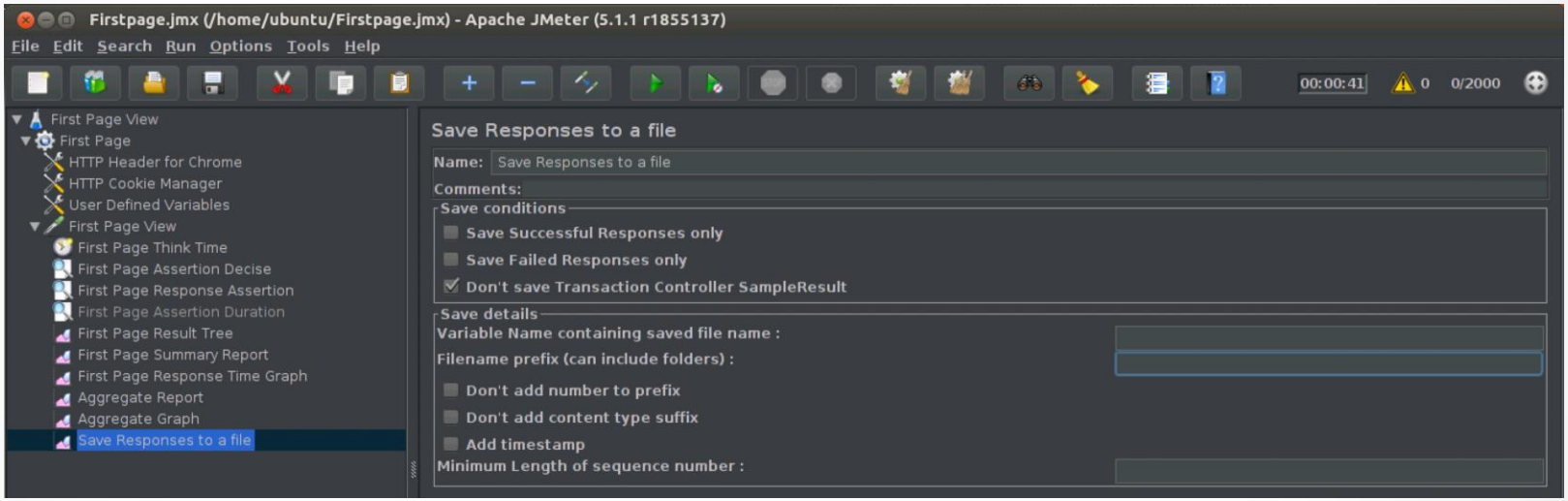
Jmeter's element part 1 (Basic)

- Listener: Simple Data Writer
  - Write/Read result to file



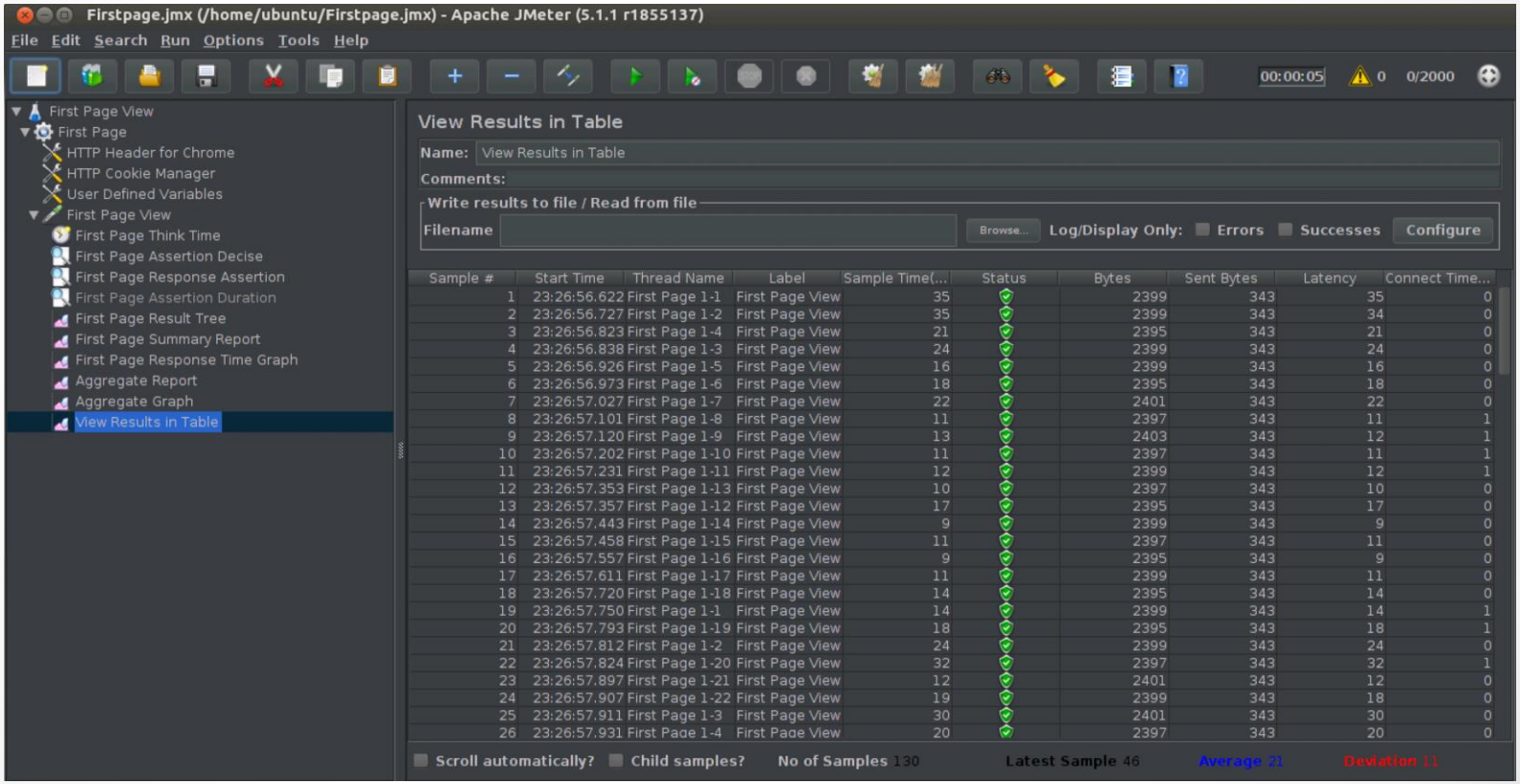
Jmeter's element part 1 (Basic)

- Listener: Save Response to File
  - Similar with result, when response is large. We can export it to file



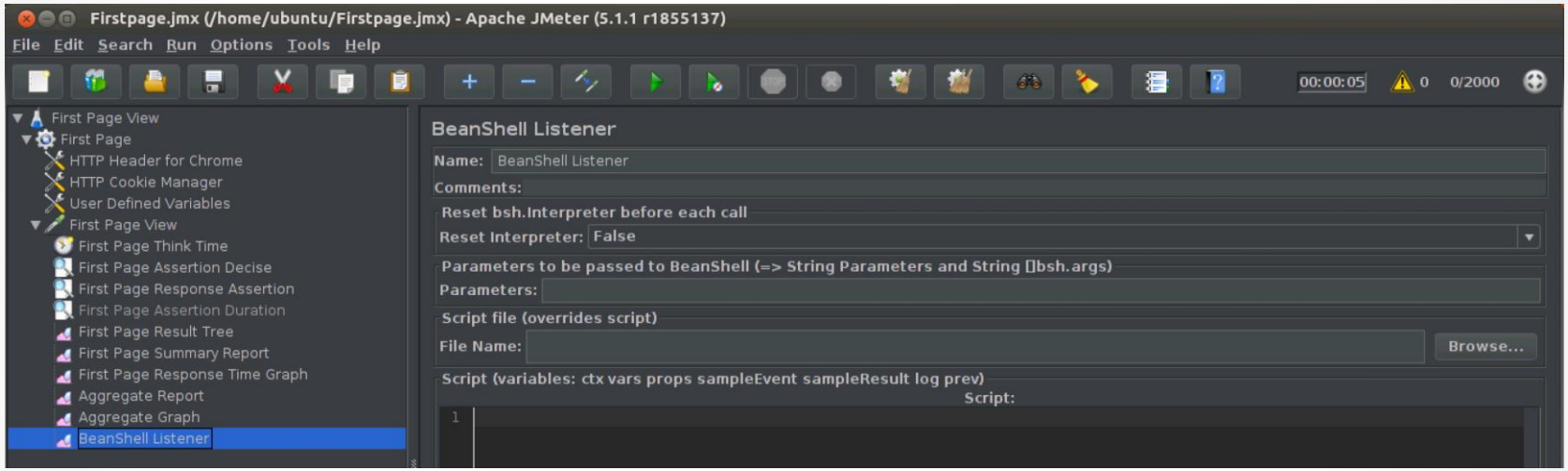
Jmeter's element part 1 (Basic)

- Listener: View Result in Table
  - Show detail result for each sample in table format



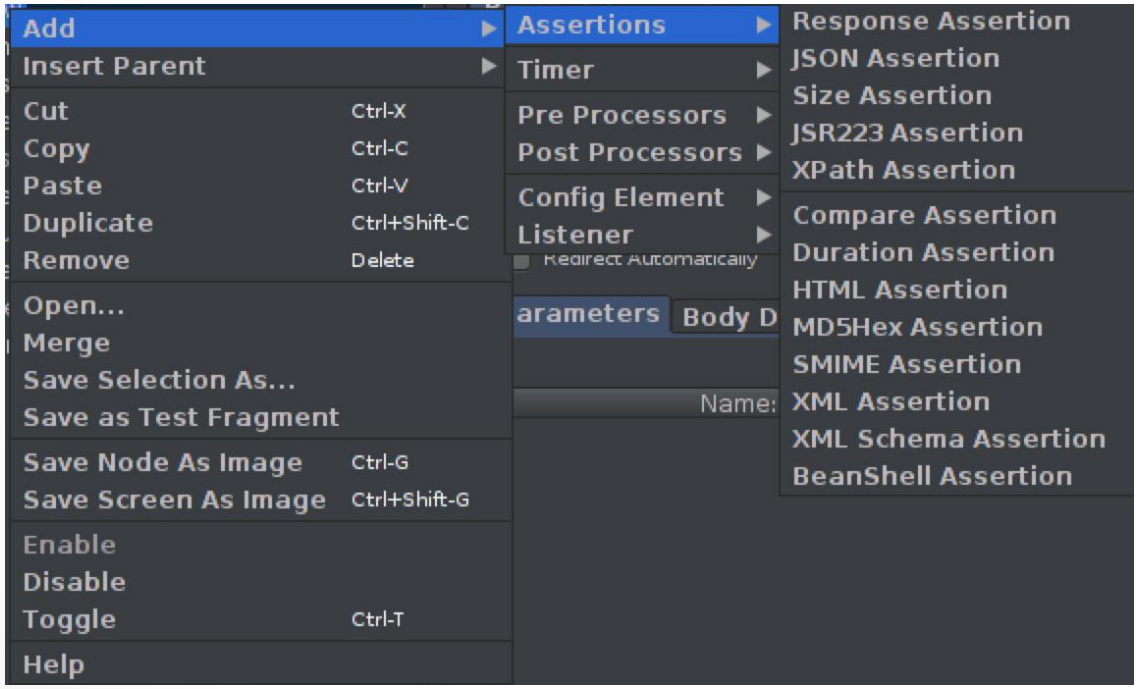
Jmeter's element part 1 (Basic)

- Listener: Beanshell Listener
  - Show result for beanshell sampler



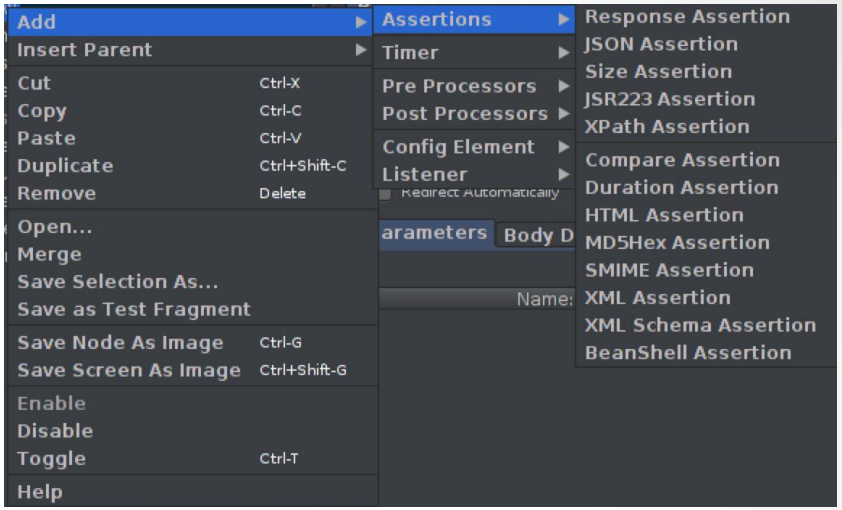
Jmeter's element part 1 (Basic)

- **Assertion**
  - Assertion is additional check for sampler for better decide pass/fail sampler's result



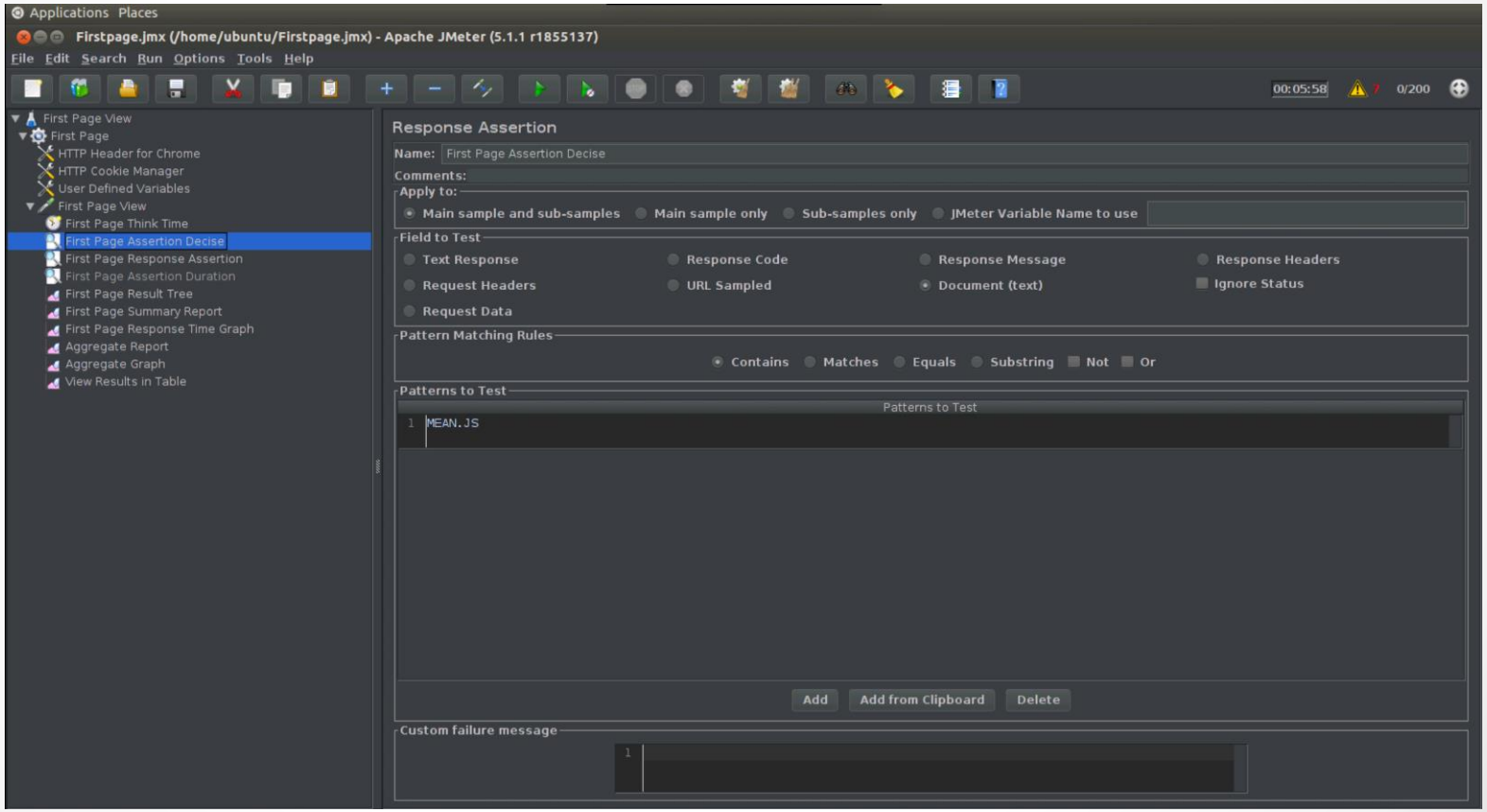
Jmeter's element part 1 (Basic)

- **Assertion**
  - **Response Assertion:**
  - JSON Assertion:
  - Size Assertion:
  - JSR223 Assertion:
  - Xpath Assertion:
  - **Compare Assertion:**
  - **Duration Assertion:**
  - HTML Assertion:
  - MD5Hex Assertion:
  - SMIME Assertion:
  - XML Assertion:
  - XML Schema Assertion:
  - BeanShell Assertion:



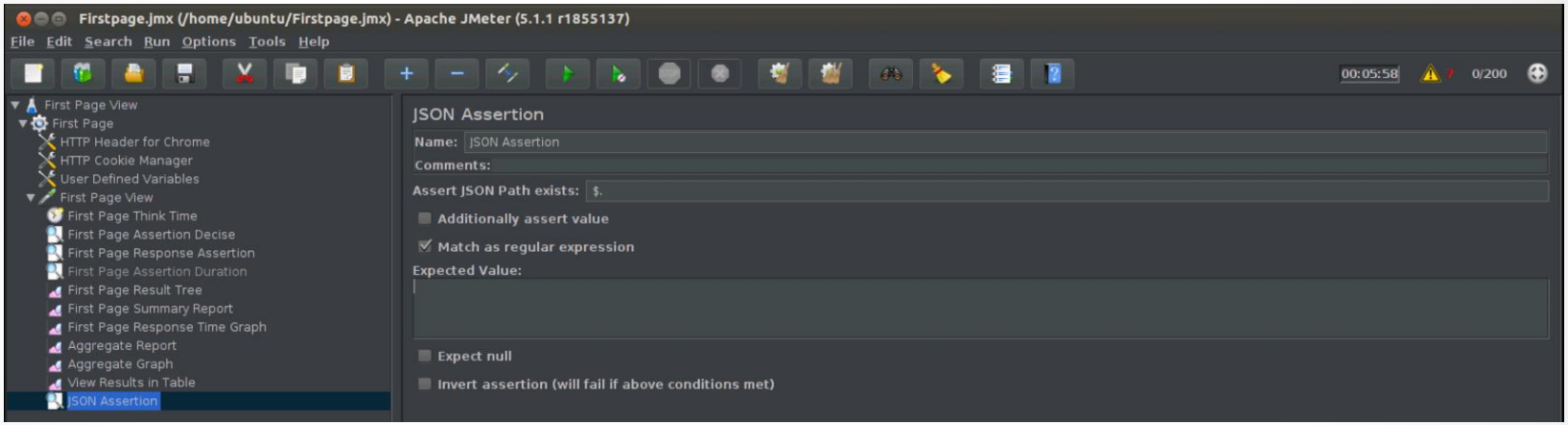
Jmeter's element part 1 (Basic)

- Assertion: Response Assertion
  - Check response from sample to decision



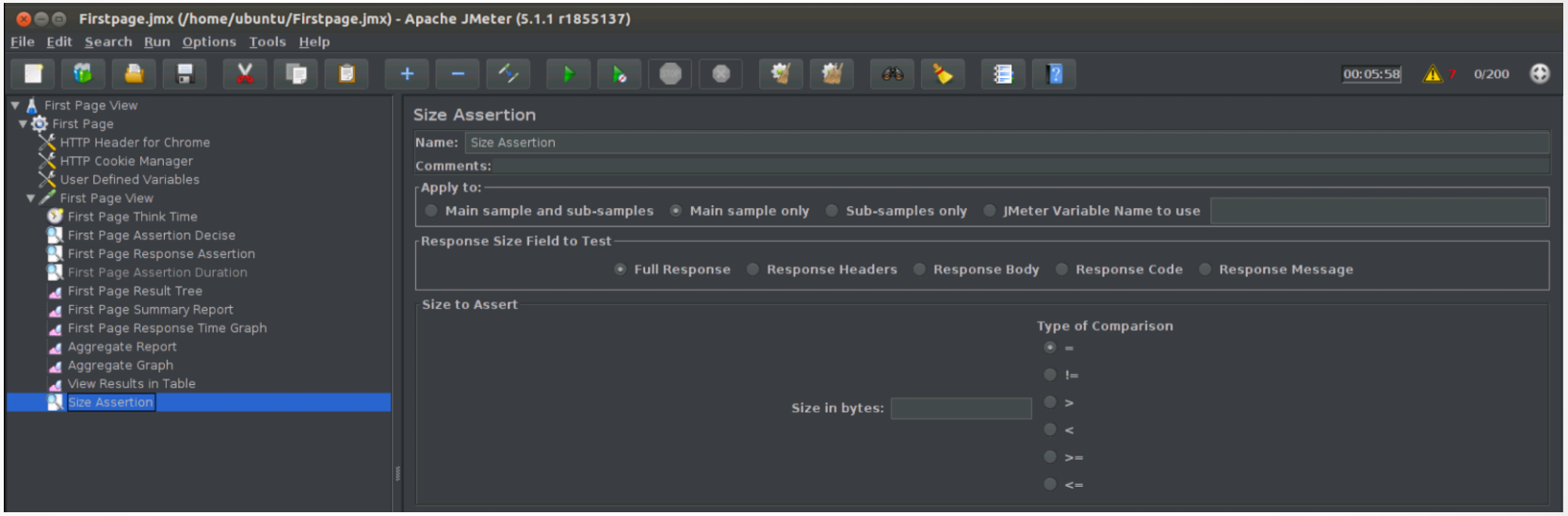
Jmeter's element part 1 (Basic)

- Assertion: JSON Assertion
  - Check response in JSON format



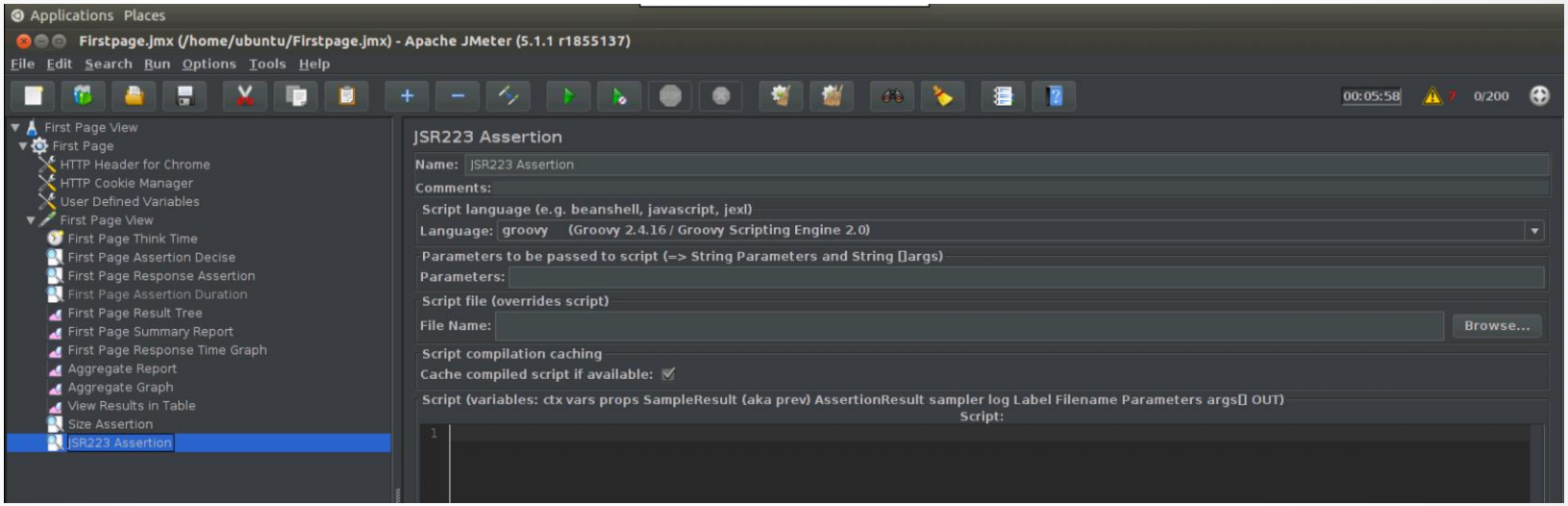
Jmeter's element part 1 (Basic)

- Assertion: Size Assertion
  - Check response sizing



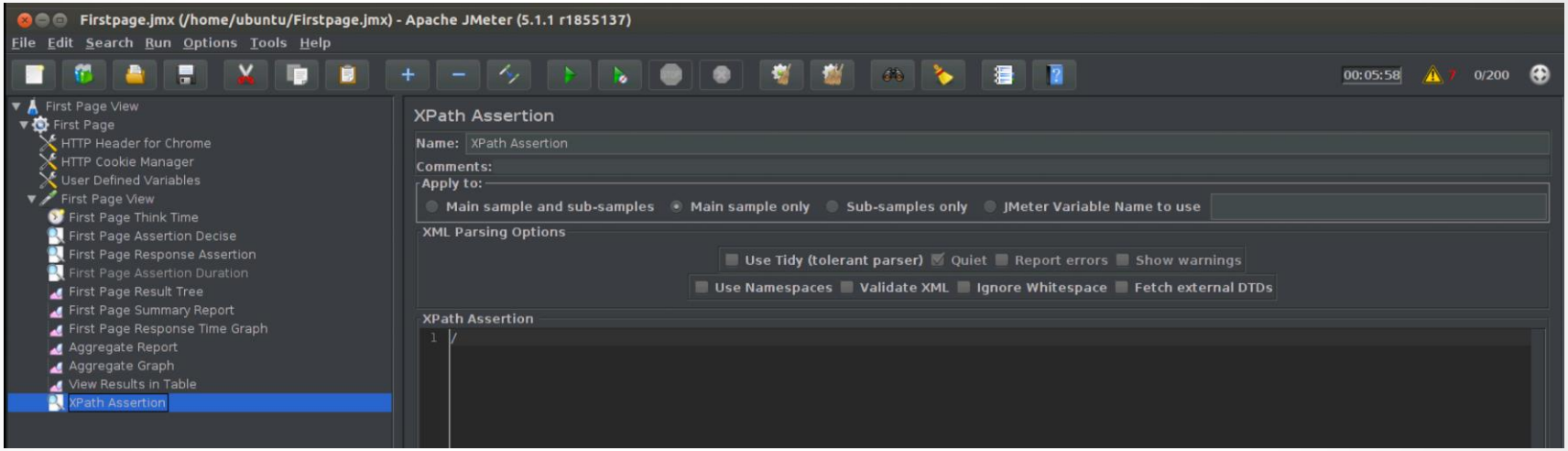
Jmeter's element part 1 (Basic)

- Assertion: JSR232 Assertion
  - Check response by script



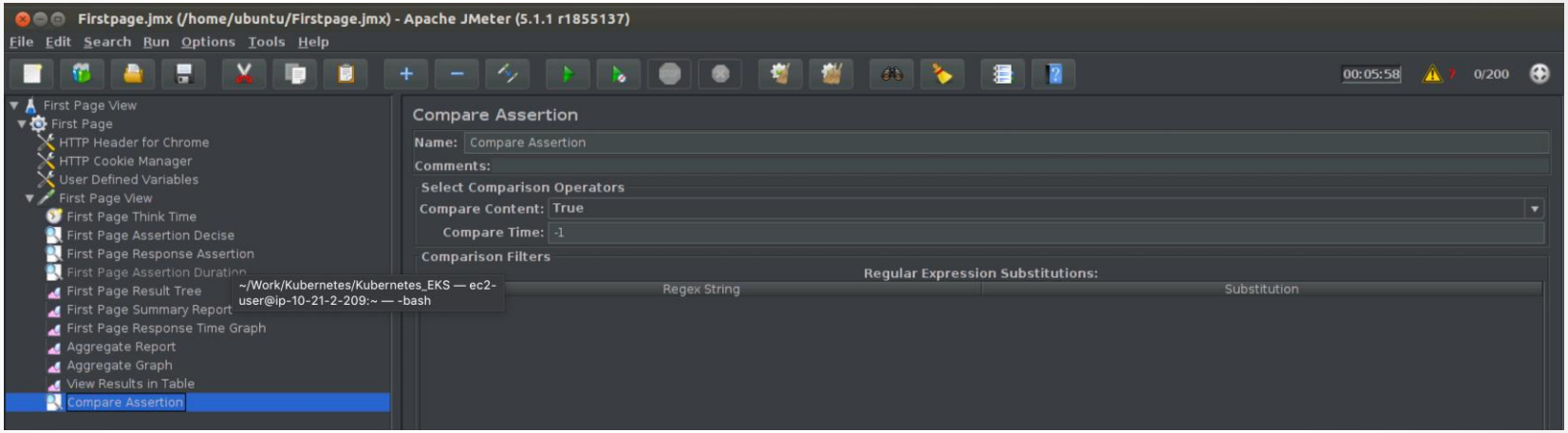
Jmeter's element part 1 (Basic)

- Assertion: XPath Assertion
  - Check response by XML, XHTML or SOAP



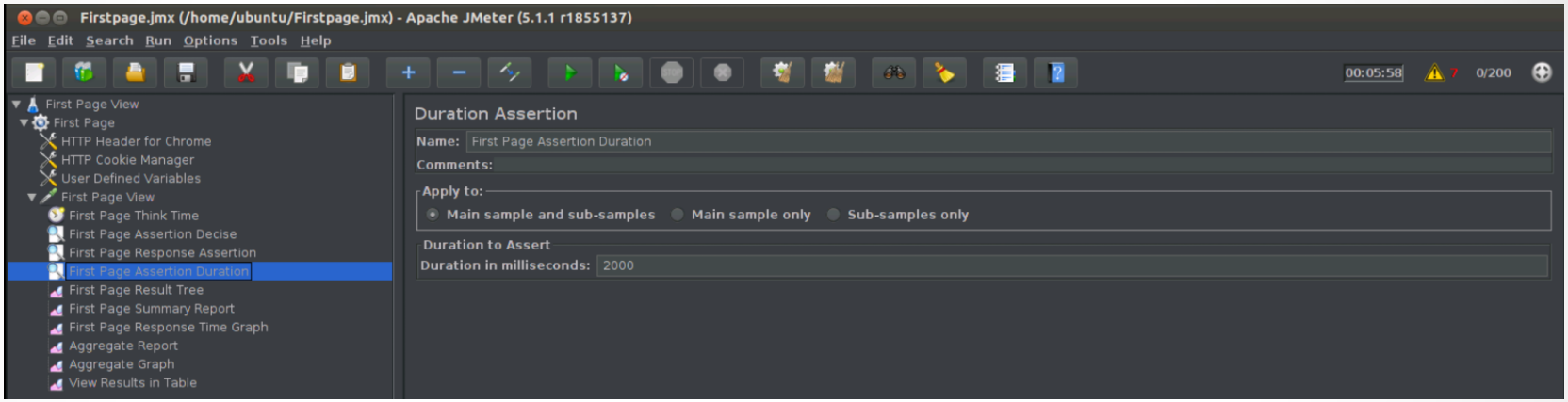
Jmeter's element part 1 (Basic)

- Assertion: Compare Assertion
  - Check response format with regular expression



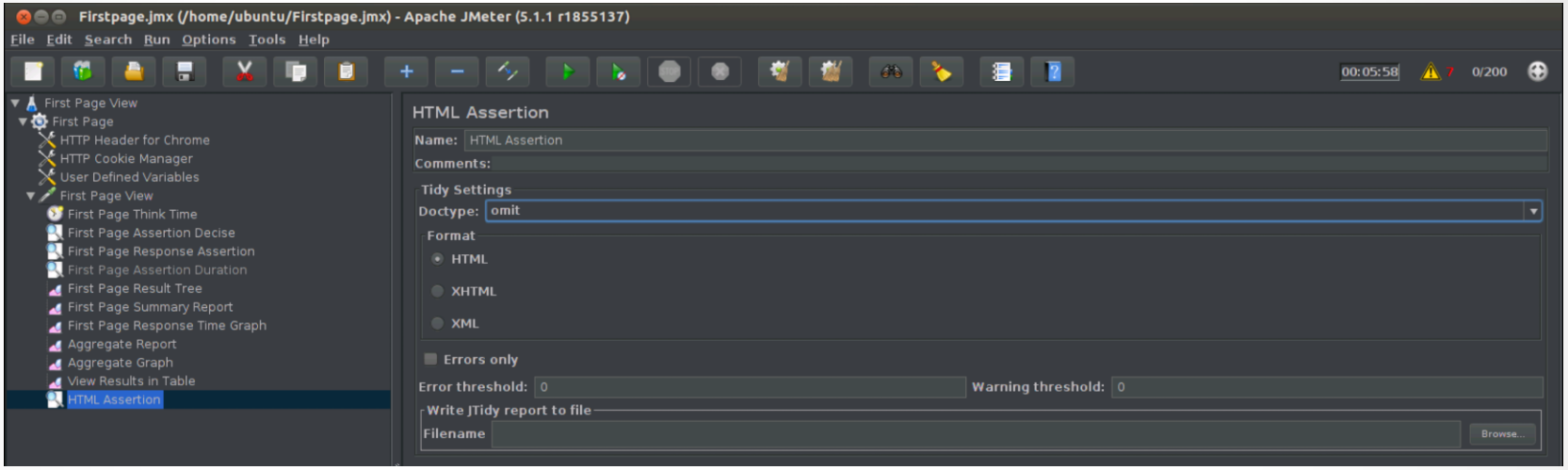
Jmeter's element part 1 (Basic)

- Assertion: Duration Assertion
  - Check response time for assertion



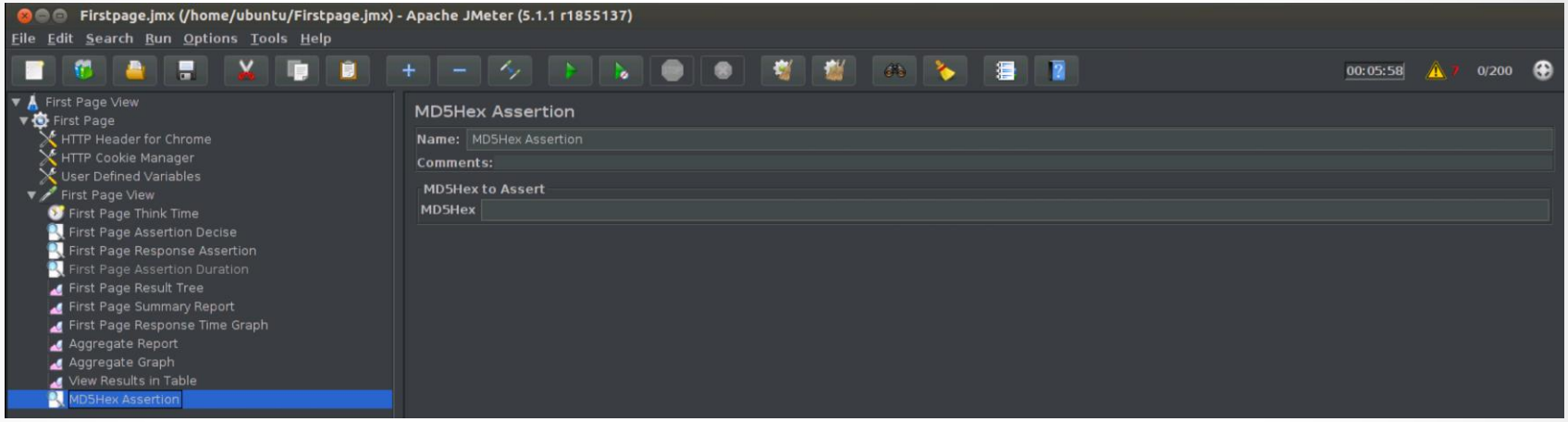
Jmeter's element part 1 (Basic)

- Assertion: HTML Assertion
  - Check HTML/XHTML/XML format with JTidy



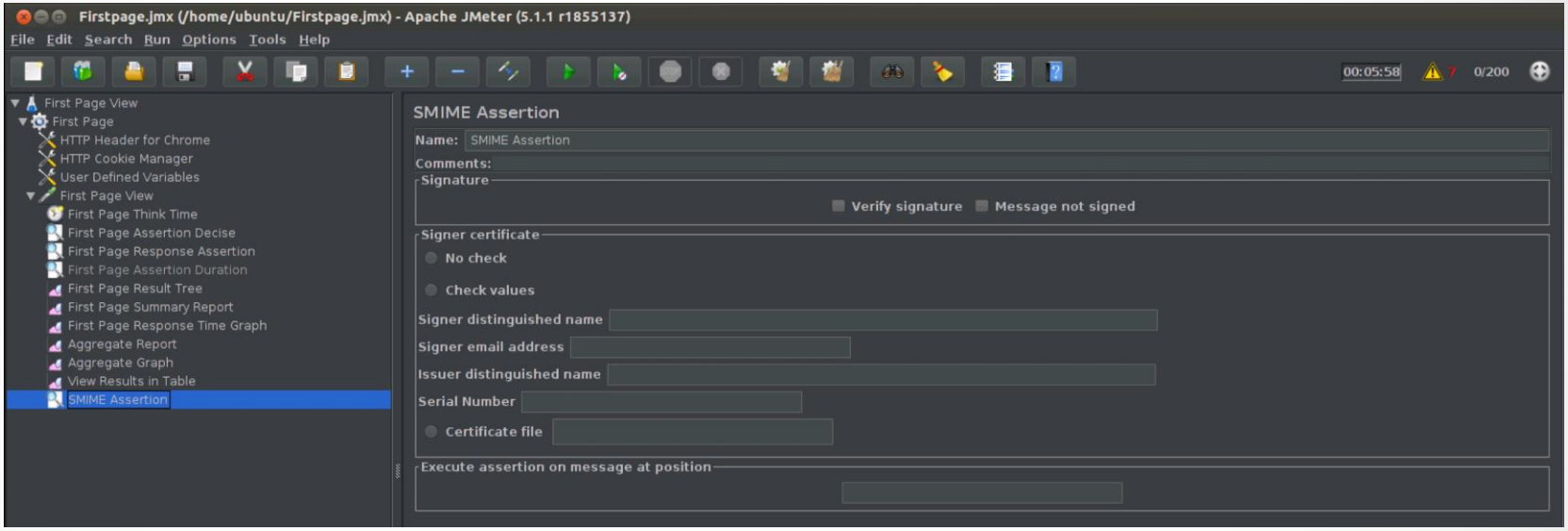
Jmeter's element part 1 (Basic)

- Assertion: MD5Hex Assertion
  - Check content with MD5Hex



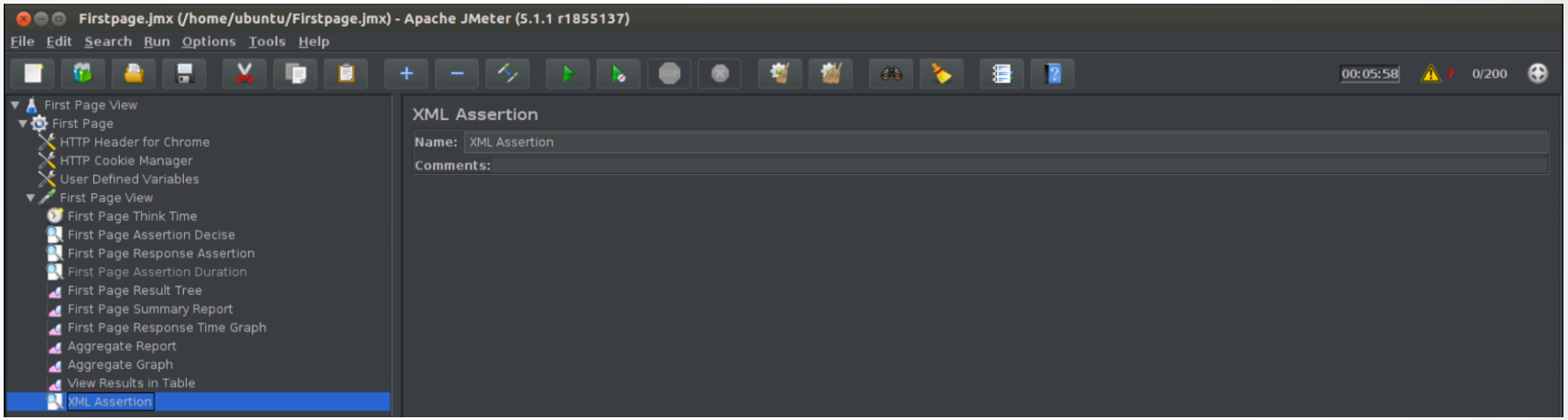
Jmeter's element part 1 (Basic)

- Assertion: SMIME Assertion
  - Check result and assertion of Mail Reader Sample



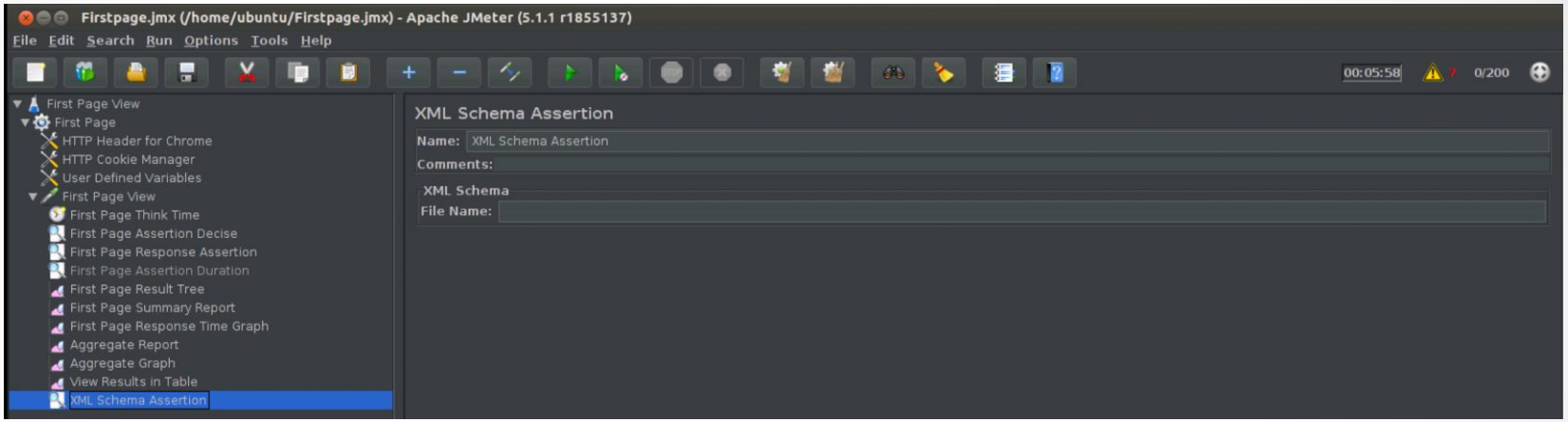
Jmeter's element part 1 (Basic)

- Assertion: XML Assertion
  - Check result format with XML



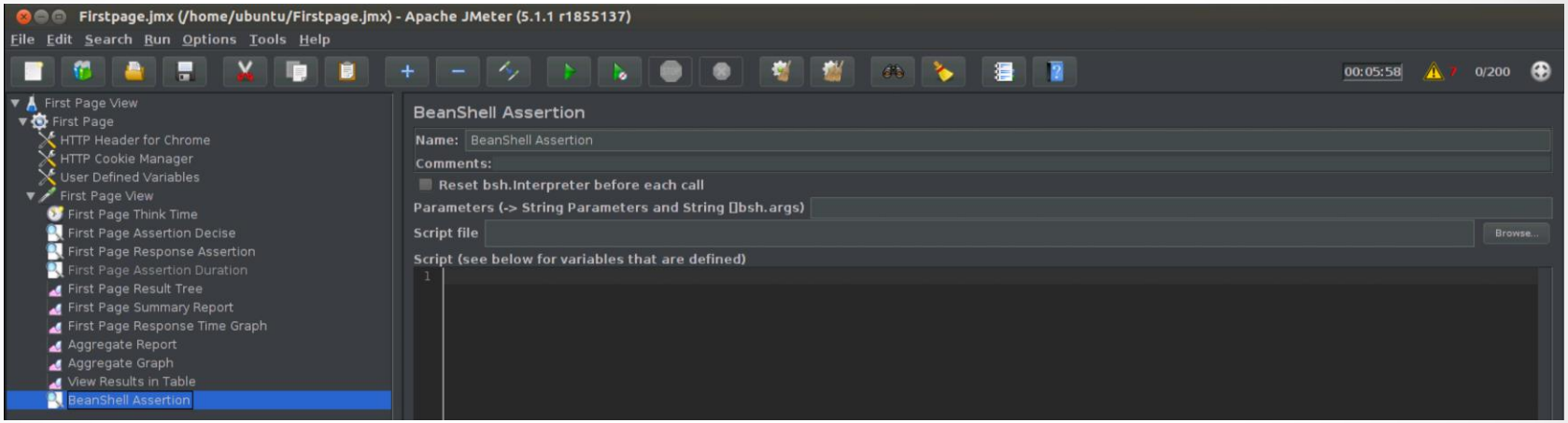
Jmeter's element part 1 (Basic)

- Assertion: XML Schema Assertion
  - Check result format with XML (Specific XML Schema)



Jmeter's element part 1 (Basic)

- Assertion: BeanShell Assertion
  - Check result with BeanShell script



WorkShop: 1-4 Basic-Assertion-Listener

- Step 1: Add listener "View result Tree" on each sampler

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

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

Sample #	Start Time	Thread Name	Label	Sample Time(...	Status	Bytes	Sent Bytes	Latency	Connect Time(...
1	01:59:30.557	Thread Group ...	MEAN.JS HTTP Requ...	18		10247	119	17	0
2	01:59:30.756	Thread Group ...	MEAN.JS HTTP Requ...	13		10247	119	12	0
3	01:59:30.956	Thread Group ...	MEAN.JS HTTP Requ...	16		10249	119	15	1
4	01:59:31.156	Thread Group ...	MEAN.JS HTTP Requ...	18		10247	119	17	0
5	01:59:31.356	Thread Group ...	MEAN.JS HTTP Requ...	20		10247	119	19	0
6	01:59:31.384	Thread Group ...	MEAN.JS HTTP Requ...	21		10249	119	20	1
7	01:59:31.556	Thread Group ...	MEAN.JS HTTP Requ...	22		10247	119	21	0
8	01:59:31.568	Thread Group ...	MEAN.JS HTTP Requ...	29		10245	119	28	1
9	01:59:31.756	Thread Group ...	MEAN.JS HTTP Requ...	21		10247	119	14	0
10	01:59:31.854	Thread Group ...	MEAN.JS HTTP Requ...	19		10247	119	17	0
11	01:59:31.955	Thread Group ...	MEAN.JS HTTP Requ...	24		10253	119	23	0
12	01:59:32.119	Thread Group ...	MEAN.JS HTTP Requ...	16		10247	119	15	0
13	01:59:32.156	Thread Group ...	MEAN.JS HTTP Requ...	19		10253	119	18	0
14	01:59:32.356	Thread Group ...	MEAN.JS HTTP Requ...	16		10251	119	15	0
15	01:59:32.440	Thread Group ...	MEAN.JS HTTP Requ...	25		10247	119	24	0
16	01:59:32.527	Thread Group ...	MEAN.JS HTTP Requ...	22		10249	119	20	0
17	01:59:32.556	Thread Group ...	MEAN.JS HTTP Requ...	17		10247	119	16	0
18	01:59:32.625	Thread Group ...	MEAN.JS HTTP Requ...	22		10249	119	22	0
19	01:59:32.657	Thread Group ...	MEAN.JS HTTP Requ...	21		10247	119	20	0
20	01:59:32.755	Thread Group ...	MEAN.JS HTTP Requ...	22		10249	119	15	1
21	01:59:32.958	Thread Group ...	MEAN.JS HTTP Requ...	18		10247	119	17	1
22	01:59:33.156	Thread Group ...	MEAN.JS HTTP Requ...	11		10249	119	11	0
23	01:59:33.345	Thread Group ...	MEAN.JS HTTP Requ...	18		10249	119	17	0
24	01:59:33.356	Thread Group ...	MEAN.JS HTTP Requ...	23		10245	119	22	0

```
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
711 2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
712
```

WorkShop: 1-4 Basic-Assertion-Listener

- Step 2: Add listener for all summary report

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/s...	Sent KB/sec	Avg. Bytes
MEAN.JS HTT...	500	22	11	89	7.18	0.00%	5.4/sec	54.42	0.63	10247.5
MAGENTO HT...	500	8256	581	11208	1961.40	0.00%	5.3/sec	137.03	1.41	26582.0
MariaDBTCPS...	500	0	0	3	0.52	0.00%	5.3/sec	0.67	0.00	130.0
MongoDBJSR...	500	0	0	19	0.96	0.00%	5.3/sec	0.00	0.00	.0
TOTAL	2000	2069	0	11208	3703.80	0.00%	21.1/sec	190.48	2.02	9239.9

Aggregate Report

Name: Aggregate Report

Comments:

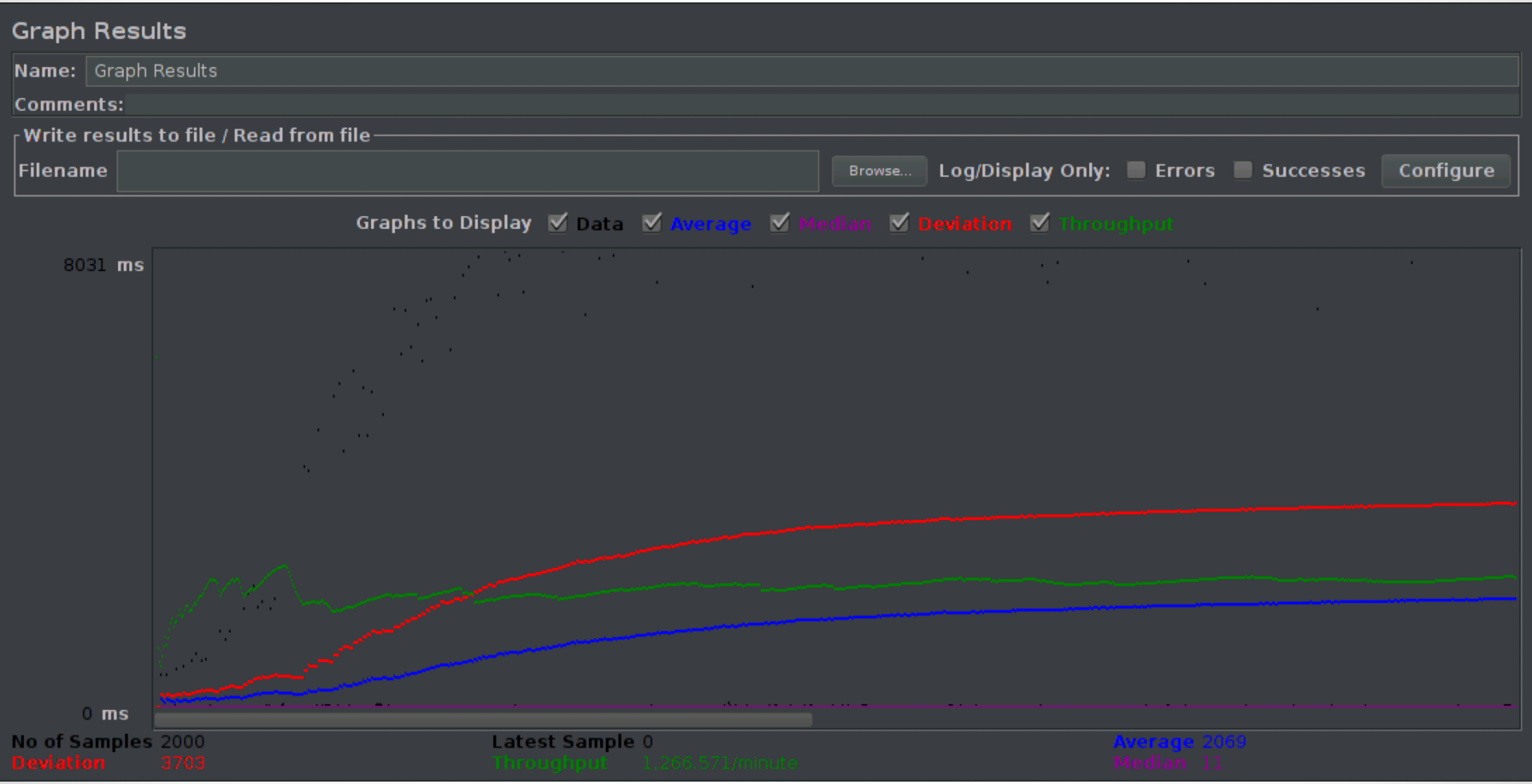
Write results to file / Read from file

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

Label	# Samples	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Throughput	Received K...	Sent KB/sec
MEAN.JS H...	500	22	21	29	36	53	11	89	0.00%	5.4/sec	54.42	0.63
MAGENTO ...	500	8256	8942	9908	10137	10489	581	11208	0.00%	5.3/sec	137.03	1.41
MariaDBTC...	500	0	1	1	1	1	0	3	0.00%	5.3/sec	0.67	0.00
MongoDBJ...	500	0	0	1	1	1	0	19	0.00%	5.3/sec	0.00	0.00
TOTAL	2000	2069	11	9130	9585	10205	0	11208	0.00%	21.1/sec	190.48	2.02

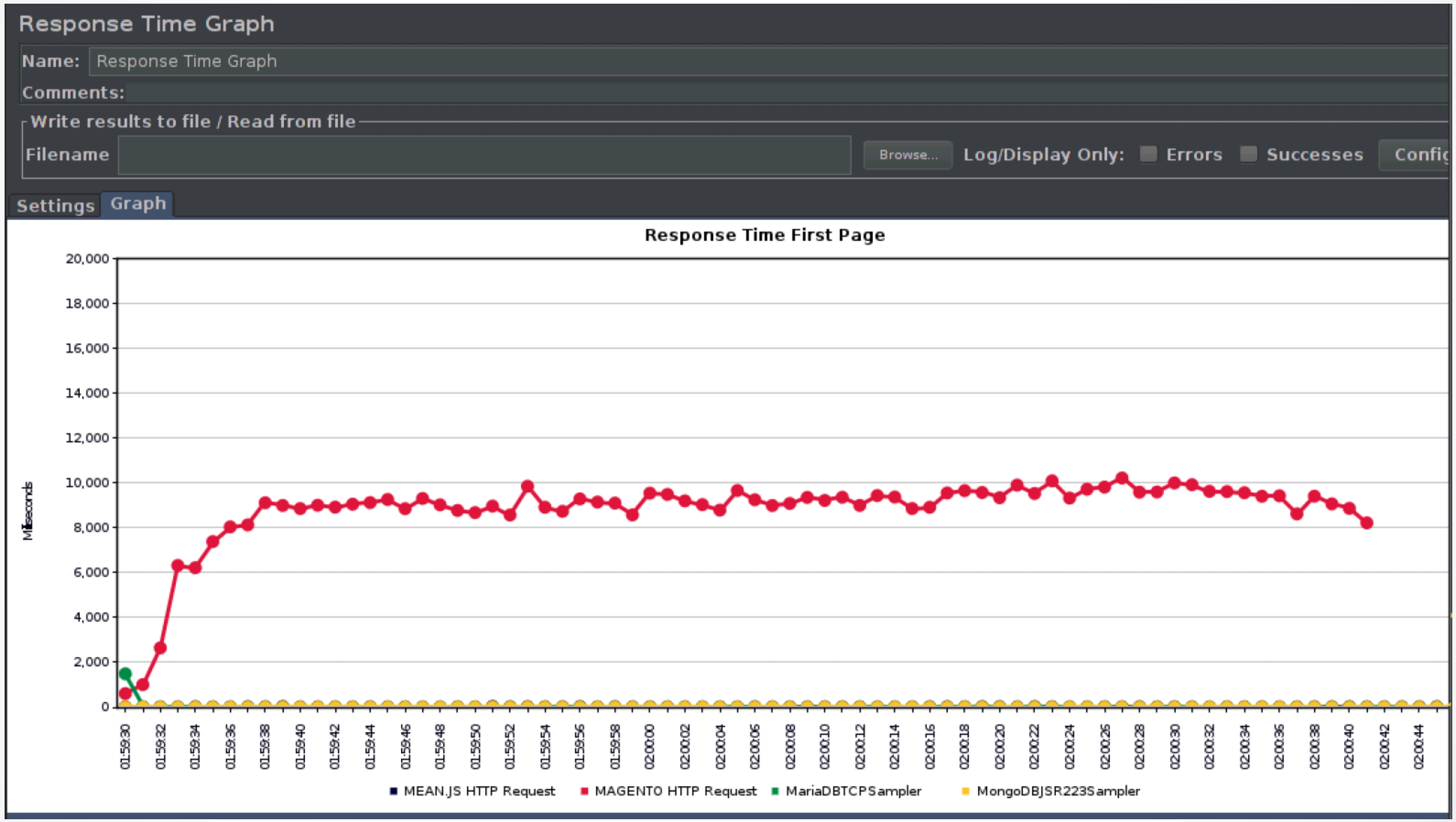
WorkShop: 1-4 Basic-Assertion-Listener

- Step 2: Add listener for all summary report



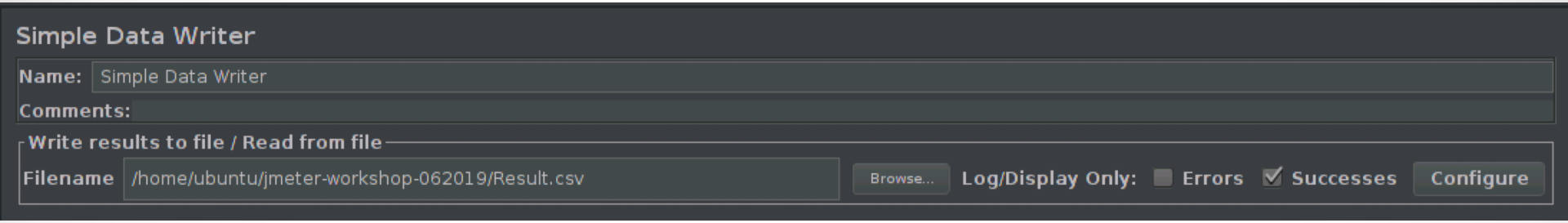
WorkShop: 1-4 Basic-Assertion-Listener

- Step 2: Add listener for all summary report



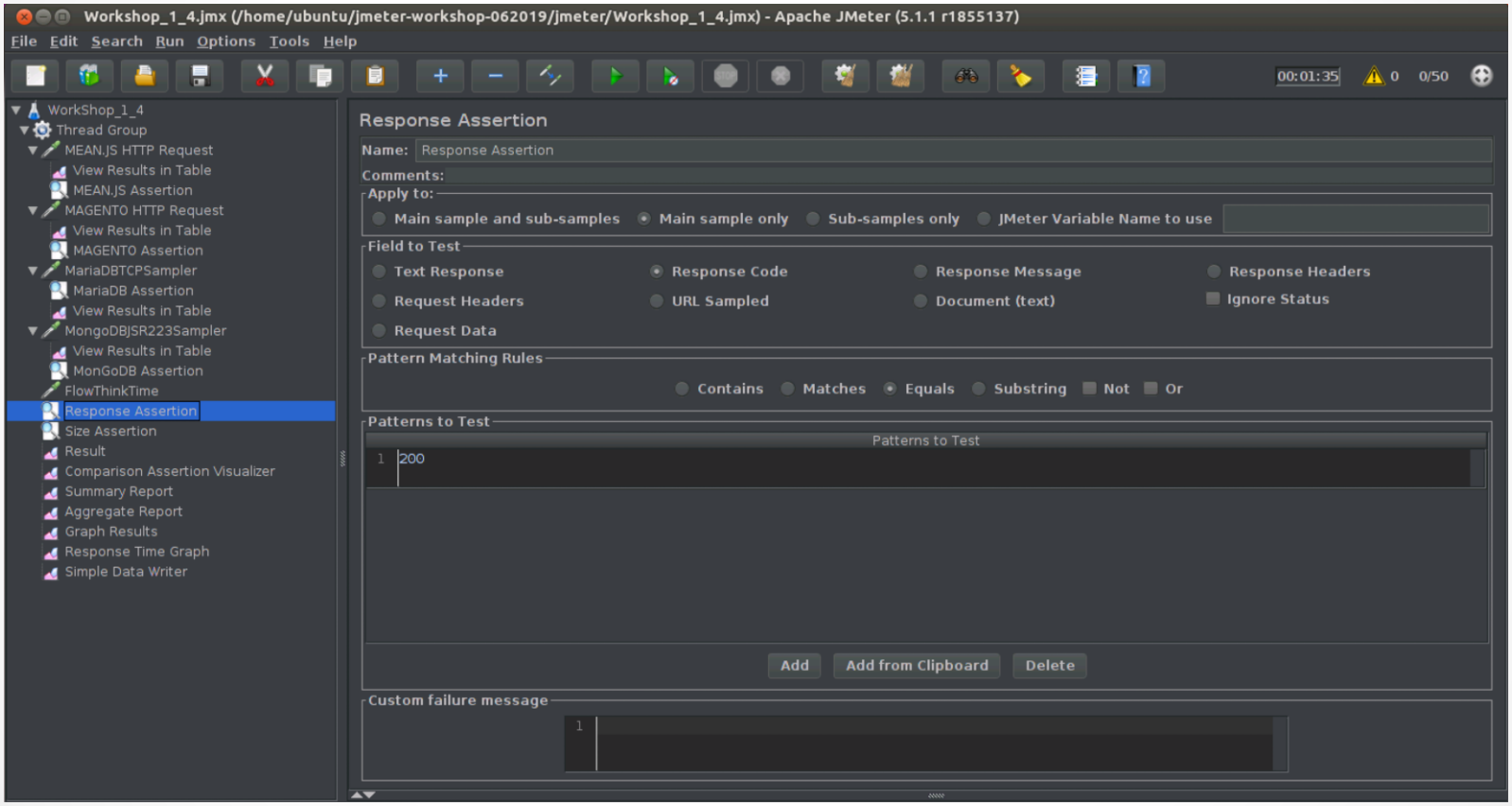
WorkShop: 1-4 Basic-Assertion-Listener

- Step 2: Add listener for all summary report



WorkShop: 1-4 Basic-Assertion-Listener

- Step 3: Add assertion "Response Assertion" for accept return code 200/OK for all sampler



WorkShop: 1-4 Basic-Assertion-Listener

- Step 4: Add assertion "Size Assertion" for accept byte receive from target less than or equal 27000 byte

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Size Assertion

Name: Size Assertion

Comments:

Apply to: Main sample and sub-samples | Main sample only | Sub-samples only | JMeter Variable Name to use

Response Size Field to Test: Full Response | Response Headers | Response Body | Response Code | Response Message

Size to Assert

Size in bytes: 27000

Type of Comparison: = | != | > | < | >= | <=

```
705 2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
706 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
711 2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
712
```

WorkShop: 1-4 Basic-Assertion-Listener

- Step 5: Add assertion "Response Assertion" for check response text "MEAN.JS"

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Response Assertion

Name: MEAN.JS 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

1 MEAN.JS

Add | Add from Clipboard | Delete

```
705 2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
706 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
711 2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
712
```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WorkShop: 1-4 Basic-Assertion-Listener

- Step 6: Add assertion “Response Assertion” for check response header “X-Powered-By: PHP/7.1.30”

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Response Assertion

Name: MAGENTO 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

```
1 X-Powered-By: PHP/7.1.30
```

Add | Add from Clipboard | Delete

```
705 2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
706 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
711 2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
712
```

WorkShop: 1-4 Basic-Assertion-Listener

- Step 7: Add assertion "Compare Assertion" for check response data with reg-ex message: "5.5.5-10.3.15-MariaDB"

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Compare Assertion

Name: MariaDB Assertion

Comments:

Select Comparison Operators

Compare Content: True

Compare Time: -1

Comparison Filters

Regular Expression Substitutions:

Regex String	Substitution
5.5.5-10.3.15-MariaDB	

Add | Add from Clipboard | Remove | Clear | Up | Down

```
705 2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
706 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
711 2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
712
```


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WorkShop: 1-4 Basic-Assertion-Listener

- Step 8: Add assertion "Duration Assertion" for check response time from target need to less than 500 ms

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Duration Assertion

Name: MonGoDB Assertion

Comments:

Apply to:

Main sample and sub-samples | Main sample only | Sub-samples only

Duration to Assert

Duration in milliseconds: 500

```
2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
2019-06-01 02:01:05,501 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
```

WorkShop: 1-4 Basic-Assertion-Listener

- Step 9: Start load test and check result

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: Case sensitive Regular exp. Search Reset

Text

- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request

Sampler result | Request | Response data

Response Body | Response headers

MEAN.JS Find Case sensitive Regular exp.

```
<meta property="og:title" content="MEAN.JS - Development Environment">
<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
<meta property="og:url" content="http://10.21.1.93:3000/">
<meta property="og:image" content="modules/core/client/img/brand/logo.png">
<meta property="og:type" content="website">

<!-- Twitter META -->
<meta name="twitter:card" content="summary">
<meta name="twitter:site" content="@TWITTER_USERNAME">
<meta name="twitter:title" content="MEAN.JS - Development Environment">
<meta name="twitter:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
<meta name="twitter:image" content="modules/core/client/img/brand/logo.png">

<!-- Fav Icon -->
<link href="/modules/core/client/img/brand/favicon.ico" rel="shortcut icon" type="image/x-icon">

<!-- Manifest -->
<link href="/manifest.json" rel="manifest">
```


APACHE JMeter™

WorkShop: 1-4 Basic-Assertion-Listener

- Step 9: Start load test and check result

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: Case sensitive Regular exp. Search Reset

Text

- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request

Sampler result Request Response data

Response Body Response headers

Find Case sensitive Regular exp.

```
1  HTTP/1.1 200 OK
2  Date: Fri, 31 May 2019 19:00:48 GMT
3  Server: Apache/2.4.39 (Unix) OpenSSL/1.1.0j PHP/7.1.30
4  X-Powered-By: PHP/7.1.30
5  Expires: Thu, 31 May 2018 19:00:53 GMT
6  Cache-Control: max-age=0, must-revalidate, no-cache, no-store
7  Pragma: no-cache
8  X-Magento-Cache-Control: max-age=86400, public, s-maxage=86400
9  X-Magento-Cache-Debug: MISS
10 X-Content-Type-Options: nosniff
11 X-XSS-Protection: 1; mode=block
12 X-Frame-Options: SAMEORIGIN
13 Vary: Accept-Encoding
14 X-UA-Compatible: IE=edge
15 Keep-Alive: timeout=5, max=100
16 Connection: Keep-Alive
```


APACHE JMeter™

WorkShop: 1-4 Basic-Assertion-Listener

- Step 9: Start load test and check result

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: Case sensitive Regular exp. Search Reset

Text

- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MEAN.JS HTTP Request
- MAGENTO HTTP Request
- MariaDBTCPSampler
- MongoDBJSR223Sampler
- MAGENTO HTTP Request
- MariaDBTCPSampler

Sampler result | Request | Response data

Response Body | Response headers

Find Case sensitive Regular exp.

Y
5.5.5-10.3.15-MariaDBHol<%Eloh<??! ??□□4-'xLQ2D?OO!mysql_native_password!□??□#08S01Got packets out of order

```
705 2019-06-01 02:01:05,331 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-46
706 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-44
707 2019-06-01 02:01:05,454 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-44
708 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread is done: Thread Group 1-47
709 2019-06-01 02:01:05,501 INFO o.a.j.t.JMeterThread: Thread finished: Thread Group 1-47
710 2019-06-01 02:01:05,501 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
```


APACHE JMeter™

WorkShop: 1-4 Basic-Assertion-Listener

- Step 9: Start load test and check result

Workshop_1_4.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Workshop_1_4.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:35 0 0/50

- WorkShop_1_4
  - Thread Group
    - MEAN.JS HTTP Request
      - View Results in Table
      - MEAN.JS Assertion
    - MAGENTO HTTP Request
      - View Results in Table
      - MAGENTO Assertion
    - MariaDBTCPSampler
      - MariaDB Assertion
      - View Results in Table
    - MongoDBJSR223Sampler
      - View Results in Table
      - MonGoDB Assertion
    - FlowThinkTime
    - Response Assertion
    - Size Assertion
    - Result
    - Comparison Assertion Visualizer
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph
    - Simple Data Writer

Summary Report

Name: Summary Report

Comments:

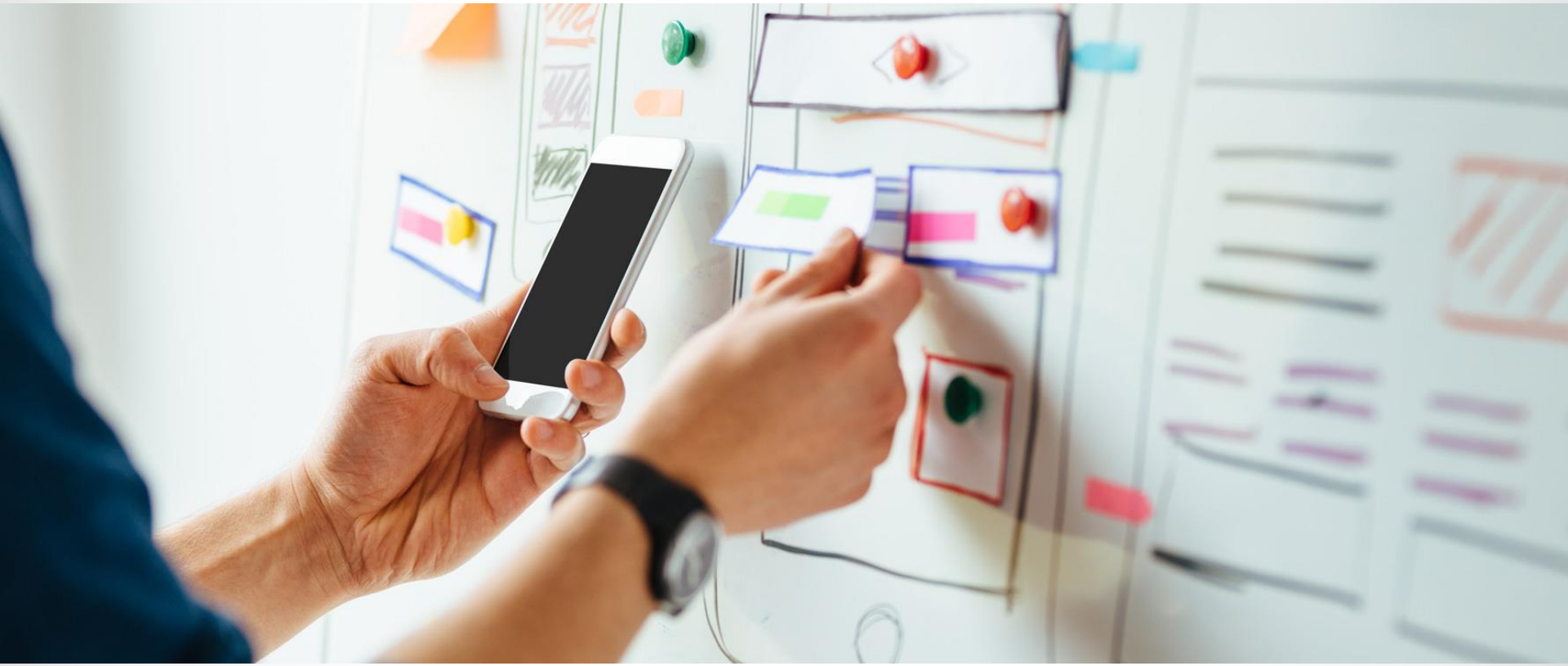
Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/...	Sent K...	Avg. By...
MEAN.JS HTTP Request	500	22	11	89	7.18	0.00%	5.4/sec	54.42	0.63	10247.5
MAGENTO HTTP Request	500	8256	581	11208	1961.40	0.00%	5.3/sec	137.03	1.41	26582.0
MariaDBTCPSampler	500	0	0	3	0.52	0.00%	5.3/sec	0.67	0.00	130.0
MongoDBJSR223Sampler	500	0	0	19	0.96	0.00%	5.3/sec	0.00	0.00	.0
TOTAL	2000	2069	0	11208	3703.80	0.00%	21.1/sec	190.48	2.02	9239.9

Include group name in label? Save Table Data Save Table Header

Full Load Test Part 1 (Basic)



JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

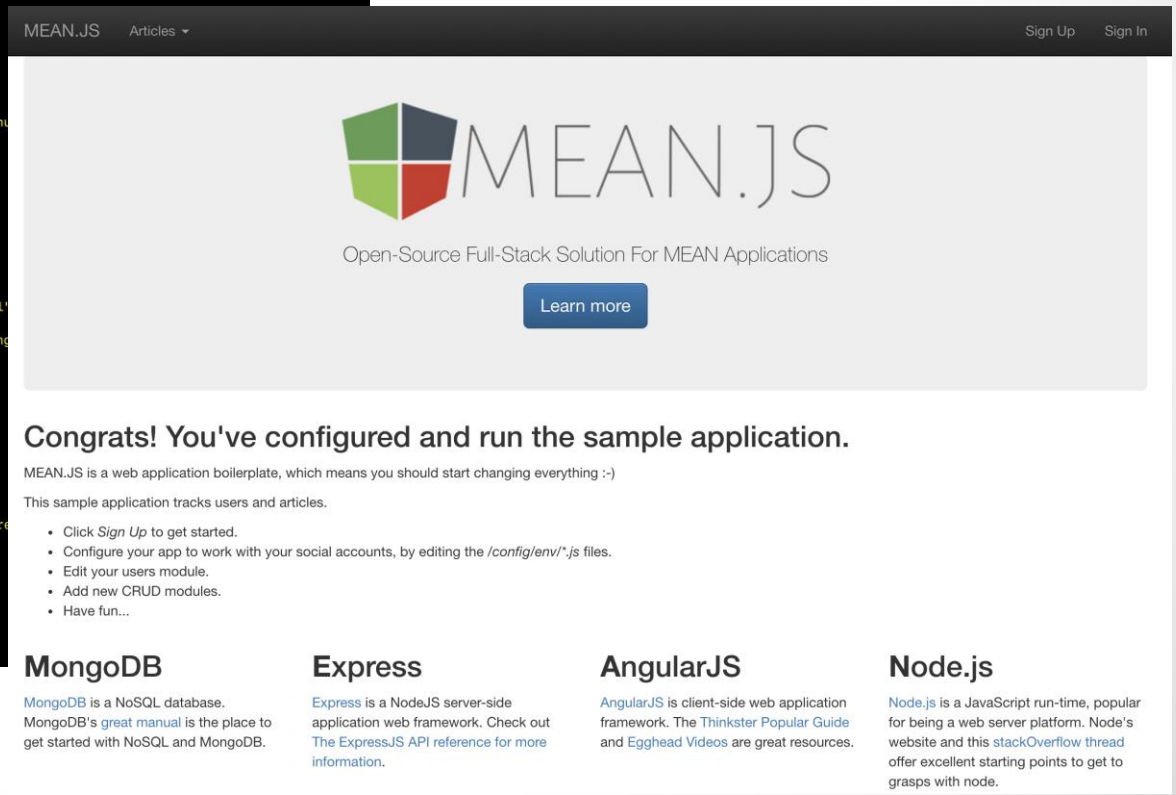
- MEAN.JS (First Page)

```
ubuntu@ip-10-21-1-152:~$ curl http://10.21.1.93:3000 -v
* Rebuilt URL to: http://10.21.1.93:3000/
*   Trying 10.21.1.93...
* Connected to 10.21.1.93 (10.21.1.93) port 3000 (#0)
> GET / HTTP/1.1
> Host: 10.21.1.93:3000
> User-Agent: curl/7.47.0
> Accept: */*
>
< HTTP/1.1 200 OK
< x-frame-options: SAMEORIGIN
< x-xss-protection: 1; mode=block
< X-Content-Type-Options: nosniff
< X-Download-Options: noopen
< Strict-Transport-Security: max-age=15778476; includeSubDomains
< p3p: ABCDEF
< Content-Type: text/html; charset=utf-8
< Content-Length: 9675
< ETag: W/"25cb-A6x9EYuvwGvJx0profEp6tC9jb8"
< Set-Cookie: sessionId=s%3A0Nc4mC-B31taTTot0wGZ1aC5cIdifDFv.HqmZGlaLsTm5NOH0aklkdhu
 Jun 2019 03:06:26 GMT; HttpOnly
< Vary: Accept-Encoding
< Date: Sat, 01 Jun 2019 03:06:26 GMT
< Connection: keep-alive
<
<!DOCTYPE html>
<html lang="en" ng-strict-di>
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1"
  <title page-title></title>
  <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, Ang
  <meta name="fragment" content="!">

  <!-- Apple META -->
  <meta name="apple-mobile-web-app-capable" content="yes">
  <meta name="apple-mobile-web-app-status-bar-style" content="black">

  <!-- Facebook META -->
  <meta property="fb:app_id" content="APP_ID">
  <meta property="og:site_name" content="MEAN.JS - Development Environment">
  <meta property="og:title" content="MEAN.JS - Development Environment">
  <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Expre
  <meta property="og:url" content="http://10.21.1.93:3000/">
  <meta property="og:image" content="modules/core/client/img/brand/logo.png">
  <meta property="og:type" content="website">

  <!-- Twitter META -->
  <meta name="twitter:card" content="summary">
  <meta name="twitter:site" content="@TWITTER_USERNAME">
  <meta name="twitter:title" content="MEAN.JS - Development Environment">
```



JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- But…Wait!!!…Stop Jmeter for a sec
- Before you start to jump in load test. Recognize about the purpose and requirement for this test
- Analysis the "baseline" and "benchmark" from requirement
- Baseline
  - FirstPage response less than 3 seconds (full page 5 seconds)
  - Error less than 5% of all test scenario
  - Response time less than 5.4 secords
  - Concurrent user 1,500
- Benchmark
  - Active user 10% of all load
  - Read/Write ratio 80/20

WorkShop: 1-5 Basic-FullTest

- Purpose for Test
  - Start load test on first page of MEAN.JS with 5 min duration
  - Think time vary between 200 ms – 2 seconds
  - Validate for make sure each response for make surly to get complete result
  - Simulate similar with android phone with chrome browser environment
  - Concurrent user was tested from 100 Users (10% of 1,000) to 1000 Users (10% of 10,000) with lamp-up period within 60 seconds until error more than 5%
  - Monitor resource of application side for tuning

WorkShop: 1-5 Basic-FullTest

KickStart_MEANJS_Workshop_1_5.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/KickStart_MEANJS_Workshop_1_5.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:45 0 100/100

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Chrome
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Thread Group 100 Users
    - MEAN.JS HTTP Request
      - Random MEANJS ThinkTime
      - MEAN.JS Assertion
      - Size Assertion Minimum
      - Size Assertion Maximum
      - Response Assertion
      - Duration Assertion
      - Comparison Assertion Visualizer
      - Result
      - View Results in Table
      - Summary Report
      - Aggregate Report
      - Graph Results
      - Response Time Graph

HTTP Request

Name: MEAN.JS HTTP Request

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: ${MeanPort}

HTTP Request

Method: GET | Path: / | Content encoding:

☐ Redirect Automatically ☑ Follow Redirects ☑ Use KeepAlive ☐ Use multipart/form-data ☐ Browser-compatible headers

Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

Detail | Add | Add from Clipboard | Delete | Up | Down

KickStart_MEANJS_Workshop_1_5.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/KickStart_MEANJS_Workshop_1_5.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:18 0 100/100

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Chrome
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Thread Group 100 Users
    - MEAN.JS HTTP Request
      - Random MEANJS ThinkTime
      - MEAN.JS Assertion
      - Size Assertion Minimum
      - Size Assertion Maximum

HTTP Header Manager

Name: HTTP Header for Chrome

Comments:

Headers Stored in the Header Manager

Name:	Value
User-agent	Mozilla/5.0 (Linux; Android 9; SM-G960F Build/PPR1.180610.011; wv) AppleWebKit/537.36 (KHTML, like Gecko) Versio...
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Encoding	gzip,deflate,sdch
Accept-Language	en-US,en;q=0.8,he;q=0.6

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: | Case sensitive | Regular exp. | Search | Reset

Text

MEAN.JS HTTP Request

Sampler result | Request | Response data

Response Body | Response headers

Find | Case sensitive | Regular exp.

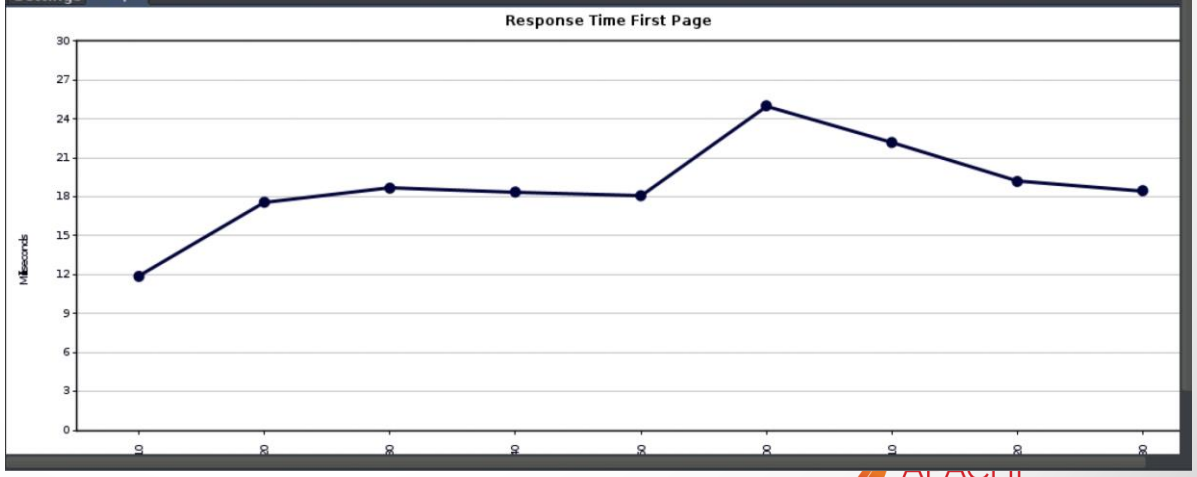
```
<!DOCTYPE html>
<html lang="en" ng-strict-di>
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1">
  <title page-title></title>
  <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
  <meta name="fragment" content="!">

  <!-- Apple META -->
  <meta name="apple-mobile-web-app-capable" content="yes">
  <meta name="apple-mobile-web-app-status-bar-style" content="black">

  <!-- Facebook META -->
  <meta property="fb:app_id" content="APP_ID">
  <meta property="og:site_name" content="MEAN.JS - Development Environment">
  <meta property="og:title" content="MEAN.JS - Development Environment">
  <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
```

Browse... | Log/Display Only: Errors Successes | Configure

Settings | Graph



JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

Summary Report

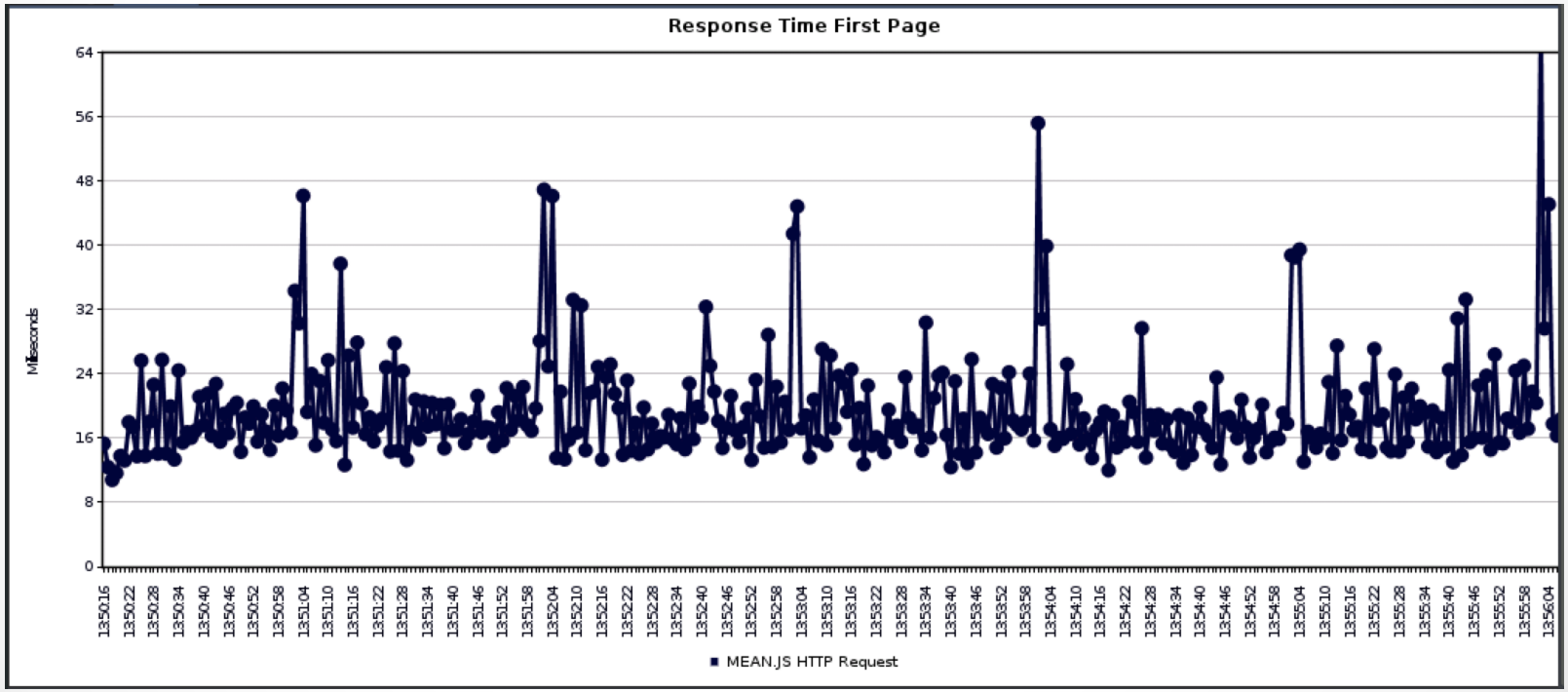
Name: Summary Report

Comments:

Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/...	Sent KB/sec	Avg. Bytes
MEAN.JS HTT...	14725	19	9	201	14.44	0.00%	46.3/sec	108.70	18.06	2401.6
TOTAL	14725	19	9	201	14.44	0.00%	46.3/sec	108.70	18.06	2401.6

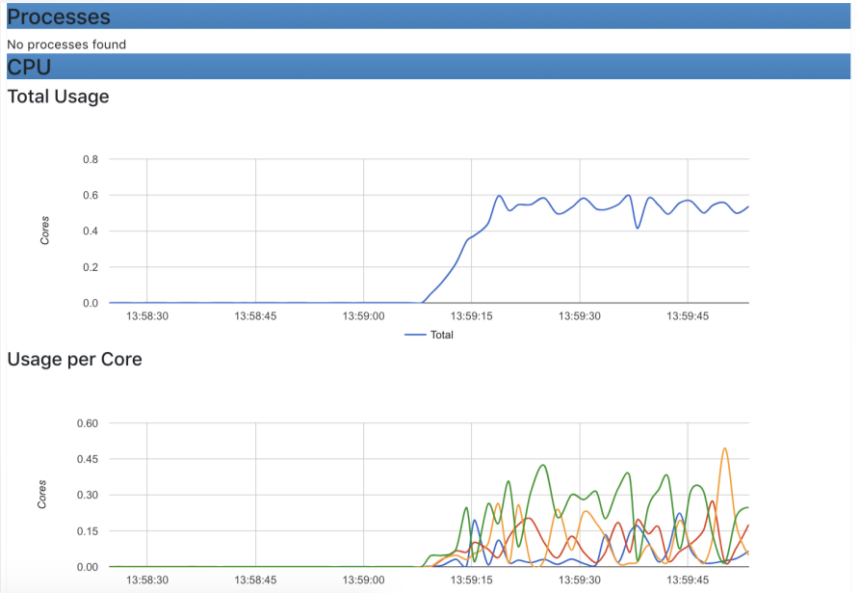


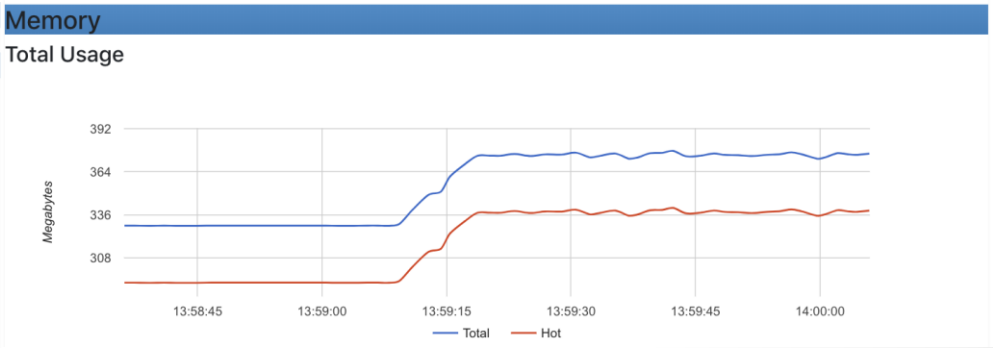
JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
351d00fcc497	magento	0.00%	161.3MiB / 15.53GiB	1.01%	50.2MB / 38.9MB	358MB / 65.2MB	13
49a7dcf906a3	mean	45.03%	275.7MiB / 15.53GiB	1.73%	66MB / 182MB	101MB / 115kB	33
6bf4fff45daf	navicat	0.00%	16.29MiB / 15.53GiB	0.10%	1.01kB / 0B	27.8MB / 4.1kB	12
b1d9f8cd18cf	phpmyadmin	0.00%	18.18MiB / 15.53GiB	0.11%	53.6kB / 598kB	56.6MB / 0B	12
0a76e50c4723	mariadb	0.05%	150.1MiB / 15.53GiB	0.94%	20.7MB / 49.5MB	84.9MB / 2.94GB	52
69fa72db72a9	cadvisor	2.46%	105.7MiB / 15.53GiB	0.66%	104MB / 2.71GB	20.3MB / 0B	15
2fae67db70ce	webmongo	0.00%	38.87MiB / 15.53GiB	0.24%	1.28MB / 1.23MB	36.7MB / 4.1kB	11
4514ee42b5ca	db	2.27%	108MiB / 15.53GiB	0.68%	31.7MB / 17.7MB	55.2MB / 159MB	36





JMeter Benchmark for Production Scale

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Stress Test Table (10% Active user ,Accept with 5% failure ,View response time less than 5 seconds (AVG) and less than 5 seconds (MAX))

Concurrent/ Duration	Action	Samples	Page	Fail Rate	Response Time (AVG)	Response Time (MAX)
100 User (5 Min)	Read	14,725	Front Page	0.00%	19 ms	201 ms
200 User (5 Min)	Read	26,593	Front Page	0.00%	90 ms	1,154 ms
400 User (5 Min)	Read	37,983	Front Page	0.00%	670 ms	3,191 ms
600 User (5 Min)	Read	37,603	Front Page	0.00%	1,185 ms	5,910 ms
800 User (5 Min)	Read	36,901	Front Page	3.50%	1,347 ms	7,672 ms
1000 User (5 Min)	Read	40,734	Front Page	6.34%	1,906 ms	8,640 ms

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Detail of Fail Result:

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: | Case sensitive | Regular exp. | Search | Reset

Text

MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
Duration Assertion
MEAN.JS HTTP Request
Duration Assertion
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request
MEAN.JS HTTP Request

Scroll automatically?

Assertion result

Assertion error: false
Assertion failure: true
Assertion failure message: The operation lasted too long: It took 5,745 milliseconds, but should not have lasted longer than 5,000 milliseconds.

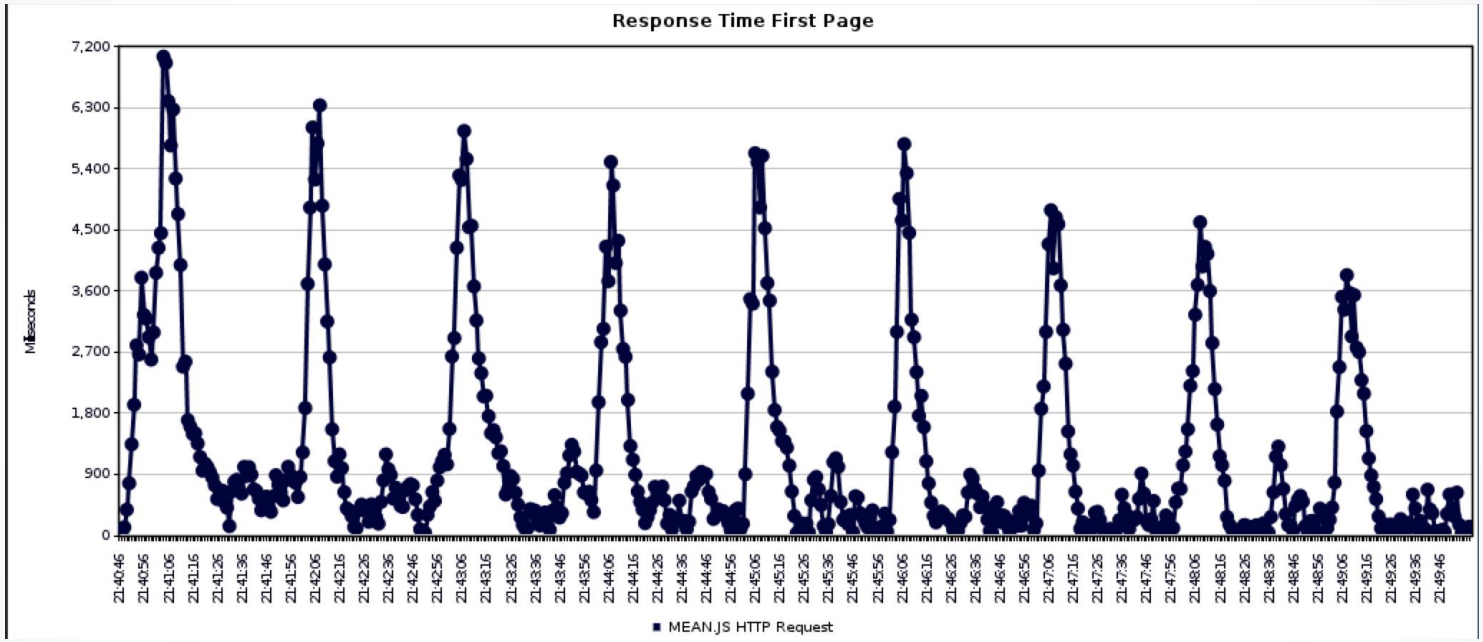
Raw

Present by: Praparn L. (eva10409@gmail.com)

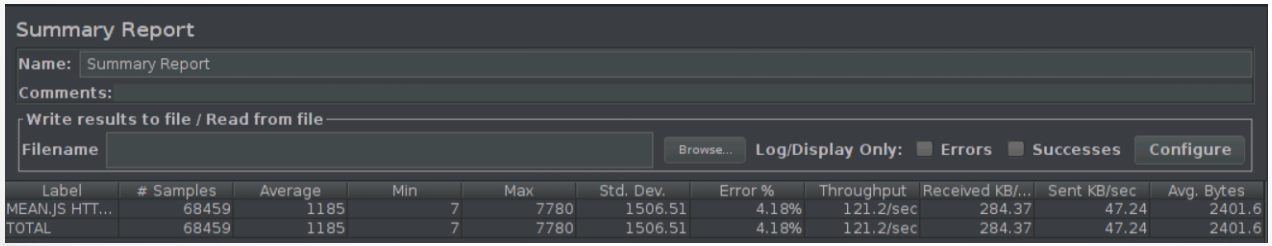
APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Response Time Overall



  - Summarize



Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

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

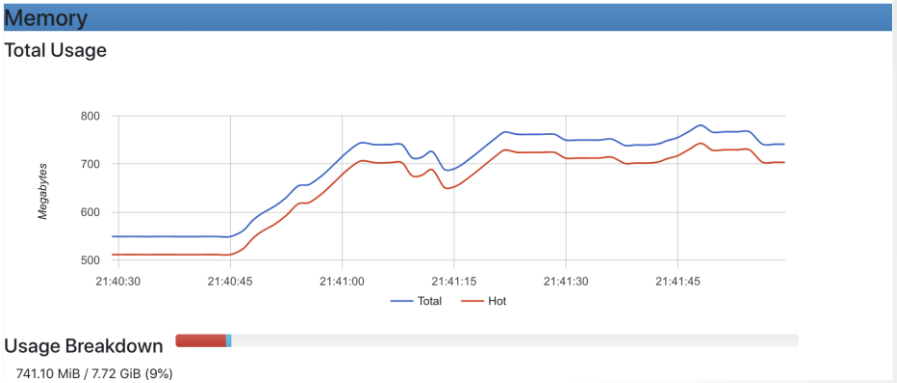
Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/...	Sent KB/sec	Avg. Bytes
MEAN.JS HTT...	68459	1185	7	7780	1506.51	4.18%	121.2/sec	284.37	47.24	2401.6
TOTAL	68459	1185	7	7780	1506.51	4.18%	121.2/sec	284.37	47.24	2401.6

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Result consumption at 800 concurrent users (8,000 users in system)
  - MEAN Container




```
CONTAINER ID   NAME          CPU %     MEM USAGE / LIMIT     MEM %     NET I/O         BLOCK I/O       PIDS
9c05362efd62   magento       0.00%     66.41MiB / 7.719GiB   0.84%     7.55MB / 3.68MB 334MB / 26.5MB  10
49a7dcf906a3   mean          109.95%   599.8MiB / 7.719GiB   7.59%     275MB / 781MB   100MB / 324kB   33
6bf4fff45daf   navicat       0.00%     14.18MiB / 7.719GiB   0.18%     1.08kB / 0B     27.3MB / 4.1kB  11
b1d9f8cd18cf   phpmyadmin    0.00%     9.5MiB / 7.719GiB     0.12%     1.08kB / 0B     49.7MB / 0B     7
0a76e50c4723   mariadb       0.05%     128.2MiB / 7.719GiB   1.62%     3.65MB / 7.54MB 84.2MB / 644MB  33
69fa72db72a9   cadvisor      2.76%     66.14MiB / 7.719GiB   0.84%     9.54MB / 553MB  20.5MB / 0B     11
2fae67db70ce   webmongo      0.01%     23.77MiB / 7.719GiB   0.30%     400kB / 579kB   38.5MB / 16.4kB 11
4514ee42b5ca   db            3.80%     244.6MiB / 7.719GiB   3.10%     122MB / 59.8MB  74.9MB / 1.02GB 36
```

```
top - 21:44:30 up 55 min,  1 user,  load average: 2.39, 1.53, 1.33
Tasks: 165 total,   3 running, 162 sleeping,   0 stopped,   0 zombie
%Cpu0  : 95.7 us,  3.3 sy,  0.0 ni,  0.3 id,  0.0 wa,  0.0 hi,  0.7 si,  0.0 st
%Cpu1  :  9.5 us,  5.1 sy,  0.0 ni, 79.3 id,  1.4 wa,  0.0 hi,  4.8 si,  0.0 st
KiB Mem :  8093528 total,  4799700 free,  1441988 used,  1851840 buff/cache
KiB Swap:        0 total,        0 free,        0 used.  6216284 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
 3057 root      20   0 1886200 412812  21452 S 107.6  5.1  33:02.76 node
 1857 999       20   0 1283380 288264  36748 S   3.7  3.6   1:16.02 mongod
 2095 root      20   0  258344  81492  14748 S   2.0  1.0   1:40.92 cadvisor
 1204 root      20   0  549876  84616  37864 S   1.7  1.0   0:26.77 dockerd
 2796 root      20   0   10796   5108   4128 S   1.7  0.1   0:34.47 containerd-shim
   13 root      20   0       0      0      0 S   0.3  0.0   0:06.27 ksoftirqd/1
 2216 1001      20   0 1718492 147672  17356 S   0.3  1.8   0:11.34 mysqld
 5596 root      20   0       0      0      0 S   0.3  0.0   0:00.35 kworker/u4:0
 6215 root      20   0       0      0      0 R   0.3  0.0   0:00.01 kworker/u4:2
    1 root      20   0   38012   6156   4104 S   0.0  0.1   0:03.97 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kthreadd
    3 root      20   0       0      0      0 S   0.0  0.0   0:00.82 ksoftirqd/0
```

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Result consumption at 800 concurrent users (8,000 users in system)

```
ubuntu@ip-10-21-1-93:~$ vmstat 2
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 7  0      0 4834192 374088 1481980    0    0   158   279 1929 2869 37  6 56  1  0
 1  0      0 4809412 374100 1481784    0    0     0   114 6745 7882 52  7 41  0  0
 1  0      0 4836352 374100 1481776    0    0     0   158 7027 7581 52  9 39  0  0
 1  0      0 4835448 374100 1481820    0    0     0   152 6273 7050 53  7 40  0  0
 0  0      0 4819436 374120 1481872    0    0     0   260 6822 8487 53  8 39  1  0
 1  0      0 4815332 374132 1481856    0    0     0   316 6978 11144 43  8 48  1  0
 7  0      0 4812432 374164 1481804    0    0     0   278 7129 10453 50  8 41  1  0
 7  0      0 4797948 374176 1481688    0    0     0   276 7739 10853 49  9 41  1  0
 1  0      0 4811032 374192 1481708    0    0     0   182 7465 8110 53  7 39  0  0
 2  0      0 4809852 374196 1481788    0    0     0   210 6696 7782 54  7 39  0  0
 2  0      0 4804240 374196 1481960    0    0     0   296 6535 9369 52 10 37  0  0
 2  0      0 4801508 374196 1481984    0    0     0   242 7393 10027 41  8 49  1  0
 2  0      0 4824700 374196 1482036    0    0     0   178 7548 7481 54  8 38  0  0
^C
ubuntu@ip-10-21-1-93:~$
```

```
ubuntu@ip-10-21-1-93:~$ iostat -xtc 2
Linux 4.4.0-1083-aws (ip-10-21-1-93)    06/01/2019      _x86_64_        (2 CPU)

06/01/2019 09:46:13 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          37.68    0.01    5.88    0.60    0.03   55.81

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    1.00    0.00     1.09     0.00     2.17     0.00    0.24    0.24    0.00   0.01   0.00
loop1             0.00     0.00    2.67    0.00     2.97     0.00     2.22     0.00    1.03    1.03    0.00   0.03   0.01
loop2             0.00     0.00    0.01    0.00     0.31     0.00    41.61     0.00    0.31    0.31    0.00   0.24   0.00
loop3             0.00     0.00    0.01    0.00     0.10     0.00    20.00     0.00    0.24    0.24    0.00   0.24   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     5.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00   29.45   45.95   305.10   561.54    22.99     0.06    0.83    0.38    1.12   0.24   1.78

06/01/2019 09:46:15 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          51.78    0.00    8.12    0.25    0.00   39.85

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   28.00     0.00   660.00    47.14     0.02    0.71    0.00    0.71   0.29   0.80

06/01/2019 09:46:17 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          52.37    0.00    7.98    0.50    0.00   39.15

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   30.50     0.00   174.00    11.41     0.01    0.46    0.00    0.46   0.39   1.20

06/01/2019 09:46:19 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          51.89    0.00    5.79    0.50    0.00   41.81

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   48.00     0.00   242.00    10.08     0.03    0.58    0.00    0.58   0.29   1.40
```

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Result consumption at 800 concurrent users (8,000 users in system)

```
ubuntu@ip-10-21-1-93:~$ iostat -xtc 2
Linux 4.4.0-1083-aws (ip-10-21-1-93)    06/01/2019      _x86_64_        (2 CPU)

06/01/2019 09:46:13 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          37.68    0.01    5.88    0.60    0.03   55.81

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    1.00    0.00     1.09     0.00     2.17     0.00    0.24    0.24    0.00   0.01   0.00
loop1             0.00     0.00    2.67    0.00     2.97     0.00     2.22     0.00    1.03    1.03    0.00   0.03   0.01
loop2             0.00     0.00    0.01    0.00     0.31     0.00    41.61     0.00    0.31    0.31    0.00   0.24   0.00
loop3             0.00     0.00    0.01    0.00     0.10     0.00    20.00     0.00    0.24    0.24    0.00   0.24   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     5.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00   29.45   45.95   305.10   561.54    22.99     0.06    0.83    0.38    1.12   0.24   1.78

06/01/2019 09:46:15 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          51.78    0.00    8.12    0.25    0.00   39.85

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   28.00     0.00   660.00    47.14     0.02    0.71    0.00    0.71   0.29   0.80

06/01/2019 09:46:17 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          52.37    0.00    7.98    0.50    0.00   39.15

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   30.50     0.00   174.00    11.41     0.01    0.46    0.00    0.46   0.39   1.20

06/01/2019 09:46:19 PM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          51.89    0.00    5.79    0.50    0.00   41.81

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   48.00     0.00   242.00    10.08     0.03    0.58    0.00    0.58   0.29   1.40
```

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MEAN.JS Result
  - Summary
    - First Page of MEAN.JS can support pass baseline at 2,000 Users (200 concurrent) at response time 90 ms (Average)
    - Full load test reach limit about 8,000 Users (800 concurrent) at response time 1,347 ms (Average)
    - Performance issue touch at CPU's resource (single cpu for nodejs)

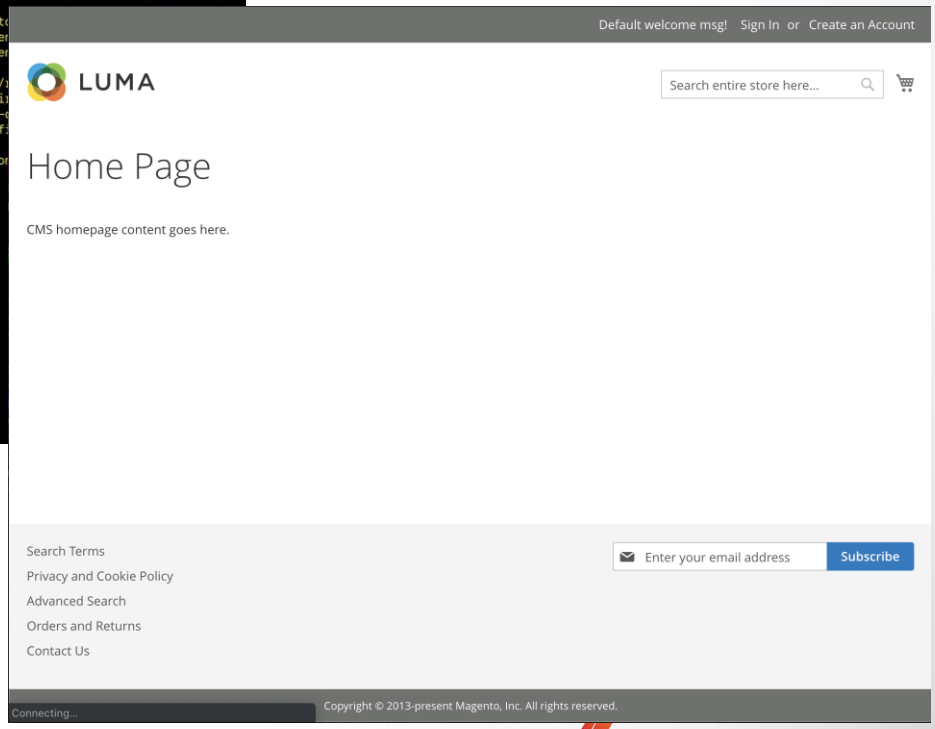
WorkShop: 1-5 Basic-FullTest

- MAGENTO (First Page)

```
ubuntu@ip-10-21-1-152:~$ curl http://52.221.184.231/index.php
<!doctype html>
<html lang="en">
    <head >
        <script>
    var BASE_URL = 'http://52.221.184.231/index.php/';
    var require = {
        "baseUrl": "http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US"
    };
</script>
        <meta charset="utf-8"/>
<meta name="robots" content="INDEX,FOLLOW"/>
<meta name="title" content="Home page"/>
<meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1.0, user-scalable=no"/>
<meta name="format-detection" content="telephone=no"/>
<title>Home page</title>
<link  rel="stylesheet" type="text/css"  media="all" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/mage/calendar.css" />
<link  rel="stylesheet" type="text/css"  media="all" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/css/styles-m.css" />
<link  rel="stylesheet" type="text/css"  media="screen and (min-width: 768px)" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en
_US/css/styles-l.css" />
<link  rel="stylesheet" type="text/css"  media="print" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento
<link  rel="icon" type="image/x-icon" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/Mager
<link  rel="shortcut icon" type="image/x-icon" href="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/er
>
<script  type="text/javascript"  src="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/requirejs/
<script  type="text/javascript"  src="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/mage/requi
<script  type="text/javascript"  src="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/requirejs-
<script  type="text/javascript"  src="http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US/mage/polyf
        </head>
    <body data-container="body" data-mage-init='{"loaderAjax": {}, "loader": { "icon": "http://52.221.184.231/pub/static/versio
/en_US/images/loader-2.gif"}}' class="cms-home cms-index-index page-layout-1column">
            <script>
        require.config({
            deps: [
                'jquery',
                'mage/translate',
                'jquery/jquery-storageapi'
            ],
            callback: function ($) {
                'use strict';

                var dependencies = [],
                    versionObj;

                $.initNamespaceStorage('mage-translation-storage');
                $.initNamespaceStorage('mage-translation-file-version');
                versionObj = $.localStorage.get('mage-translation-file-version');
```



WorkShop: 1-5 Basic-FullTest

- Purpose for Test
  - Start load test on first page of Magento with 5 min duration
  - Think time vary between 200 ms – 2 seconds
  - Validate for make sure each response for make surly to get complete result
  - Simulate similar with android phone with chrome browser environment
  - Concurrent user was tested from 10 Users (10% of 100) to 100 Users (10% of 1,000) with lamp-up period within 60 seconds until error more than 5%
  - Monitor resource of application side for tuning

WorkShop: 1-5 Basic-FullTest

KickStart_MAGENTO_WorkShop_1_5.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/KickStart_MAGENTO_WorkShop_1_5.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:06:21 0 0/10

- KickStart_MAGENTO_WorkShop_1_5
  - HTTP Header for Chrome
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Thread Group 10 Users
    - MEGENTO HTTP Request
    - Comparison Assertion Visualizer
    - Result
    - View Results in Table
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph

HTTP Request

Name: MEGENTO HTTP Request

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BasePublicIP} | Port Number: {MagentoPort}

HTTP Request

Method: GET | Path: /index.php | Content encoding:

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

Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

Detail | Add | Add from Clipboard | Delete | Up | Down

KickStart_MAGENTO_WorkShop_1_5.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/KickStart_MAGENTO_WorkShop_1_5.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:06:21 0 0/10

- KickStart_MAGENTO_WorkShop_1_5
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Thread Group 10 Users
    - MEGENTO HTTP Request
    - Comparison Assertion Visualizer
    - Result
    - View Results in Table
    - Summary Report
    - Aggregate Report
    - Graph Results
    - Response Time Graph

HTTP Header Manager

Name: HTTP Header for Android

Comments:

Headers Stored in the Header Manager

Name:	Value
User-agent	Mozilla/5.0 (Linux; Android 9; SM-G960F Build/PPR1.180610.011; wv) AppleWebKi...
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Encoding	gzip,deflate,sdch
Accept-Language	en-US,en;q=0.8,he;q=0.6

WorkShop: 1-5 Basic-FullTest

View Results Tree

Name: Result

Comments:

Write results to file / Read from file

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

Search: | Case sensitive | Regular exp. | Search | Reset

Text

MEGENTO HTTP Request

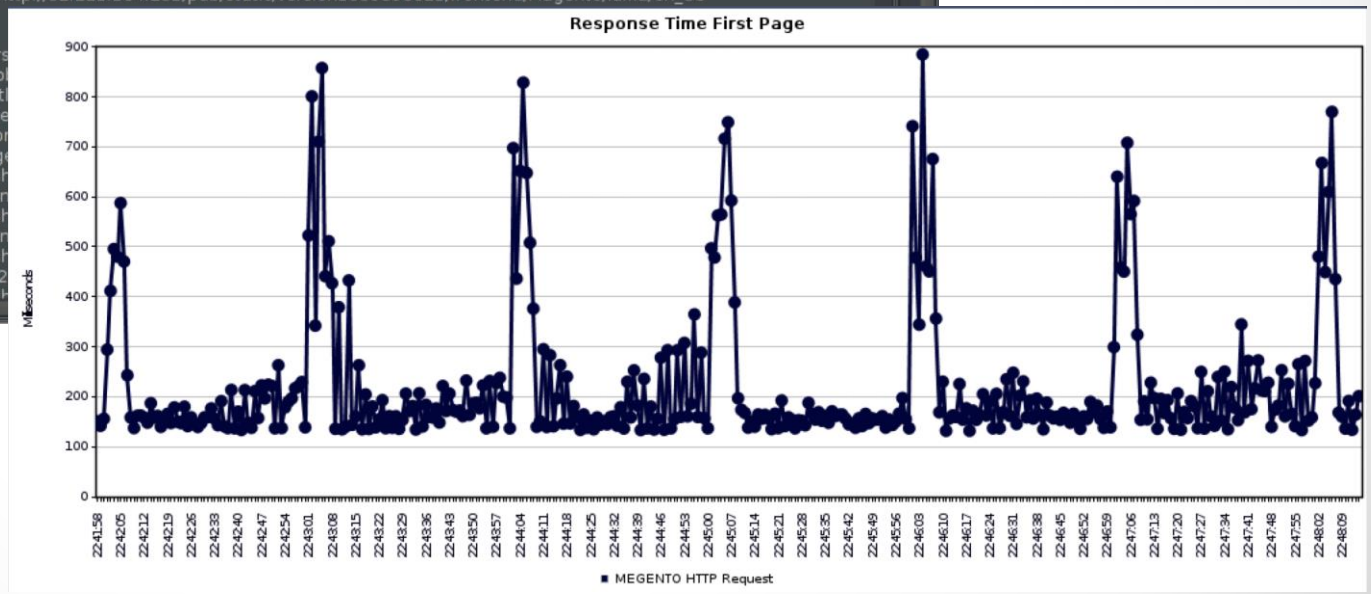
Scroll automatically?

Sampler result | Request | Response data

Response Body | Response headers

Find | Case sensitive | Regular exp.

```
<!doctype html>
<html lang="en">
  <head >
    <script>
  var BASE_URL = 'http://52.221.184.231/index.php/';
  var require = {
    "baseUrl": "http://52.221.184.231/pub/static/version1559398821/frontend/Magento/luma/en_US"
  };
</script>
```

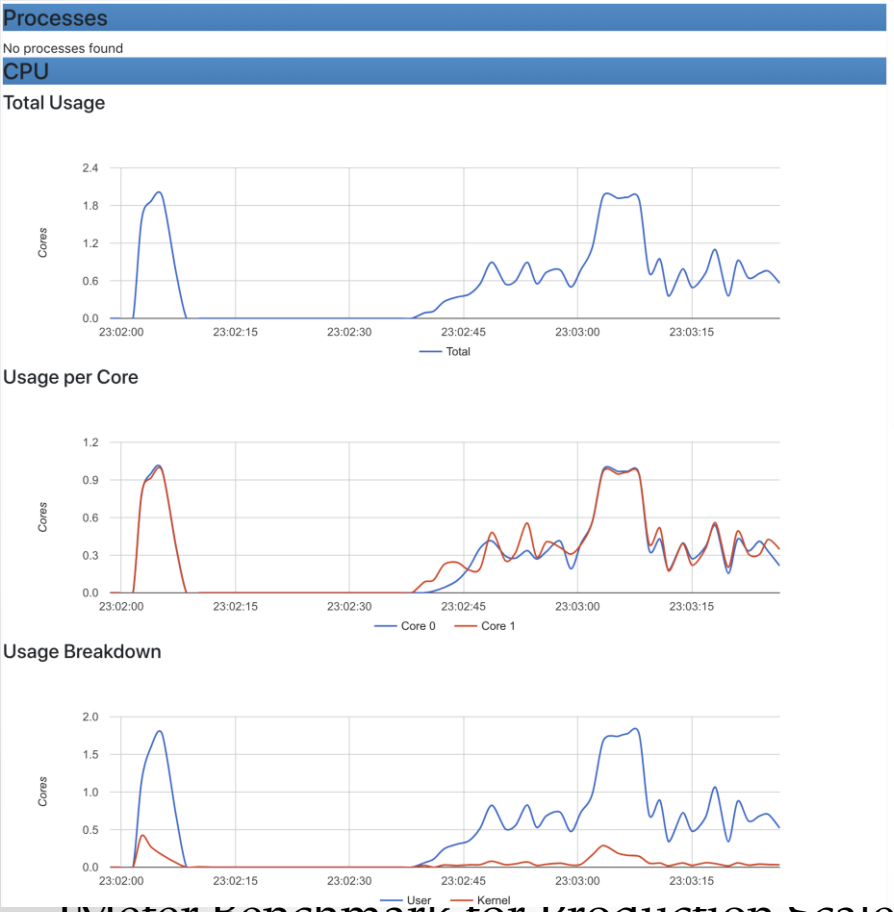


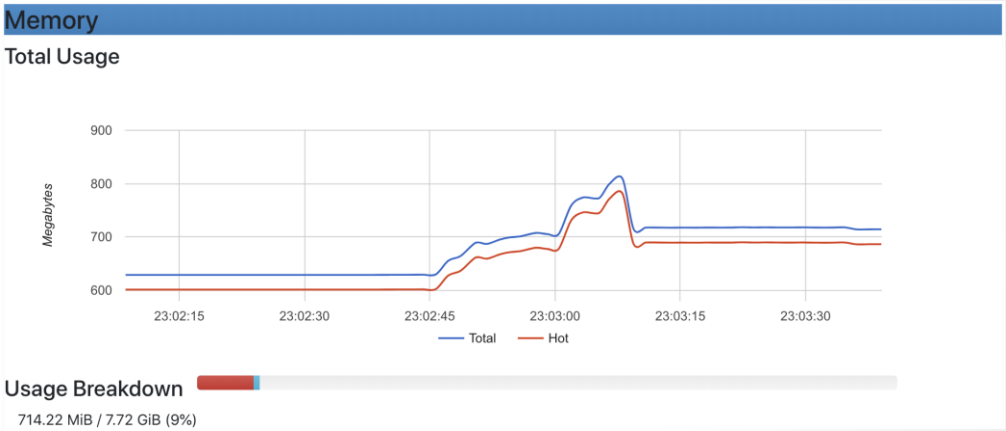
JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
9c05362efd62	magento	78.55%	235.3MiB / 7.719GiB	2.98%	109MB / 62.8MB	334MB / 164MB	19
49a7dcf906a3	mean	0.07%	436.8MiB / 7.719GiB	5.53%	330MB / 937MB	100MB / 324kB	33
6bf4fff45daf	navicat	0.00%	14.18MiB / 7.719GiB	0.18%	1.12kB / 0B	27.3MB / 4.1kB	11
b1d9f8cd18cf	phpmyadmin	0.01%	9.5MiB / 7.719GiB	0.12%	1.12kB / 0B	49.7MB / 0B	7
0a76e50c4723	mariadb	0.50%	146.9MiB / 7.719GiB	1.86%	29MB / 103MB	84.8MB / 1.86GB	53
69fa72db72a9	cadvisor	1.61%	39.48MiB / 7.719GiB	0.50%	18.3MB / 764MB	20.5MB / 0B	12
2fae67db70ce	webmongo	0.04%	33.87MiB / 7.719GiB	0.43%	787kB / 832kB	38.5MB / 16.4kB	11
4514ee42b5ca	db	0.19%	272.2MiB / 7.719GiB	3.44%	146MB / 72.3MB	74.9MB / 1.32GB	36





JMeter Benchmark for Production Scale

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Stress Test Table (10% Active user ,Accept with 5% failure ,View response time less than 5 seconds (AVG) and less than 5 seconds (MAX))

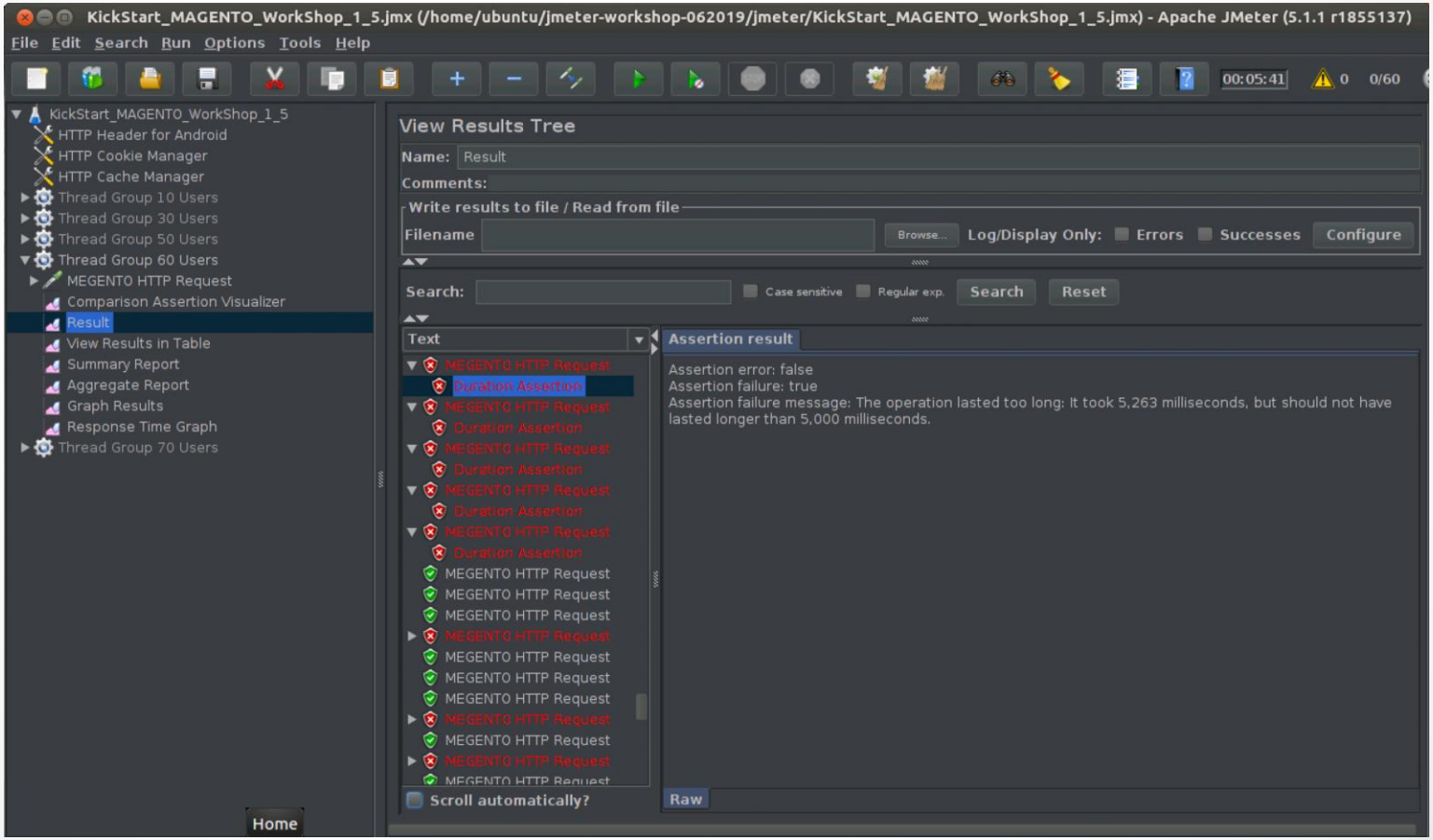
Concurrent/ Duration	Action	Samples	Page	Fail Rate	Response Time (AVG)	Response Time (MAX)
10 User (5 Min)	Read	1,323	Front Page	0.00%	219 ms	872 ms
30 User (5 Min)	Read	3,352	Front Page	0.00%	1,080 ms	2,376 ms
50 User (5 Min)	Read	2,974	Front Page	0.00 %	3,141 ms	4,567 ms
60 User (5 Min)	Read	3,170	Front Page	2.37 %	4,243 ms	6,750 ms
70 User (5 Min)	Read	2,832	Front Page	78.67 %	5,210 ms	7,944 ms

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

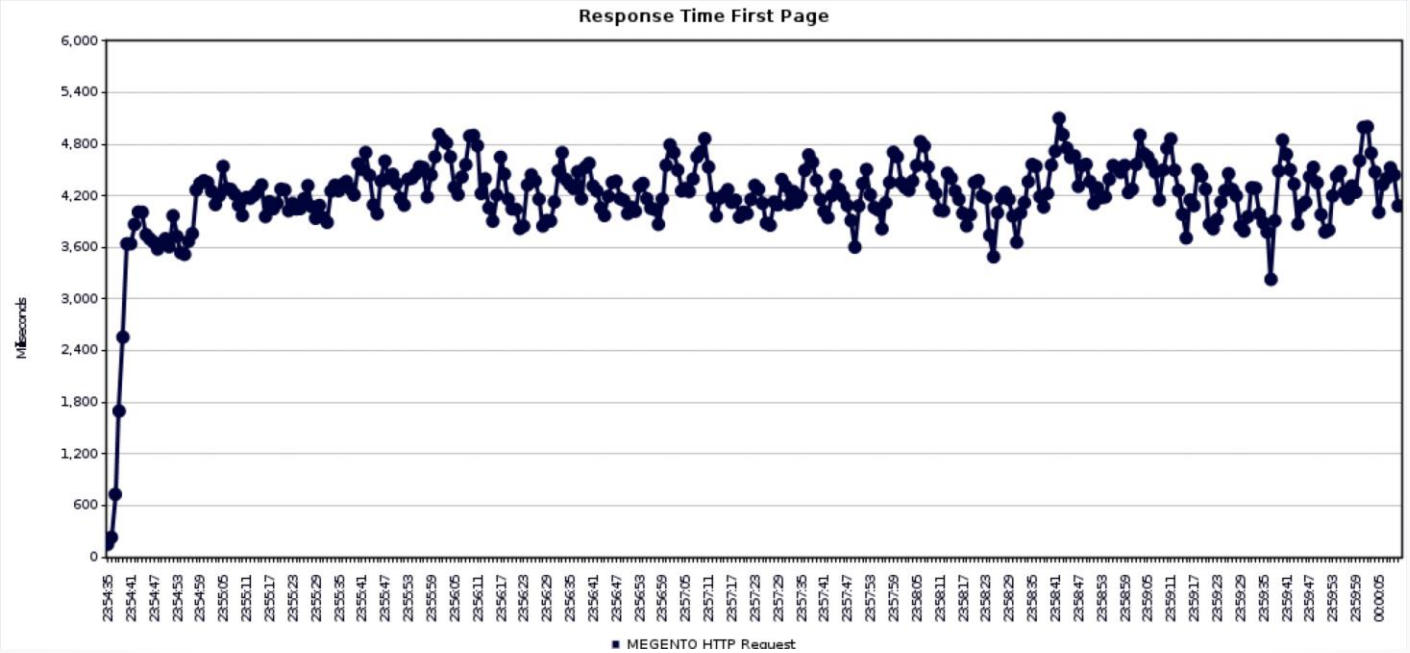
- MAGENTO Result
  - Detail of Fail Result:



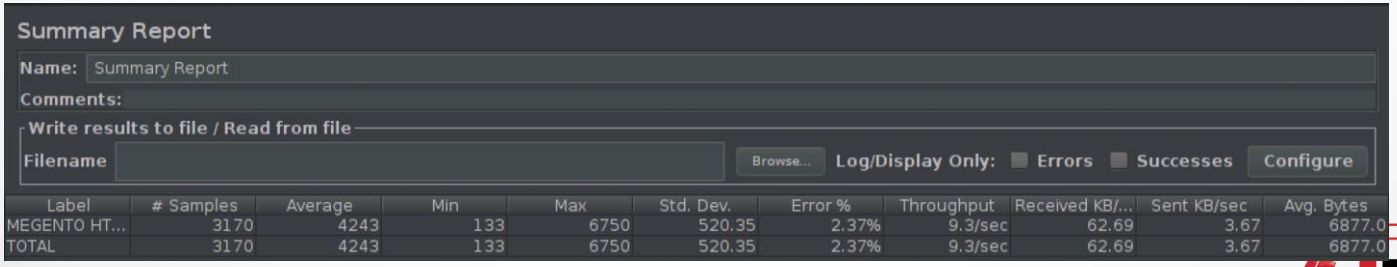
Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Response Time Overall



  - Summarize



Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

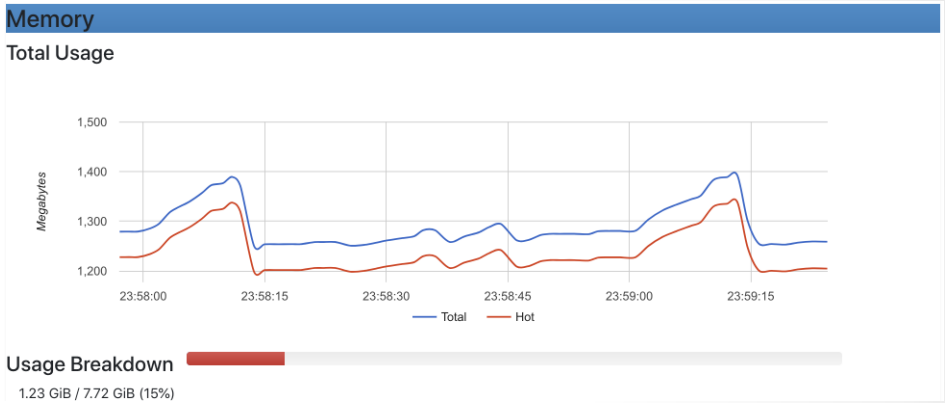
Filename | Browse... | Log/Display Only: Errors Successes | Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/...	Sent KB/sec	Avg. Bytes
MEGENTO HT...	3170	4243	133	6750	520.35	2.37%	9.3/sec	62.69	3.67	6877.0
TOTAL	3170	4243	133	6750	520.35	2.37%	9.3/sec	62.69	3.67	6877.0

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Result consumption at 60 concurrent users (600 users in system)
  - MEAN Container




```
CONTAINER ID   NAME          CPU %     MEM USAGE / LIMIT     MEM %    NET I/O         BLOCK I/O       PIDS
ca2ffbad3d38   magento       191.12%   1.203GiB / 7.719GiB   15.58%   53.6MB / 125MB  20.5MB / 26MB   84
49a7dcf906a3   mean          0.14%     384.2MiB / 7.719GiB   4.86%    331MB / 941MB   100MB / 324kB   33
6bf4fff45daf   navicat       0.00%     14.15MiB / 7.719GiB   0.18%    1.21kB / 0B     27.3MB / 4.1kB  11
b1d9f8cd18cf   phpmyadmin    0.00%     9.5MiB / 7.719GiB     0.12%    1.21kB / 0B     49.7MB / 0B     7
0a76e50c4723   mariadb       1.80%     160MiB / 7.719GiB     2.02%    57.6MB / 161MB  84.8MB / 2.57GB 62
69fa72db72a9   cadvisor      1.89%     70.25MiB / 7.719GiB   0.89%    27.2MB / 865MB  20.5MB / 0B     12
2fae67db70ce   webmongo      0.00%     38.41MiB / 7.719GiB   0.49%    1.04MB / 1.01MB 38.5MB / 16.4kB 11
4514ee42b5ca   db            0.23%     272.2MiB / 7.719GiB   3.44%    147MB / 72.9MB  74.9MB / 1.36GB 36
```

```
top - 00:05:21 up  3:16,  1 user,  load average: 26.36, 21.64, 24.46
Tasks: 237 total,  37 running, 200 sleeping,   0 stopped,   0 zombie
%Cpu0  : 90.0 us, 10.0 sy,  0.0 ni,  0.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu1  : 90.0 us,  9.3 sy,  0.0 ni,  0.0 id,  0.0 wa,  0.0 hi,  0.7 si,  0.0 st
KiB Mem :  8093528 total,  3860132 free,  2335220 used,  1898176 buff/cache
KiB Swap:        0 total,        0 free,        0 used.  5323780 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
15599 daemon    20   0  488780  49584  28028 R   5.0  0.6   0:01.69 httpd
15601 daemon    20   0  488784  49608  28036 R   5.0  0.6   0:01.65 httpd
15678 ubuntu    20   0  222496  55260  24364 R   5.0  0.7   0:00.92 php
15584 daemon    20   0  488384  49316  28020 R   4.7  0.6   0:01.87 httpd
15598 daemon    20   0  488784  49604  28032 R   4.7  0.6   0:01.66 httpd
15607 daemon    20   0  488784  49608  28036 R   4.7  0.6   0:01.67 httpd
15608 daemon    20   0  488776  49608  28036 R   4.7  0.6   0:01.69 httpd
15610 daemon    20   0  488776  49604  28036 R   4.7  0.6   0:01.70 httpd
15618 daemon    20   0  488784  49608  28036 R   4.7  0.6   0:01.64 httpd
15677 ubuntu    20   0  199584  30476  23048 R   4.7  0.4   0:00.92 php
15679 ubuntu    20   0  222496  55216  24320 R   4.7  0.7   0:00.92 php
```

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Result consumption at 60 concurrent users (600 users in system)

```
ubuntu@ip-10-21-1-93:~$ vmstat 1
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
51  0      0 3874312 383056 1519580    0    0    46   190 1044   10 40  5 55  0  0
46  0      0 3875928 383056 1519620    0    0     0  1664 1879 3863 93  7  0  0  0
47  0      0 3870832 383060 1519664    0    0     0   100 1303 3463 93  7  0  0  0
50  0      0 3870272 383060 1519788    0    0     0   884 1778 4039 92  8  0  0  0
41  0      0 3871296 383068 1519868    0    0     0     0 1837 4678 90 11  0  0  0
31  0      0 3873416 383076 1519992    0    0     0     0 1520 3244 90 11  0  0  0
38  0      0 3874584 383080 1520068    0    0     0     0 1797 4194 92  9  0  0  0
39  0      0 3873828 383080 1520180    0    0     0     0 1949 4267 92  9  0  0  0
44  0      0 3867276 383080 1520168    0    0     0   216 1283 3100 94  7  0  0  0
^C
```

```
ubuntu@ip-10-21-1-93:~$ sar -n DEV 2
Linux 4.4.0-1083-aws (ip-10-21-1-93)    06/02/2019      _x86_64_        (2 CPU)

12:08:09 AM     IFACE   rxpck/s   txpck/s    rxkB/s    txkB/s   rxcmp/s   txcmp/s  rxmcst/s   %ifutil
12:08:11 AM vethb76b148      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM        lo      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM      ens5     85.00    144.50      8.36    184.25      0.00      0.00      0.00      0.00
12:08:11 AM vetheee1836    192.00    243.50     49.56     23.15      0.00      0.00      0.00      0.00
12:08:11 AM vethb5479bd    268.50    227.00     91.96     53.83      0.00      0.00      0.00      0.01
12:08:11 AM veth69eb8d9     41.00     49.00    110.33      4.03      0.00      0.00      0.00      0.01
12:08:11 AM vethde66354      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM br-d0602bc792ae      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM veth86399ce      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM   docker0     66.00     84.00    178.23      8.29      0.00      0.00      0.00      0.00
12:08:11 AM veth362f130      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:11 AM veth7257a36      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

12:08:11 AM     IFACE   rxpck/s   txpck/s    rxkB/s    txkB/s   rxcmp/s   txcmp/s  rxmcst/s   %ifutil
12:08:13 AM vethb76b148      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM        lo      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM      ens5    118.00    189.00     12.29    228.07      0.00      0.00      0.00      0.00
12:08:13 AM vetheee1836    115.50    147.50     24.59     12.55      0.00      0.00      0.00      0.00
12:08:13 AM vethb5479bd    192.00    179.00    122.94     32.50      0.00      0.00      0.00      0.01
12:08:13 AM veth69eb8d9     41.00     53.00    110.33      4.29      0.00      0.00      0.00      0.01
12:08:13 AM vethde66354      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM br-d0602bc792ae      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM veth86399ce      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM   docker0     85.50    116.50    219.55     12.20      0.00      0.00      0.00      0.00
12:08:13 AM veth362f130      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:13 AM veth7257a36      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00

12:08:13 AM     IFACE   rxpck/s   txpck/s    rxkB/s    txkB/s   rxcmp/s   txcmp/s  rxmcst/s   %ifutil
12:08:15 AM vethb76b148      1.50      1.00      0.12      0.18      0.00      0.00      0.00      0.00
12:08:15 AM        lo      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:15 AM      ens5    130.50    150.00     15.32    151.73      0.00      0.00      0.00      0.00
12:08:15 AM vetheee1836     73.00     86.00     15.67      7.62      0.00      0.00      0.00      0.00
12:08:15 AM vethb5479bd    136.00    153.00     44.53     26.85      0.00      0.00      0.00      0.00
12:08:15 AM veth69eb8d9     41.00     50.00    110.33      4.11      0.00      0.00      0.00      0.01
12:08:15 AM vethde66354      1.50      1.00      0.12      0.18      0.00      0.00      0.00      0.00
12:08:15 AM br-d0602bc792ae      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:15 AM veth86399ce      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:15 AM   docker0     91.00    130.00    146.00     15.29      0.00      0.00      0.00      0.00
12:08:15 AM veth362f130      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
12:08:15 AM veth7257a36      2.00      3.00      0.36      0.25      0.00      0.00      0.00      0.00
```

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Result consumption at 60 concurrent users (600 users in system)

```
ubuntu@ip-10-21-1-93:~$ iostat -xtc 2
Linux 4.4.0-1083-aws (ip-10-21-1-93)    06/02/2019      _x86_64_        (2 CPU)

06/02/2019 12:06:53 AM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          40.05    0.01    4.98    0.21    0.03   54.72

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.29    0.00     0.32     0.00     2.17     0.00    0.24    0.24    0.00   0.01   0.00
loop1             0.00     0.00    0.77    0.00     0.86     0.00     2.22     0.00    1.03    1.03    0.00   0.03   0.00
loop2             0.00     0.00    0.00    0.00     0.09     0.00    41.61     0.00    0.31    0.31    0.00   0.24   0.00
loop3             0.00     0.00    0.00    0.00     0.03     0.00    20.00     0.00    0.24    0.24    0.00   0.24   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     5.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    8.71   35.78    90.52   379.49    21.13     0.04    0.93    0.38    1.07   0.21   0.94

06/02/2019 12:06:55 AM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          94.01    0.00    5.99    0.00    0.00    0.00

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   72.50     0.00   396.00    10.92     0.13    1.74    0.00    1.74   0.11   0.80

06/02/2019 12:06:57 AM
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          92.50    0.00    7.50    0.00    0.00    0.00

Device:         rrqm/s   wrqm/s     r/s     w/s    rkB/s    wkB/s avgrq-sz avgqu-sz   await r_await w_await  svctm  %util
loop0             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop1             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop2             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop3             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
loop4             0.00     0.00    0.00    0.00     0.00     0.00     0.00     0.00    0.00    0.00    0.00   0.00   0.00
nvme0n1           0.00     0.00    0.00   25.00     0.00   100.00     8.00     0.04    1.52    0.00    1.52   0.16   0.40
```

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 1-5 Basic-FullTest

- MAGENTO Result
  - Summary
    - First Page of MAGENTO can support only 600 Users (60 concurrent)
    - Performance issue touch at CPU's resource consume all (all cpu for apache httpd)
    - Base on PHP process. Will effect to cost per compute than other language

Outline Day 1

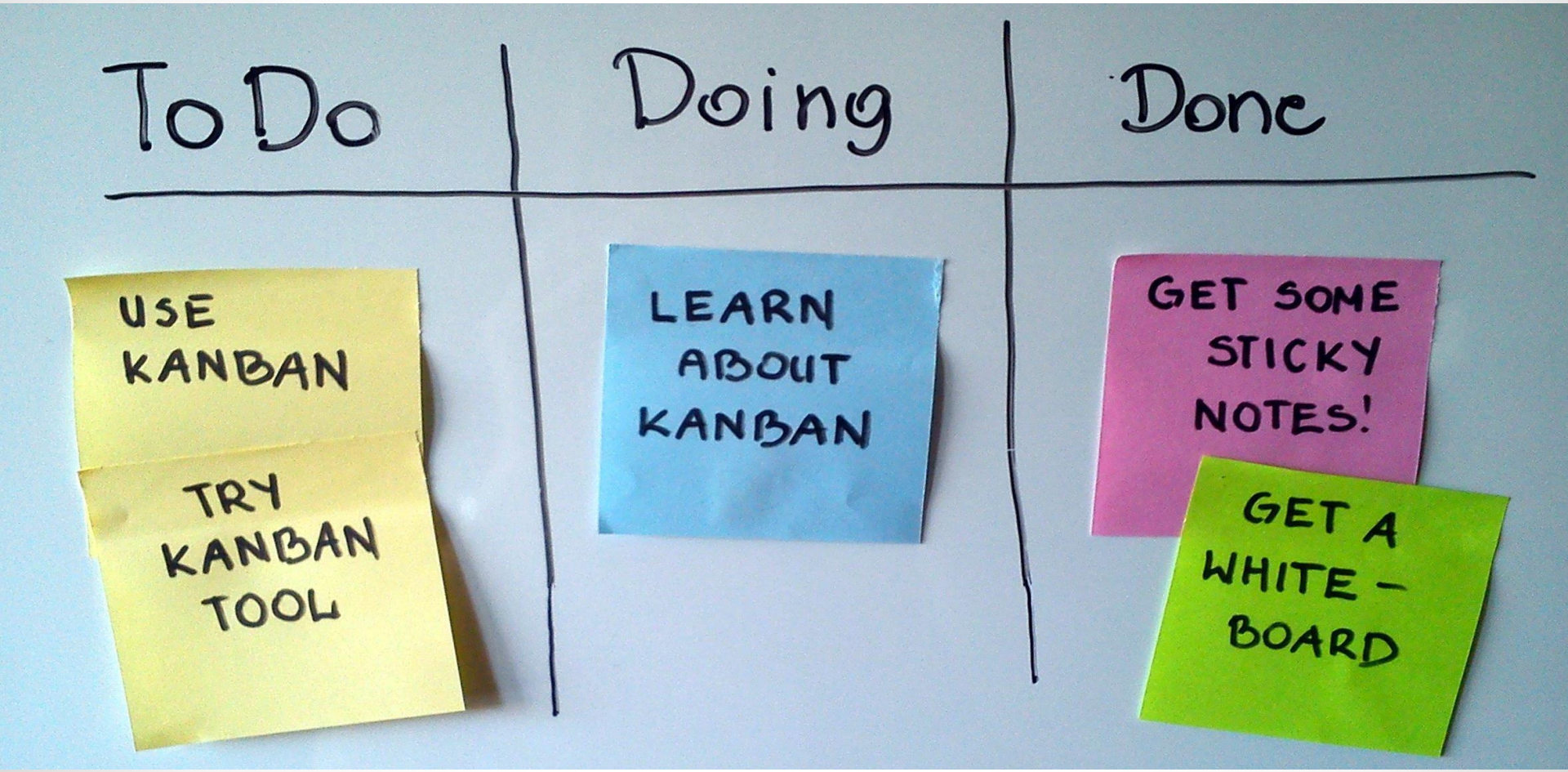
- Application UX and Pain Point
- Performance test principle
  - Benchmark vs Baseline
  - Performance testing type
  - Performance test tool comparison
  - Selenium vs JMeter
- Introduction to JMeter
  - What is JMeter ?
  - Jmeter Major Component
  - MEAN Stack
  - Magento Stack
- JMeter's elements part 1 (Basic)
  - Test Plan
  - Thread Group
  - Sampler
  - Listener
  - Assertion
- Full Load Test Part 1 (Simple Load Test)

Jmeter ZerotoHero for Production Scale (Day 2)

Outline Day 2

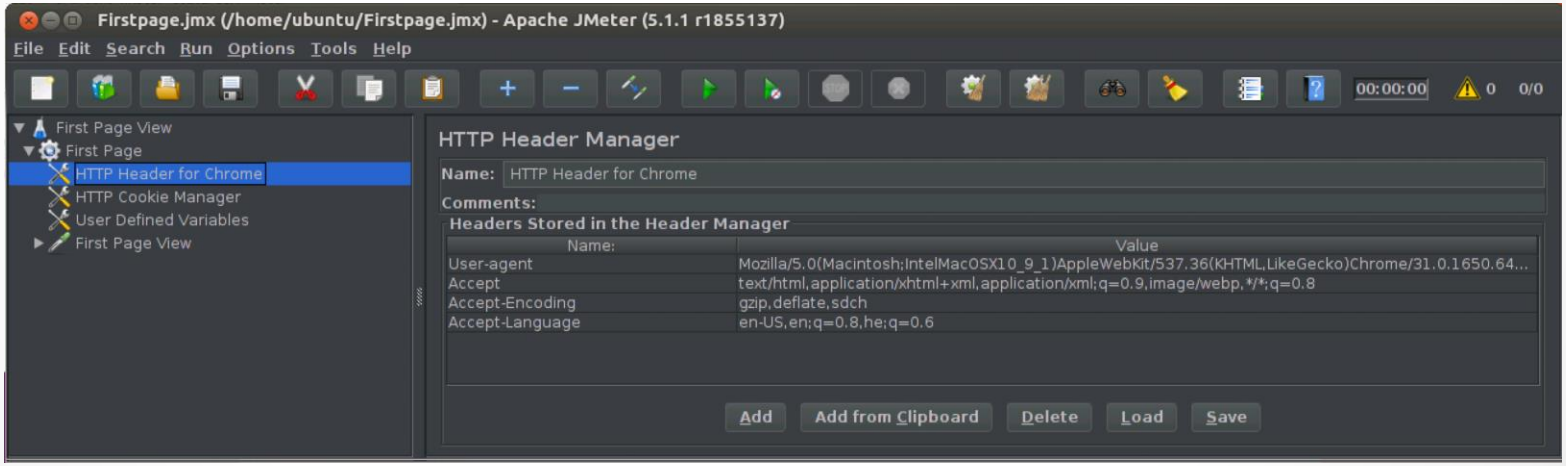
- JMeter's elements part 2 (Advance)
  - Config Element and Parameter
  - Pre/Post Processors
  - Timer
  - Logical Controller
- Full Load Test Part 2 (Complex Load Test)
- Jmeter's for production
  - Testing with plugin
  - Non-GUI mode
  - Distributed Load Model
  - Record Performance Test
  - Best Practice for Jmeter

Jmeter's element part 2 (Advance)



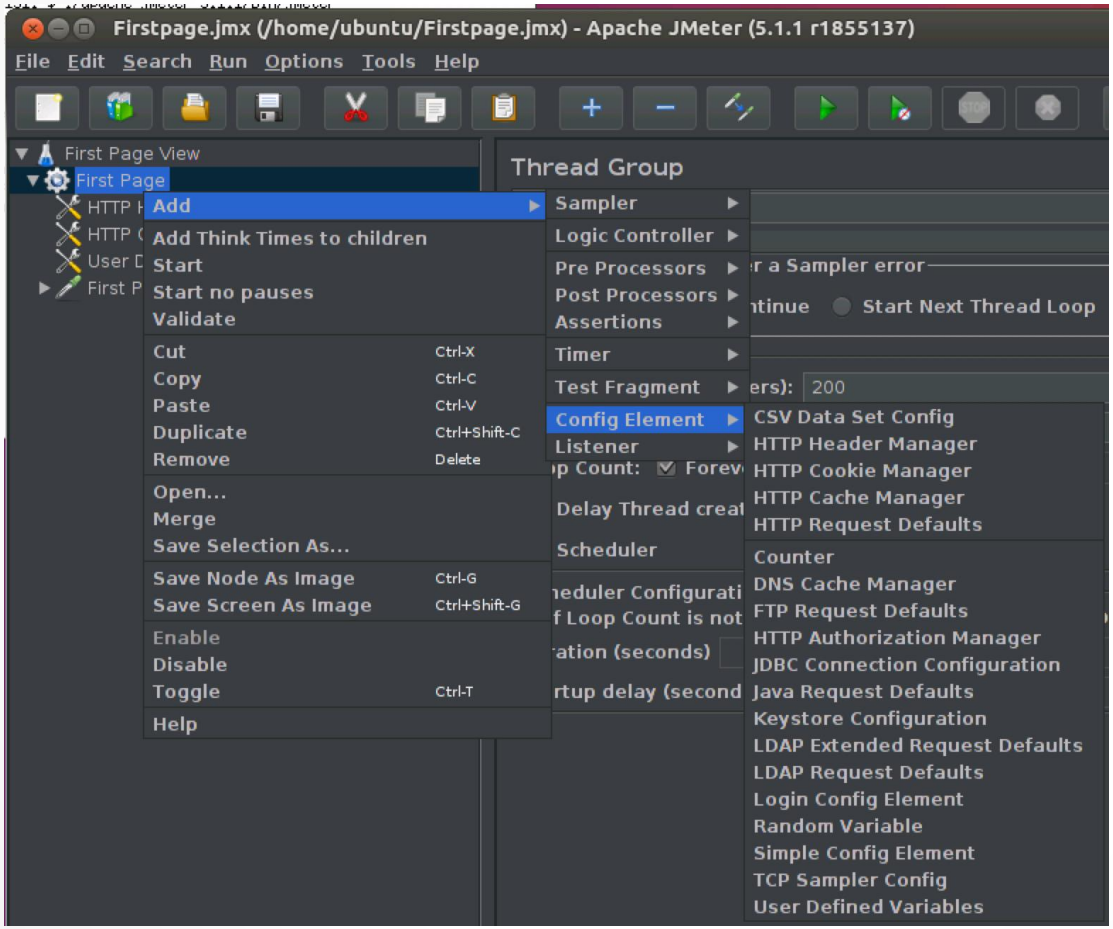
Jmeter's element part 2 (Advance)

- **<u>Configure Element and Parameter</u>**
  - Configure Element and Parameter is additional component for help to perform load test that reflect real situation of user experience as close as possible such as control cooker, http header, input dataset via file or define "parameter" for use with other component



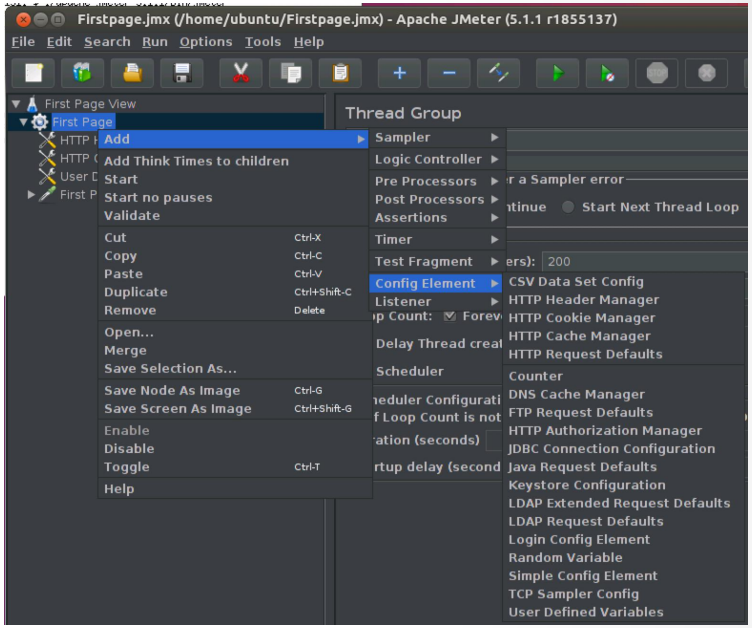
Jmeter's element part 2 (Advance)

- **Configure Element and Parameter**



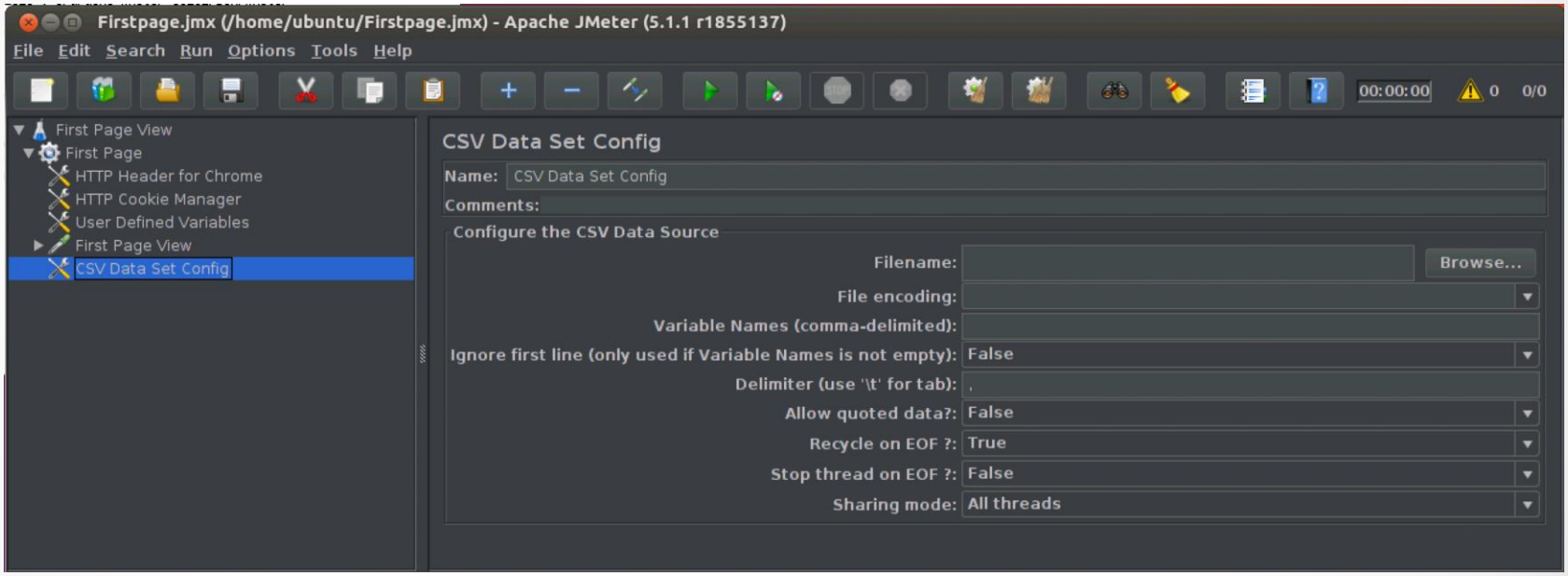
Jmeter's element part 2 (Advance)

- **<u>Configure Element and Parameter</u>**
  - **CSV Data Set Config:**
  - **HTTP Header Manager:**
  - **HTTP Cookie Manager:**
  - **HTTP Cache Manager:**
  - **HTTP Request Defaults:**
  - Counter:
  - **DNS Cache Manager:**
  - FTP Request Default:
  - HTTP Authorization Manager:
  - JDBC Connection Configuration:
  - Java Request Defaults:
  - Keystore Configuration:
  - LDAP Request Default: , LDAP Extended Request Defaults:
  - **Login Config Element:**
  - Random Variable:
  - Simple Config Element:
  - TCP Sampler Config:
  - User Defined Variables:



Jmeter's element part 2 (Advance)

- Configure Element and Parameter: CSV Data Set
  - Retrieve source data for load test from CSV file. We can share this data for all threads of operate



Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Header Mng
  - We can check our target user agents from community

https://developers.whatismybrowser.com/useragents/explore/

Apps | NMac Ked - Mac... | Medium | Infra | NOVA | jerkins | vagrant | Mesos | Vue | docker | Taiwan | NGINX | Other Bookmarks

User Agents | Search/Parse | Learn | Detection | API | Log In | Sign Up

Homepage > User Agents > Explore

List of User Agents

User Agent strings come in all shapes and sizes, and the number of unique user agents is growing all the time. We've collected millions of user agents and have categorised them here for you, based on some of the things we can detect about them - Operating System, Browser, Hardware Type, Browser Type, and so on.

Browse our user agents...

Our user agent parser and our database of user agents is powered by the millions of user agents we collect on whatismybrowser.com.

You can browse an organised collection of them below (or you can parse a custom user agent here).

SOFTWARE:
- Chrome (298,826)
- Internet Explorer (284,346)
- Firefox (75,913)
- Opera Mini (42,371)
- Android Browser (37,681)
- Opera (36,723)
- UC Browser (24,349)
- Safari (22,452)
- Outlook (16,407)

Browse all Software Names

OPERATING SYSTEMS:
- Windows (484,305)
- Android (312,057)
- iOS (47,415)
- Linux (39,971)
- Mac OS X (33,362)
- macOS (17,098)
- Symbian (5,613)
- BlackBerry OS (5,003)
- Windows Phone (2,305)

Browse all Operating Systems

OPERATING PLATFORMS:
- iPhone (25,306)
- iPad (10,554)
- Nexus 5 (4,403)
- Samsung SM-G900P (3,310)
- MAUI based Platform (3,125)
- Vivo (3,113)
- Galaxy S III (2,582)
- Galaxy S4 (2,273)
- iPod (2,137)

Browse all Operating Platforms

SOFTWARE TYPES:
- Web Browser (958,845)
- In-App Browser (22,625)
- Software Library (3,164)
- Crawler (2,197)
- Download Helper (965)
- Application (625)
- Analyser (428)
- Site Monitor (301)
- Media Player (92)

Browse all Software Types

HARDWARE TYPES:
- Computer (579,294)
- Mobile (211,479)
- Phone (162,952)
- Tablet (36,053)
- Server (3,332)
- E-Book Reader (2,183)
- Music Player (2,136)
- TV (1,231)
- Large Screen (413)

Browse all Hardware Types

LAYOUT ENGINES:
- Trident (318,138)
- Blink (307,017)
- WebKit (177,322)
- Gecko (86,015)
- Presto (46,099)
- KHTML (3,136)
- EdgeHTML (2,812)
- Goanna (1,320)
- NetFront (1,190)

Browse all Layout Engine Names

APACHE JMeter™

Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Header Mng

In-App Browser User Agents

This is a complete listing of In-App Browser user agents. Click on the user agent to view detailed information about it.

User agent	Software	OS	Layout engine	Popularity
Mozilla/5.0 (X11; Linux x86_64; rv:45.0) Gecko/20100101 Thunderbird/45.8.0	Thunderbird 45.8	Linux	Gecko	Very common
Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) electron/1.0.0 Chrome/53.0.2785.113 Electron/1.4.3 Safari/537.36	Electron Application 1.4	Windows	Webkit	Very common
Mozilla/5.0 (X11; Linux x86_64; rv:45.0) Gecko/20100101 Thunderbird/45.3.0	Thunderbird 45.3	Linux	Gecko	Common
Mozilla/5.0 (X11; Linux x86_64; rv:45.0) Gecko/20100101 Thunderbird/45.2.0 Lightning/4.7.4	Thunderbird 45.2	Linux	Gecko	Common
Mozilla/5.0 (iPhone; CPU iPhone OS 11_4_1 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Mobile/15G77 [FBAN/FBIOS;FBAV/183.0.0.41.81;FBBV/119182652;FBDV/iPhone8,1;FBMD/iPhone;FBSN/iOS;FBSV/11.4.1;FBSS/2;FBCR/Oi;FBID/phone;FBLC/pt_BR;FBOP/5;FBRV/0]	Facebook App 183	iOS	Webkit	Common
Mozilla/5.0 (iPad; CPU OS 10_2_1 like Mac OS X) AppleWebKit/602.4.6 (KHTML, like Gecko) Mobile/14D27 [FBAN/FBIOS;FBAV/90.0.0.51.69;FBBV/56254015;FBDV/iPad3,5;FBMD/iPad;FBSN/iOS;FBSV/10.2.1;FBSS/2;FBCR/Carrier;FBID/tablet;FBLC/pt_BR;FBOP/5;FBRV/0]	Facebook App 90	iOS		

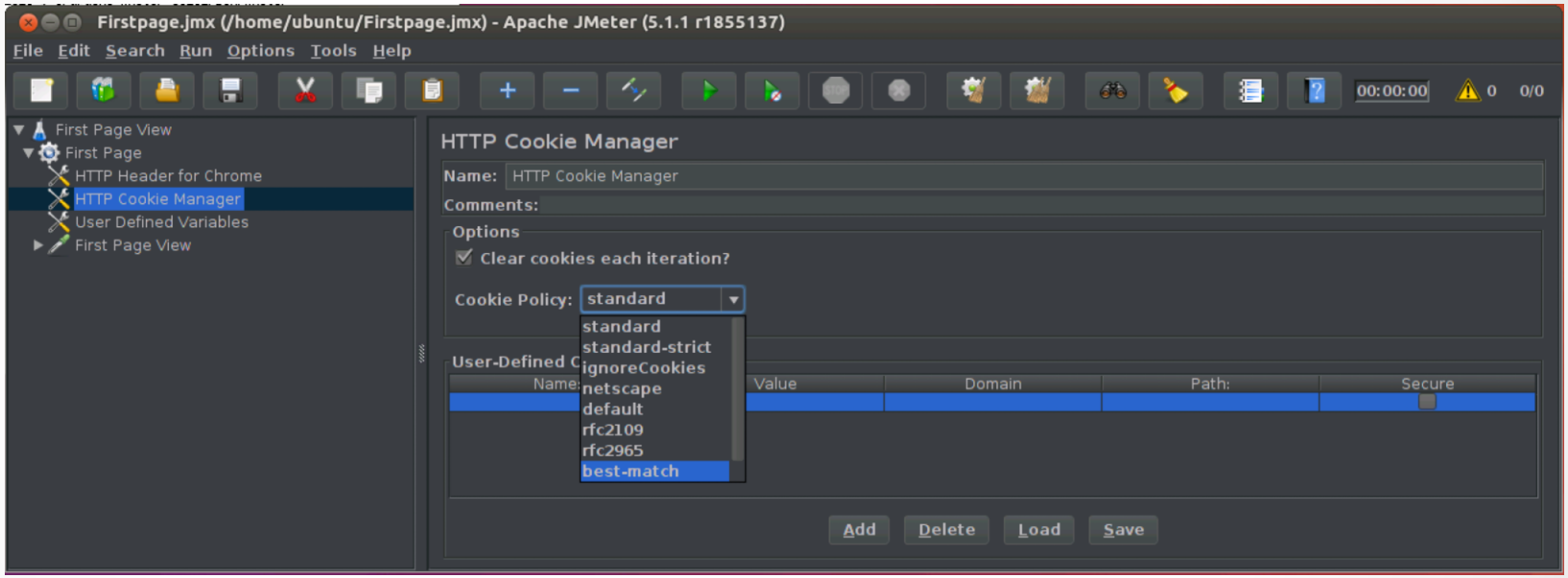
TV User Agents

This is a complete listing of TV user agents. Click on the user agent to view detailed information about it.

User agent	Software	Software Type	OS	Popularity
Mozilla/5.0 (SMART-TV; X11; Linux armv7l) AppleWebKit/537.42 (KHTML, like Gecko) Chromium/25.0.1349.2 Chrome/25.0.1349.2 Safari/537.42	Chromium 25	Web Browser	Linux	Very common
Mozilla/5.0 (Linux; NetCast; U) AppleWebKit/537.31 (KHTML, like Gecko) Chrome/26.0.1410.33 Safari/537.31 SmartTV/5.0	NetCast	Web Browser	Linux	Very common
Mozilla/5.0 (Linux; NetCast; U) AppleWebKit/537.31 (KHTML, like Gecko) Chrome/34.0.1847.137 Safari/537.31 SmartTV/6.0	NetCast	Web Browser	Linux	Very common
Mozilla/5.0 (SMART-TV; Linux; Tizen 2.4.0) AppleWebkit/538.1 (KHTML, like Gecko) SamsungBrowser/1.1 TV Safari/538.1	Samsung Browser 1.1	Web Browser	Linux	Common
Mozilla/5.0 (Linux; NetCast; U) AppleWebKit/537.31 (KHTML, like Gecko) Chrome/38.0.2125.122 Safari/537.31 SmartTV/7.0	NetCast	Web Browser	Linux	Common

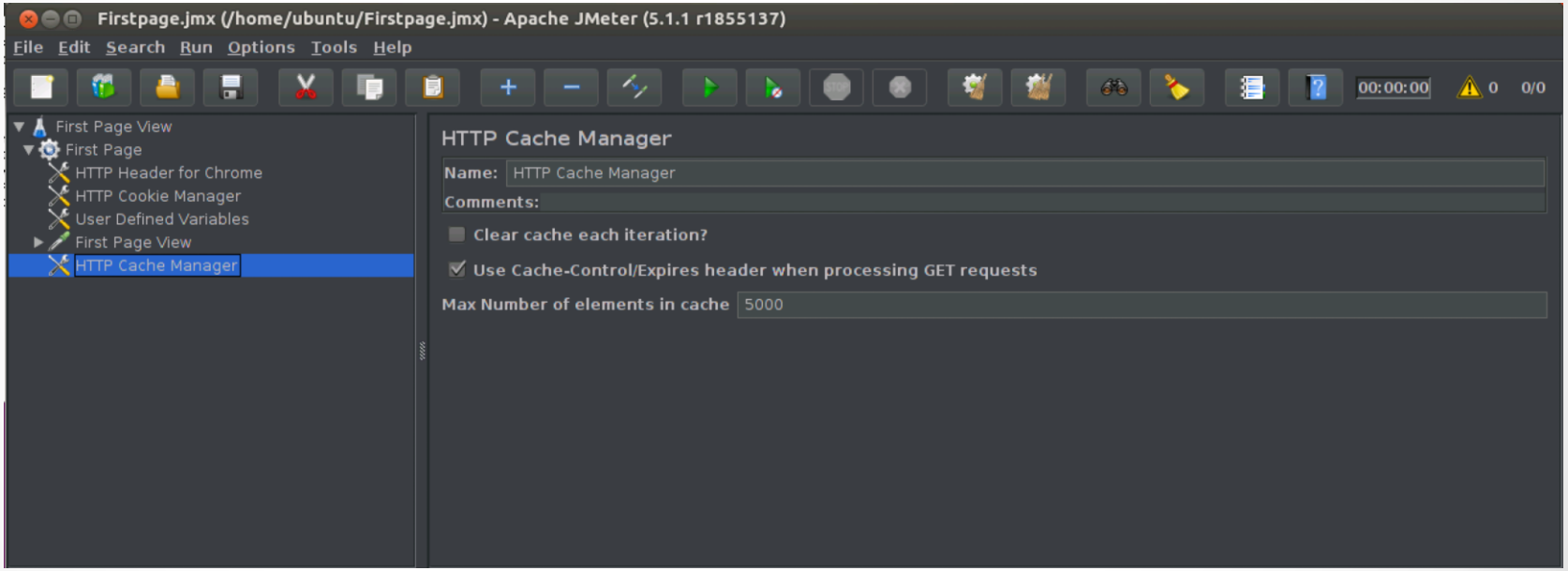
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Cookie Mng
  - Set configure http cookie for simulate as client request



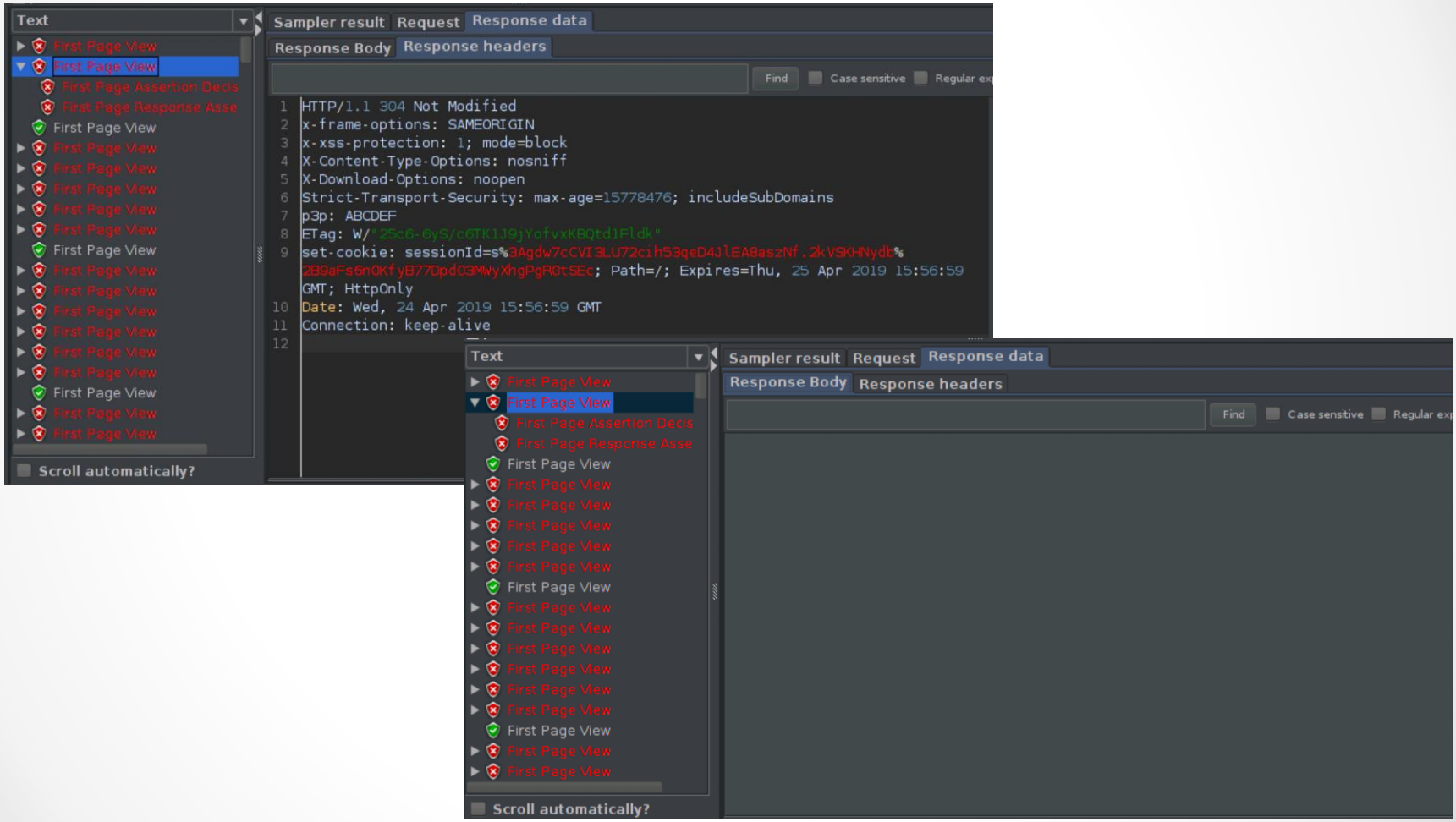
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Cache Mng
  - Set configure for simulate cache on browser of end device with "last recent use" algorithm.
  - Remark: This may effect to assertion !



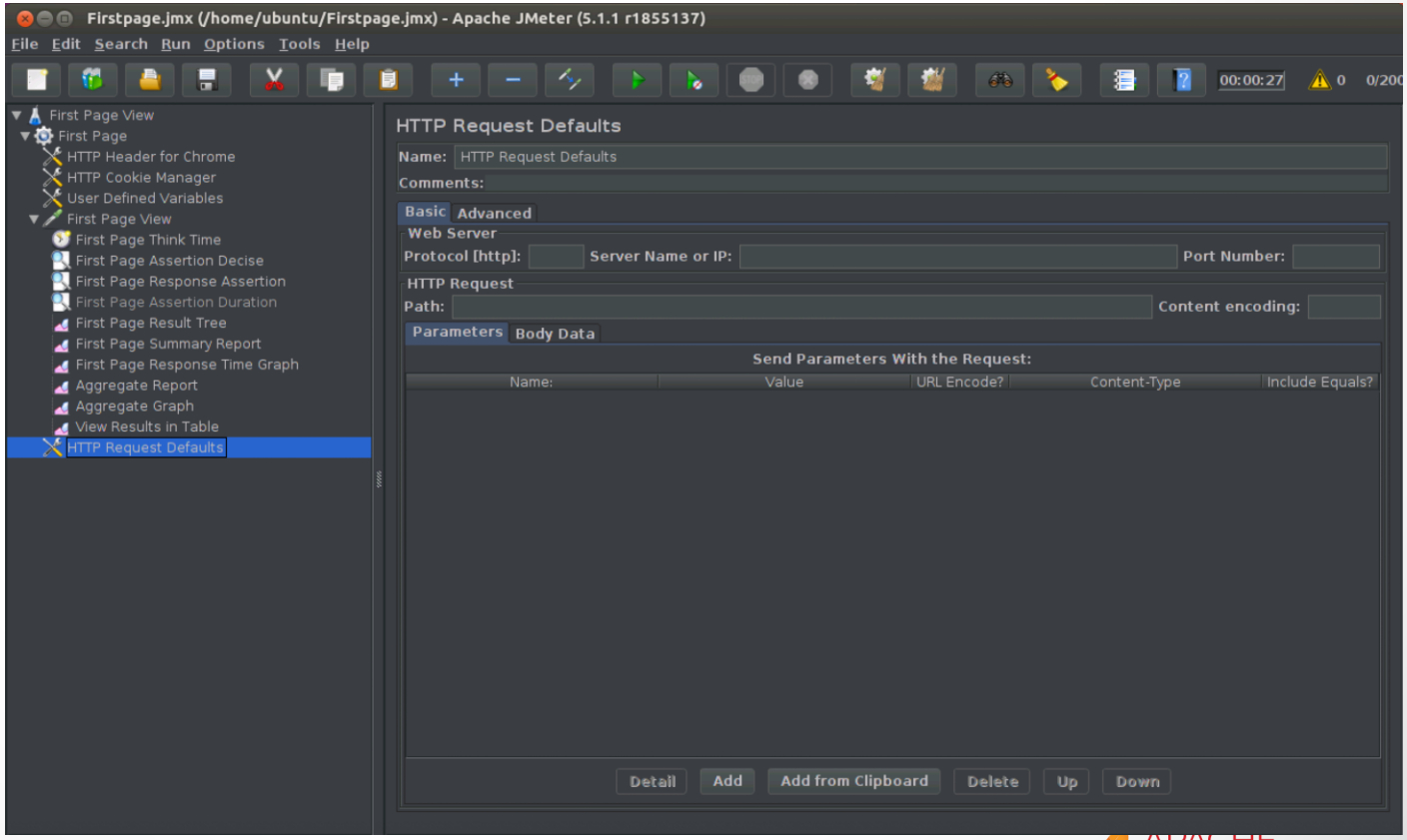
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Cache Mng



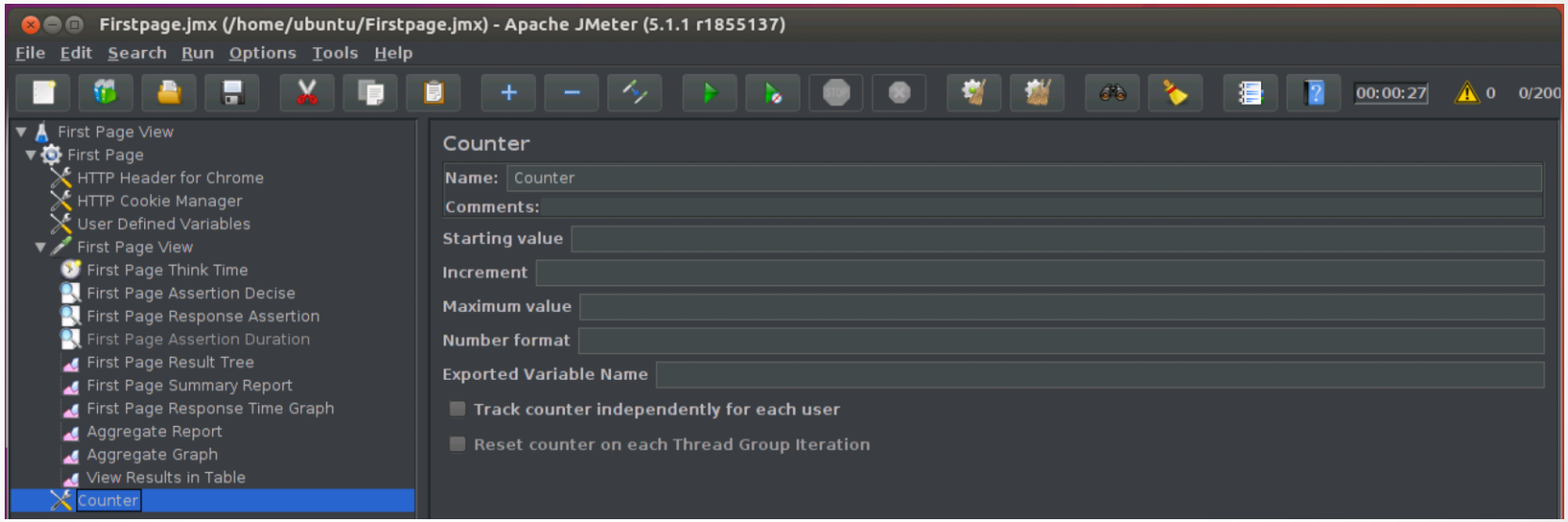
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Request Default
  - Provide default "Server Name or IP" , Port for all sample http



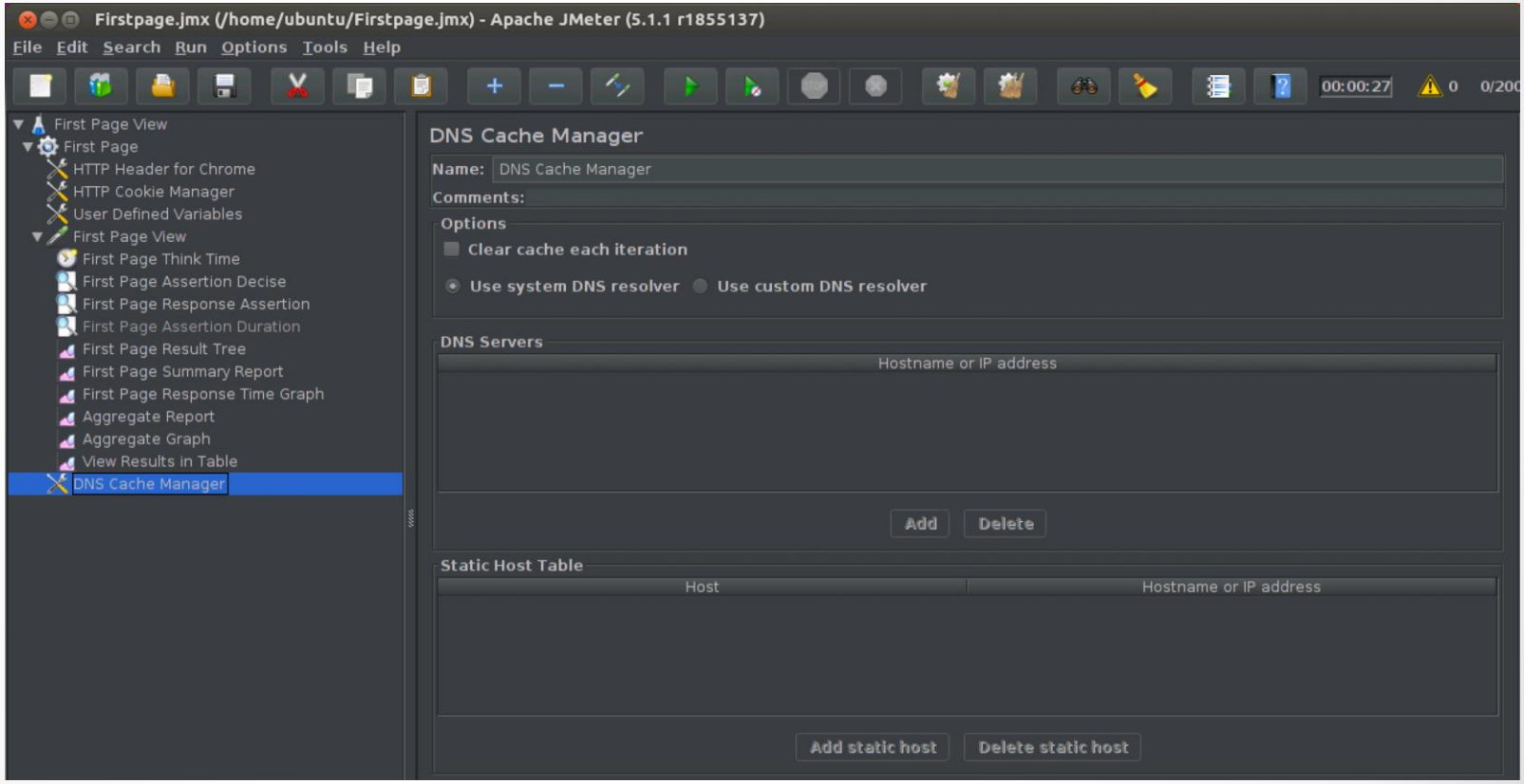
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: Counter
  - For counter any increase value for each iteration and can be use reference on any thread group



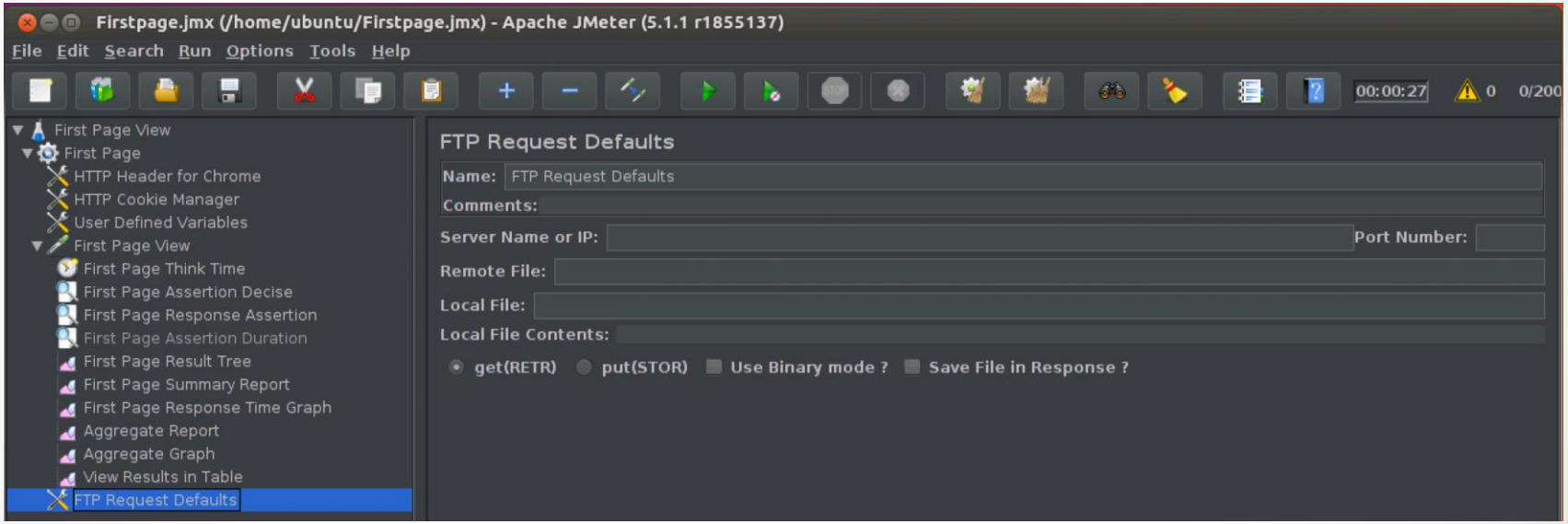
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: DNS Cache MNG
  - Manage cache strategic for DNS service



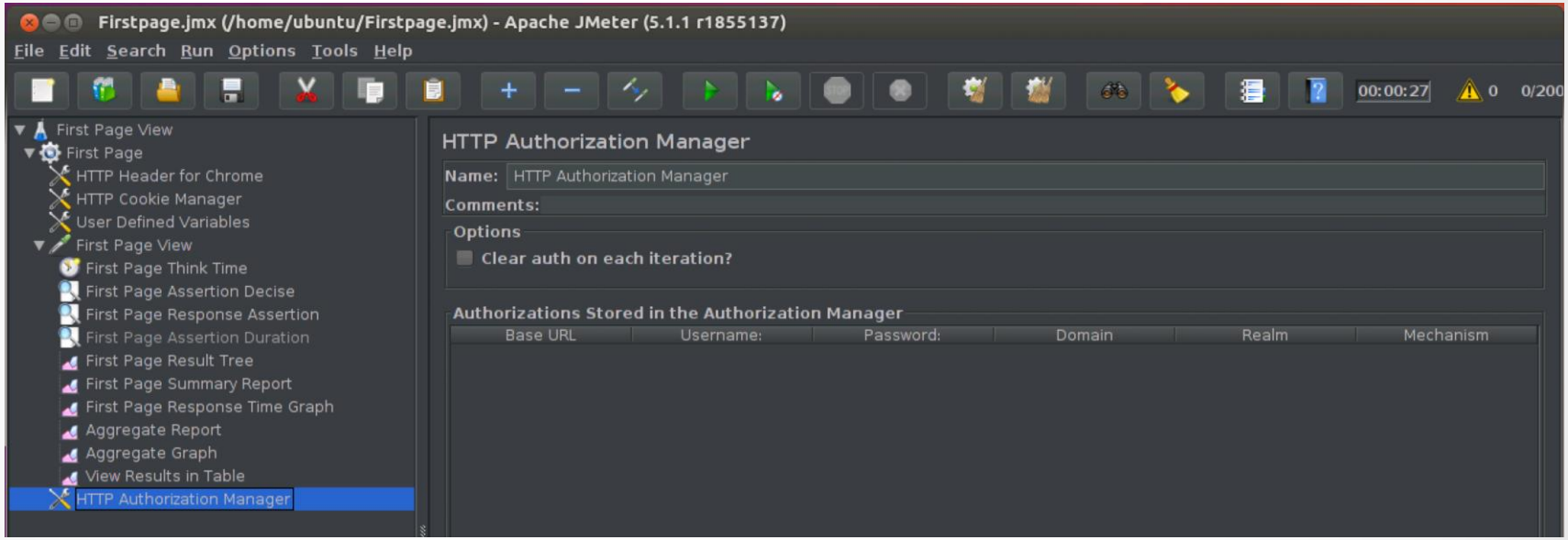
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: FTP Request Defa.
  - Provide default "Server Name or IP" , Port for all sample of FTP



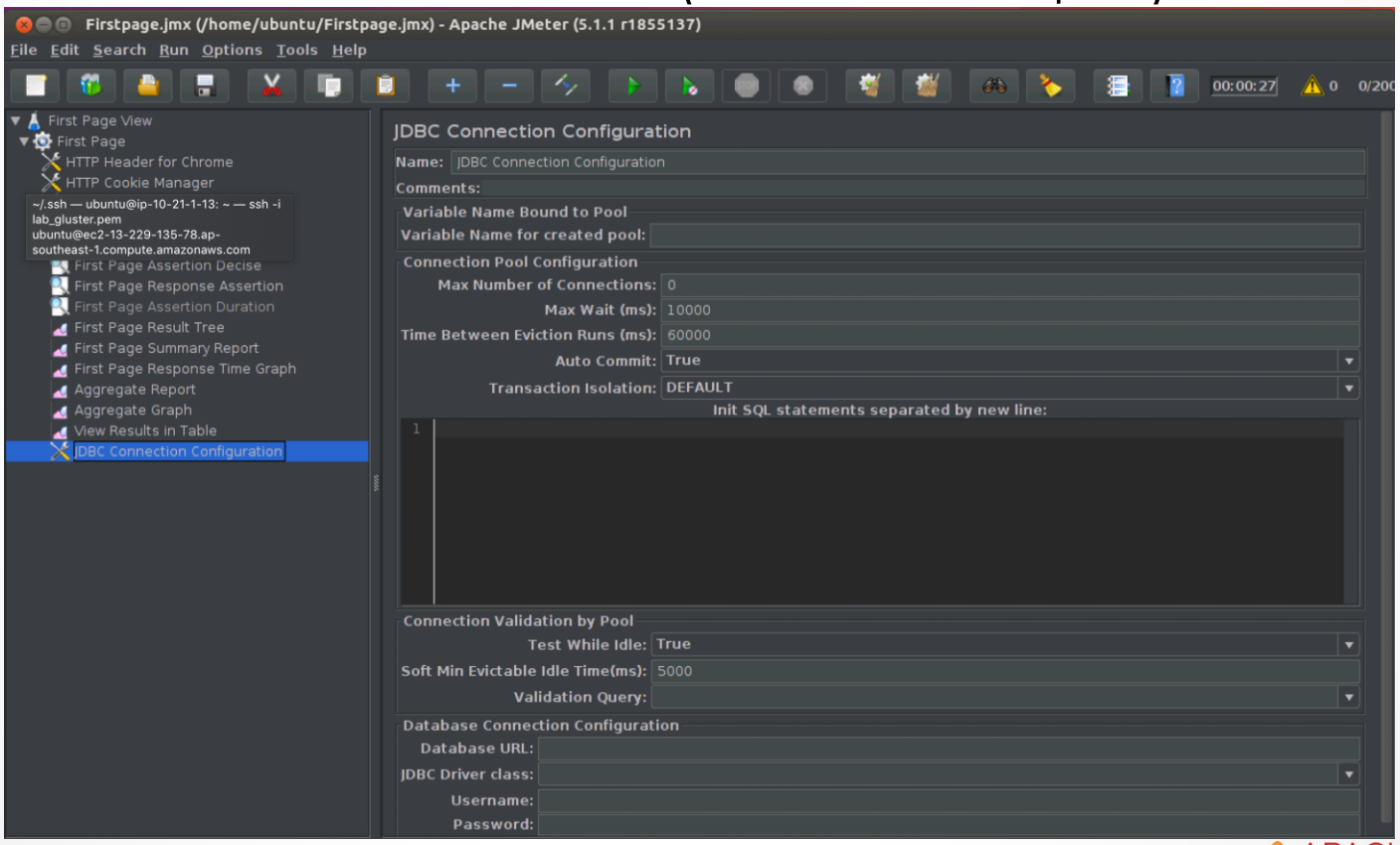
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: HTTP Authorize Manager.
  - Provide central authorization for all relate Base URL



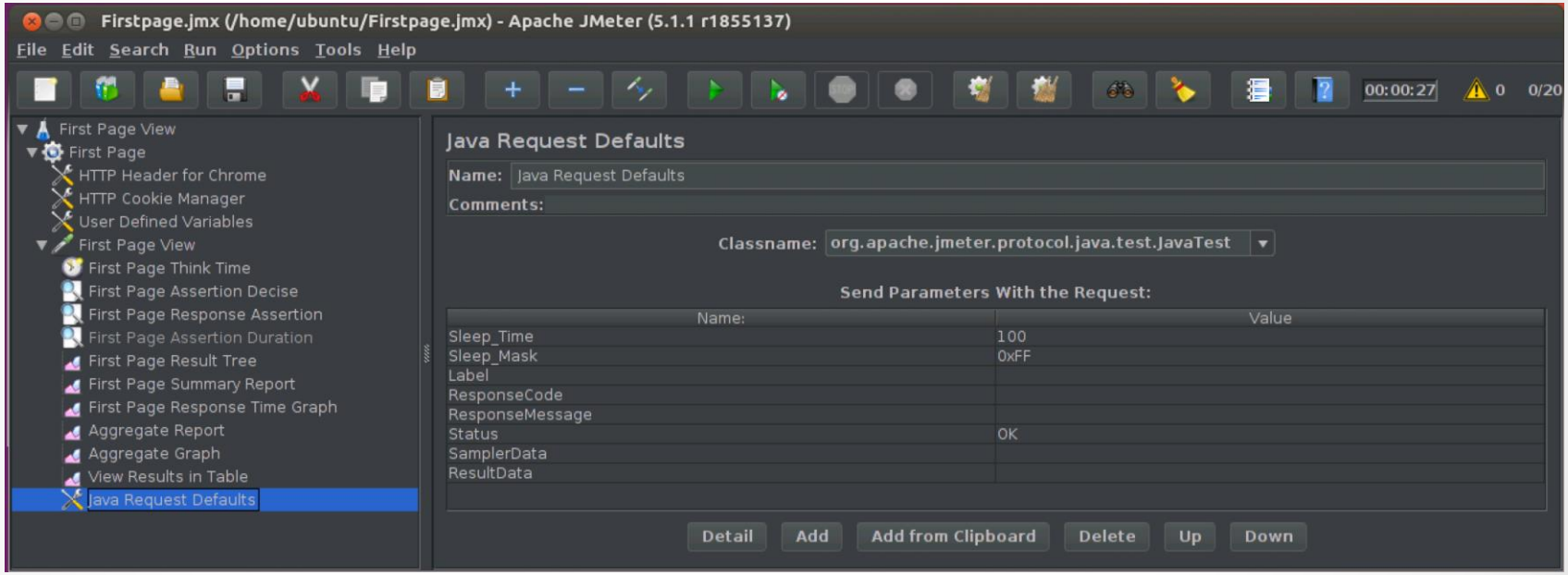
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: JDBC Configuration Management.
  - Provide JDBC Connection (For JDBC Sampler)



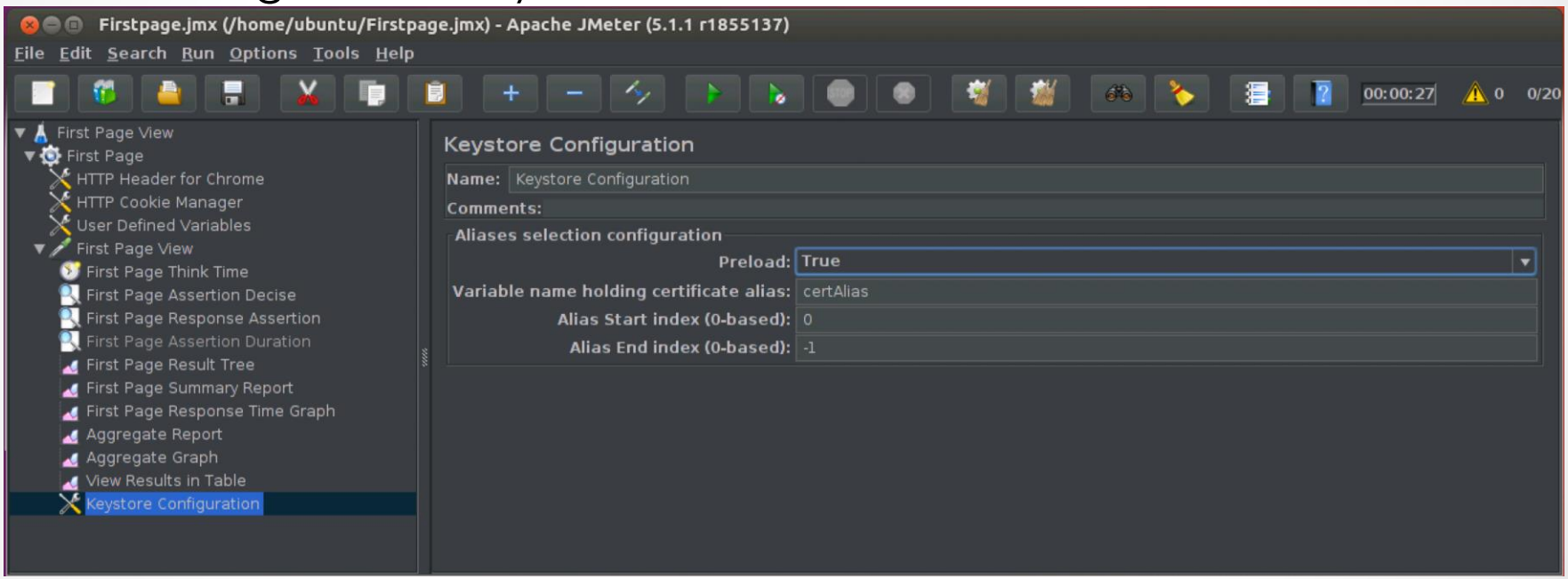
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: Java Request Default
  - Provide default parameter for Java Request



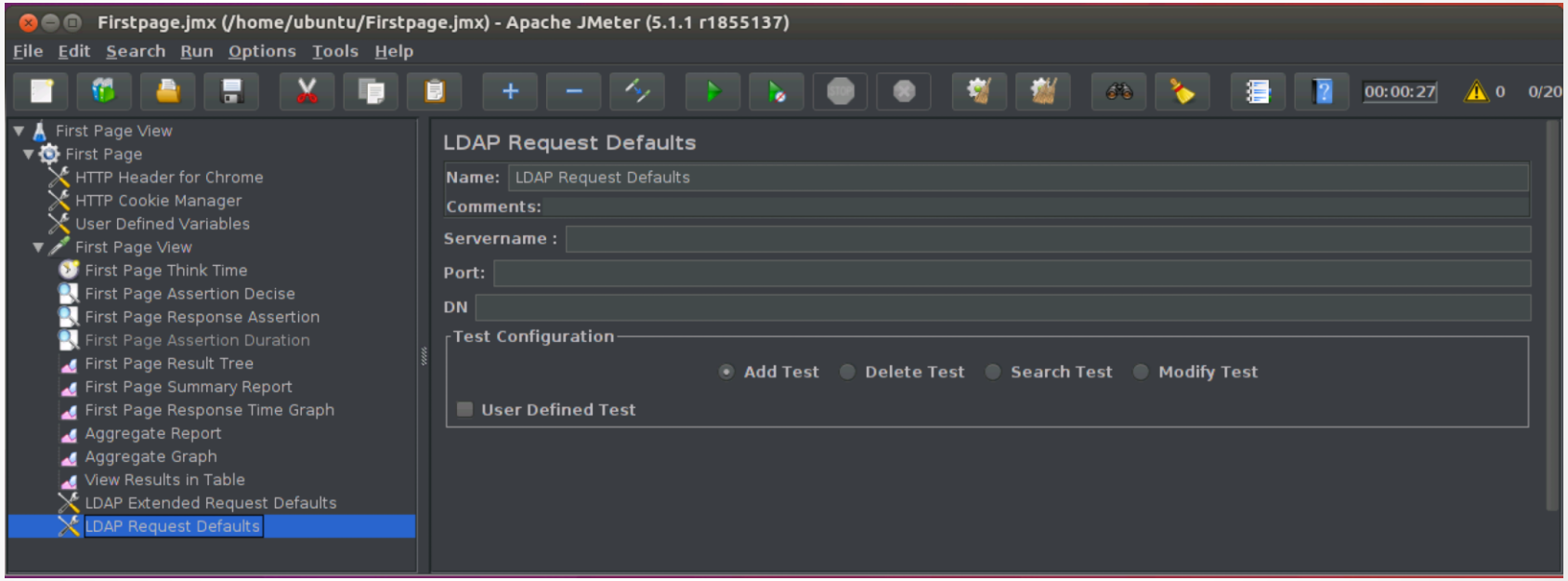
Jmeter's element part 2 (Advance)

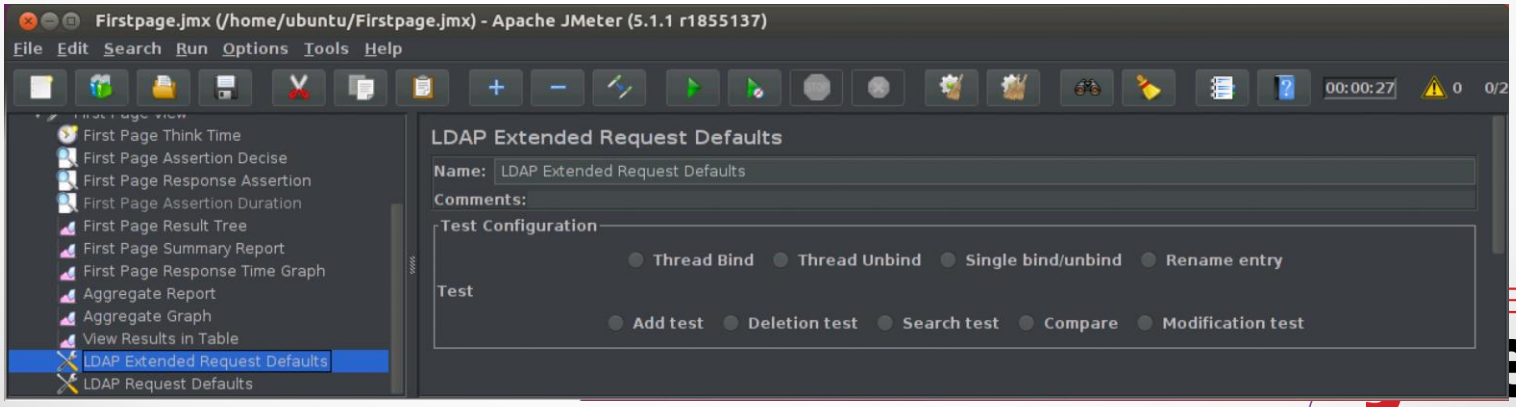
- Configure Element and Parameter: Keystore Configuration
  - Configure SSL keystore for authentication



Jmeter's element part 2 (Advance)

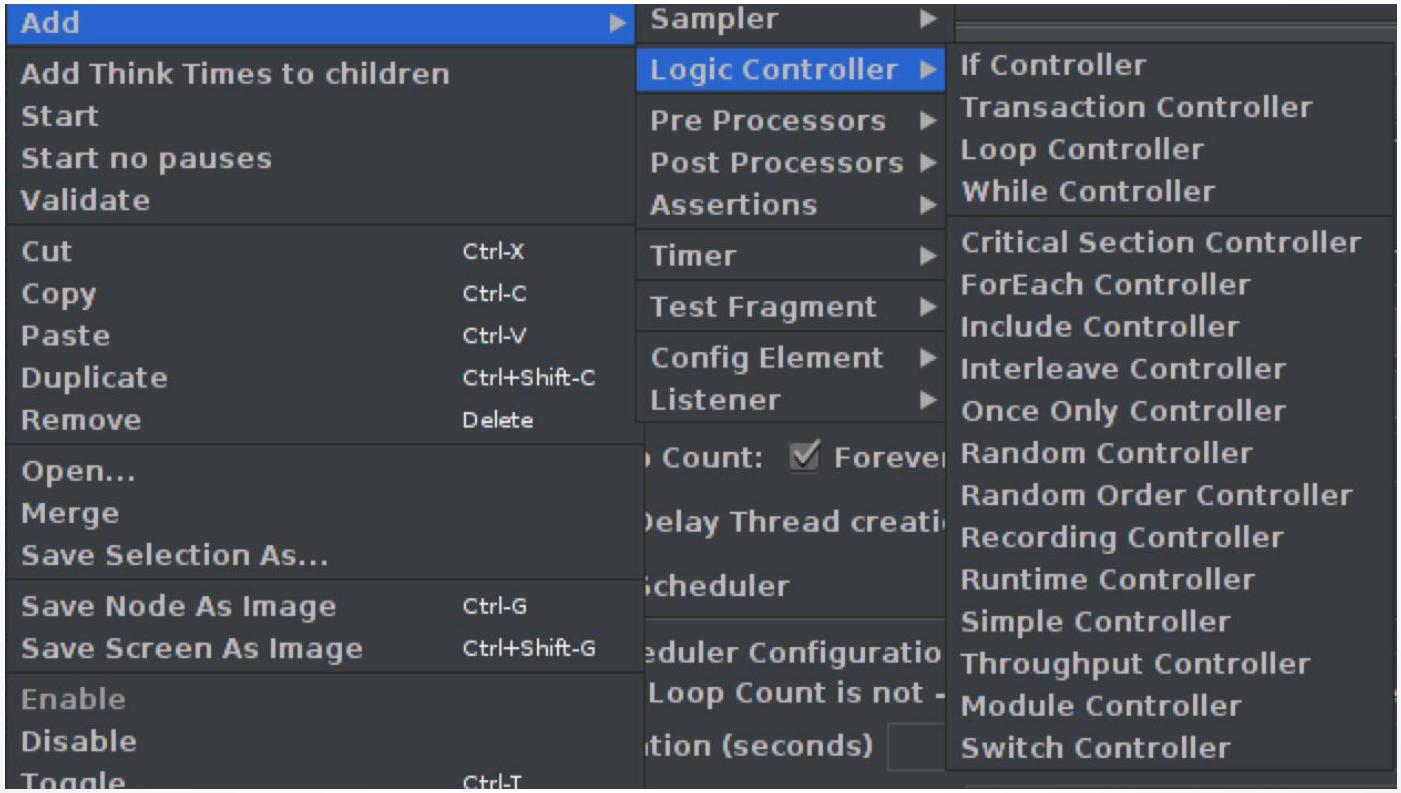
- Configure Element and Parameter: LDAP Request.
  - Configure default for LDAP setting





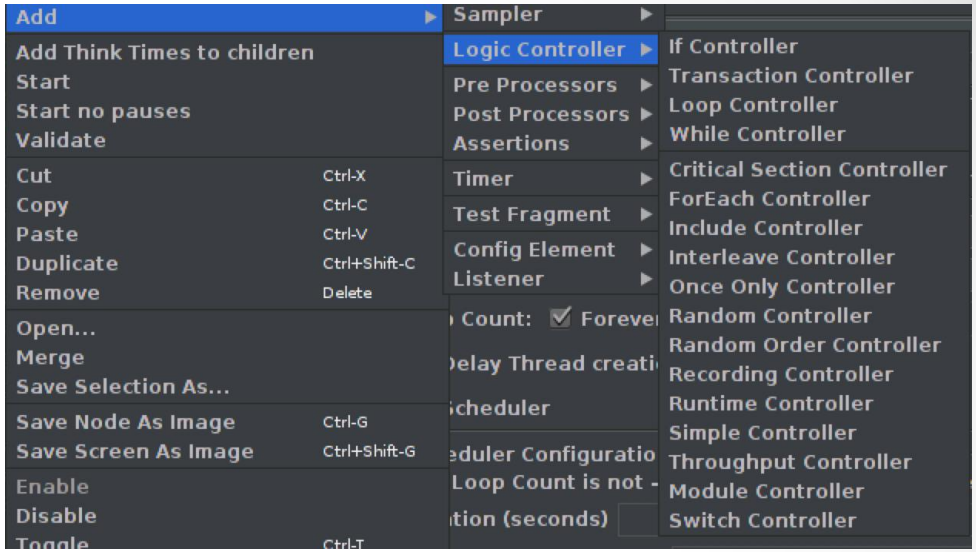
Jmeter's element part 2 (Advance)

- **Logical Controller**
  - Provide logical for control test plan on complex condition.
  - This will place on top of test plan/controller for control



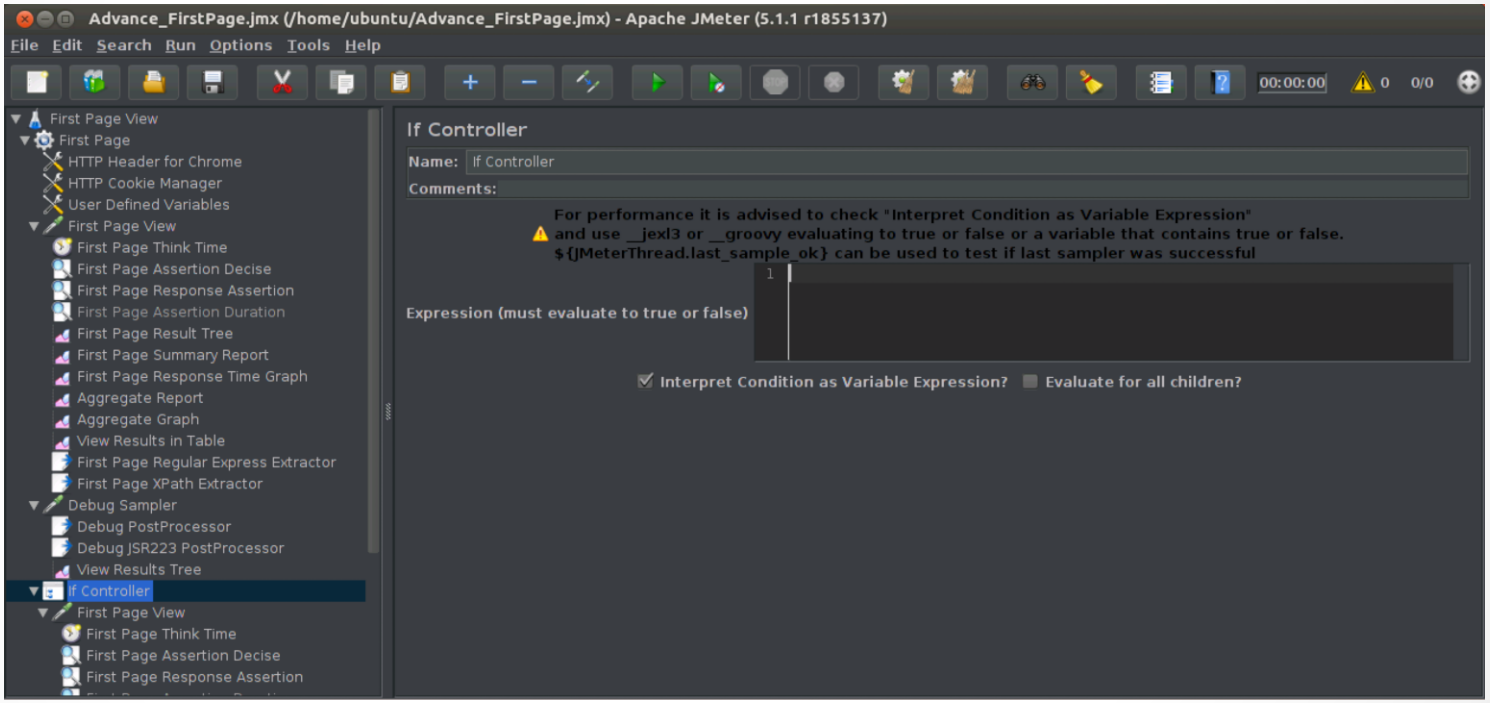
Jmeter's element part 2 (Advance)

- **Logical Controller**
  - If Controller:
  - **Transaction Controller:**
  - Loop Controller:
  - While Controller:
  - Critical Section Controller:
  - ForEach Controller:
  - **Include Controller:**
  - **Interleave Controller:**
  - Once Only Controller:
  - **Random Controller:**
  - Random Order Controller:
  - Recording Controller:
  - Runtime Controller:
  - **Simple Controller:**
  - Throughput Controller:
  - Module Controller:
  - Switch Controller:



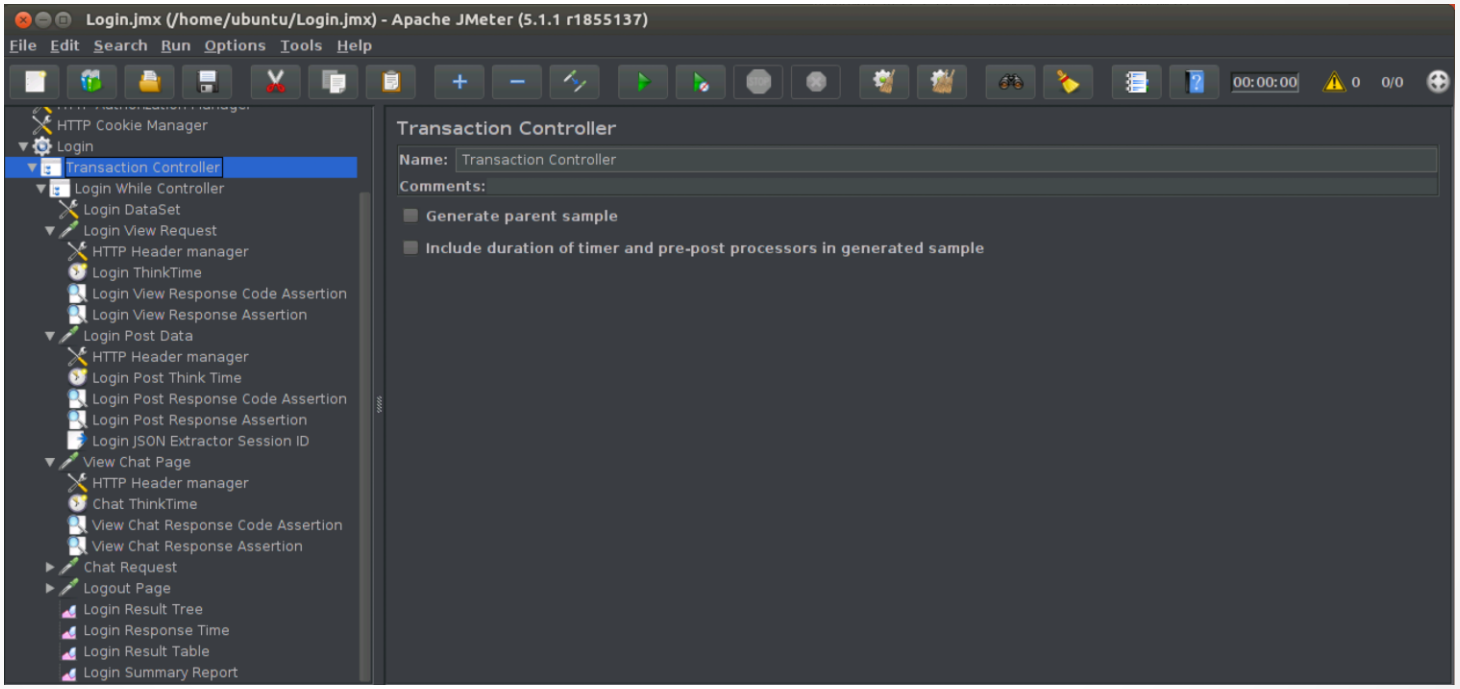
Jmeter's element part 2 (Advance)

- Logical Controller: If Controller
  - Base on javascript for check condition to do sampler or not



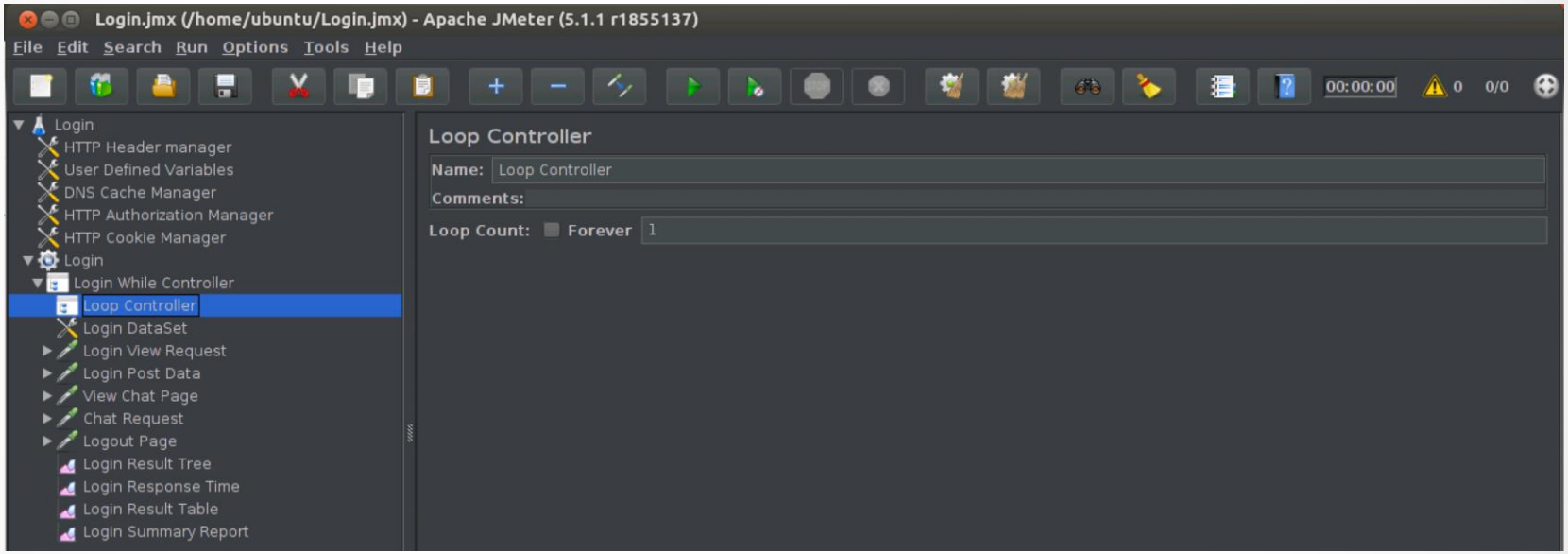
Jmeter's element part 2 (Advance)

- Logical Controller: Transaction Controller
  - Generate "virtual samplers" for collect all time, average, median of all samplers under this controller



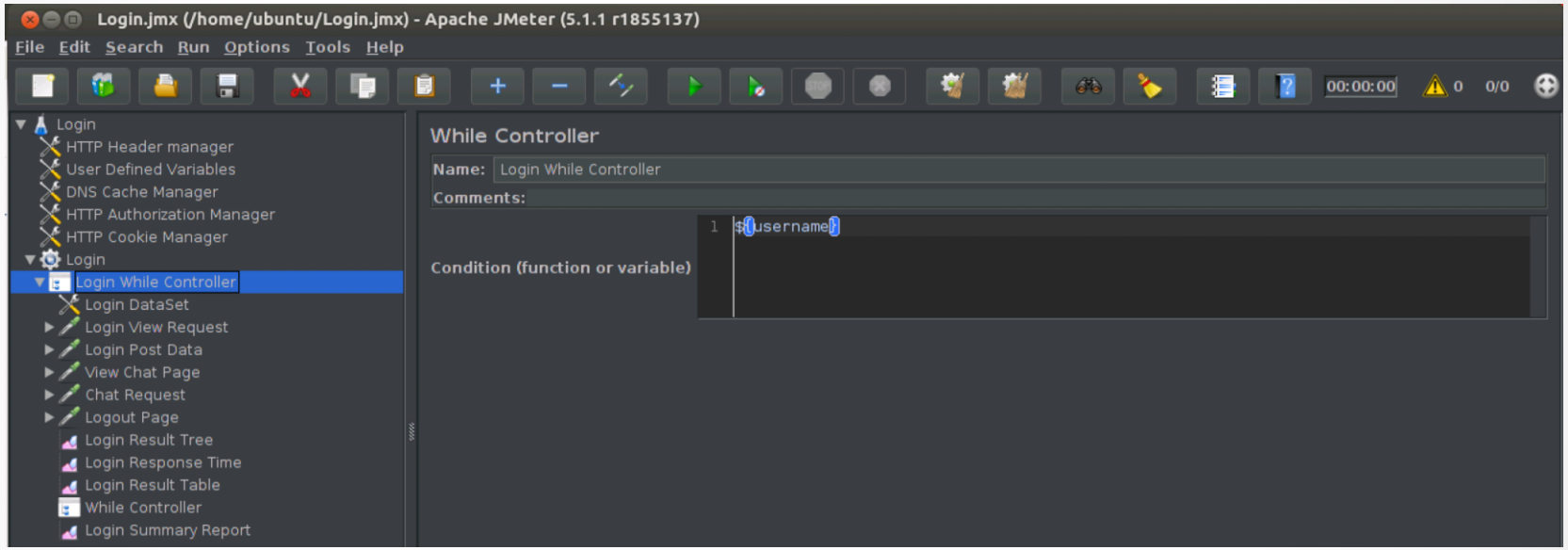
Jmeter's element part 2 (Advance)

- Logical Controller: Loop Controller
  - Generate loop with static/forever



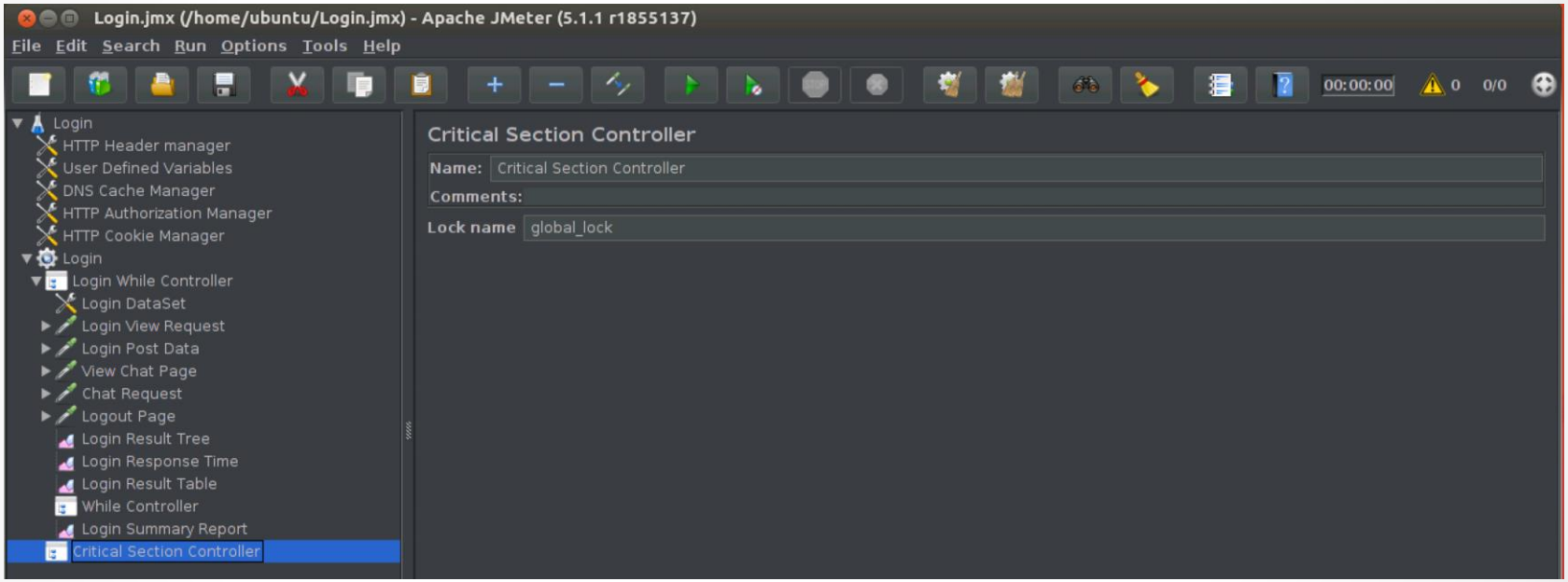
Jmeter's element part 2 (Advance)

- Logical Controller: While Controller
  - Generate while loop condition



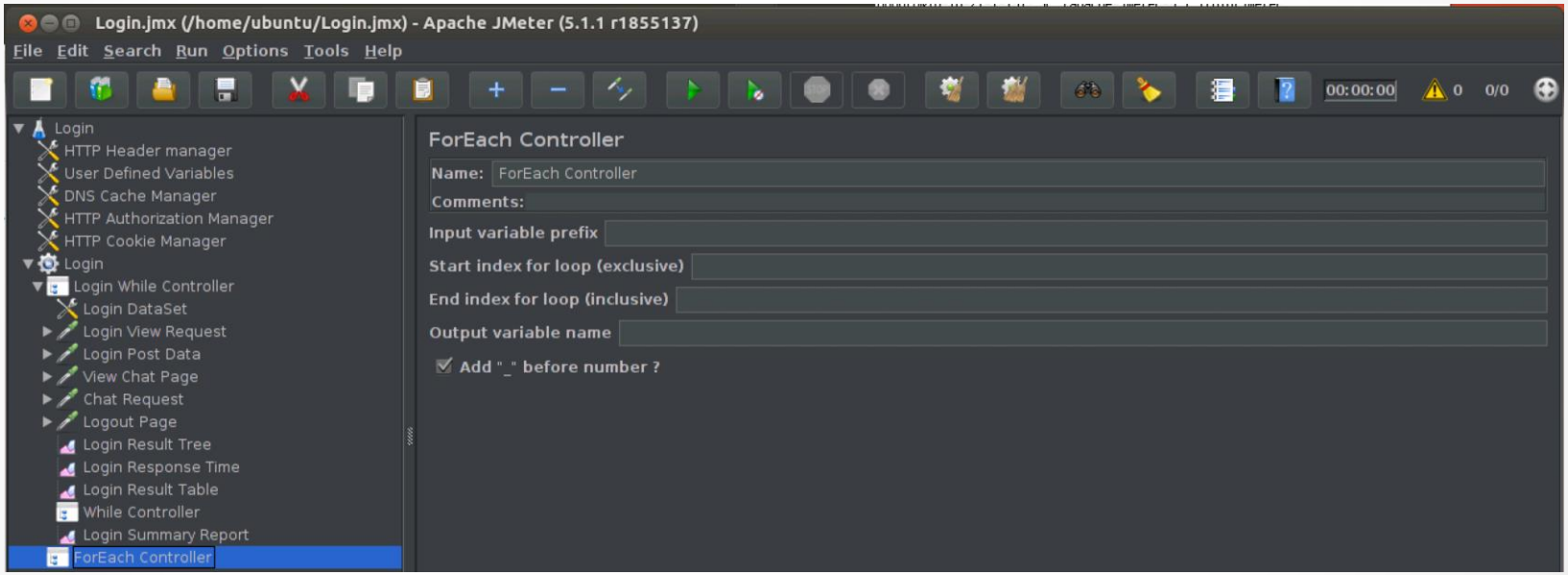
Jmeter's element part 2 (Advance)

- Logical Controller: Critical Section Controller
  - Force to run only 1 thread at time as name of "Lock"



Jmeter's element part 2 (Advance)

- Logical Controller: ForEach Controller
  - Loop control test base on dynamic variable for each member on variable (Ex: result from regex extraction)

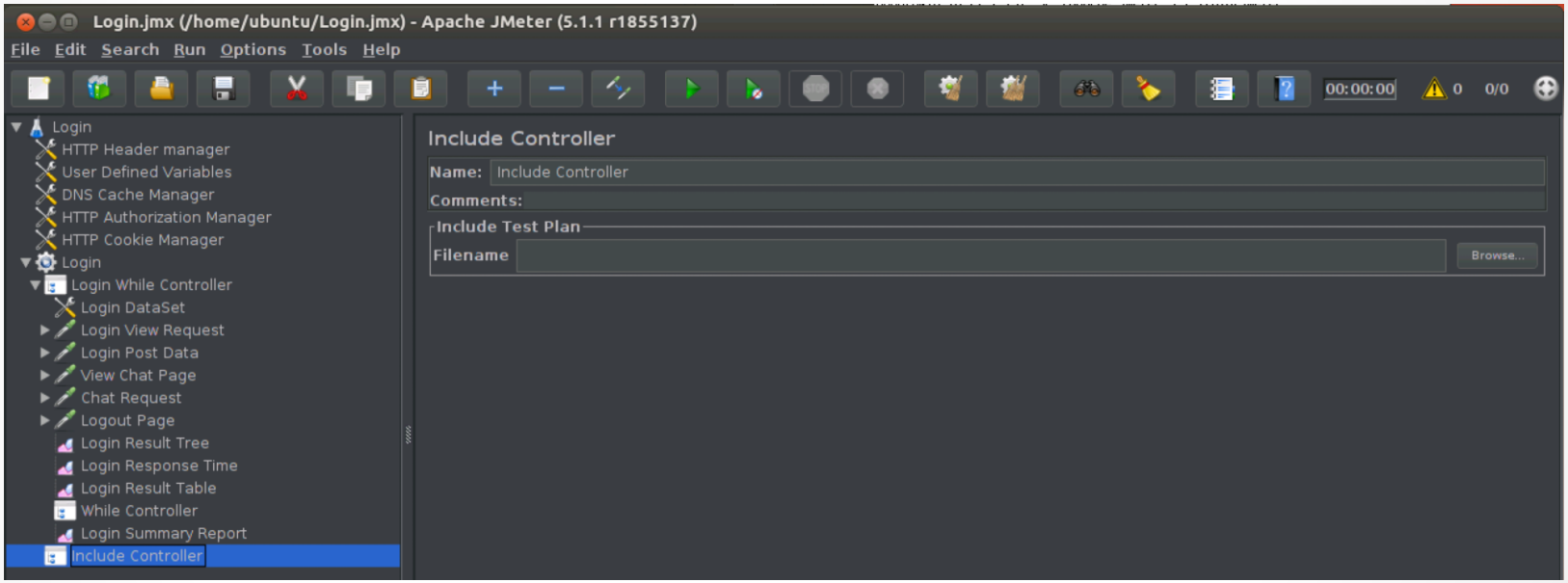


Jmeter's element part 2 (Advance)

Result:
FBField=
FBField_1=titleMEAN.JS - Development Environment
FBField_1_g=2
FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
FBField_1_g1=title
FBField_1_g2=MEAN.JS - Development Environment
FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_2_g=2
FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
FBField_2_g1=description
FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_3=urlhttp://10.21.1.85/
FBField_3_g=2
FBField_3_g0=<meta property="og:url" content="http://10.21.1.85/">
FBField_3_g1=url
FBField_3_g2=http://10.21.1.85/
FBField_4=imagemodules/core/client/img/brand/logo.png
FBField_4_g=2
FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
FBField_4_g1=image
FBField_4_g2=modules/core/client/img/brand/logo.png
FBField_5=typewebsite
FBField_5_g=2
FBField_5_g0=<meta property="og:type" content="website">
FBField_5_g1=type
FBField_5_g2=website
FBField_matchNr=5

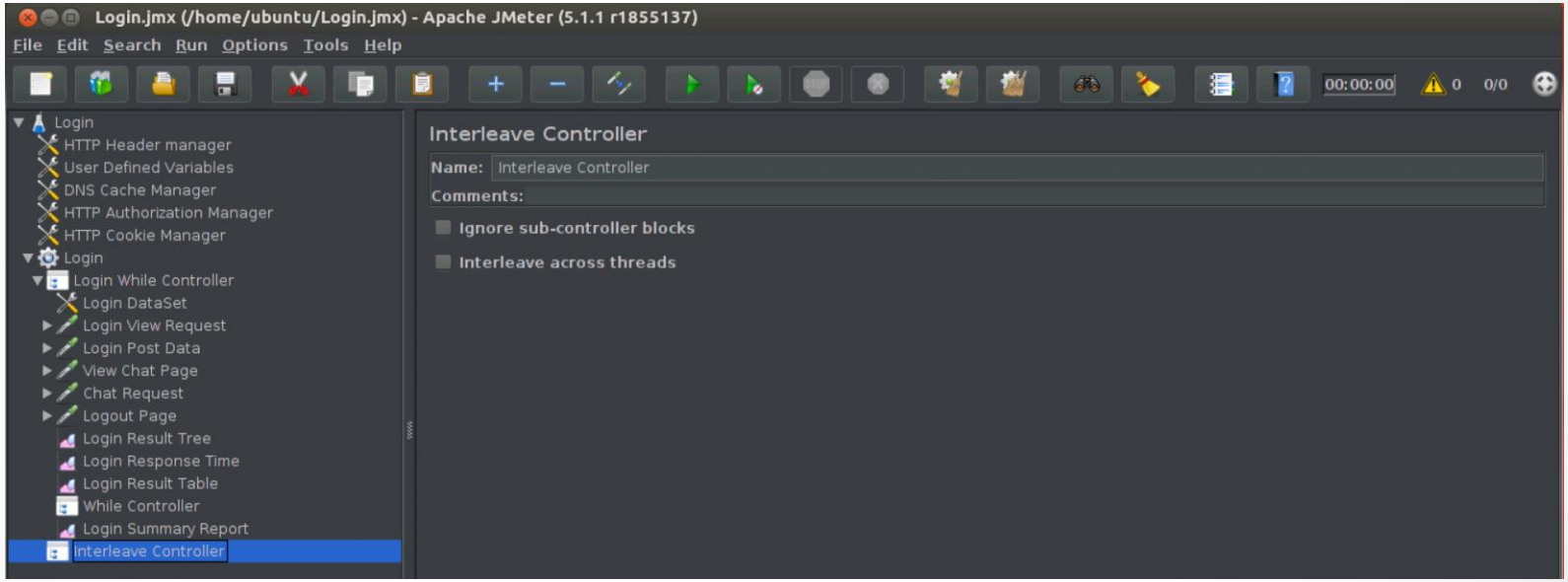
Jmeter's element part 2 (Advance)

- Logical Controller: Include Controller
  - Include other test plan (*.jmx) in to current test plan



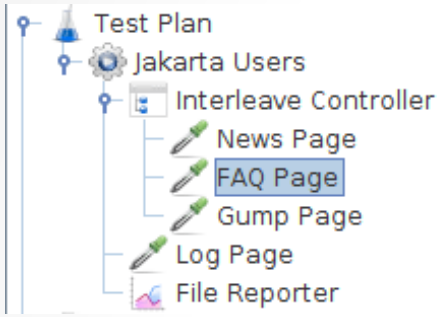
Jmeter's element part 2 (Advance)

- Logical Controller: Interleave Controller
  - Simulate and select only **one** test plan at time for simulate infrequence load below this controller



Jmeter's element part 2 (Advance)

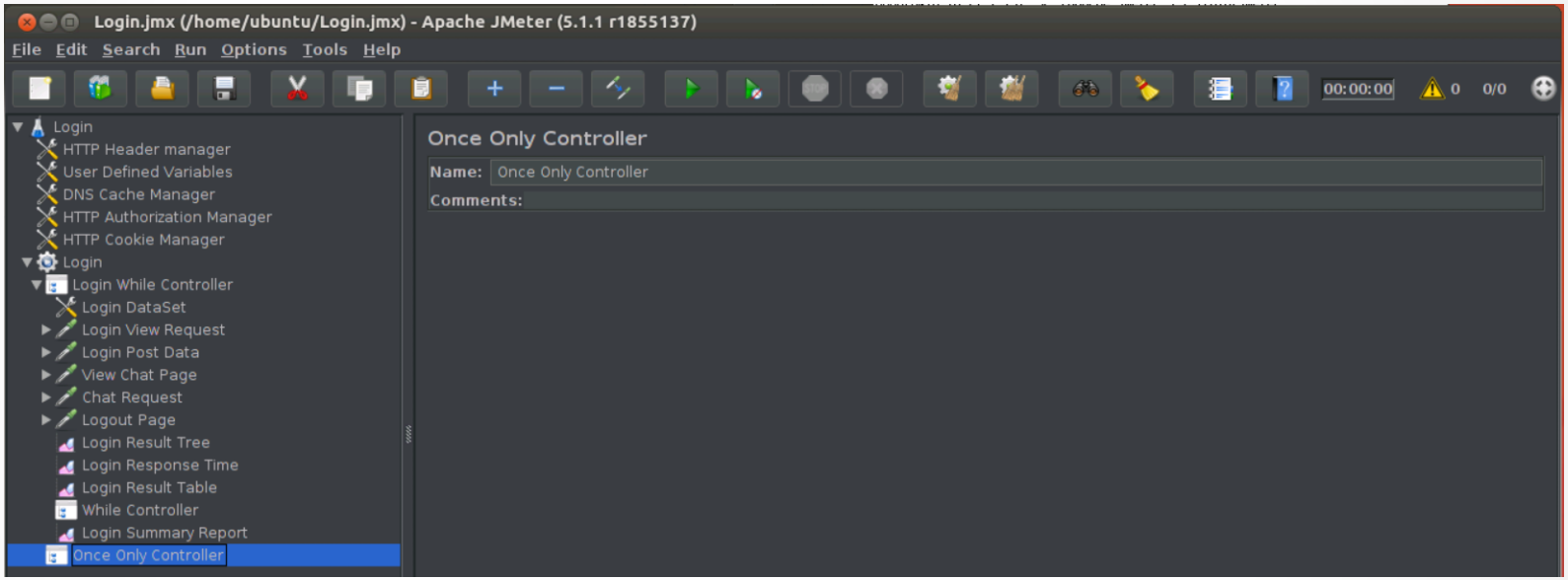
- Logical Controller: Interleave Controller



Loop Iteration	Each JMeter Thread Sends These HTTP Requests
1	News Page
1	Log Page
2	FAQ Page
2	Log Page
3	Gump Page
3	Log Page
4	Because there are no more requests in the controller, JMeter starts over and sends the first HTTP Request, which is the News Page.
4	Log Page
5	FAQ Page
5	Log Page

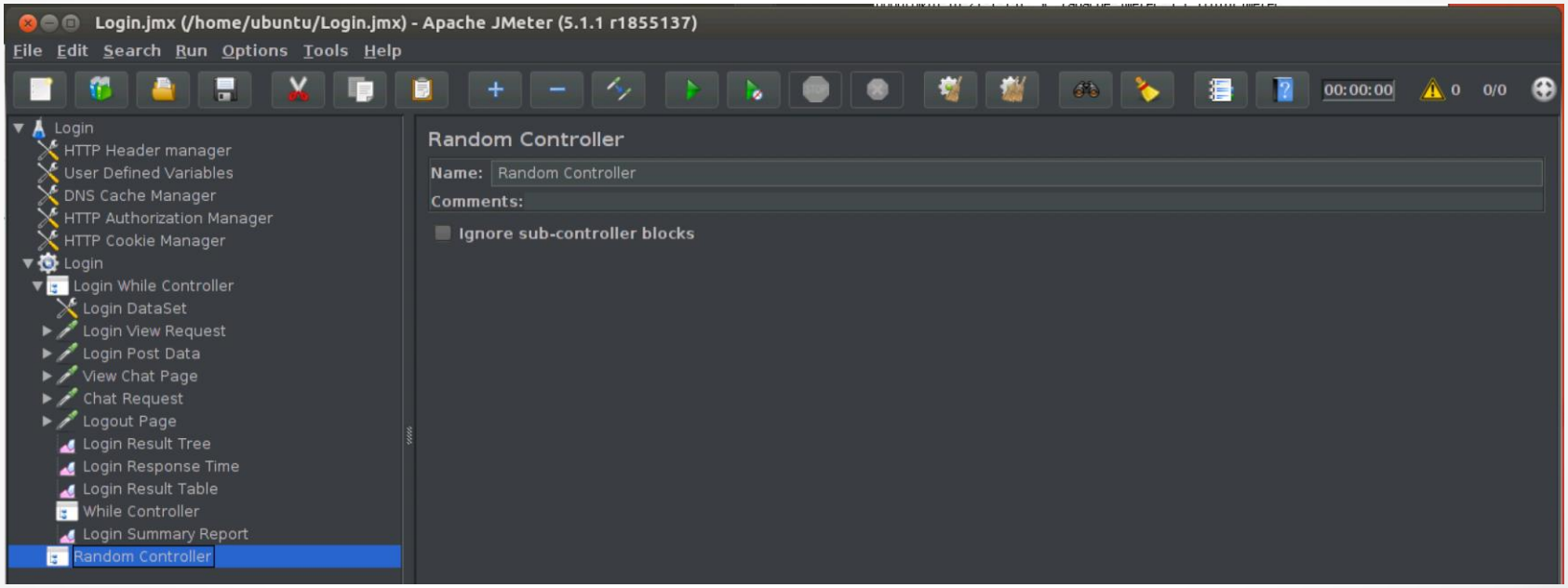
Jmeter's element part 2 (Advance)

- Logical Controller: Once Only Controller
  - Force run only once time per iteration



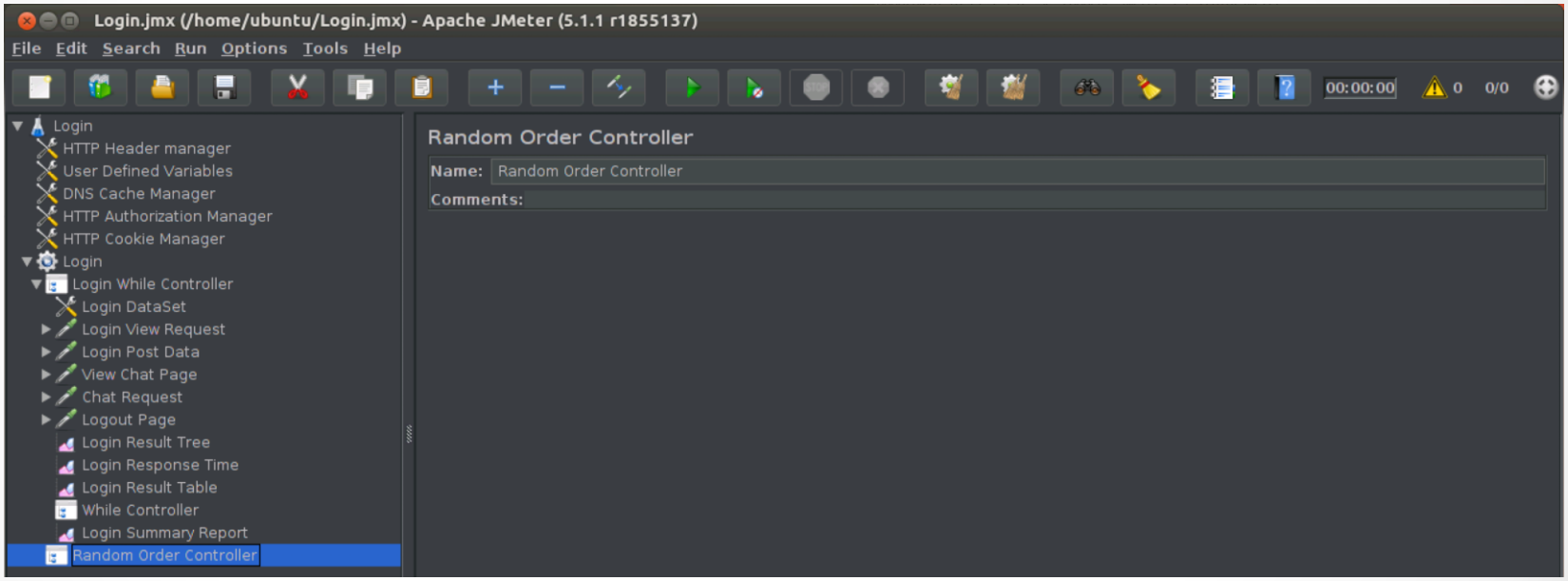
Jmeter's element part 2 (Advance)

- Logical Controller: Random Controller
  - Similar to interleave controller but random select sampler to run



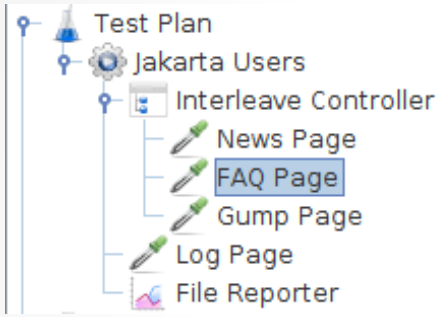
Jmeter's element part 2 (Advance)

- Logical Controller: Random Order Controller
  - Run all sampler under controller by random



Jmeter's element part 2 (Advance)

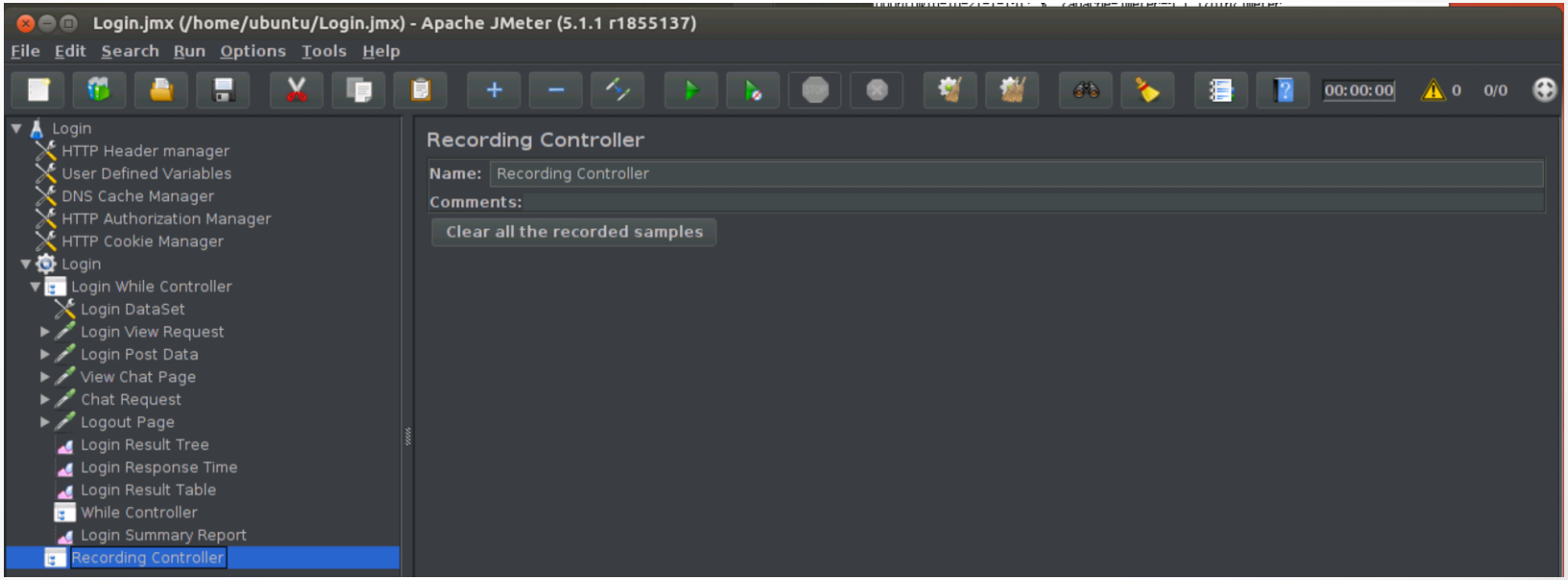
- Logical Controller: Random Order Controller



Loop Iteration	Each JMeter Thread Sends These HTTP Requests
1	News Page
1	Gump Page
1	FAQ Page
1	Log Page
2	Gump Page
2	News Page
2	FAW Page
2	Log Page
3	News Page
3	…

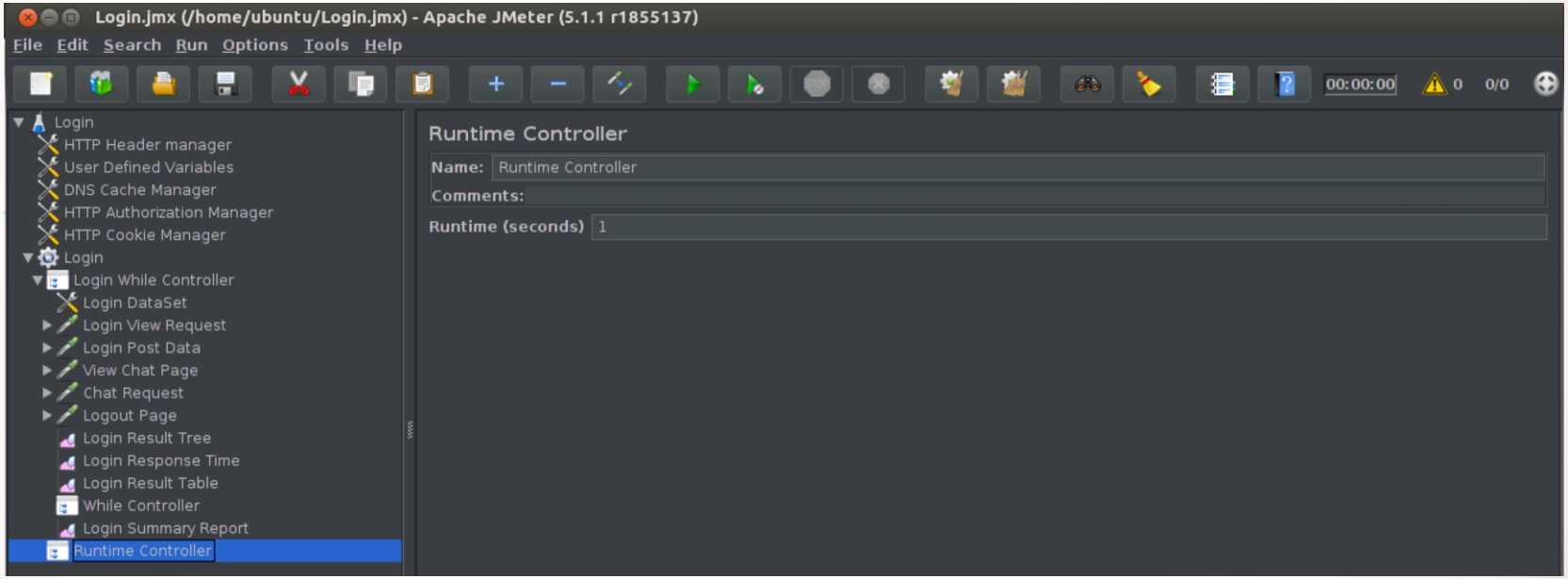
Jmeter's element part 2 (Advance)

- Logical Controller: Recording Controller
  - Work with HTTPS Test Scripts Recorder
  - Collect all record result to create element under this controller



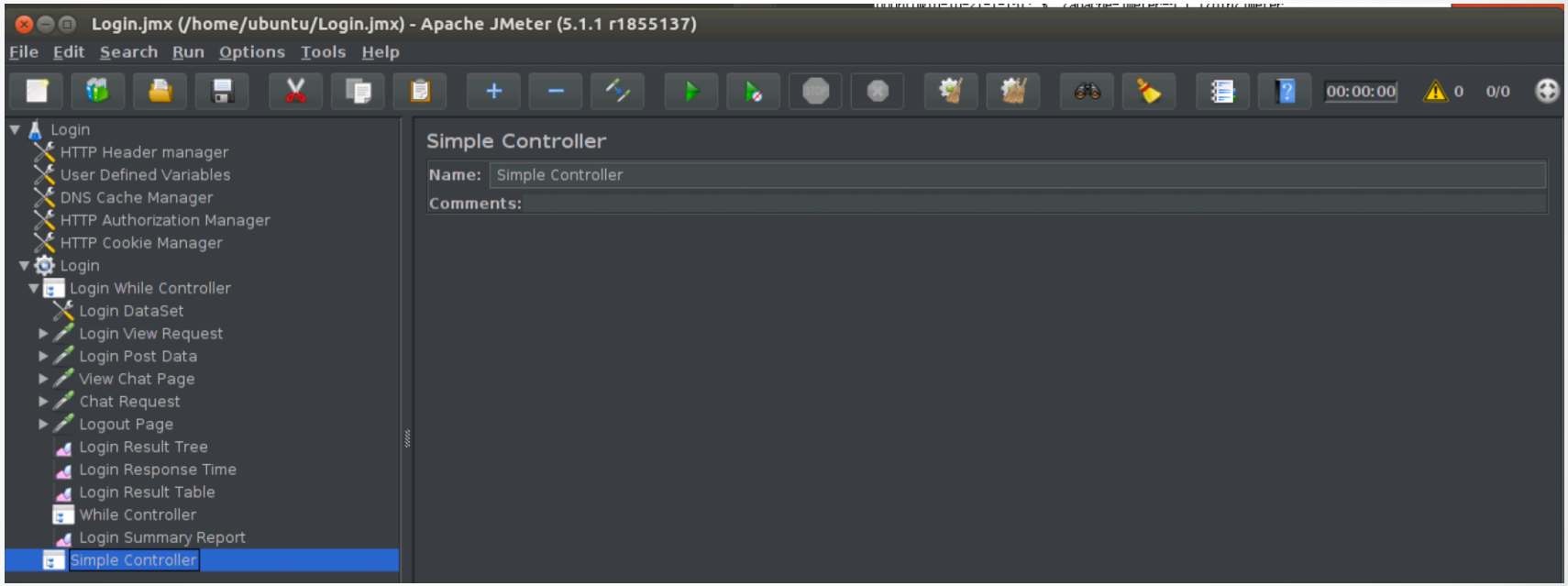
Jmeter's element part 2 (Advance)

- Logical Controller: Runtime Controller
  - Control overall runtime of all sampler under this controller to not exceeded



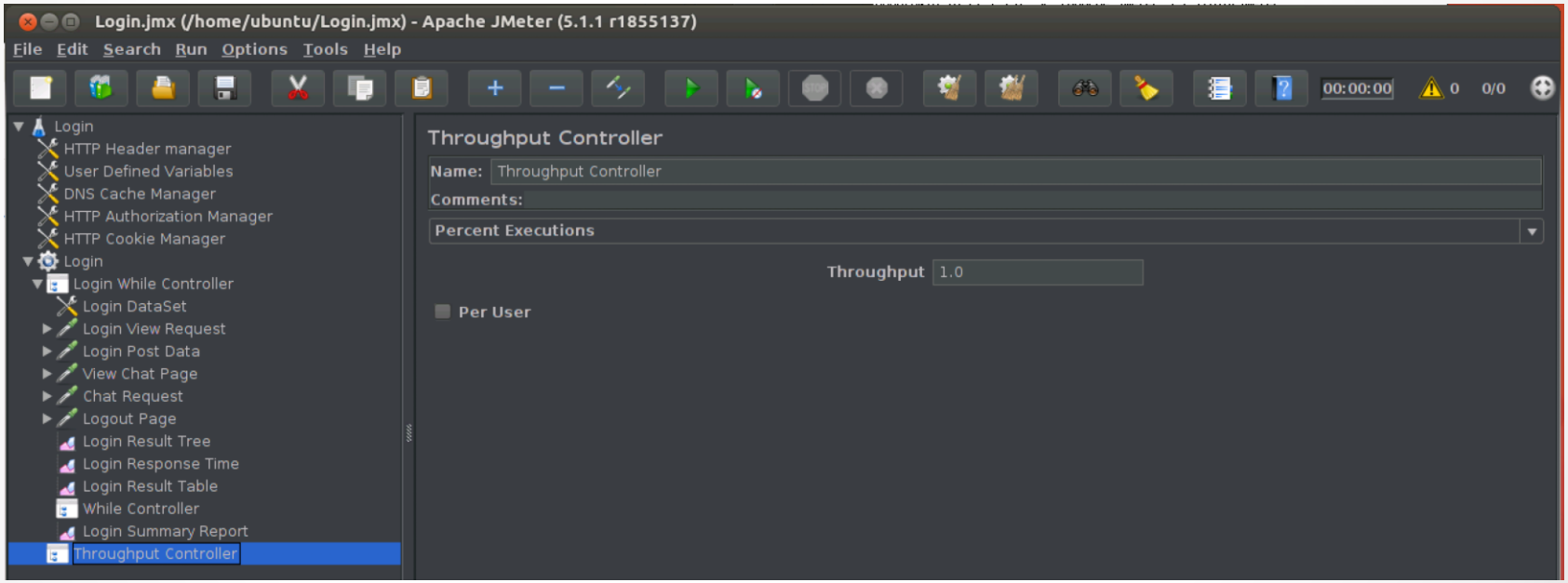
Jmeter's element part 2 (Advance)

- Logical Controller: Simple Controller
  - Keep all sampler run by sequence as normal



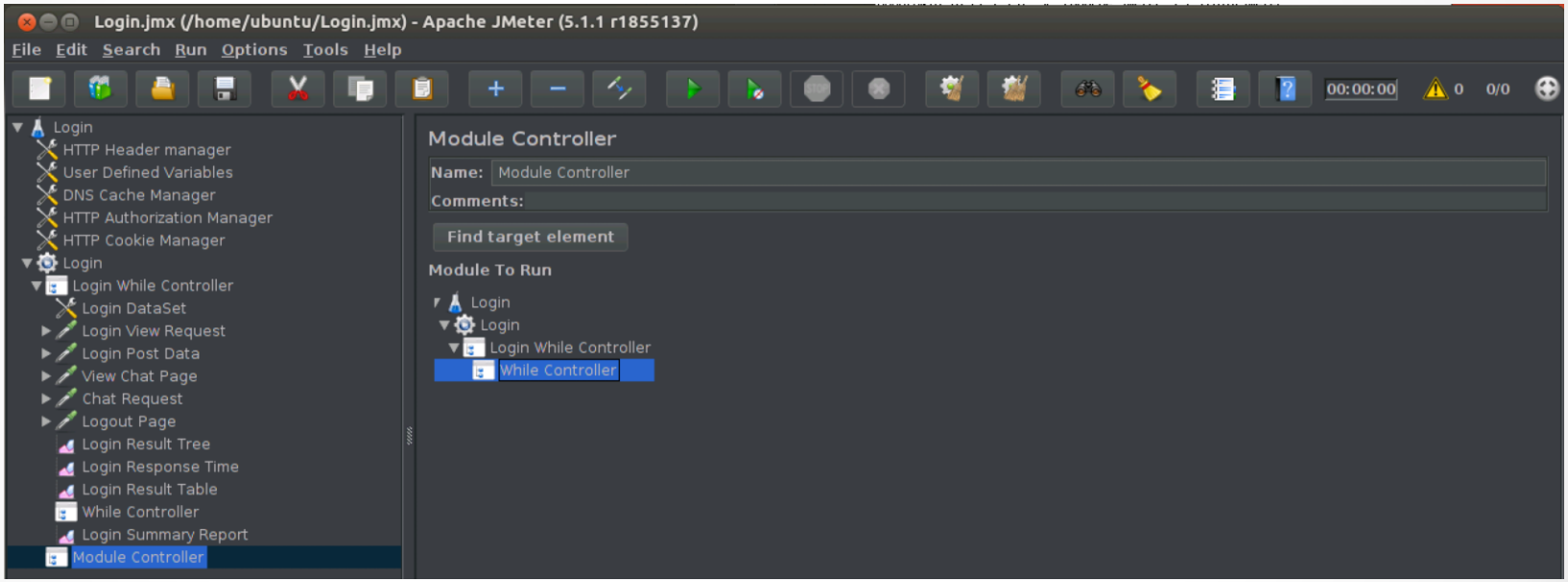
Jmeter's element part 2 (Advance)

- Logical Controller: Throughput Controller
  - Control run sampler base on throughput (% of work or per user) in each iteration



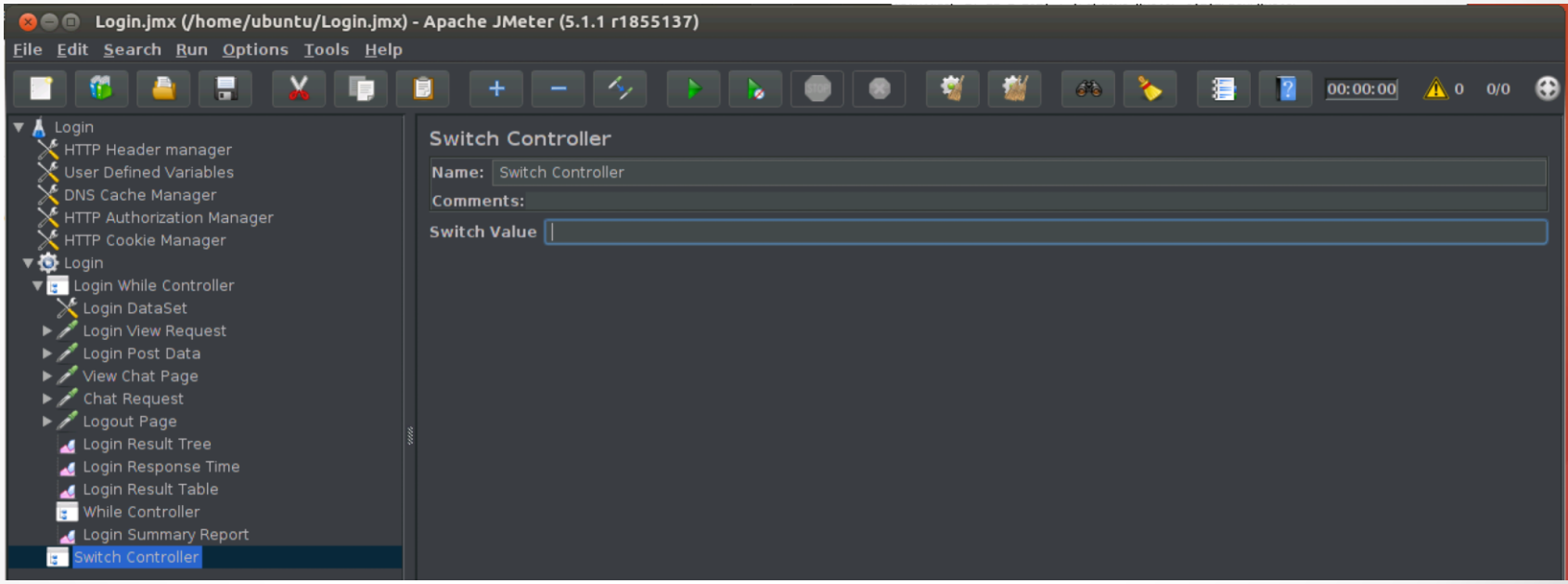
Jmeter's element part 2 (Advance)

- Logical Controller: Module Controller
  - Retrieve any module in test plan for running under this controller



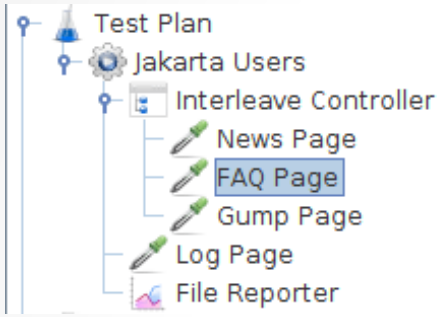
Jmeter's element part 2 (Advance)

- Logical Controller: Switch Controller
  - Similar to interleave controller but it will selective to run by "switch value" (Can be name match or number (seq match))



Jmeter's element part 2 (Advance)

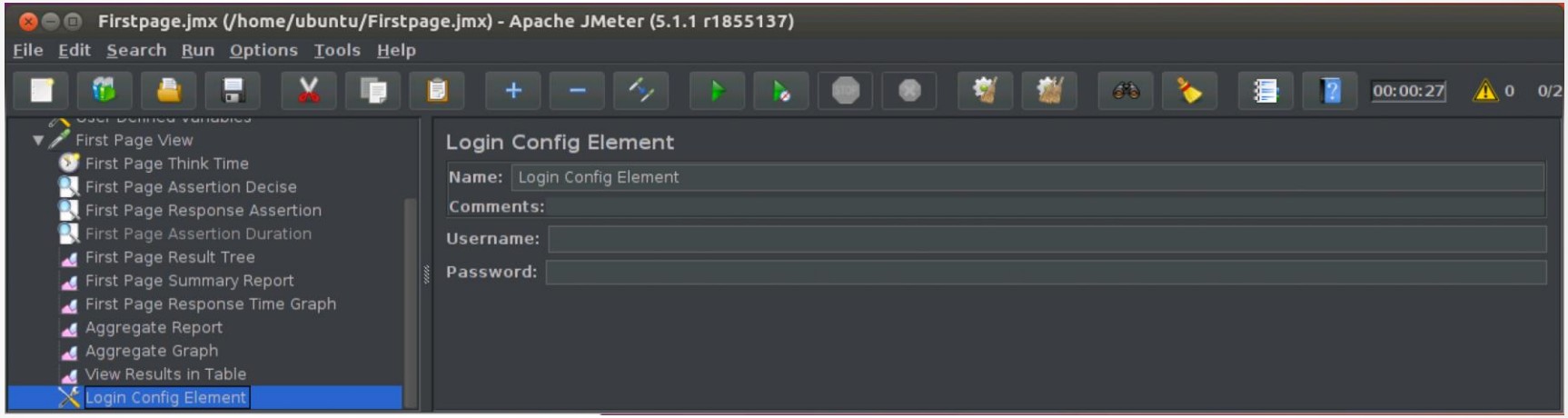
- Logical Controller: Switch Controller (switch value:2)



Loop Iteration	Each JMeter Thread Sends These HTTP Requests
1	FAQ Page
1	Log Page
2	FAQ Page
2	Log Page
3	FAQ Page
3	Log Page
4	FAQ Page
4	Log Page
5	FAQ Page
5	…

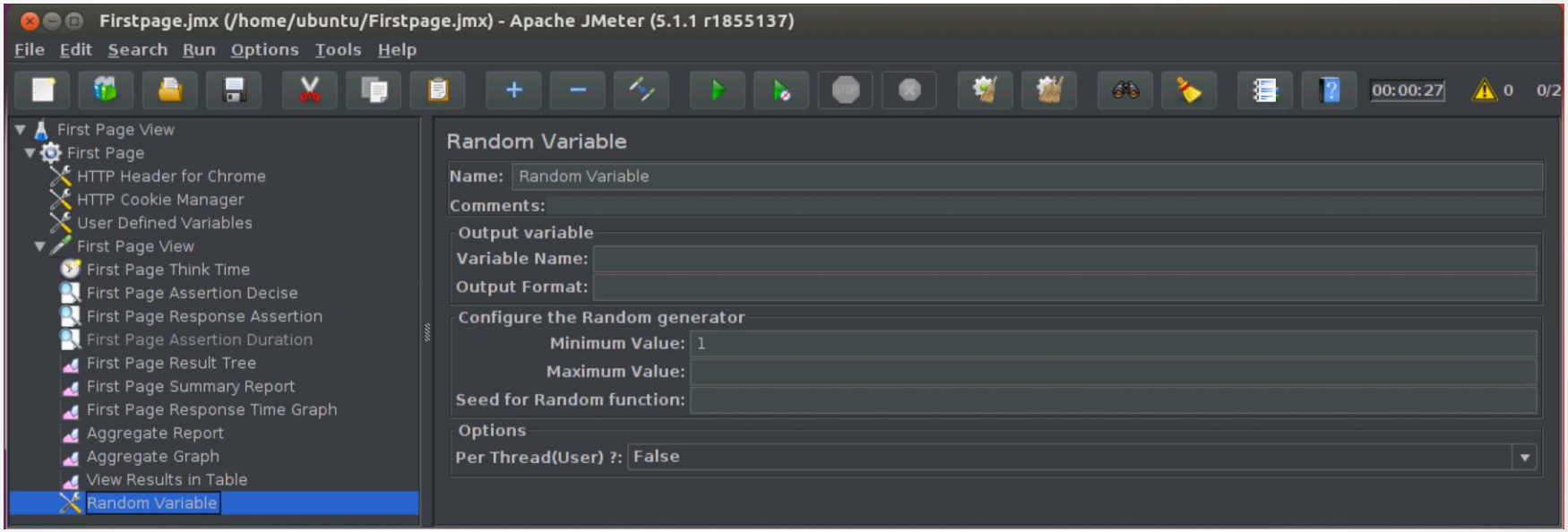
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: Login Config Ele.
  - Configure default username/password for login



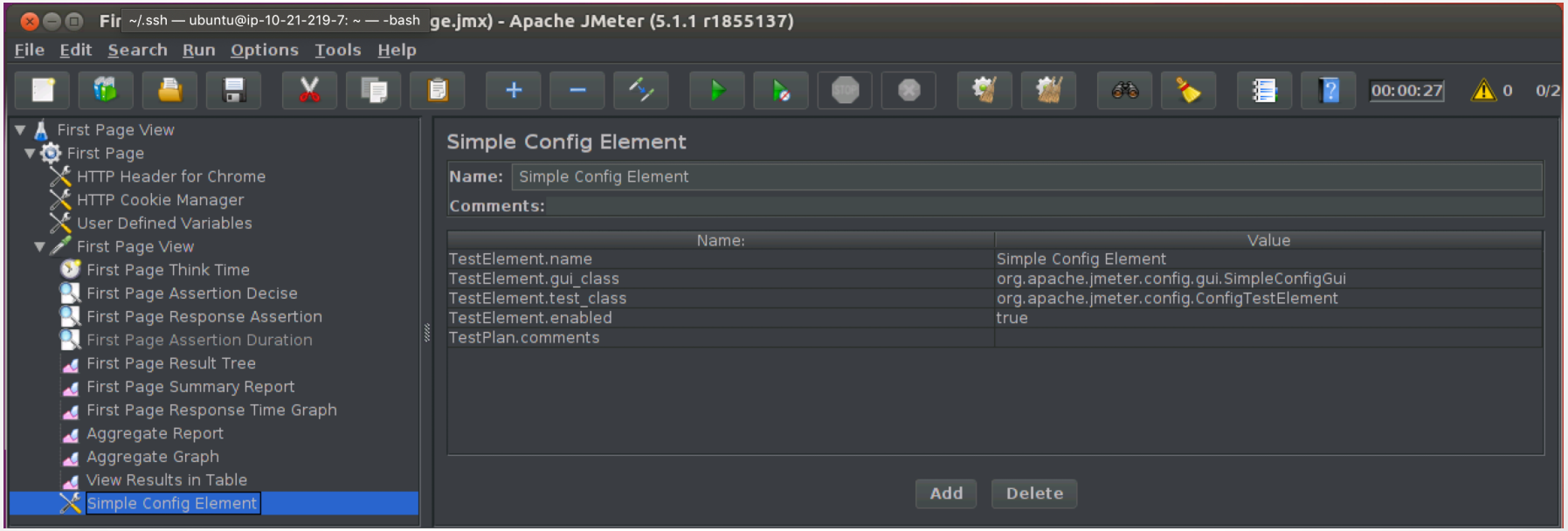
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: Random Variable.
  - Configure any random variable for user on sample



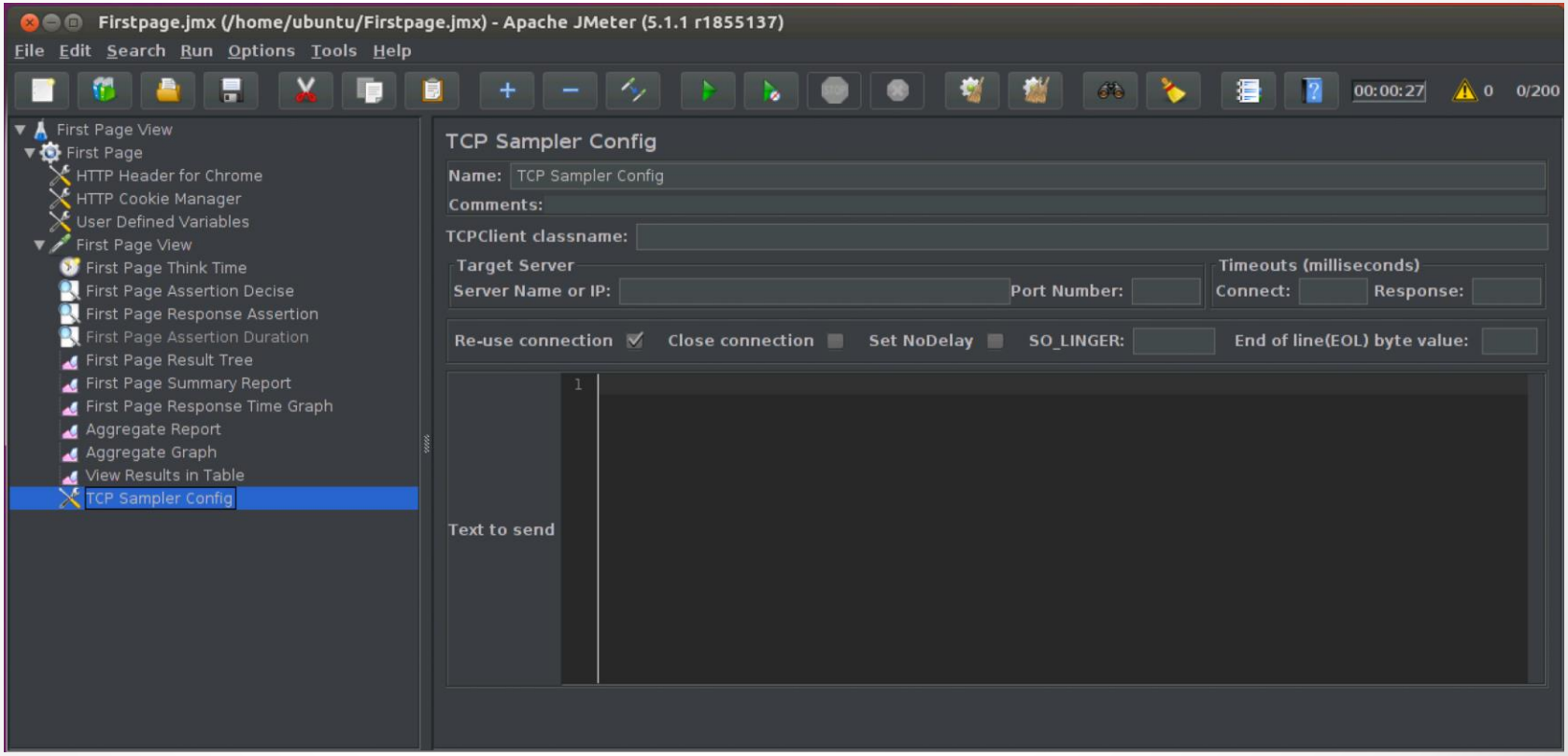
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: Simple Config Element.
  - Configure for override environment on sampler



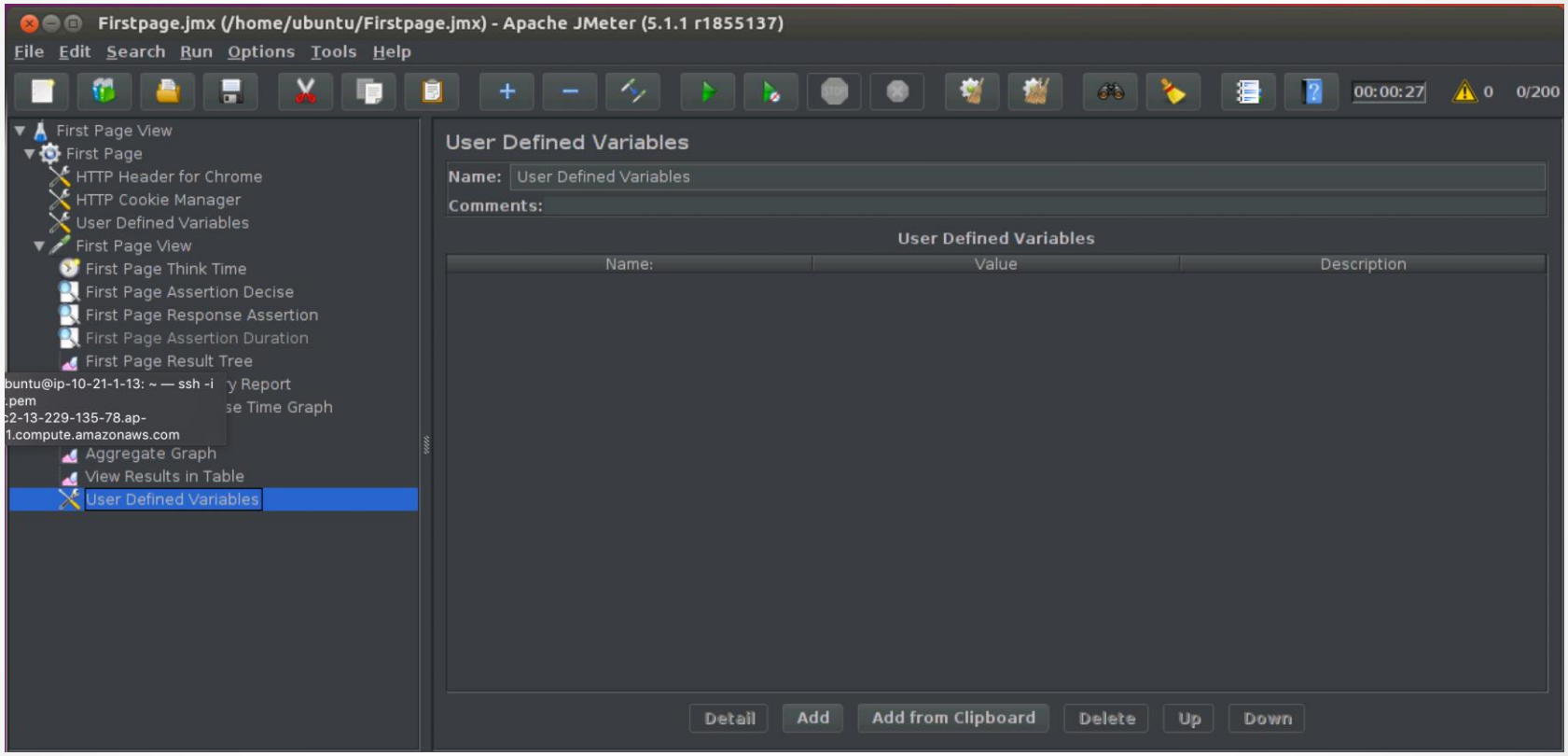
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: TCP simpler Conf
  - Configure for provide default data of TCP Sampler



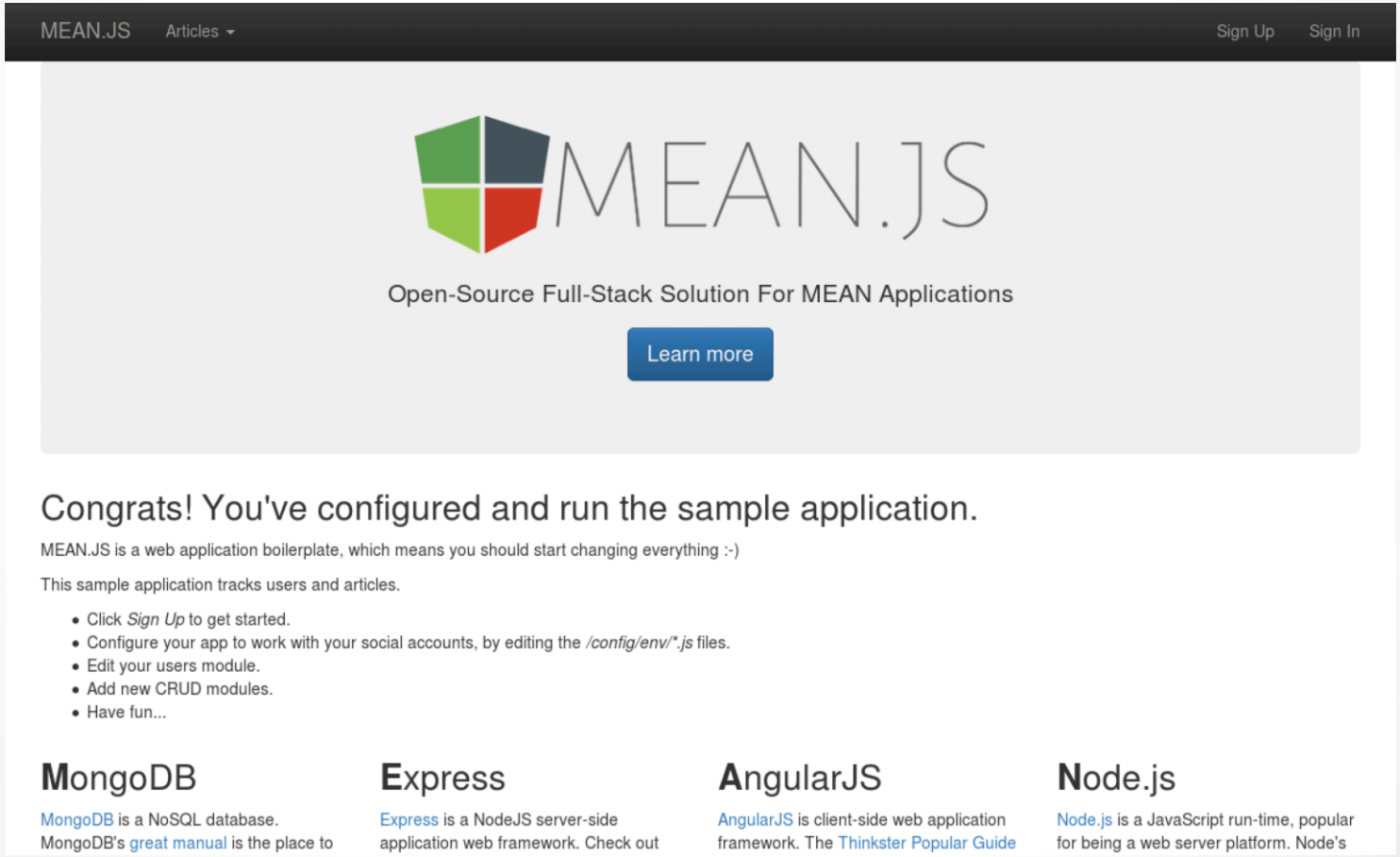
Jmeter's element part 2 (Advance)

- Configure Element and Parameter: User Define Value



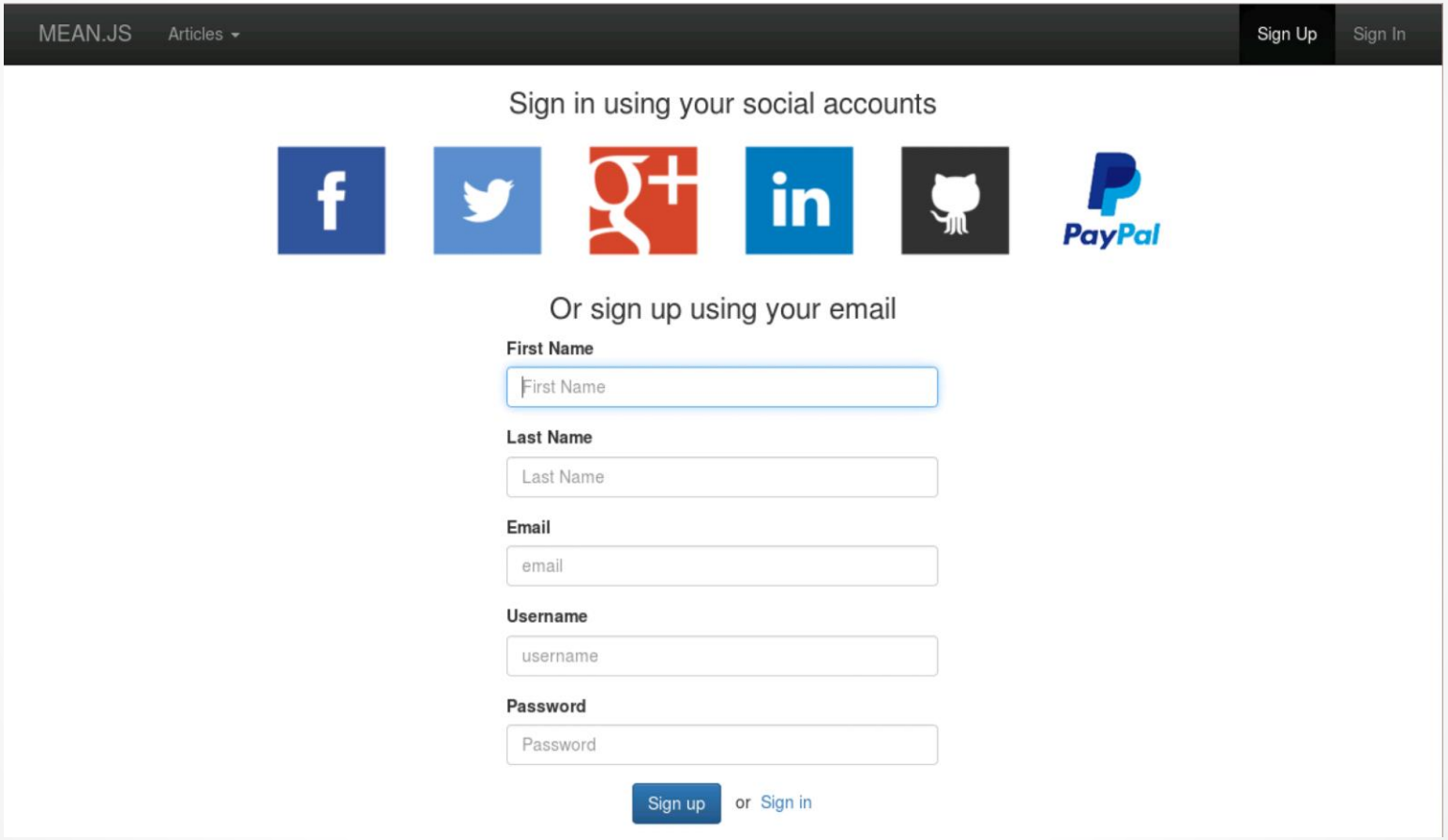
WorkShop: 2-1 CSV Data for MEAN.JS

- **User Journey for SignUp Activity**
- Step 1: Open FirstPage



WorkShop: 2-1 CSV Data for MEAN.JS

- Step 2: Open Menu "SignUp"



WorkShop: 2-1 CSV Data for MEAN.JS

- Step 3: Input information and SignUp

Or sign up using your email

First Name

TestName

Last Name

TestLastName

Email

test@test.test

Username

testname

Password

••••••••••••

Password Requirements

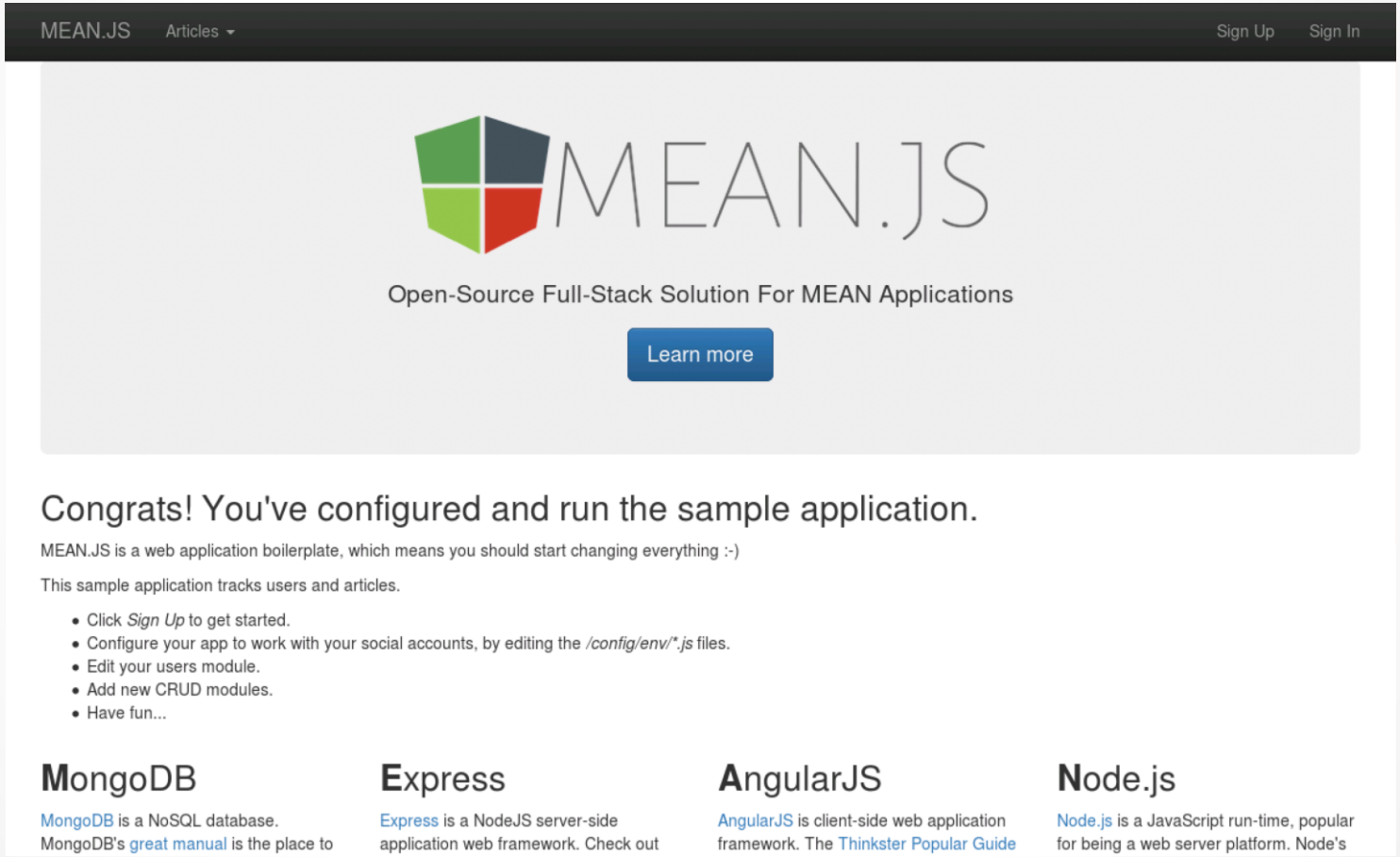
100%

WorkShop: 2-1 CSV Data for MEAN.JS

- Step 4: After signup. MEAN.JS will login and back to MEAN.JS

WorkShop: 2-1 CSV Data for MEAN.JS

- Step 5: Choose Signout and Back to Main page again



WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Data for Load Test about 5,000 records

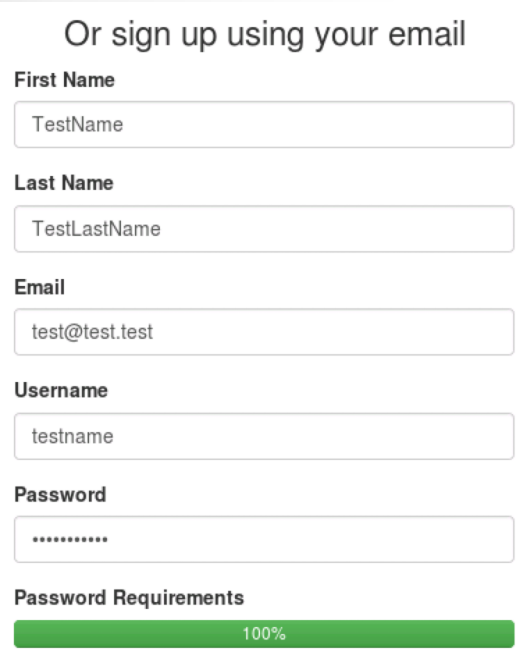
MEANJSData.csv - LibreOffice Calc

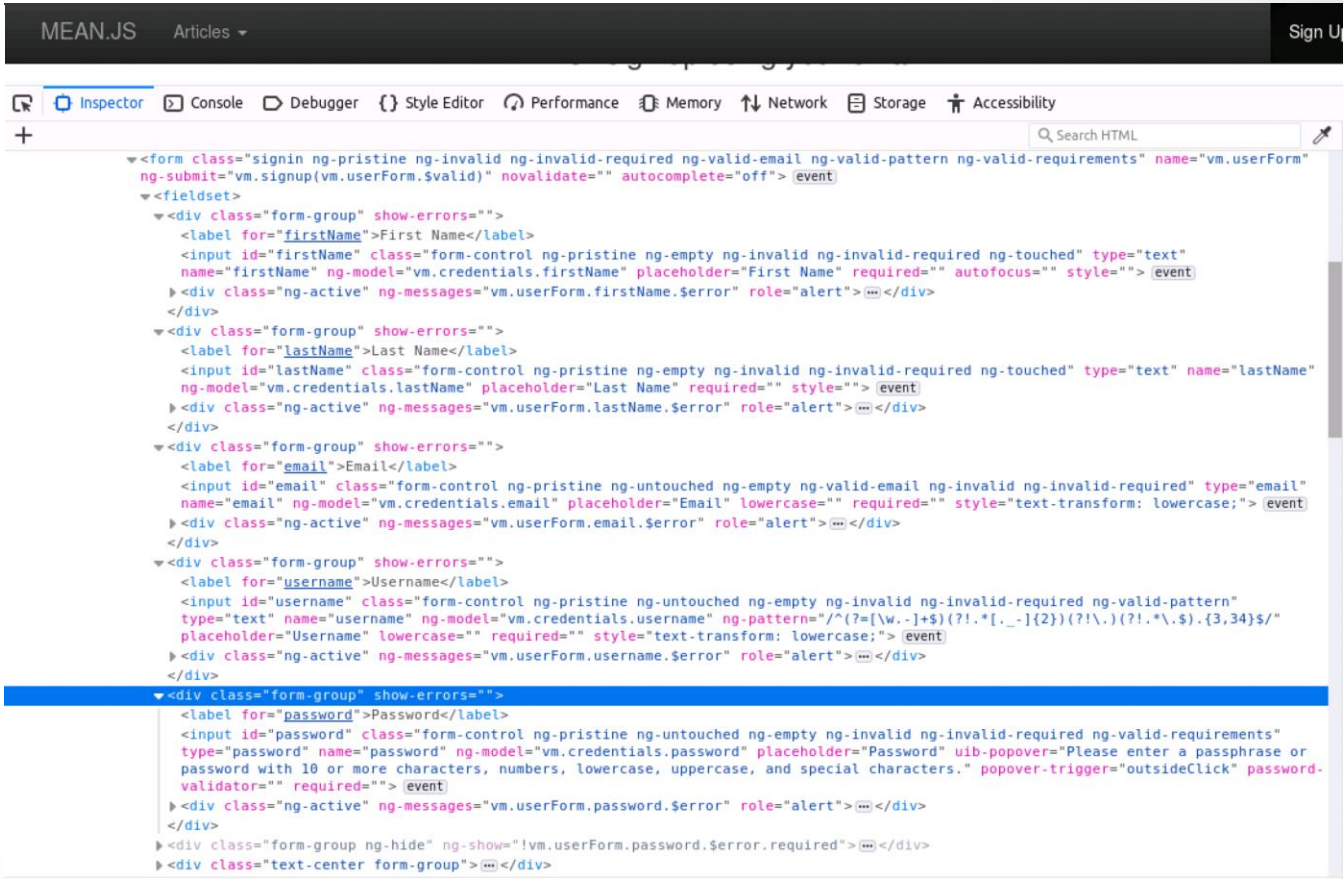
	A	B	C	D	E
1	firstName	lastName	email	username	password
2	Usertest_1	SurnameTest_1	Usertest_1@loadtest.com	usertest1	P@ssw0rdforTest
3	Usertest_2	SurnameTest_2	Usertest_2@loadtest.com	usertest2	P@ssw0rdforTest
4	Usertest_3	SurnameTest_3	Usertest_3@loadtest.com	usertest3	P@ssw0rdforTest
5	Usertest_4	SurnameTest_4	Usertest_4@loadtest.com	usertest4	P@ssw0rdforTest
6	Usertest_5	SurnameTest_5	Usertest_5@loadtest.com	usertest5	P@ssw0rdforTest
7	Usertest_6	SurnameTest_6	Usertest_6@loadtest.com	usertest6	P@ssw0rdforTest
8	Usertest_7	SurnameTest_7	Usertest_7@loadtest.com	usertest7	P@ssw0rdforTest
9	Usertest_8	SurnameTest_8	Usertest_8@loadtest.com	usertest8	P@ssw0rdforTest
10	Usertest_9	SurnameTest_9	Usertest_9@loadtest.com	usertest9	P@ssw0rdforTest
11	Usertest_10	SurnameTest_10	Usertest_10@loadtest.com	usertest10	P@ssw0rdforTest
12	Usertest_11	SurnameTest_11	Usertest_11@loadtest.com	usertest11	P@ssw0rdforTest
13	Usertest_12	SurnameTest_12	Usertest_12@loadtest.com	usertest12	P@ssw0rdforTest
14	Usertest_13	SurnameTest_13	Usertest_13@loadtest.com	usertest13	P@ssw0rdforTest
15	Usertest_14	SurnameTest_14	Usertest_14@loadtest.com	usertest14	P@ssw0rdforTest

……

WorkShop: 2-1 CSV Data for MEAN.JS

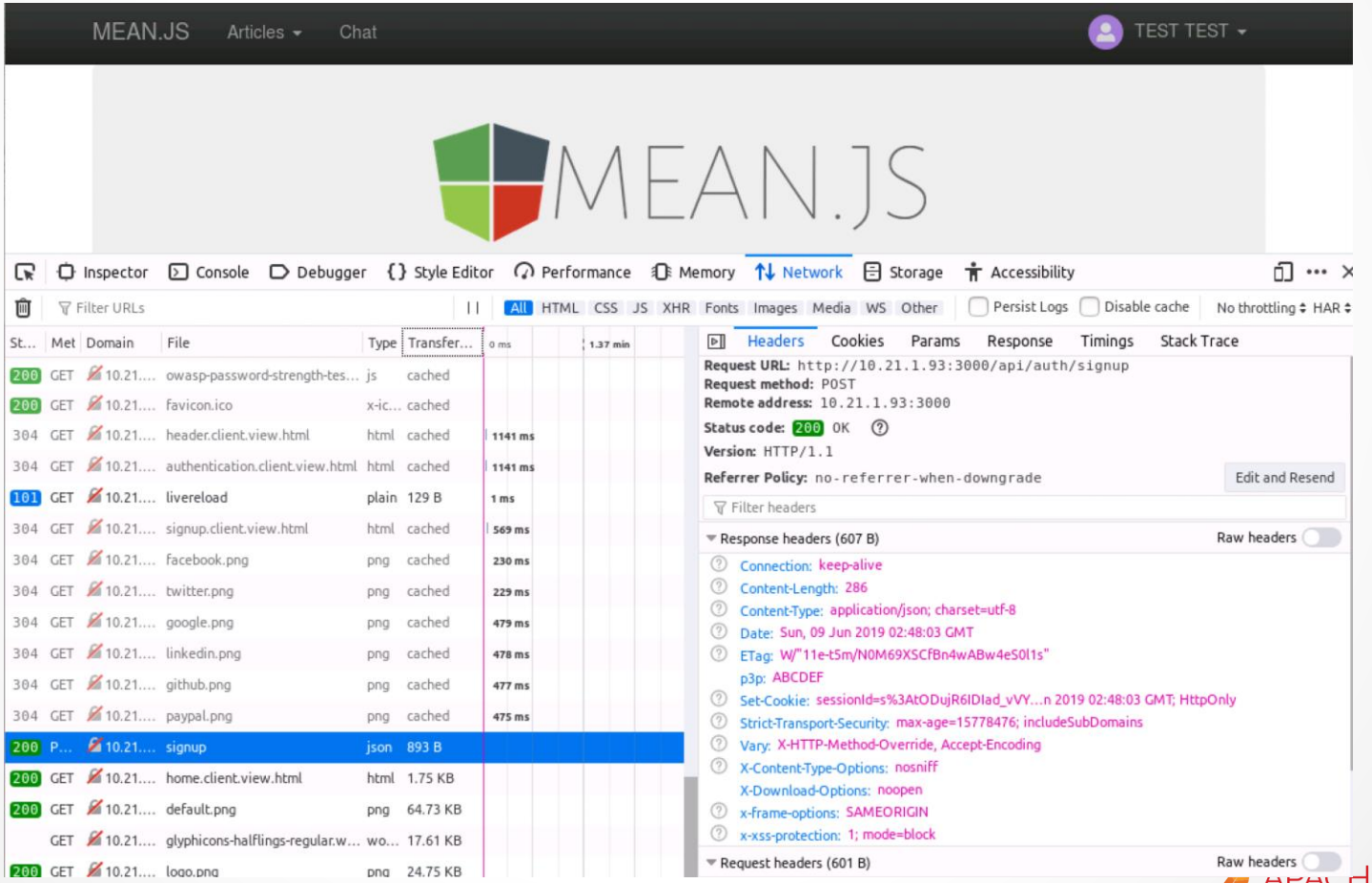
- **Setup Test Plan**
- Post Data Form (Developer Inspector on Browser)





WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Detail in post form: http://x.x.x.x/api/auth/signup



WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Detail in post form:
  - FirstName: <firstName>
  - lastName: <lastName>
  - email: <email@xxx.xxx>
  - username: <username>
  - password: <password>

Headers Cookies Params Response Timings Stack Trace

Filter request parameters

JSON

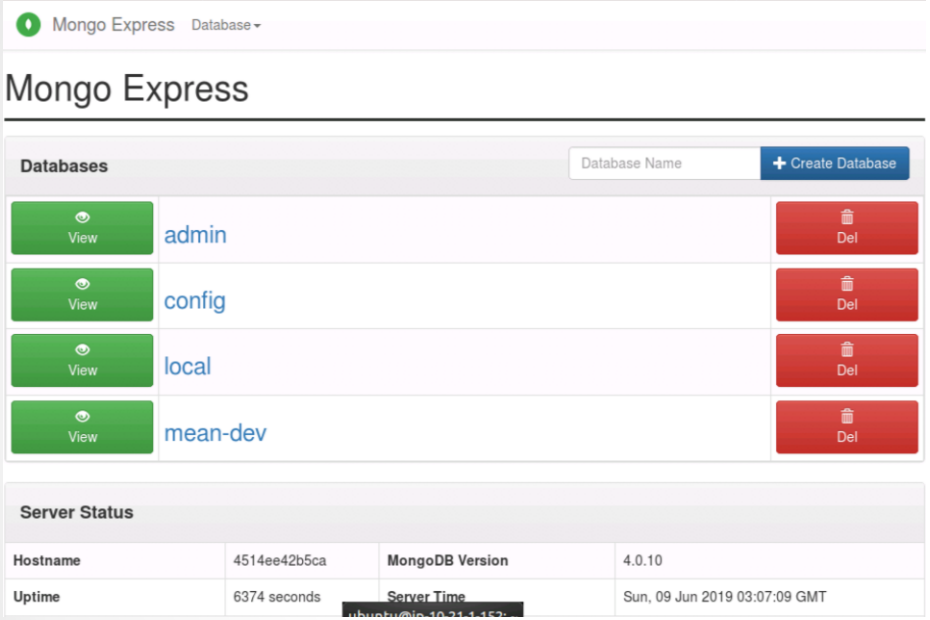
email: test@test.com
firstName: TEST
lastName: TEST
password: P@ssw0rd1234
username: test

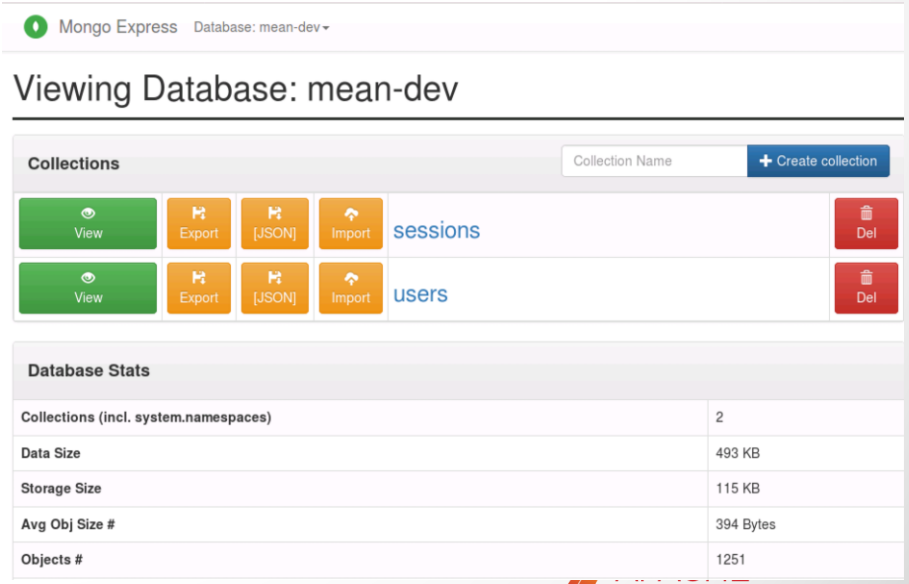
Request payload

```
1 {"firstName":"TEST","lastName":"TEST","email":"test@test.com","username":"test","password":"P@ssw0rd1234"}
```

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Check MONGODB from Mongo Express





WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Check MongoDB from Mongo Express

Mongo Express Database: mean-dev > Collection: users

Viewing Collection: users

New Document | New Index

Simple | Advanced

Key | Value | String | Find

Delete all 1304 documents retrieved

← First | ← Prev | Next → | Last →

_id	salt	displayName	provider	username	created	roles	profileImage
5cfc77a98ebf81002a12d15d	ldH2dvQjqzYoDxOCHbSLxA==	Usertest_1 SurnameTest_1	local	usertest1	Sun Jun 09 2019 03:06:17 GMT+0000	user	/modules/use /client/img/pr /default.png

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WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Check MongoDB from Mongo Express

Mongo Express Database: mean-dev > Collection: users > Document 5cfc77ab8ebf81002a12d161

Editing Document: 5cfc77ab8ebf81002a12d161

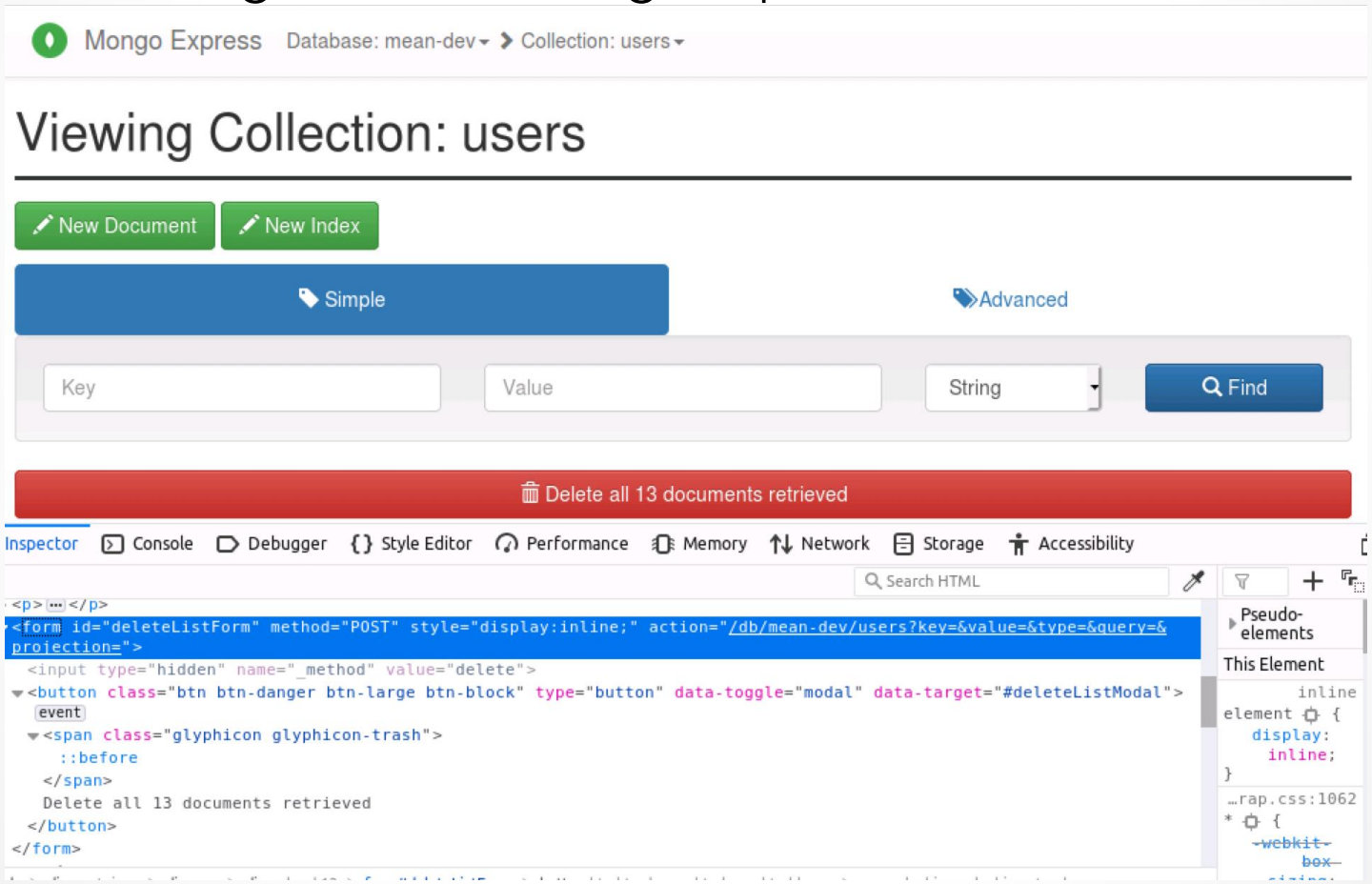
Back Save


```
{
    "_id": ObjectID("5cfc77ab8ebf81002a12d161"),
    "salt": "frvh1A0eIiOigWupRaPUCQ==",
    "displayName": "Usertest_5 SurnameTest_5",
    "provider": "local",
    "username": "usertest5",
    "created": ISODate("2019-06-09T03:06:19.819Z"),
    "roles": [
        "user"
    ],
    "profileImageURL": "/modules/users/client/img/profile/default.png",
    "password": "y90iBiyPNJJS4qz+qA6PGyyRxsZkjDSEFeQ+bZqt+IeCjRGryA6WSeY5iVgIaZdfO4fqdRAErX/mtyiMaSLtlA==",
    "email": "usertest_5@loadtest.com",
    "lastName": "SurnameTest_5",
    "firstName": "Usertest_5",
    "__v": 0
}
```


Back Save

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Delete MongoDB from Mongo Express



WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Delete MongoDB from Mongo Express

Mongo Express Database: mean-dev

Viewing Database: mean-dev

Collection "users" deleted!

Collections

Collection Name + Create collection

View | Export | [JSON] | Import | sessions | Del

Inspector | Console | Debugger | Style Editor | Performance | Memory | Network | Storage | Accessibility

Filter URLs | All | HTML | CSS | JS | XHR | Fonts | Images | Media | WS | Other | Persist Logs | Disable cache | No throttling | HAR

Status	Met...	Domain	File	Type	Transferred	0 ms / 640 ms
302	POST	10.21.1.93:8...	users?key=&value=&type=&query=&projection=	html	10.40 KB	8 ms
200	GET	10.21.1.93:8...	mean-dev	html	10.41 KB	17 ms
304	GET	10.21.1.93:8...	bootstrap.min.css	css	cached	1 ms
304	GET	10.21.1.93:8...	bootstrap-theme.min.css	css	cached	1 ms
304	GET	10.21.1.93:8...	style.css	css	cached	1 ms
304	GET	10.21.1.93:8...	vendor-47ad38d08af7dbfa26be.min.js	js	cached	1 ms

10 requests | 198.32 KB / 20.81 KB transferred | Finish: 330 ms | DOMContentLoaded: 253 ms | load: 279 ms

Headers | Cookies | Params | Re

Filter request parameters

Query string

key:
value:
type:
query:
projection:

Form data

_method: delete

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WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Open CSV Data Set Config for get data from CSV file

KickStart_MEANJS_Workshop_2_1.jmx (/home/ubuntu/jmeter-workshop-062019/Workshop-2-1-Advance_CSV/KickStart_MEANJS_Workshop_2_1.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:04:11 0 0/1

- SignUp Thread Group
  - SignUp While Controller
    - InsertDataSet
    - Simple Controller
      - SignUp View Page
        - ViewPage ThinkTime
        - HTTP Header manager
        - ViewPage Response Assertion
        - ViewPage Response Code Assertion
        - ViewPage Duration Assertion
        - Size Assertion Minimum
        - Size Assertion Maximum
      - SignUp Post Page
        - PostPage ThinkTime
        - HTTP Header manager
        - PostPage Response Assertion
        - SignUp Response Code Assertion
      - SingUp LogOut
        - LogOut ThinkTime

CSV Data Set Config

Name: InsertDataSet

Comments:

Configure the CSV Data Source

Filename:	/home/ubuntu/jmeter-workshop-062019/Workshop-2-1-Advance_CSV/MEANJSData.csv Browse...
File encoding:	UTF-8
Variable Names (comma-delimited):	firstName,lastName,email,username,password
Ignore first line (only used if Variable Names is not empty):	True
Delimiter (use '\t' for tab):	,
Allow quoted data?:	False
Recycle on EOF ?:	False
Stop thread on EOF ?:	True
Sharing mode:	All threads

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Create sample post data with field required

Template_MEANJS_Workshop_2_1.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_1.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:32 0 200/200

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
    - MEAN.JS WarmUp
    - Comparison Assertion Visualizer
    - View Results in Table
  - SignUp Thread Group
    - SignUp White Controller
      - InsertDataSet
      - Simple Controller
        - SignUp View Page
        - SignUp Post Page
          - PostPage ThinkTime
          - HTTP Header manager
          - PostPage Response Assertion
          - SignUp Response Code Assertion
        - SingUp LogOut
      - SignUp View Results Tree
      - SignUp Resource Table
      - SignUp ResponseTime Graph
      - SignUp Summary Report
  - tearDown Thread Group
    - Define Custome Value for Mongo Express

HTTP Request

Name: SignUp Post Page

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: ${MeanPort}

HTTP Request

Method: POST | Path: api/auth/signup | Content encoding:

☐ Redirect Automatically ☑ Follow Redirects ☑ Use KeepAlive ☐ Use multipart/form-data ☐ Browser-compatible headers

Parameters | Body Data | Files Upload

```
1 {"firstName":"${firstName}","lastName":"${lastName}","email":"${email}","username":"${username}","password":
"${password}"}
```


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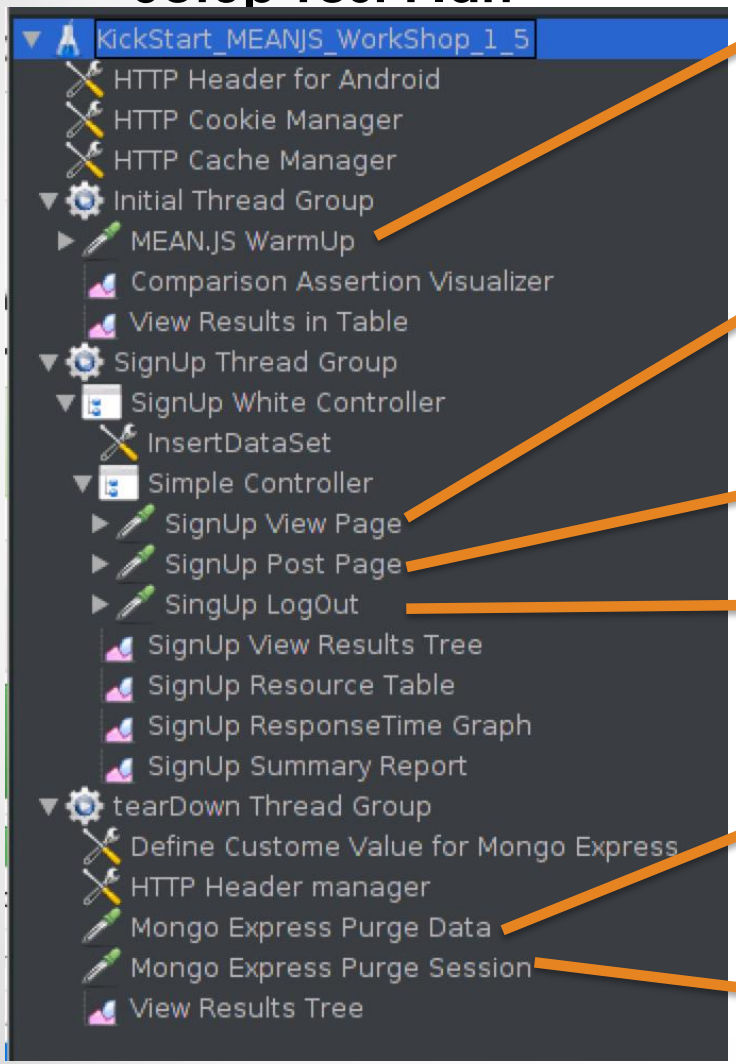
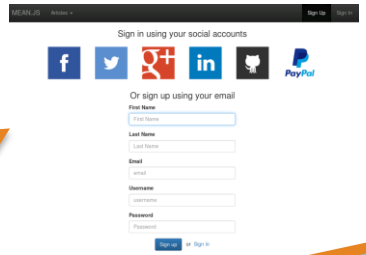
WorkShop: 2-1 CSV Data for MEAN.JS

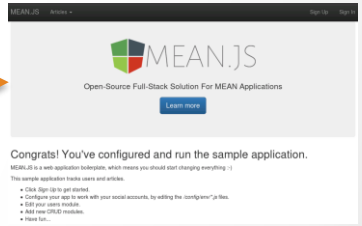
- **Setup Test Plan**
- Create 3 phase of Thread Group
  - Initial Thread Group
    - Boost Up MEAN.JS with Simple First Page View (200 User 1 Round)
  - Main Thread Group
    - SignUp View Page (GET Signup Page)
    - SignUp Post Page (Post data to MEAN.JS)
    - SignUp Logout (GET Logout Page)
  - TearDown Thread Group
    - MONGOExpress Delete data “User” (Post Data)
    - MONGOExpress Delete date “Session” (Post Data)

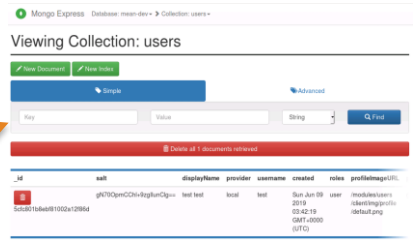
WorkShop: 2-1 CSV Data for MEAN.JS

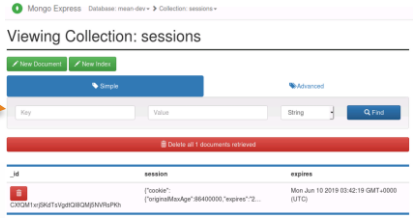
- **Setup Test Plan**











JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Run result:

Template_MEANJS_Workshop_2_1.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_1.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:18 0 111/200

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
    - MEAN.JS WarmUp
    - Comparison Assertion Visualizer
    - View Results in Table
  - SignUp Thread Group
    - SignUp White Controller
      - InsertDataSet
      - Simple Controller
        - SignUp View Page
        - SignUp Post Page
        - SingUp LogOut
      - SignUp View Results Tree
      - SignUp Resource Table
      - SignUp ResponseTime Graph
      - SignUp Summary Report
  - tearDown Thread Group
    - Define Custome Value for Mongo Exp
    - HTTP Header manager
    - Mongo Express Purge Data
    - Mongo Express Purge Session
    - View Results Tree

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

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

Sample #	Start Time	Thread Name	Label	Sample Tim...	Status	Bytes	Sent Bytes	Latency	Connect Time...
4	10:47:11.667	Initial Thread Group 1-3	MEAN.JS WarmUp	20		2399	399	20	0
5	10:47:11.685	Initial Thread Group 1-5	MEAN.JS WarmUp	15		2399	399	15	0
6	10:47:11.752	Initial Thread Group 1-6	MEAN.JS WarmUp	14		2399	399	14	1
7	10:47:11.862	Initial Thread Group 1-7	MEAN.JS WarmUp	12		2401	399	12	0
8	10:47:11.897	Initial Thread Group 1-10	MEAN.JS WarmUp	11		2405	399	11	0
9	10:47:11.908	Initial Thread Group 1-8	MEAN.JS WarmUp	11		2401	399	11	0
10	10:47:11.926	Initial Thread Group 1-9	MEAN.JS WarmUp	11		2401	399	11	0
11	10:47:12.010	Initial Thread Group 1-11	MEAN.JS WarmUp	13		2403	399	13	1
12	10:47:12.122	Initial Thread Group 1-13	MEAN.JS WarmUp	18		2401	399	18	1
13	10:47:12.165	Initial Thread Group 1-15	MEAN.JS WarmUp	13		2401	399	13	0
14	10:47:12.167	Initial Thread Group 1-14	MEAN.JS WarmUp	23		2401	399	23	1
15	10:47:12.179	Initial Thread Group 1-12	MEAN.JS WarmUp	21		2403	399	21	0
16	10:47:12.204	Initial Thread Group 1-16	MEAN.JS WarmUp	10		2399	399	10	0
17	10:47:12.309	Initial Thread Group 1-17	MEAN.JS WarmUp	13		2401	399	13	1
18	10:47:12.348	Initial Thread Group 1-18	MEAN.JS WarmUp	11		2399	399	11	0
19	10:47:12.394	Initial Thread Group 1-20	MEAN.JS WarmUp	12		2401	399	12	1
20	10:47:12.503	Initial Thread Group 1-19	MEAN.JS WarmUp	13		2399	399	13	1
21	10:47:12.624	Initial Thread Group 1-21	MEAN.JS WarmUp	12		2399	399	12	0
22	10:47:12.643	Initial Thread Group 1-24	MEAN.JS WarmUp	12		2401	399	12	1
23	10:47:12.679	Initial Thread Group 1-22	MEAN.JS WarmUp	15		2401	399	15	0

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Run result:

Template_MEANJS_Workshop_2_1.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_1.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:41 0 200/200

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
    - SignUp White Controller
      - InsertDataSet
      - Simple Controller
        - SignUp View Page
        - SignUp Post Page
        - SingUp LogOut
      - SignUp View Results Tree
      - SignUp Resource Table
      - SignUp ResponseTime Graph
      - SignUp Summary Report
  - tearDown Thread Group
    - Define Custome Value for Mongo Exp
    - HTTP Header manager
    - Mongo Express Purge Data
    - Mongo Express Purge Session
    - View Results Tree

View Results in Table

Name: SignUp Resource Table

Comments:

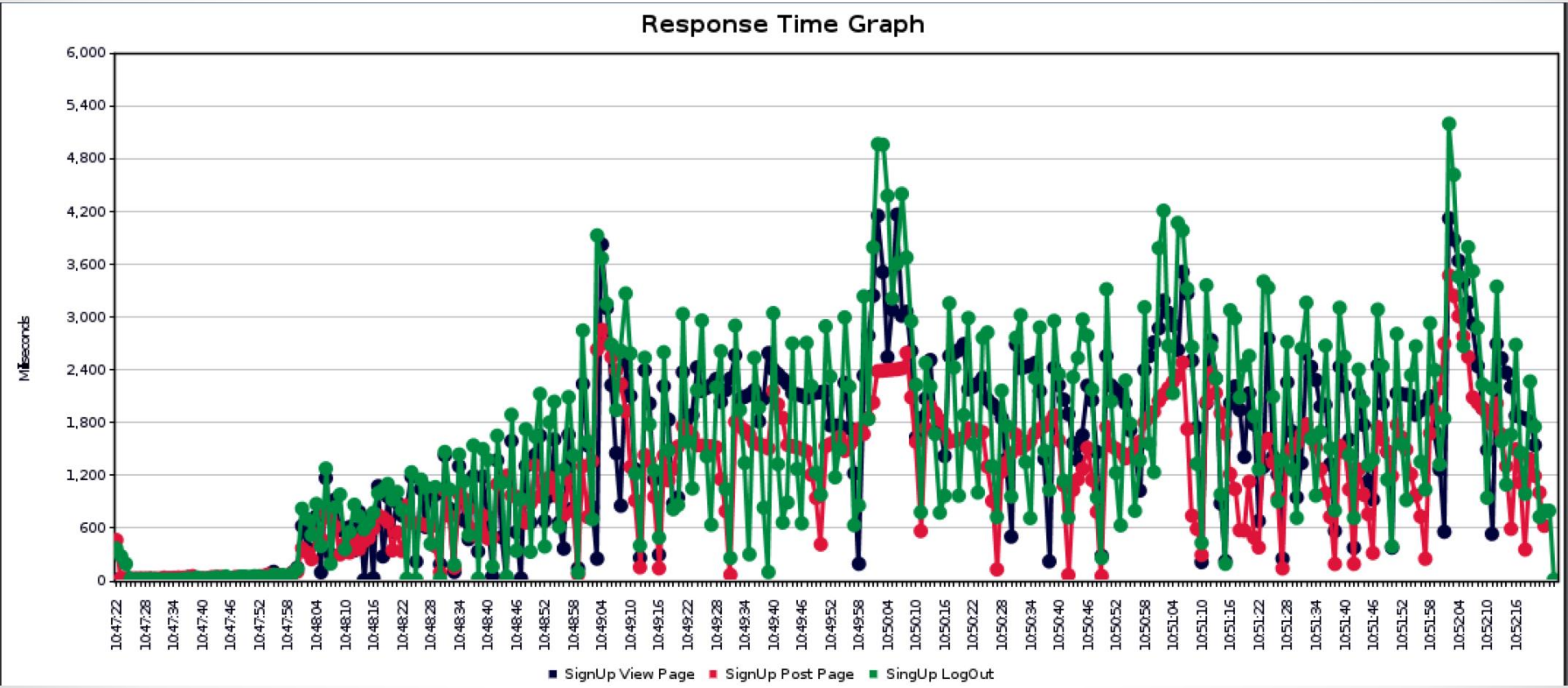
Write results to file / Read from file

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

Sample #	Start Time	Thread Name	Label	Sample Time...	Status	Bytes	Sent Bytes	Latency	Connect Tim...
1	10:47:22.828	SignUp Threa...	SignUp View Page	12		2414	381	12	1
2	10:47:23.490	SignUp Threa...	SignUp View Page	11		2408	381	11	0
3	10:47:23.851	SignUp Threa...	SignUp Post Page	34		936	773	33	0
4	10:47:24.050	SignUp Threa...	SignUp View Page	12		2410	381	12	1
5	10:47:24.502	SignUp Threa...	SignUp Post Page	31		930	767	31	0
6	10:47:24.620	SignUp Threa...	SignUp View Page	13		2410	381	12	0
7	10:47:25.116	SignUp Threa...	SignUp Post Page	30		932	769	29	0
8	10:47:25.251	SignUp Threa...	SignUp View Page	17		2412	381	17	1
9	10:47:25.702	SignUp Threa...	SignUp Post Page	29		932	769	29	0
10	10:47:25.889	SignUp Threa...	SignUp View Page	13		2412	381	13	0
11	10:47:25.930	SignUp Threa...	SingUp LogOut	23		2838	1026	8	0
12	10:47:26.299	SignUp Threa...	SignUp Post Page	28		934	771	28	0
13	10:47:26.444	SignUp Threa...	SignUp View Page	15		2412	381	15	0
14	10:47:26.571	SignUp Threa...	SingUp LogOut	21		2832	1014	4	0
15	10:47:26.977	SignUp Threa...	SignUp Post Page	29		934	771	28	0
16	10:47:26.995	SignUp Threa...	SignUp View Page	25		334	540	0	0
17	10:47:27.109	SignUp Threa...	SignUp View Page	14		2408	381	14	0
18	10:47:27.335	SignUp Threa...	SingUp LogOut	19		2834	1018	4	0
19	10:47:27.551	SignUp Threa...	SignUp Post Page	31		934	771	31	0
20	10:47:27.600	SignUp Threa...	SignUp View Page	15		334	534	0	0

WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Run result:



WorkShop: 2-1 CSV Data for MEAN.JS

- **Setup Test Plan**
- Run result:

Template_MEANJS_Workshop_2_1.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_1.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:05:16 0 0/1

- KickStart_MEANJS_WorkShop_1_5
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
    - SignUp White Controller
      - InsertDataSet
    - Simple Controller
      - SignUp View Page
      - SignUp Post Page
      - SingUp LogOut
    - SignUp View Results Tree
    - SignUp Resource Table
    - SignUp ResponseTime Graph
    - SignUp Summary Report
  - tearDown Thread Group
    - Define Custome Value for Mongo Exp
    - HTTP Header manager
    - Mongo Express Purge Data
    - Mongo Express Purge Session
    - 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 Configure

Search: Case sensitive Regular exp. Search Reset

Text

- Mongo Express Purge Data
  - Mongo Express Purge Data-(
  - Mongo Express Purge Data-:
  - Mongo Express Purge Session
  - Mongo Express Purge Sessic
  - Mongo Express Purge Sessic
  - Mongo Express Purge Sessic

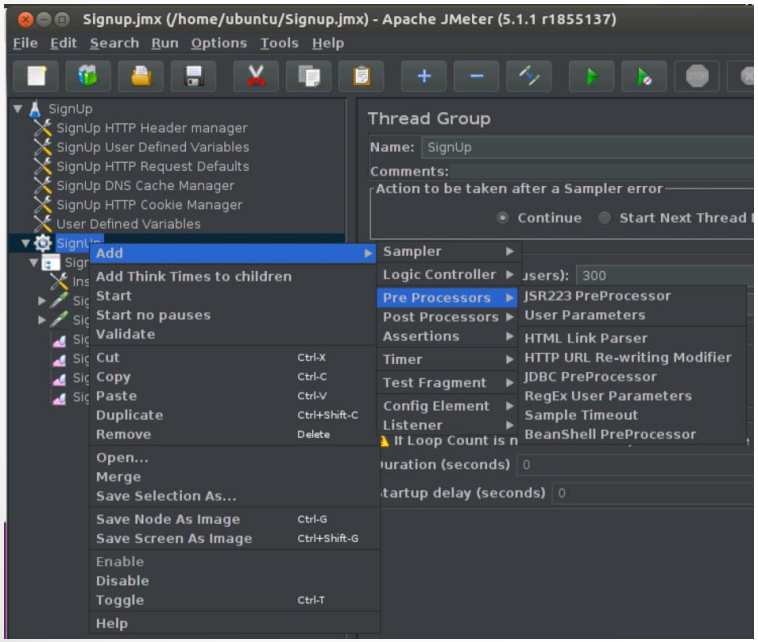
Sampler result | Request | Response data

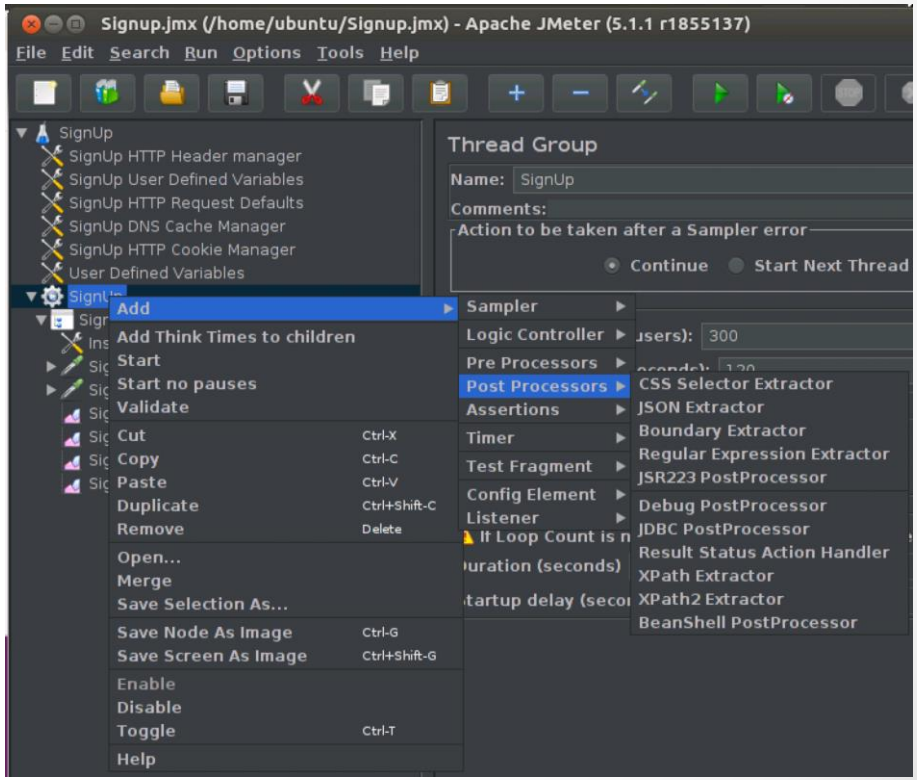
Thread Name: tearDown Thread Group 1-1
Sample Start: 2019-06-09 10:52:25 ICT
Load time: 105
Connect Time: 0
Latency: 7
Size in bytes: 9856
Sent bytes:1914
Headers size in bytes: 606
Body size in bytes: 9250
Sample Count: 1
Error Count: 0
Data type ("text"|"bin"|""): text
Response code: 200
Response message: OK

HTTPSampleResult fields:
ContentType: text/html; charset=utf-8
DataEncoding: utf-8

Jmeter's element part 2 (Advance)

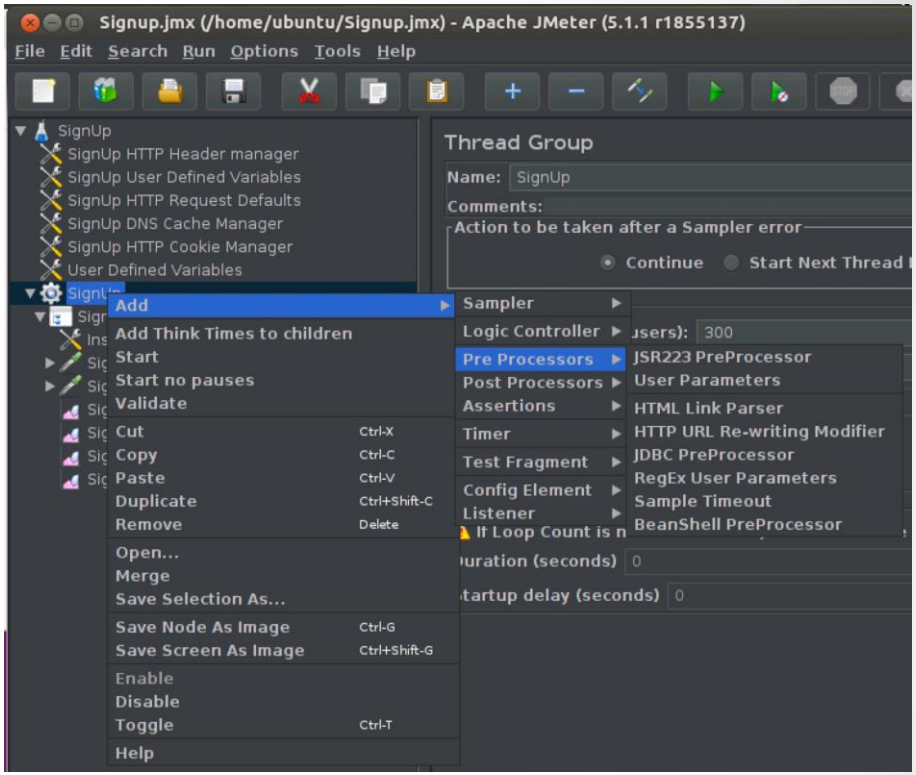
- **<u>Pre/Post Process (Scope on their loop)</u>**
  - Pre Process: Use to modify the samplers in scope
  - Post Process: Usually run for collect result from samplers. *Remark: Post process will run before assertion and after their samplers





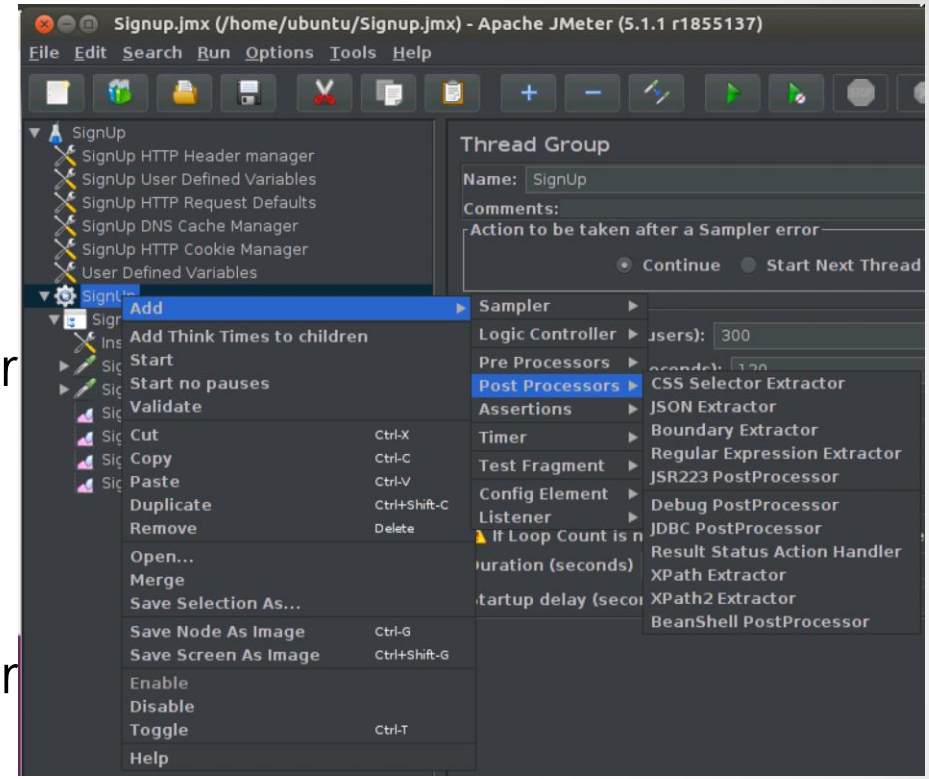
Jmeter's element part 2 (Advance)

- **Pre-Process**
  - JSR223 PreProcessor:
  - User Parameters:
  - HTML Link Parsers:
  - **HTTP URL Re-writing Modifier**
  - JDBC PreProcessor:
  - **RegEx User Parameters:**
  - Sample Timeout:
  - BeanShell PreProcessor:



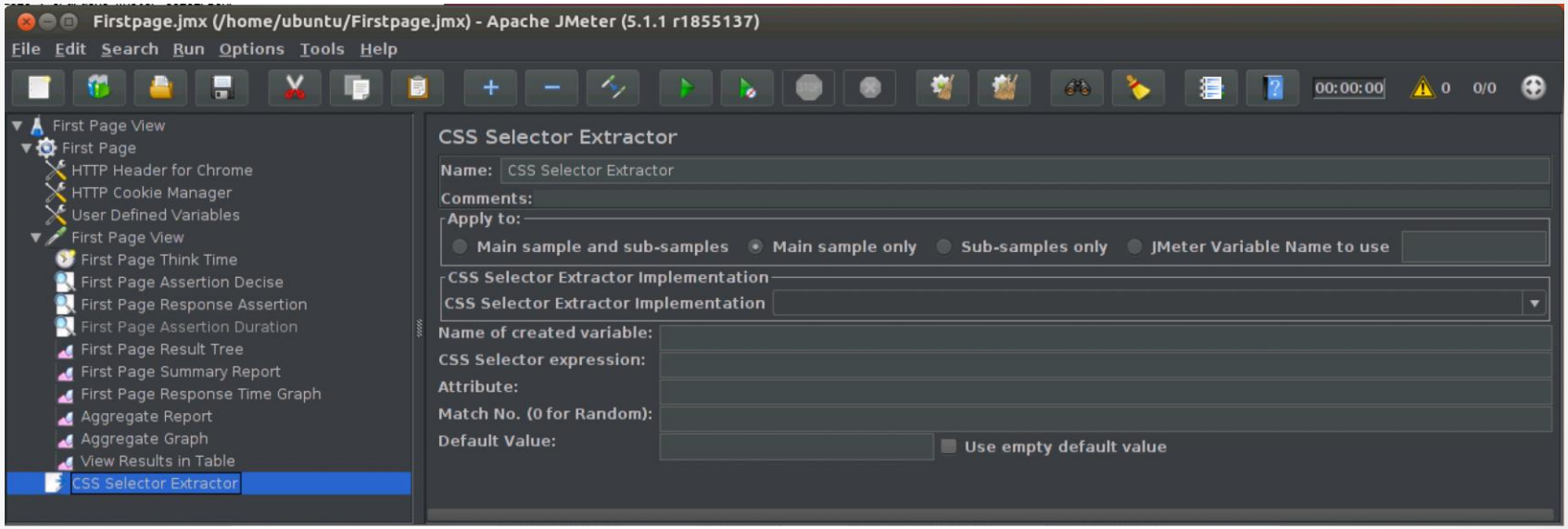
Jmeter's element part 2 (Advance)

- **Post-Process**
  - CSS Selector Extractor:
  - JSON Extractor:
  - Boundary Extractor:
  - Regular Expression Extractor
  - JSR223 PostProcessor:
  - Debug PostProcessor:
  - JDBC PostProcessor:
  - Result Status Action Handler
  - XPath Extractor:
  - XPath2 Extractor:
  - BeanShell PostProcessor:



Jmeter's element part 2 (Advance)

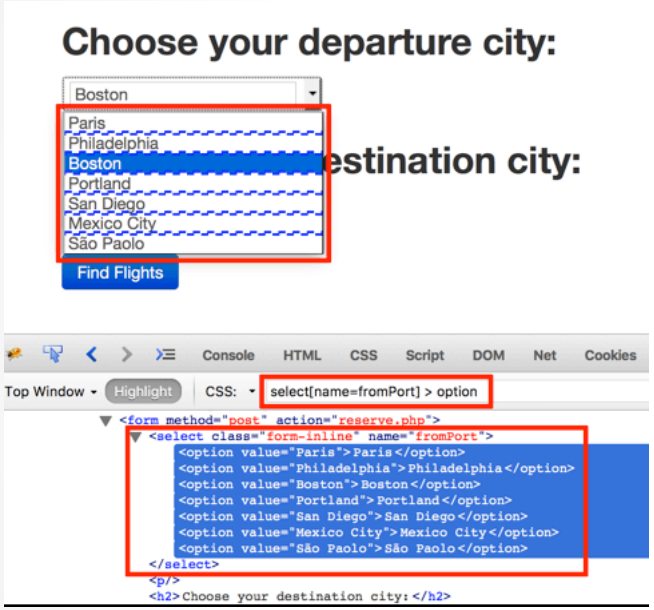
- Post Process: CSS Selector Extractor
  - Extract value of selection when user interactive with front-end via CSS/JQuery



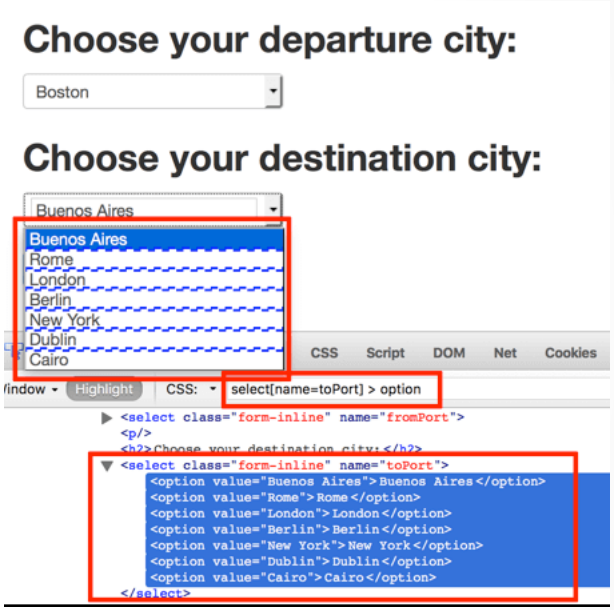
Jmeter's element part 2 (Advance)

- Post Process: CSS Selector Extractor

Application: Field:"fromPort"



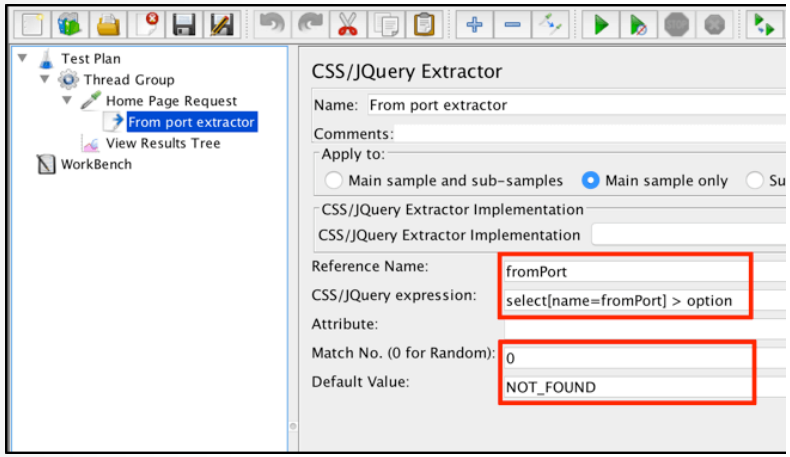
Application: Field:"toPort"



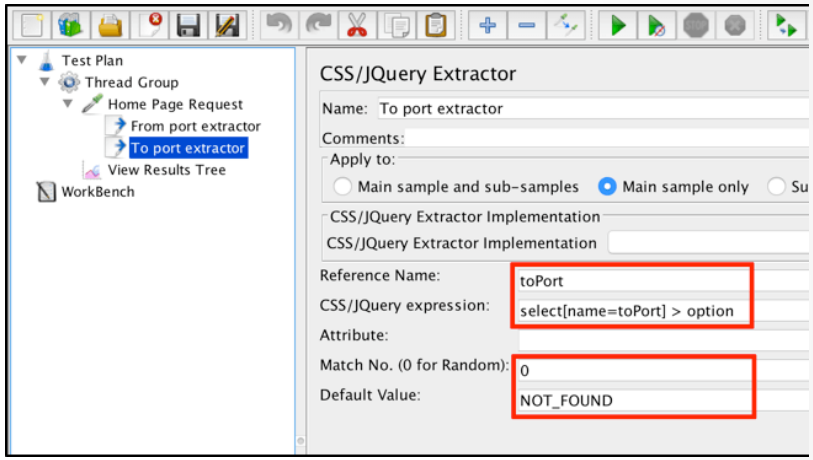
Jmeter's element part 2 (Advance)

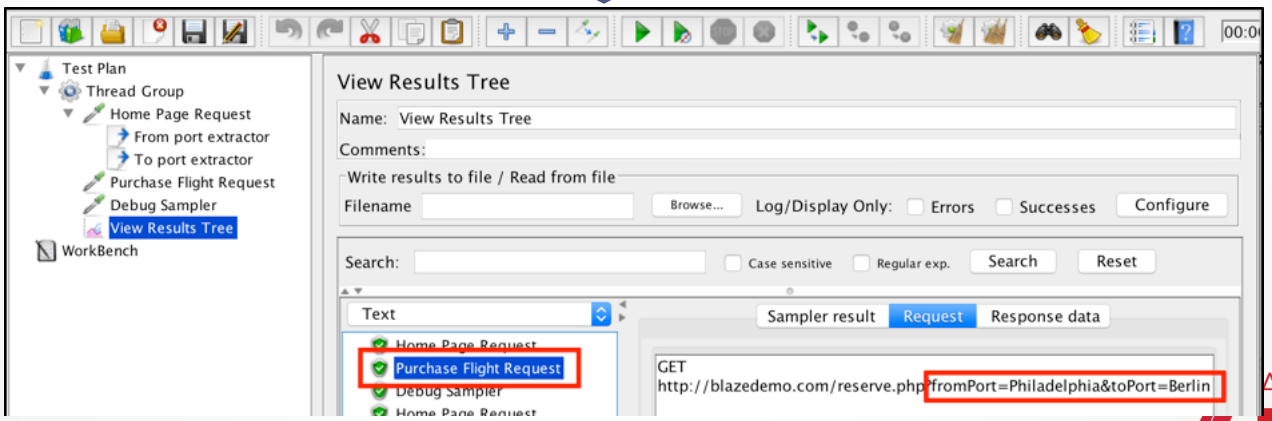
- Post Process: CSS Selector Extractor

CSS/Jquery Extractor :"fromPort"



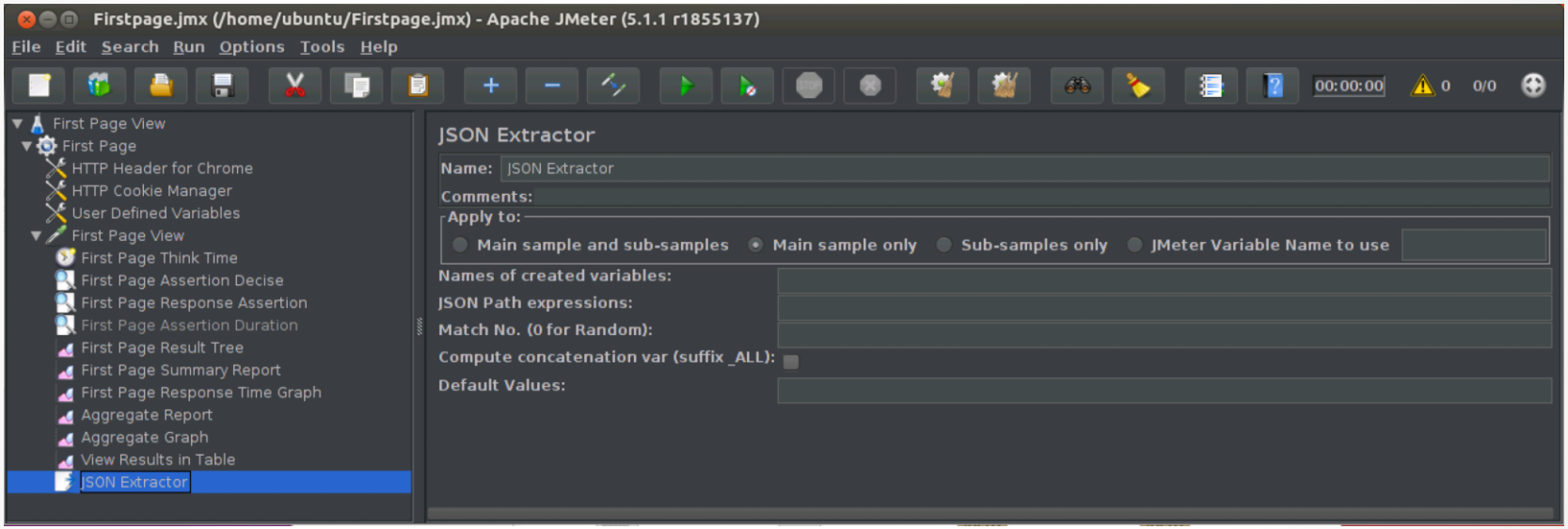
CSS/Jquery Extractor :"toPort"





Jmeter's element part 2 (Advance)

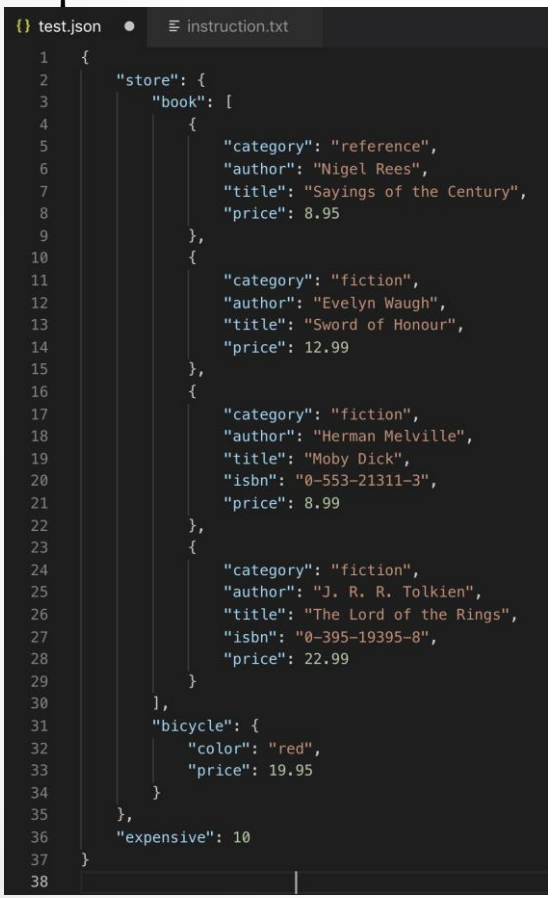
- Post Process: JSON Extractor
  - Extractor JSON response from restful base on JsonPath and we can operate with expression also



Jmeter's element part 2 (Advance)

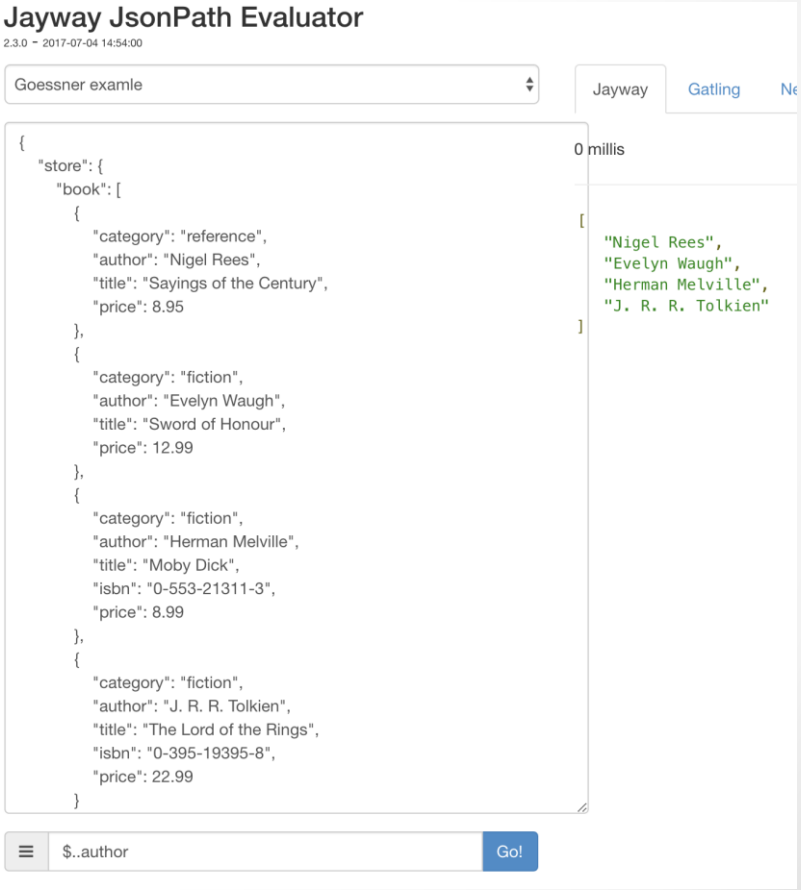
- Post Process: JSON Extractor

Response from rest:




```
{
    "store": {
        "book": [
            {
                "category": "reference",
                "author": "Nigel Rees",
                "title": "Sayings of the Century",
                "price": 8.95
            },
            {
                "category": "fiction",
                "author": "Evelyn Waugh",
                "title": "Sword of Honour",
                "price": 12.99
            },
            {
                "category": "fiction",
                "author": "Herman Melville",
                "title": "Moby Dick",
                "isbn": "0-553-21311-3",
                "price": 8.99
            },
            {
                "category": "fiction",
                "author": "J. R. R. Tolkien",
                "title": "The Lord of the Rings",
                "isbn": "0-395-19395-8",
                "price": 22.99
            }
        ],
        "bicycle": {
            "color": "red",
            "price": 19.95
        }
    },
    "expensive": 10
}
```

JsonPath

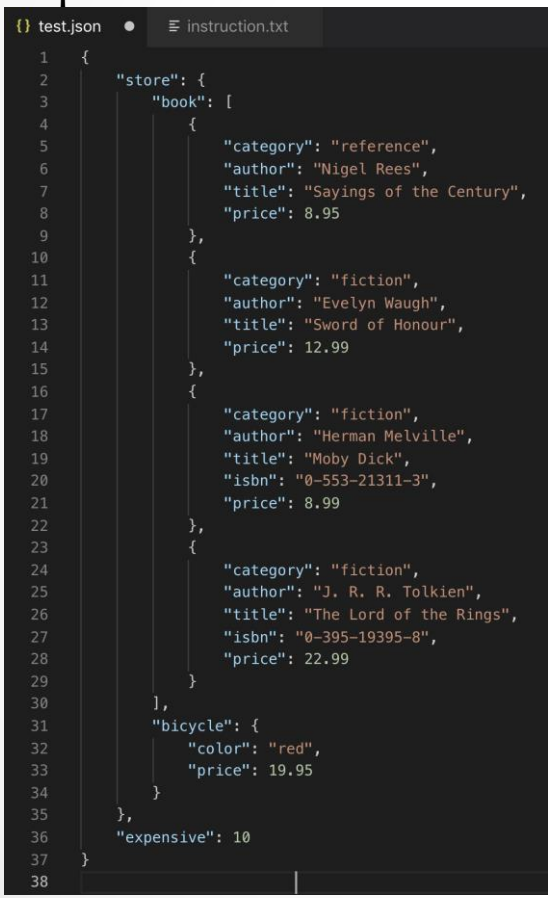


Ref :http://jsonpath.herokuapp.com

Jmeter's element part 2 (Advance)

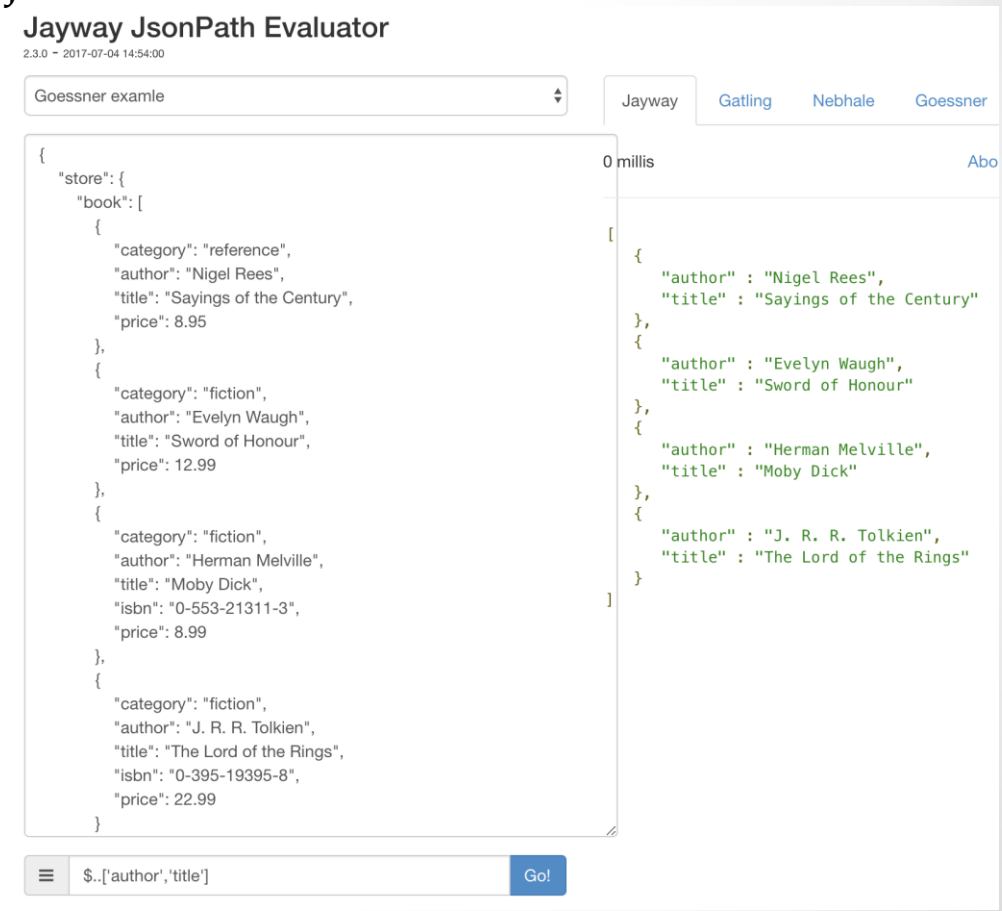
- Post Process: JSON Extractor

Response from rest:




```
{
    "store": {
        "book": [
            {
                "category": "reference",
                "author": "Nigel Rees",
                "title": "Sayings of the Century",
                "price": 8.95
            },
            {
                "category": "fiction",
                "author": "Evelyn Waugh",
                "title": "Sword of Honour",
                "price": 12.99
            },
            {
                "category": "fiction",
                "author": "Herman Melville",
                "title": "Moby Dick",
                "isbn": "0-553-21311-3",
                "price": 8.99
            },
            {
                "category": "fiction",
                "author": "J. R. R. Tolkien",
                "title": "The Lord of the Rings",
                "isbn": "0-395-19395-8",
                "price": 22.99
            }
        ],
        "bicycle": {
            "color": "red",
            "price": 19.95
        }
    },
    "expensive": 10
}
```

JsonPath

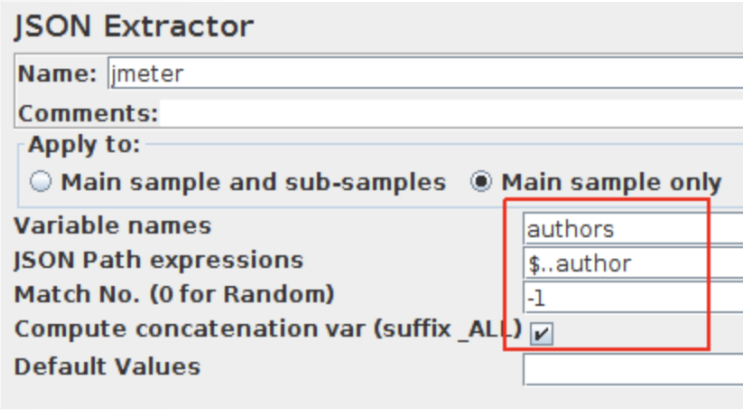


Ref :http://jsonpath.herokuapp.com

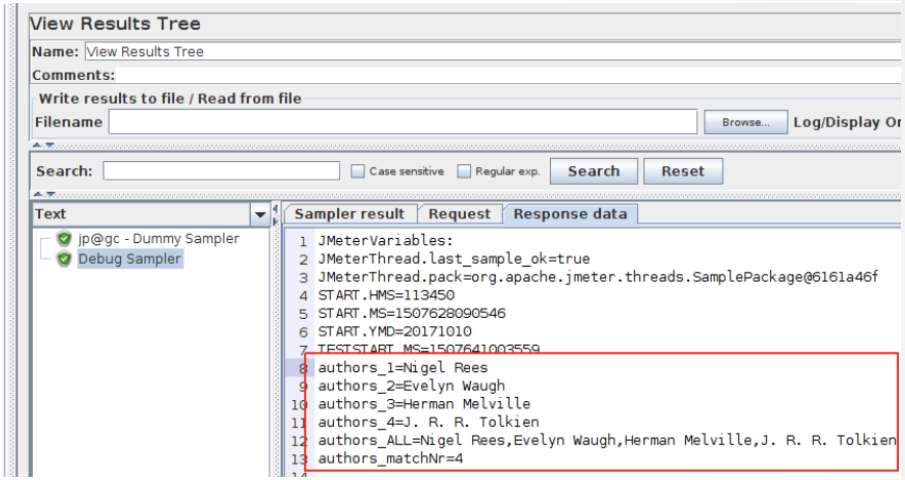
Jmeter's element part 2 (Advance)

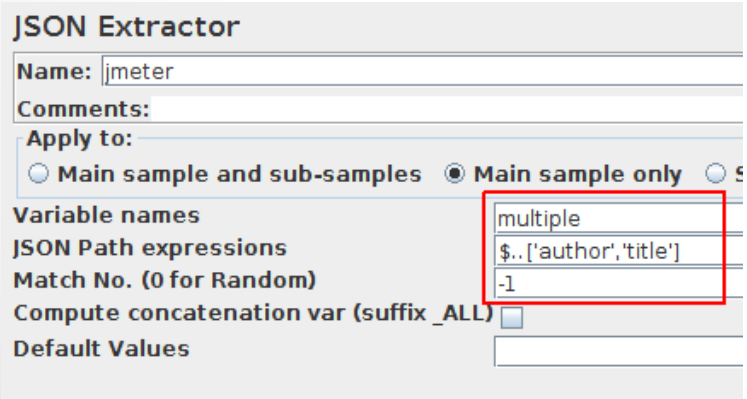
- Post Process: JSON Extractor

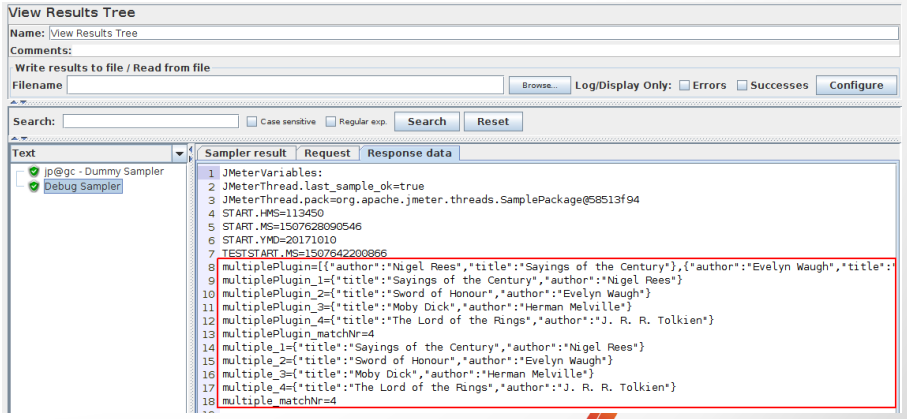
Jmeter



JsonPath

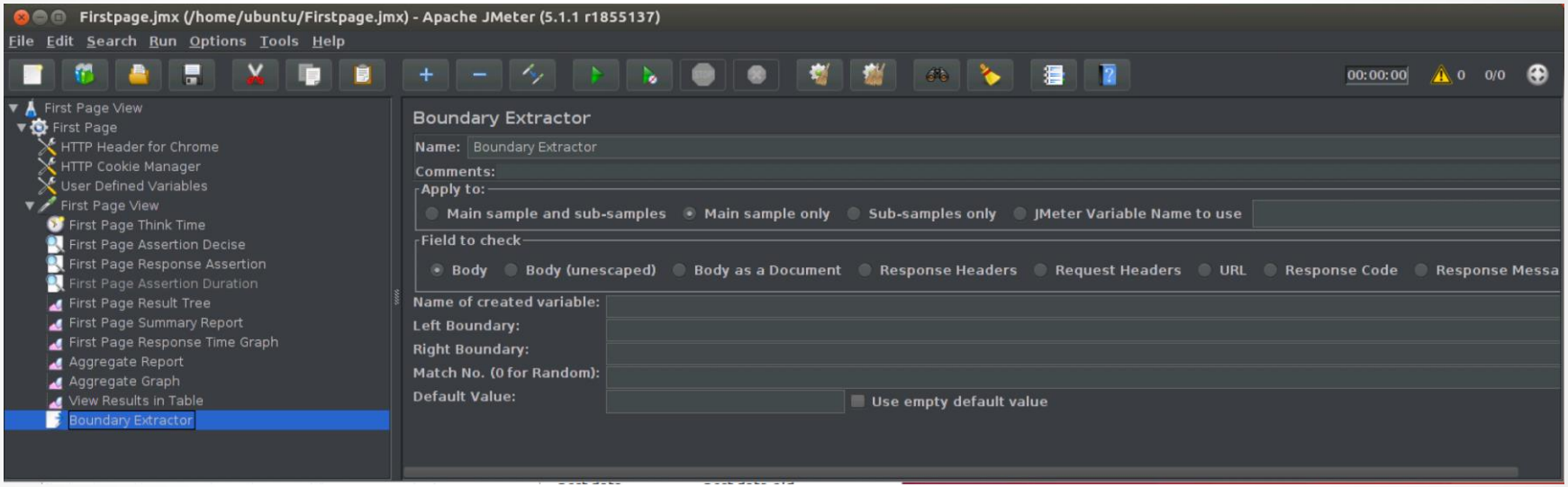






Jmeter's element part 2 (Advance)

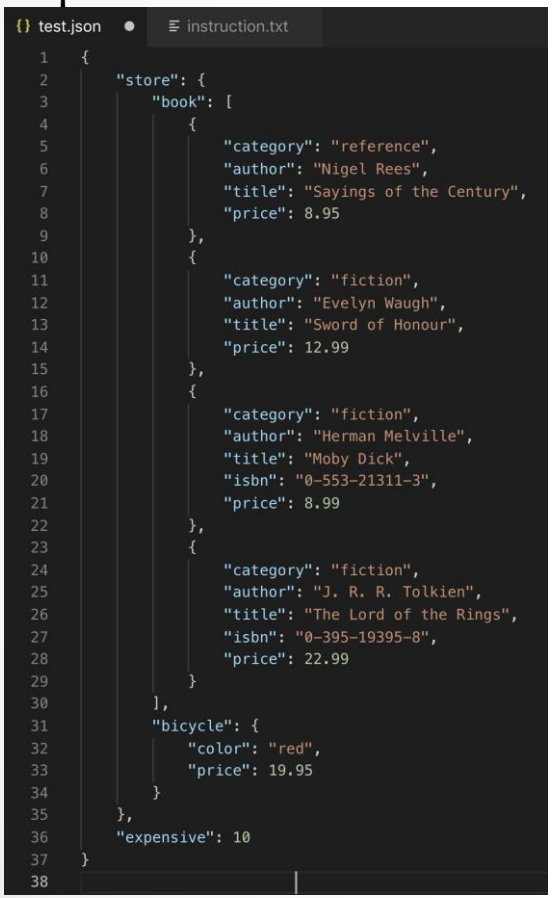
- Post Process: Boundary Extractor
  - Extract value from "Left/Right" Boundary



Jmeter's element part 2 (Advance)

- Post Process: Boundary Extractor

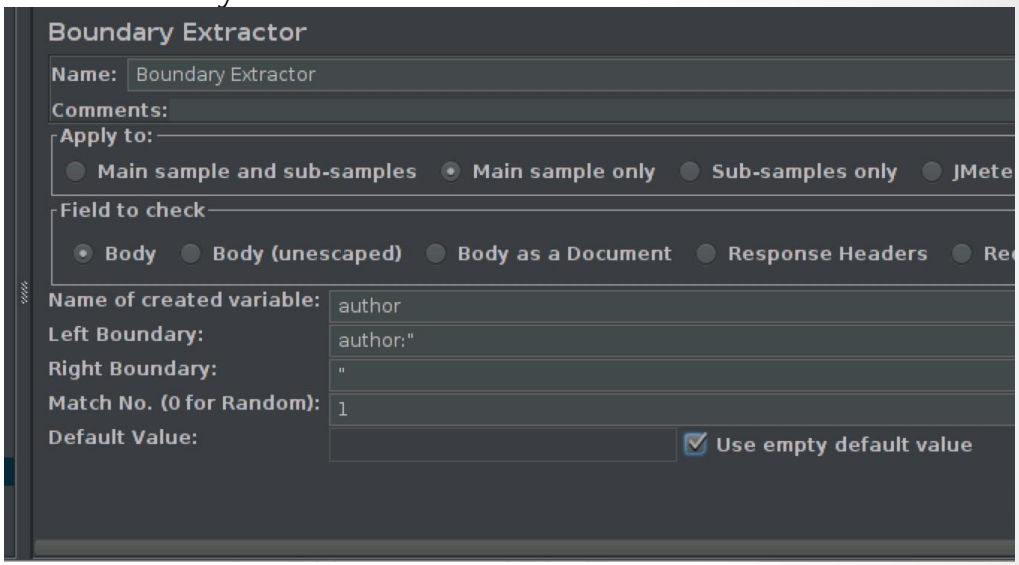
Response from rest:




```
{
    "store": {
        "book": [
            {
                "category": "reference",
                "author": "Nigel Rees",
                "title": "Sayings of the Century",
                "price": 8.95
            },
            {
                "category": "fiction",
                "author": "Evelyn Waugh",
                "title": "Sword of Honour",
                "price": 12.99
            },
            {
                "category": "fiction",
                "author": "Herman Melville",
                "title": "Moby Dick",
                "isbn": "0-553-21311-3",
                "price": 8.99
            },
            {
                "category": "fiction",
                "author": "J. R. R. Tolkien",
                "title": "The Lord of the Rings",
                "isbn": "0-395-19395-8",
                "price": 22.99
            }
        ],
        "bicycle": {
            "color": "red",
            "price": 19.95
        }
    },
    "expensive": 10
}
```

Ref :http://jsonpath.herokuapp.com

Boundary Extractor

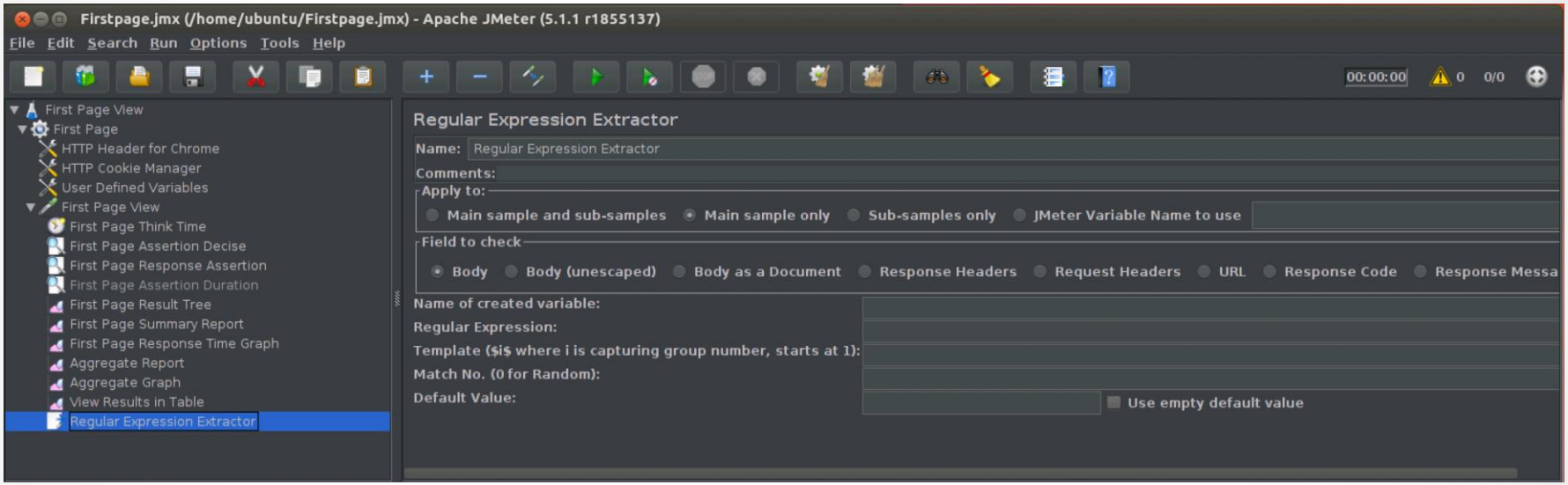


Result:

Nigel Rees

Jmeter's element part 2 (Advance)

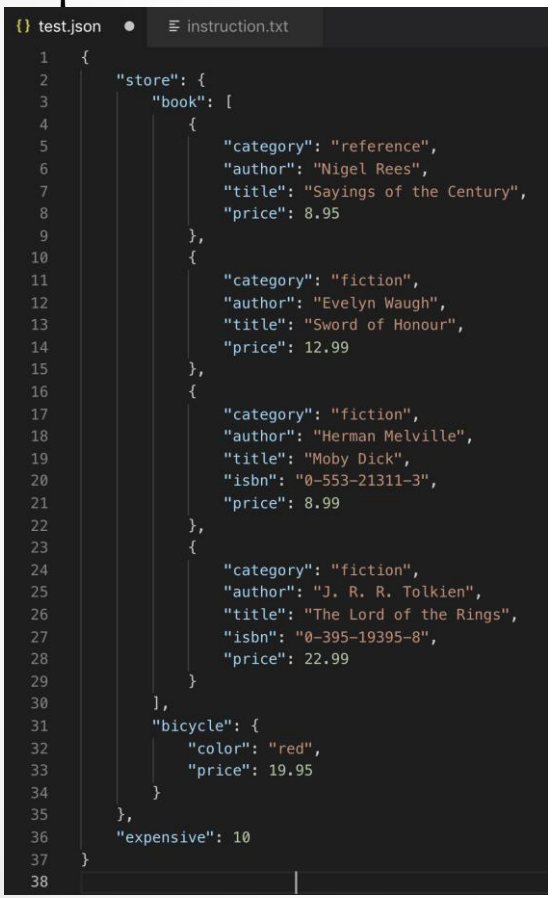
- Post Process: Regular Expression Extractor
  - Extract value with Regular Expression



Jmeter's element part 2 (Advance)

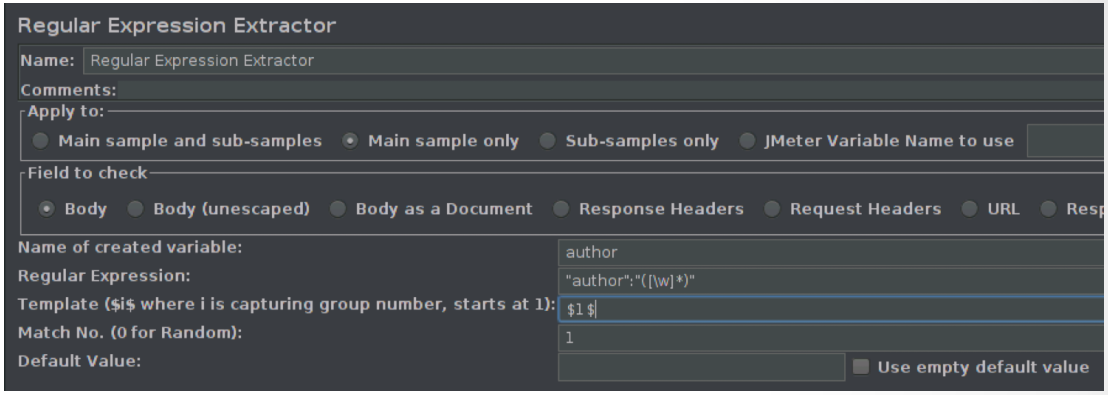
- Post Process: Regular Expression Extractor

Response from rest:




```
{
    "store": {
        "book": [
            {
                "category": "reference",
                "author": "Nigel Rees",
                "title": "Sayings of the Century",
                "price": 8.95
            },
            {
                "category": "fiction",
                "author": "Evelyn Waugh",
                "title": "Sword of Honour",
                "price": 12.99
            },
            {
                "category": "fiction",
                "author": "Herman Melville",
                "title": "Moby Dick",
                "isbn": "0-553-21311-3",
                "price": 8.99
            },
            {
                "category": "fiction",
                "author": "J. R. R. Tolkien",
                "title": "The Lord of the Rings",
                "isbn": "0-395-19395-8",
                "price": 22.99
            }
        ],
        "bicycle": {
            "color": "red",
            "price": 19.95
        }
    },
    "expensive": 10
}
```

Regular Expression Extractor



Token: "author": "Nigel Rees"

Result:

Nigel Rees (Group Number 1)

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Token (Patter Definition)

Metacharacter	Description	Remark
.	Any character	
[ ]	Group of character (Bracket Expression) [abc] = "a","b","c" [a-z] = "a","b",…. "z" [abx-z] = "a","b","x","y","z" [A-Za-z] = "a","b",…. "z" or "A","B",…. "Z" [0-9]="0","1",…"9" [_#.] ="_","#","." [ก-๙] = all thai character	
[^]	Negate to Group of character	
^	Begin consideration with this character	Usually use for define start RegEx
$	End consideration with this character	Usually use for define end RegEx
( )	Defined group of token	
|	Or operator [abc]|[xyz] = "a","b","c","x","y","z"	

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Character Classes (FAQ of Token ➔ Set to Template)

Character Classes	Description	Remark
\w	[A-Za-z0-9_]	
\W	[^A-Za-z0-9_]	
\a	[A-Za-z]	
\s	[\t]	Space (" ") , Tab
_s	[\t\r\n\v\f]	Space (" "), Tab and All whitespace
\S	[^ \t\r\n\v\f]	
\d	[0-9]	
\D	[^0-9]	
\l	[a-z]	
\u	[A-Z]	
\x	[A-Fa-f0-9]	Hexadecimal Digits

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Qualification (Identify How many character on token)

Metacharacter	Description	Remark
?	0 (min), 1 (max)	Possible to have 1 character or Nothing
*	0 (min), ∞ (Infinity)	Possible to have infinity character or Nothing
+	1 (min), ∞ (Infinity)	Required at least 1 character and possible to infinity
{min, max}	min,max {3} ➔ Allow only 3 character {1,4} ➔ Min 1 char, Max 4 char {5,} ➔ Min 5 char, Max Infinity	

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example1: "author": "**Nigel Rees**"

  Ans1: [A-Za-z0-9_]{0,20} ➔ True

  Ans2: [A-Za-z0-9_]* ➔ True

  Ans3: /w* ➔ True

  But…if some data come with ""author": "Vak@an$da299" it still pass !!!.

  Why? Regex will consideration only some token with match our criteria (Some lot of character of token)

  Ex: Vak ➔ pass

  an ➔ pass

  da299 ➔ pass

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Solution:

  Solution1: (basic): ^/w*$ (Force to check entire token)

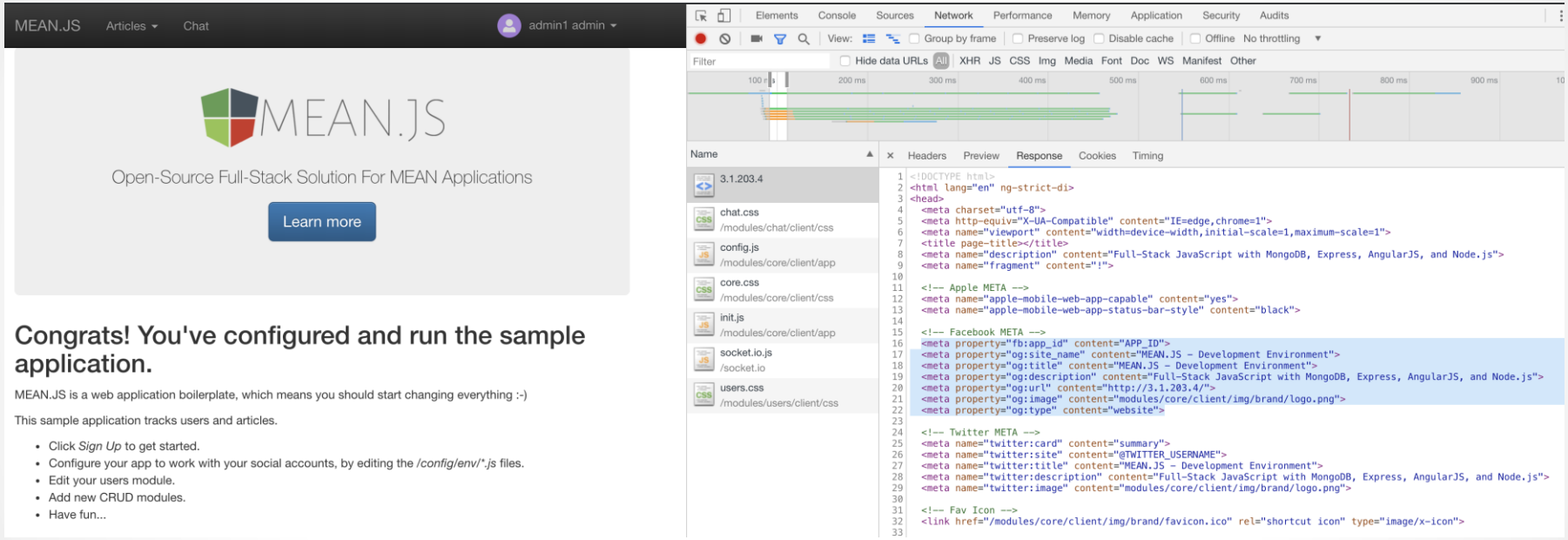
  Solution2: (Group): (/w)* (Set grouping only this group token)

  Final Ans: "author":"**(/w)***"

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS



<meta property="og:**title**" content="**MEAN.JS - Development Environment**">
<meta property="og:**description**" content="**Full-Stack JavaScript …**">
<meta property="og:**url**" content="**http://3.1.203.4/**">
<meta property="og:**image**" content="**modules/core/client/img/brand/logo.png**">
<meta property="og:**type**" content="**website**">

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS

  <meta property="og:**title**" content="**MEAN.JS - Development Environment**">
  <meta property="og:**description**" content="**Full-Stack JavaScript …**">
  <meta property="og:**url**" content="**http://3.1.203.4/**">
  <meta property="og:**image**" content="**modules/core/client/img/brand/logo.png**">
  <meta property="og:**type**" content="**website**">

  We have 2 group name need to extract. Both group may container difference regex for operate

  Group1: <meta property="og:xxxx"

  Ans: [a-z]+ ➔ lower case (a-z) with at lease 1 char

  Group 2: container="xxxx">

  Ans: .+ ➔ any character with at lease 1 char

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS

  <meta property="og:**title**" content="**MEAN.JS - Development Environment**">
  <meta property="og:**description**" content="**Full-Stack JavaScript …**">
  <meta property="og:**url**" content="**http://3.1.203.4/**">
  <meta property="og:**image**" content="**modules/core/client/img/brand/logo.png**">
  <meta property="og:**type**" content="**website**">

  Final Answer:

  <meta property="og:([a-z])+" content="(.)+">

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:02 0 0/10

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
    - Debug Sampler
      - View Results Tree

Regular Expression Extractor

Name: First Page Regular Express Extractor

Comments:

Apply to: Main sample and sub-samples | Main sample only | Sub-samples only | JMeter Variable Name to use

Field to check: Body | Body (unescaped) | Body as a Document | Response Headers | Request Headers | URL | Response Code | Response Message

Name of created variable: FBField

Regular Expression: <meta property="og:([a-z]+)" content="(.+)">

Template (i where i is capturing group number, starts at 1): $1$$2$

Match No. (0 for Random): -1

Default Value: Use empty default value

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:03 0 0/10

- First Page View
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    - HTTP Header for Chrome
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      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
    - Debug Sampler
      - 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 Configure

Search: Case sensitive Regular exp. Search Reset

Text

- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler
- Debug Sampler

Scroll automatically?

Sampler result | Request | Response data

Response Body | Response headers

Find Case sensitive Regular exp.

```
BASE_URL_1=10.21.1.85
FBField=
FBField_1=$i$MEAN.JS - Development Environment
FBField_1_g=2
FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
FBField_1_g1=title
FBField_1_g2=MEAN.JS - Development Environment
FBField_2=$i$Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_2_g=2
FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
FBField_2_g1=description
FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_3=$i$http://10.21.1.85/
FBField_3_g=2
FBField_3_g0=<meta property="og:url" content="http://10.21.1.85/">
FBField_3_g1=url
FBField_3_g2=http://10.21.1.85/
FBField_4=$i$modules/core/client/img/brand/logo.png
FBField_4_g=2
FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
FBField_4_g1=image
FBField_4_g2=modules/core/client/img/brand/logo.png
FBField_5=$i$website
FBField_5_g=2
FBField_5_g0=<meta property="og:type" content="website">
FBField_5_g1=type
FBField_5_g2=website
FBField_matchNr=5
JMeterThread.last_sample_ok=true
```


APACHE JMeter™

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS

```
<meta property="og:site_name" content="MEAN.JS - Development Environment">
<meta property="og:title" content="MEAN.JS - Development Environment">
<meta property="og:description" content="Full-Stack JavaScript …">
<meta property="og:url" content="http://3.1.203.4/">
<meta property="og:image" content="modules/core/client/img/brand/logo.png">
<meta property="og:type" content="website">
```

Result:

```
FBField=
FBField_1=titleMEAN.JS - Development Environment
FBField_1_g=2
FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
FBField_1_g1=title
FBField_1_g2=MEAN.JS - Development Environment
FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_2_g=2
FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
FBField_2_g1=description
FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_3=urlhttp://10.21.1.85/
FBField_3_g=2
FBField_3_g0=<meta property="og:url" content="http://10.21.1.85/">
FBField_3_g1=url
FBField_3_g2=http://10.21.1.85/
FBField_4=imagemodules/core/client/img/brand/logo.png
FBField_4_g=2
FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
FBField_4_g1=image
FBField_4_g2=modules/core/client/img/brand/logo.png
FBField_5=typewebsite
FBField_5_g=2
FBField_5_g0=<meta property="og:type" content="website">
FBField_5_g1=type
FBField_5_g2=website
FBField_matchNr=5
```

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example2: Feedback from MEAN.JS

  Final Variable:

  {FBField_matchNr} = Total Iterate

  {FBField_g} = Total Group Number

  {FBField_n_g1}= Value of group 1

  {FBField_n_g2}= Value of group 2

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

https://regexr.com

Untitled Pattern | Save (cmd-s) | New | by gskinner | GitHub | Sign In

Escaped characters

reserved characters	\+
octal escape	\000
hexadecimal escape	\xFF
unicode escape	\uFFFF
extended unicode escape	\u{FFFF}
control character escape	\cI
tab	\t
line feed	\n

Escape sequences can be used to insert reserved, special, and unicode characters. All escaped characters begin with the \ character.

Expression | JavaScript | Flags

```
/<meta property="og:([a-z])+" content="(.)+">/g
```

Text | 5 matches (0.3ms)

```
<meta property="fb:app_id" content="APP_ID">
<meta property="og:site_name" content="MEAN.JS - Development Environment">
<meta property="og:title" content="MEAN.JS - Development Environment">
<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
<meta property="og:url" content="http://3.1.203.4/">
<meta property="og:image" content="modules/core/client/img/brand/logo.png">
<meta property="og:type" content="website">
```

Tools | Replace | List | Details | Explain

Roll-over elements below to highlight in the Expression above. Click to open in Reference.

< **Character.** Matches a "<" character (char code 60).

m **Character.** Matches a "m" character (char code 109). Case sensitive.

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor vs Boundary Extractor

Type of Post Process	Boundary Extractor	Regular Expression Extractor
Advantage	- Simple for action - Java run faster with simple condition	- Support search with regular expression - Well-know and lot of document
Disadvantage	- Unsupported complex search	- Possibly resource insufficient when due with loop or huge of XML

Jmeter's element part 2 (Advance)

- Post Process: JSR223 PostProcess
  - Extract value with Groovy Language

Advance_FirstPage.jmx (/home/ubuntu/Advance_FirstPage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:06 0 0/1

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
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      - View Results Tree
      - Debug JSR223 PostProcessor

Home

JSR223 PostProcessor

Name: Debug JSR223 PostProcessor

Comments:

Script language (e.g. groovy, jexl, javascript (avoid for performances), ...)

Language: groovy (Groovy 2.4.16 / Groovy Scripting Engine 2.0)

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

Parameters:

Script file (overrides script)

File Name: Browse...

Script compilation caching

Cache compiled script if available:

Script (variables: ctx vars props prev sampler log Label Filename Parameters args[] OUT)

Script:

```
1  int count = Integer.parseInt(vars.get("FBField_matchNr"));
2  log.info("Total Vault Iteration "+count)
3  String g1="";
4  String g2="";
5  for(int i=1;i<=count;i++)
6  {
7      g1=vars.get("FBField_"+i+"_g1");
8      g2=vars.get("FBField_"+i+"_g2");
9      log.info("FBField Iteration:"+i+"  Group 1:"+g1);
10     log.info("FBField Iteration:"+i+"  Group 1:"+g1);
11 }
12
```

```
48 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
49 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
50 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
51 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
52 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
53 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
54 2019-05-12 01:07:40,798 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
55 2019-05-12 01:07:41,864 INFO o.a.j.e.J.Debug JSR223 PostProcessor: Total Vault Iteration 5
56 2019-05-12 01:07:41,865 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
57 2019-05-12 01:07:41,865 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
58 2019-05-12 01:07:41,865 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
59 2019-05-12 01:07:41,865 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
60 2019-05-12 01:07:41,865 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
```

Jmeter's element part 2 (Advance)

- Post Process: JSR223 PostProcess
  - Example: Get all data from dynamic variable of regular expression extractor

Final Variable:

{FBField_matchNr} = Total Iterate

{FBField_g} = Total Group Number

{FBField_n_g1}= Value of group 1

{FBField_n_g2}= Value of group 2

  - Example:
    - FBField=
    - FBField_1=titleMEAN.JS - Development Environment
    - FBField_1_g=2
    - FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
    - FBField_1_g1=title
    - FBField_1_g2=MEAN.JS - Development Environment
    - FBField_matchNr=5

Jmeter's element part 2 (Advance)

- Post Process: JSR223 PostProcess
  - Do some coding

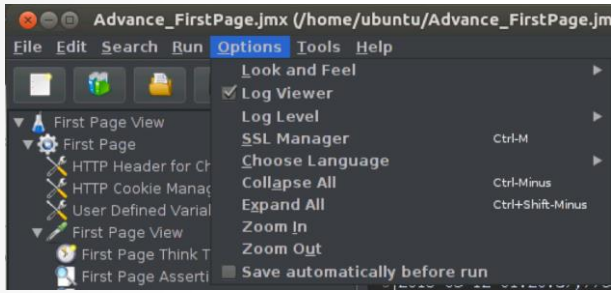
Script (variables: ctx vars props prev sampler log Label Filename Parameters args[] OUT)

Script:

```
int count = Integer.parseInt(vars.get("FBField_matchNr"));
log.info("Total Vault Iteration "+count)
String g1="";
String g2="";
for(int i=1;i<=count;i++)
{
     g1=vars.get("FBField_"+i+"_g1");
     g2=vars.get("FBField_"+i+"_g2");
     log.info("FBField Iteration:"+i+"  Group 1:"+g1);
     log.info("FBField Iteration:"+i+"  Group 2:"+g2);
}
```

Jmeter's element part 2 (Advance)

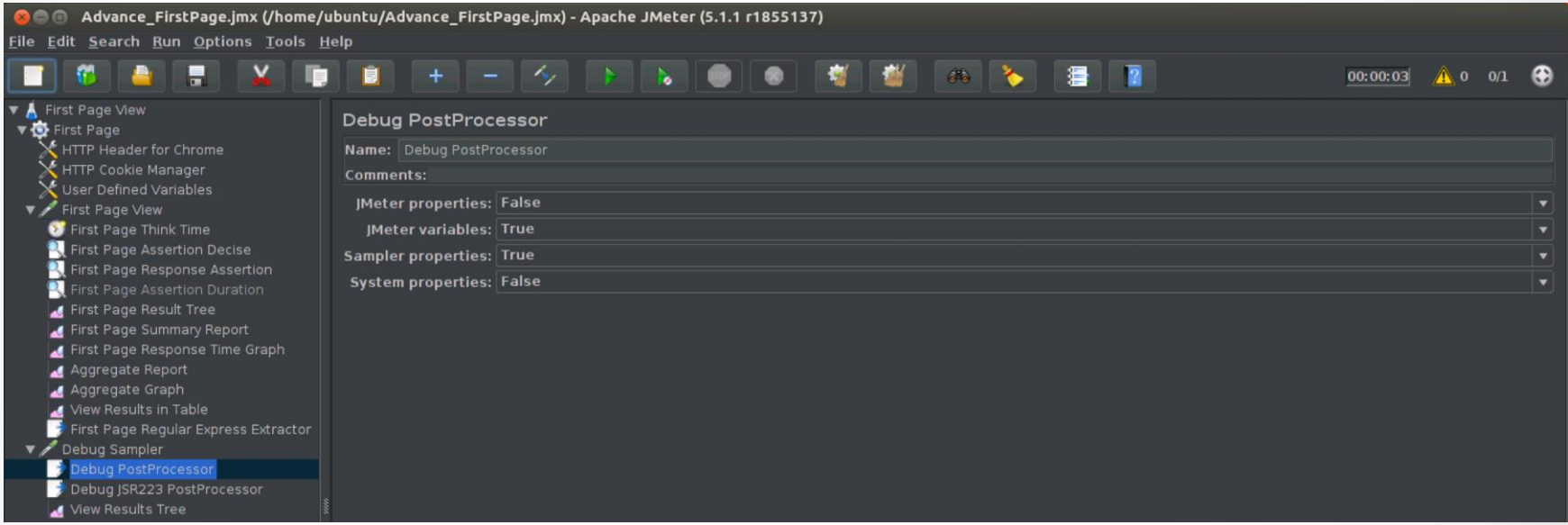
- Post Process: JSR223 PostProcess
  - Show output as log (Options ➔ Log Viewer)




```
2019-05-12 01:20:37,775 INFO o.a.j.t.JMeterThread: Thread started: First Page 1-1
2019-05-12 01:20:38,874 INFO o.a.j.e.J.Debug JSR223 PostProcessor: Total Vault Iteration 5
2019-05-12 01:20:38,875 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
2019-05-12 01:20:38,875 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
2019-05-12 01:20:38,875 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
2019-05-12 01:20:38,875 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, A
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.65/
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
2019-05-12 01:20:38,876 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 2:website
2019-05-12 01:20:39,941 INFO o.a.j.e.J.Debug JSR223 PostProcessor: Total Vault Iteration 5
2019-05-12 01:20:39,942 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, A
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.65/
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
2019-05-12 01:20:39,943 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 2:website
2019-05-12 01:20:41,054 INFO o.a.j.e.J.Debug JSR223 PostProcessor: Total Vault Iteration 5
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, A
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.65/
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
2019-05-12 01:20:41,055 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 2:website
```

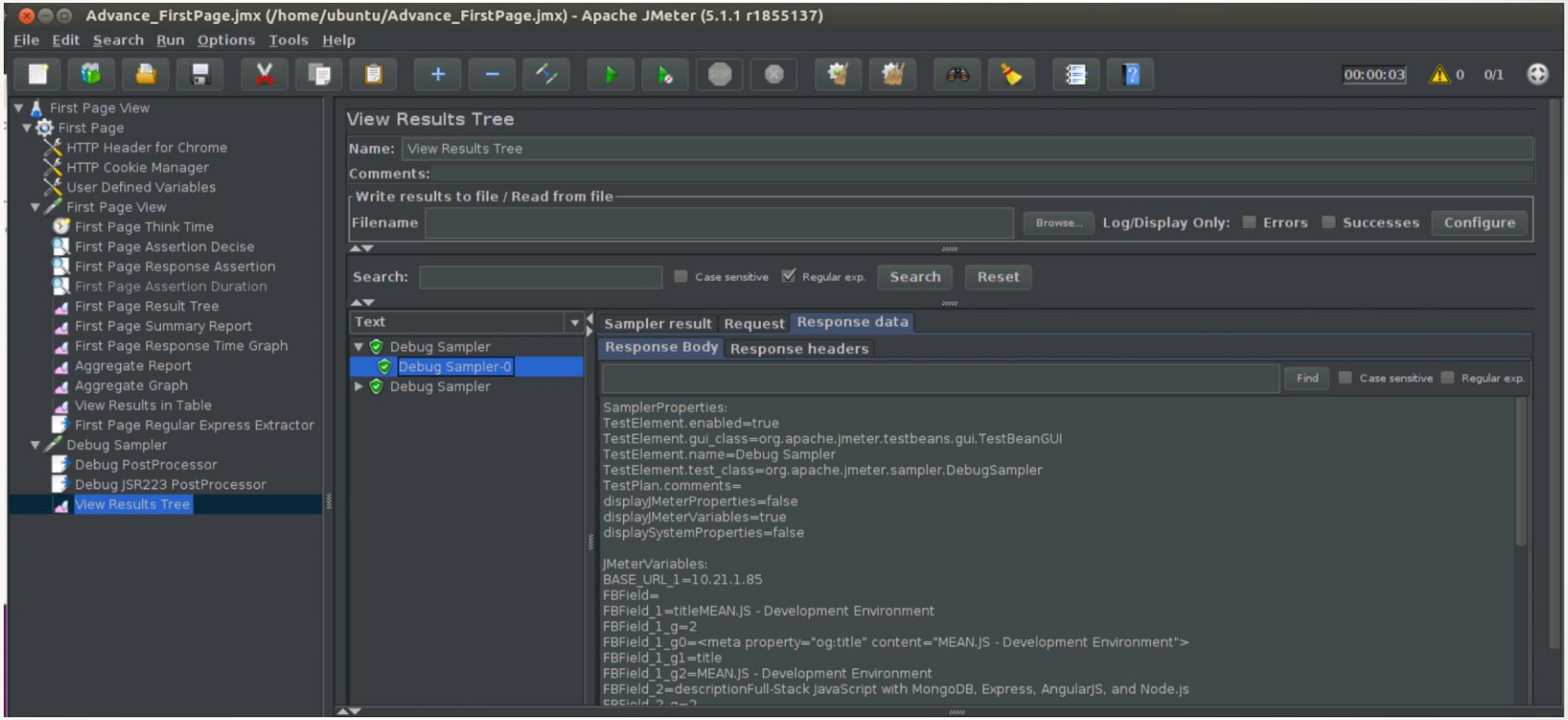
Jmeter's element part 2 (Advance)

- Post Process: Debug PostProcess
  - Create Sub-sample for show variable of Jmeter (Show in result tree)



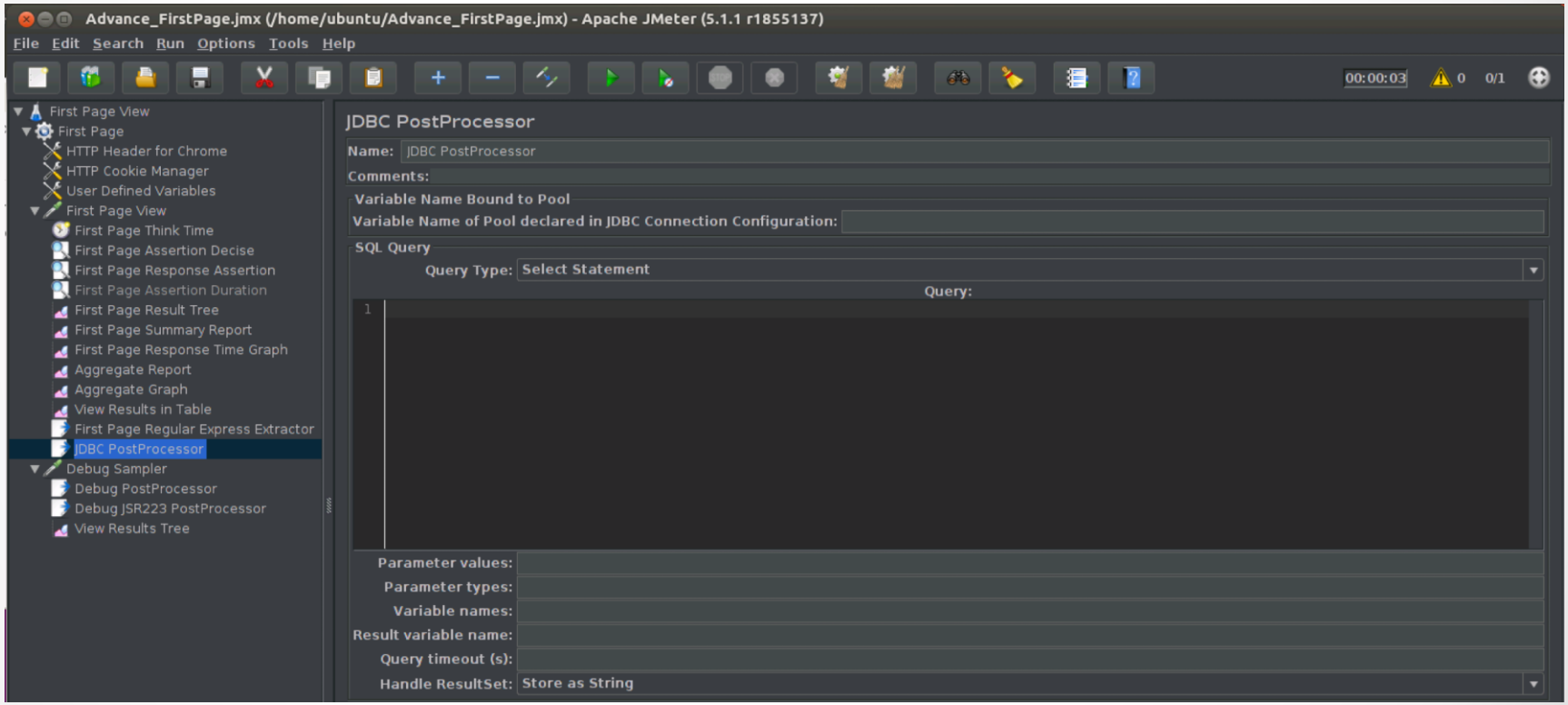
Jmeter's element part 2 (Advance)

- Post Process: Debug PostProcess



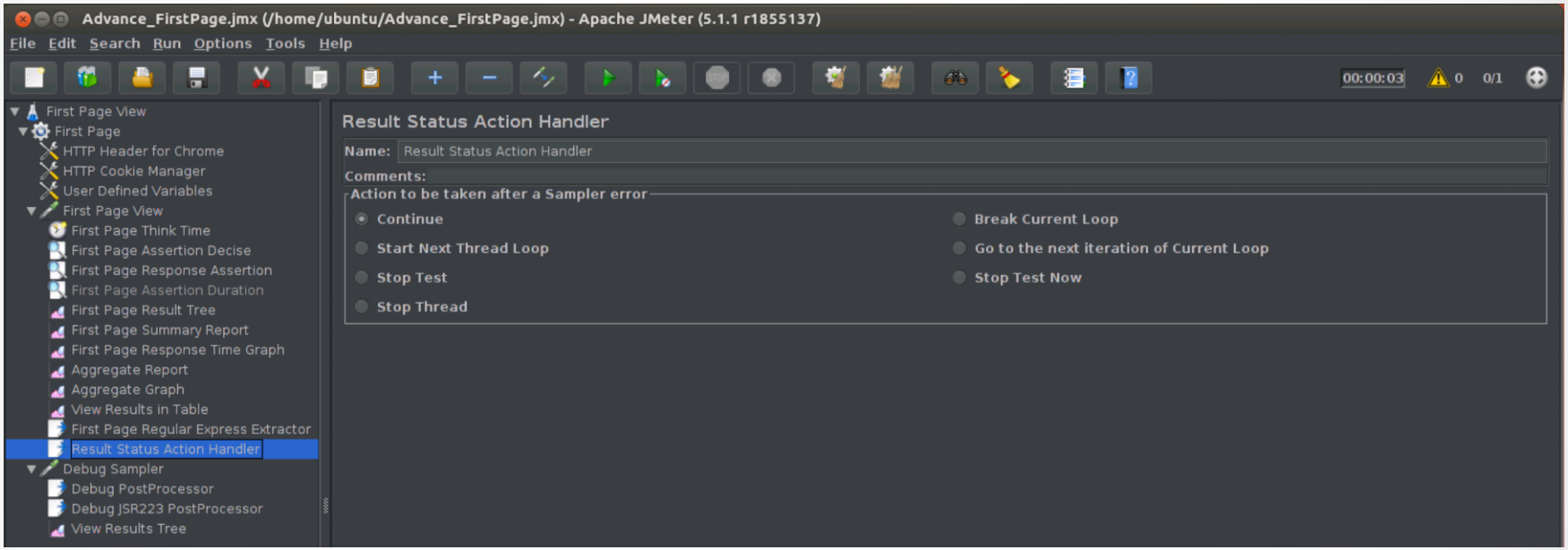
Jmeter's element part 2 (Advance)

- Post Process: JDBC ProcessProcessor
  - Run some sql statement after JDBC sample to database



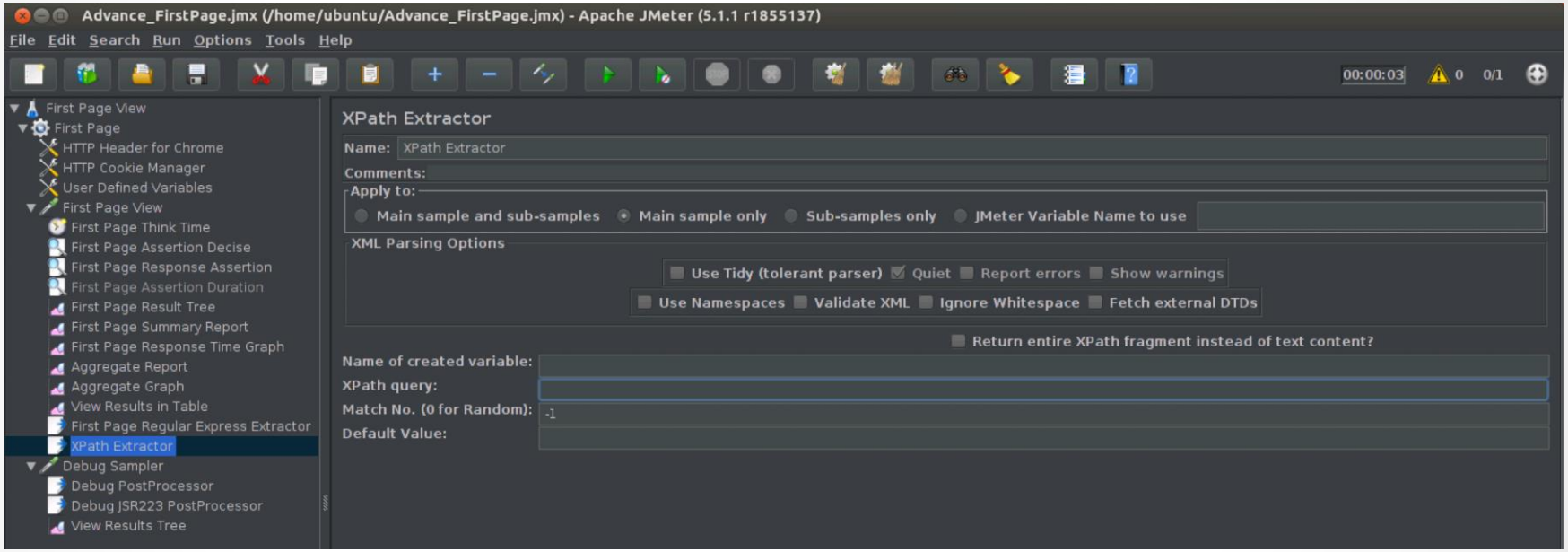
Jmeter's element part 2 (Advance)

- Post Process: Result Status Action Handler
  - Control event after sampler got error



Jmeter's element part 2 (Advance)

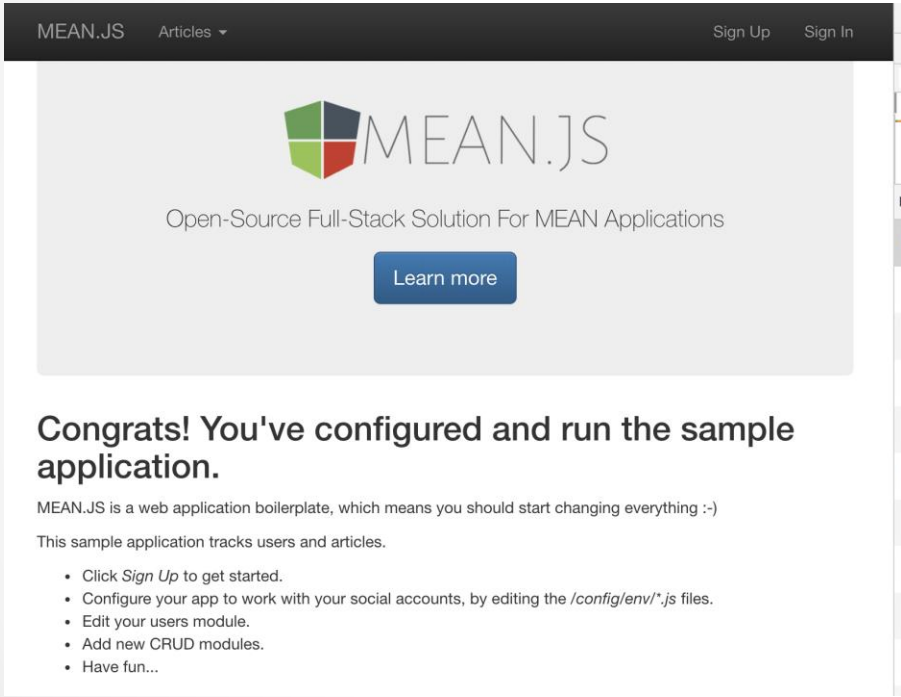
- Post Process: XPath Extraction
  - Get value from XML or XHTML (Retrieve from <Tag>)

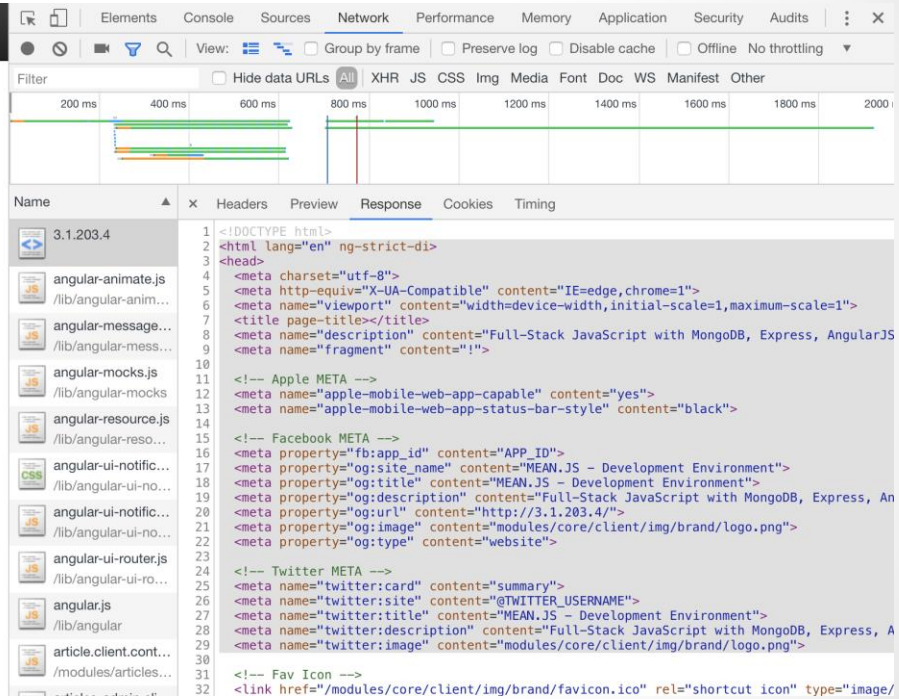


Jmeter's element part 2 (Advance)

- Post Process: XPath Extraction

  Example: FirstPage </html/head/meta/@name>





Jmeter's element part 2 (Advance)

- Post Process: XPath Extraction

  Example: FirstPage </html/head/meta/@name>

Advance_FirstPage.jmx (/home/ubuntu/Advance_FirstPage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:03 0 0/1

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
      - First Page XPath Extractor
    - Debug Sampler
      - Debug PostProcessor
      - Debug JSR223 PostProcessor
      - View Results Tree

XPath Extractor

Name: First Page XPath Extractor

Comments:

Apply to:

Main sample and sub-samples | Main sample only | Sub-samples only | JMeter Variable Name to use

XML Parsing Options

Use Tidy (tolerant parser) | Quiet | Report errors | Show warnings

Use Namespaces | Validate XML | Ignore Whitespace | Fetch external DTDs

Return entire XPath fragment instead of text content?

Name of created variable: XPath

XPath query: /html/head/meta/@name

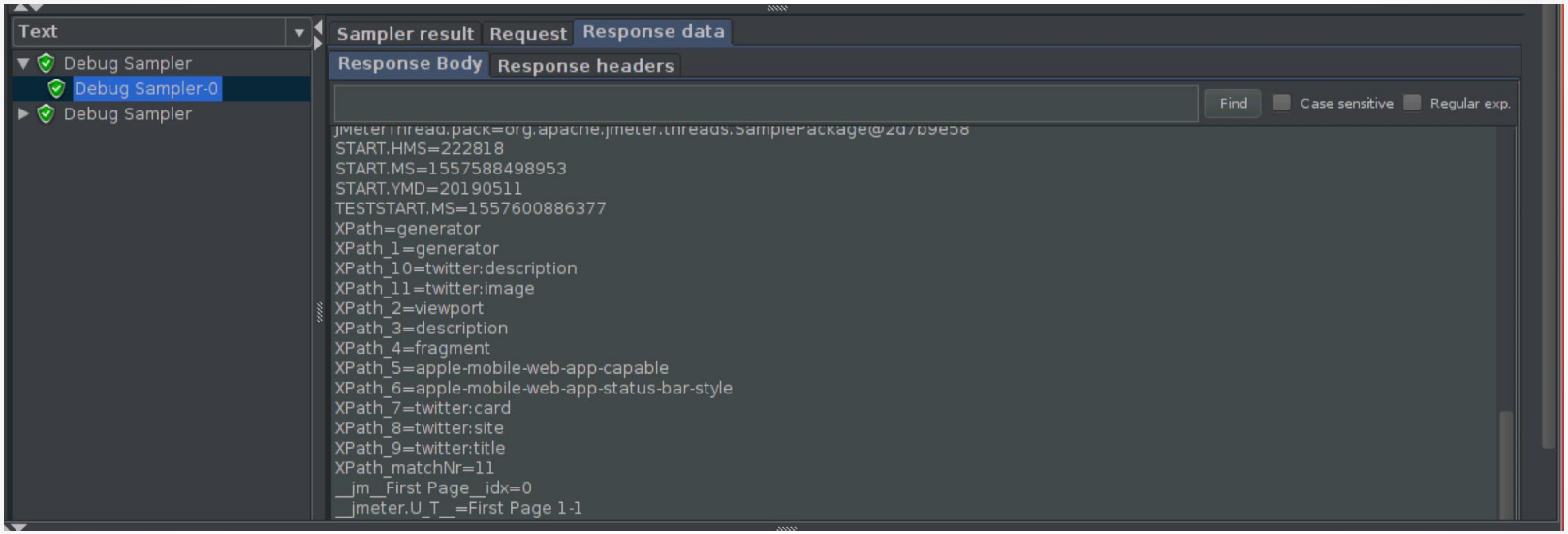
Match No. (0 for Random): -1

Default Value:

Jmeter's element part 2 (Advance)

- Post Process: XPath Extraction

  Example: FirstPage </html/head/meta/@name>

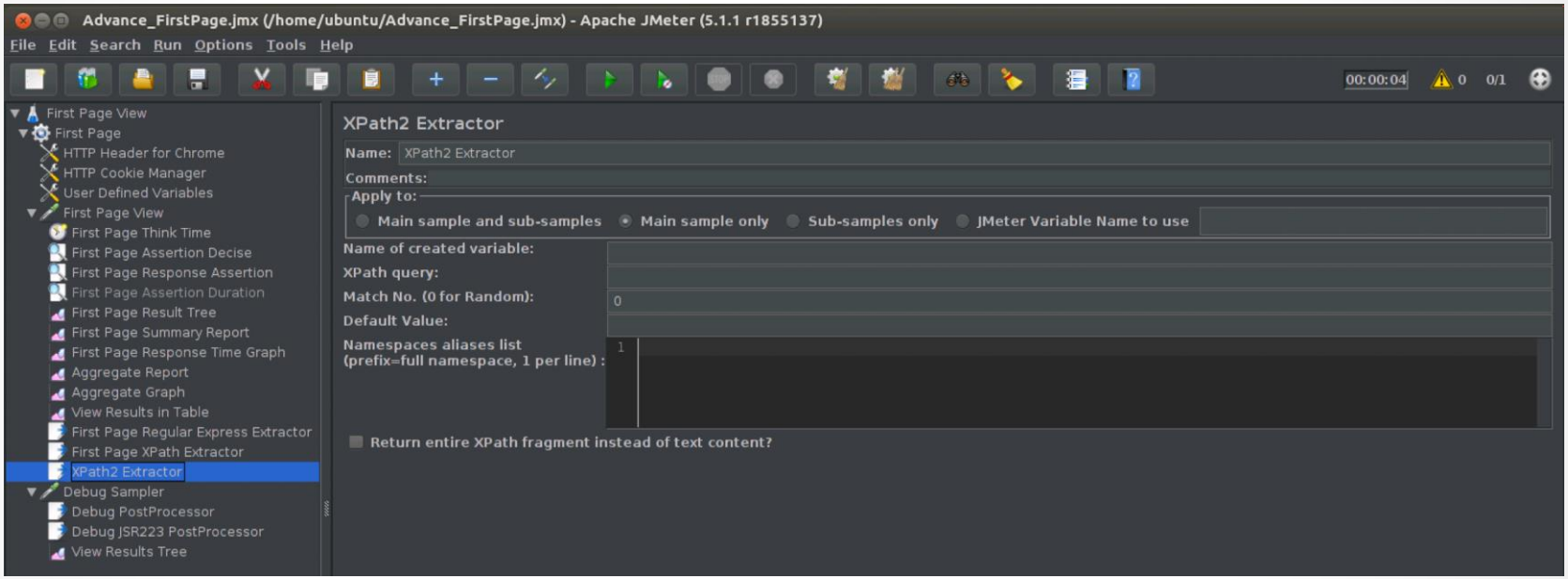



```
<html lang="en" ng-strict-di>
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1">
  <title page-title></title>
  <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
  <meta name="fragment" content="!">

  <!-- Apple META -->
  <meta name="apple-mobile-web-app-capable" content="yes">
  <meta name="apple-mobile-web-app-status-bar-style" content="black">

  <!-- Facebook META -->
  <meta property="fb:app_id" content="APP_ID">
  <meta property="og:site_name" content="MEAN.JS - Development Environment">
  <meta property="og:title" content="MEAN.JS - Development Environment">
  <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
  <meta property="og:url" content="http://3.1.203.4/">
  <meta property="og:image" content="modules/core/client/img/brand/logo.png">
  <meta property="og:type" content="website">

  <!-- Twitter META -->
  <meta name="twitter:card" content="summary">
  <meta name="twitter:site" content="@TWITTER_USERNAME">
  <meta name="twitter:title" content="MEAN.JS - Development Environment">
  <meta name="twitter:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
  <meta name="twitter:image" content="modules/core/client/img/brand/logo.png">
```

Jmeter's element part 2 (Advance)

- Post Process: XPath2 Extraction

  Extend property for namespace for XML format

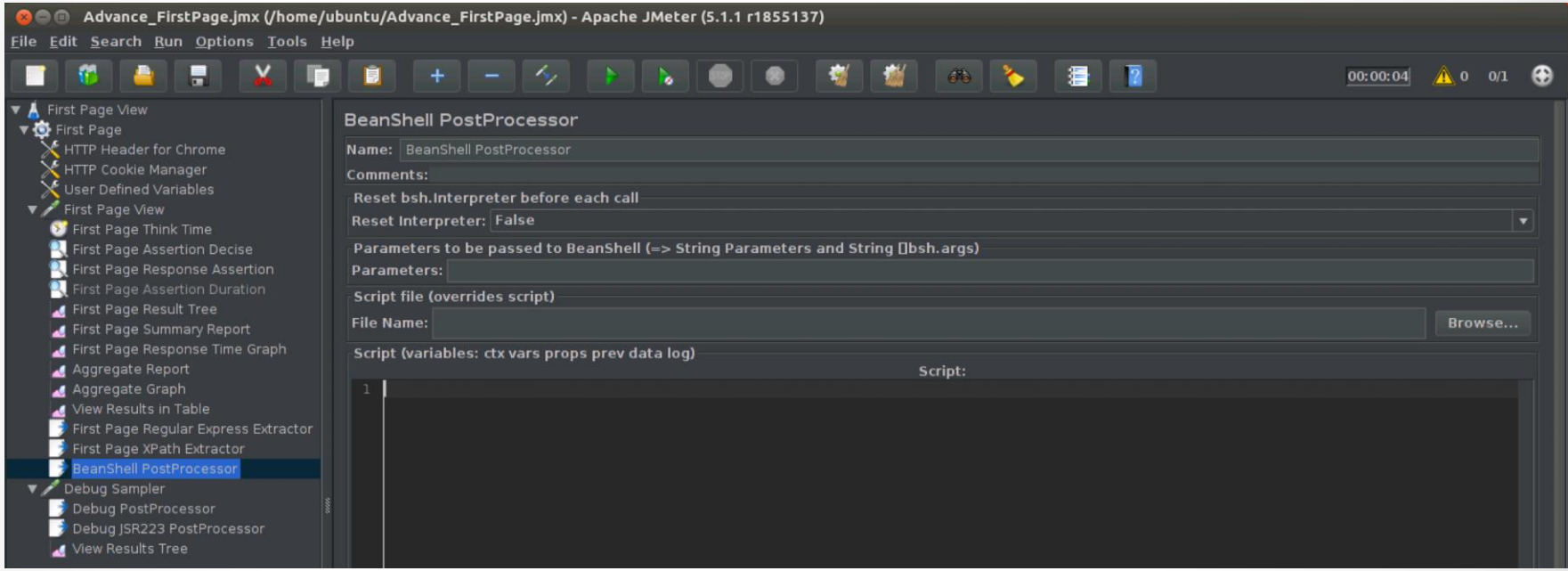



```
1  <root xmlns:foo="http://www.foo.org/" xmlns:bar="http://www.bar.org">
2    <actors>
3      <actor id="1">Christian Bale</actor>
4      <actor id="2">Liam Neeson</actor>
5      <actor id="3">Michael Caine</actor>
6    </actors>
7    <foo:singers>
8      <foo:singer id="4">Tom Waits</foo:singer>
9      <foo:singer id="5">B.B. King</foo:singer>
10     <foo:singer id="6">Ray Charles</foo:singer>
11   </foo:singers>
12 </root>
```

Jmeter's element part 2 (Advance)

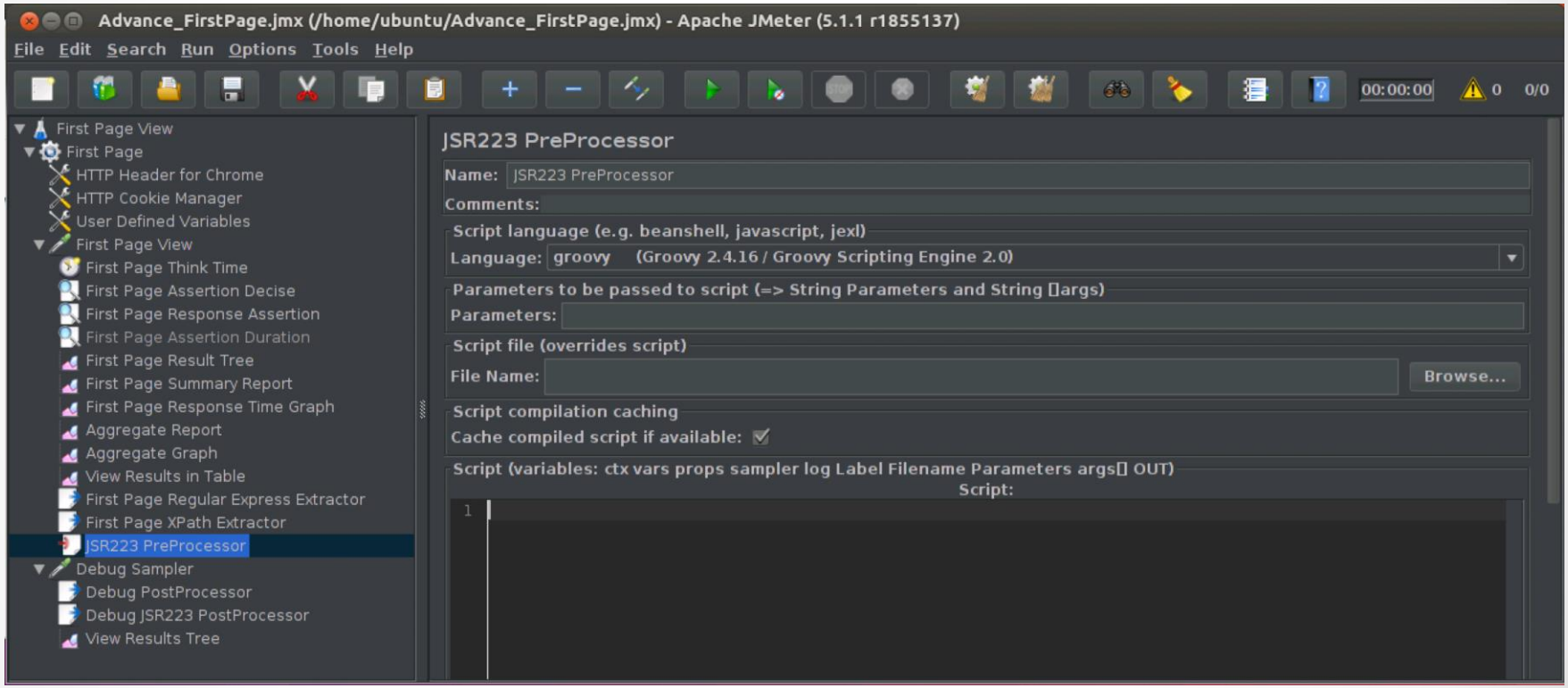
- Post Process: BeanShell PostProcessor

  Coding on beanshell for operate after sampler



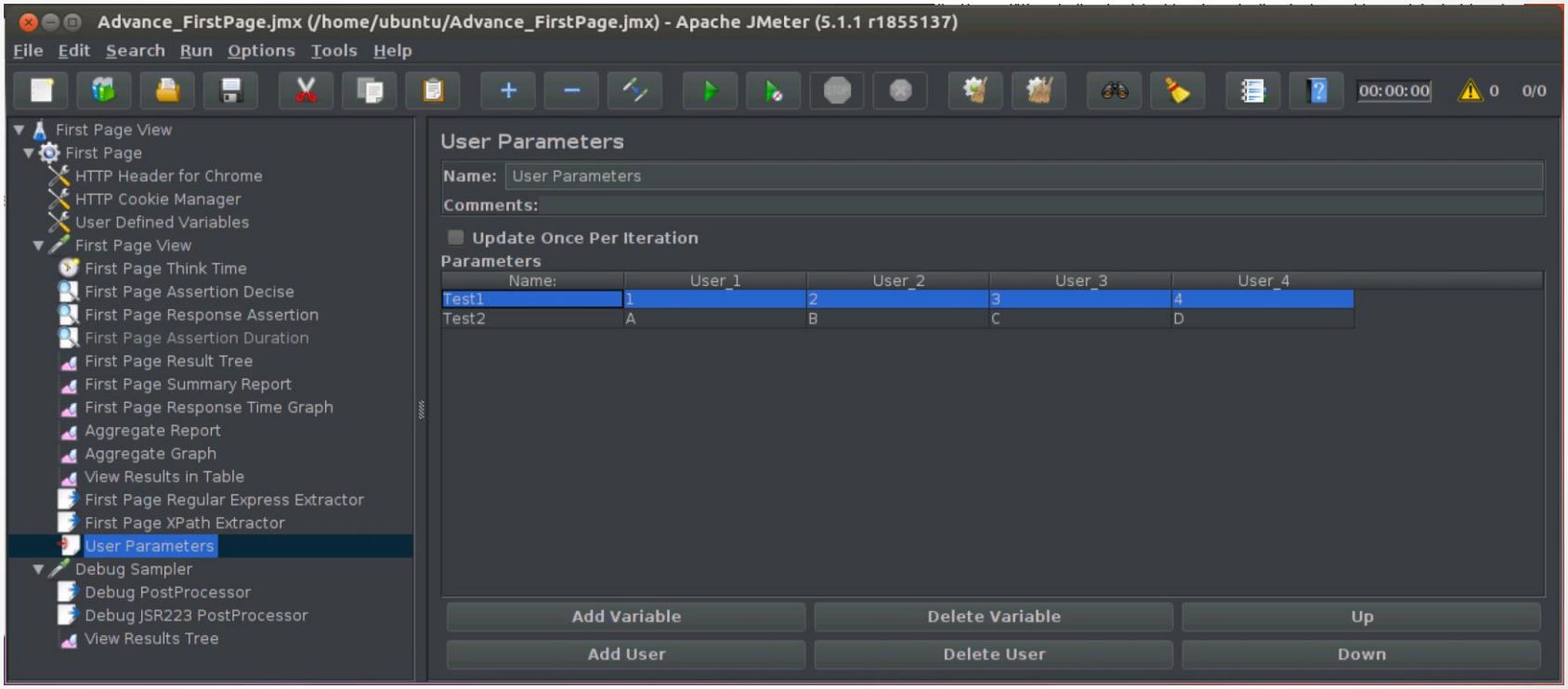
Jmeter's element part 2 (Advance)

- Pre Process: JSR232 PreProcessor
  - Run script with Groovy Language before sampler



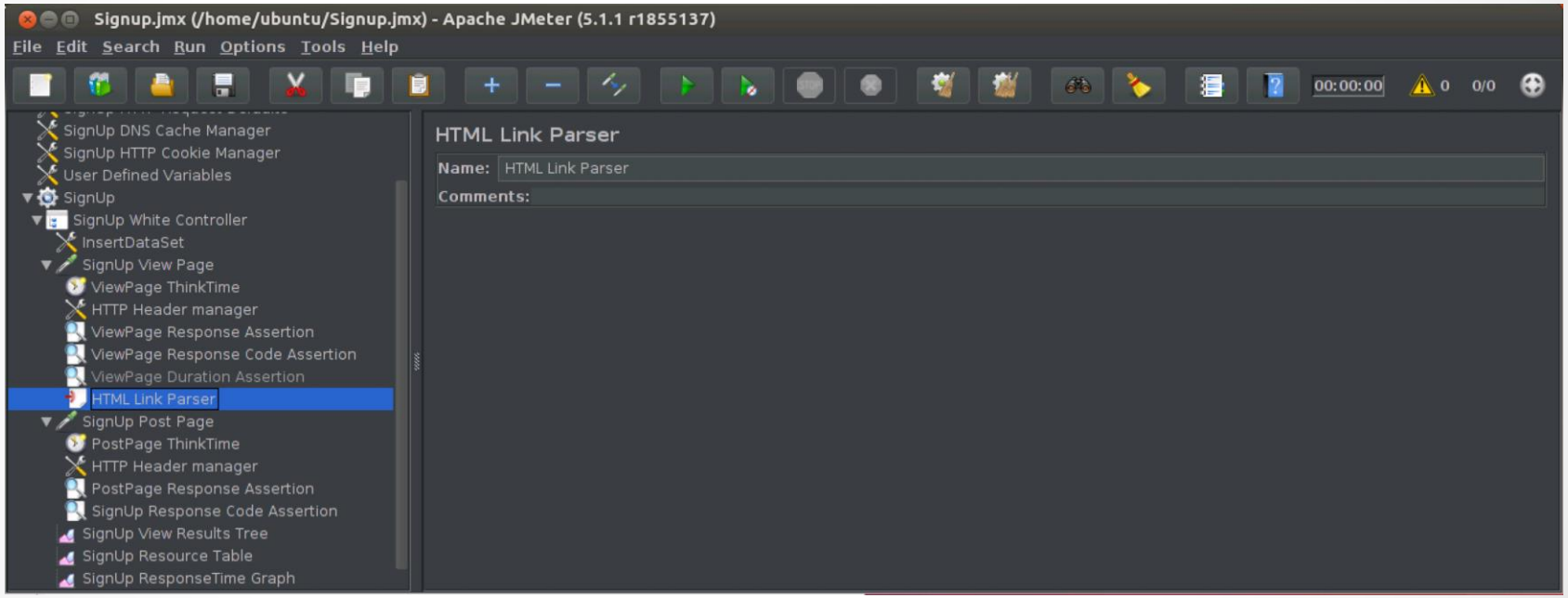
Jmeter's element part 2 (Advance)

- Pre Process: User Parameters
  - Define parameter for apply with samplers



Jmeter's element part 2 (Advance)

- Pre Process: HTML Link Parser
  - Automatic extract the selection from previous request

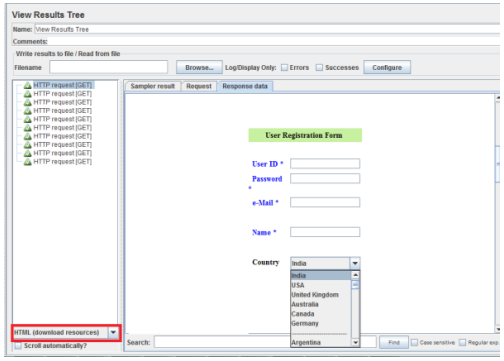


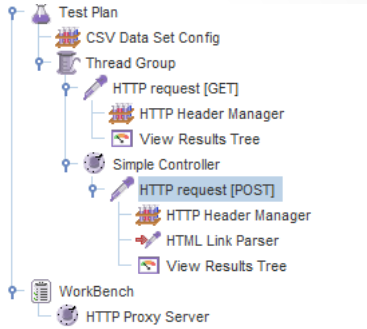
Jmeter's element part 2 (Advance)

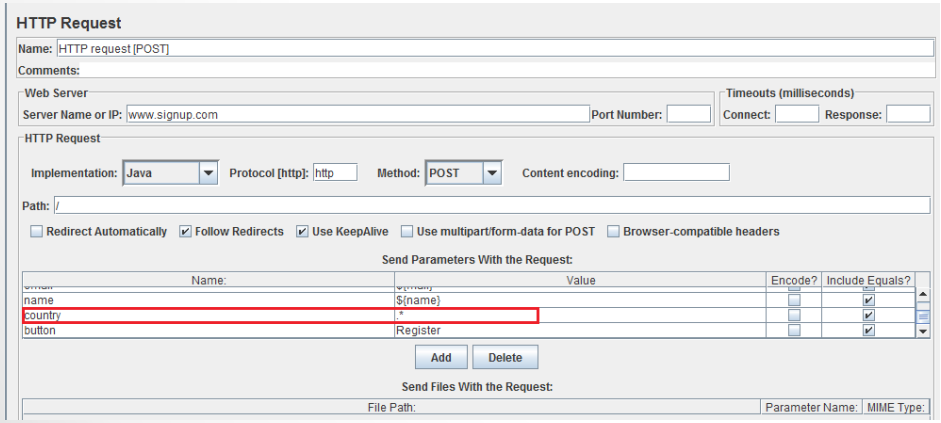
- Pre Process: HTML Link Parser

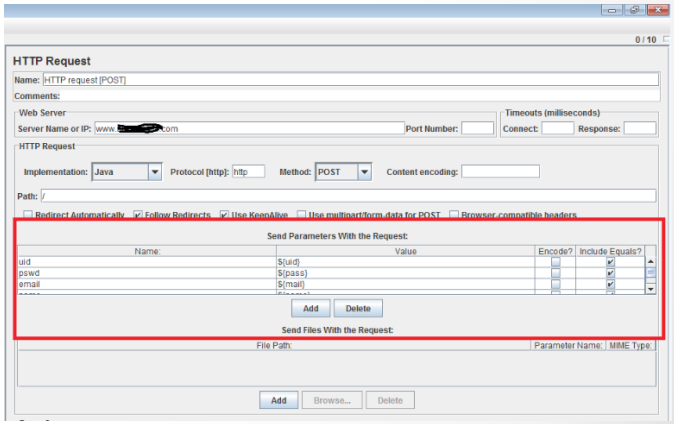
Application

Sample1 (GET Form)





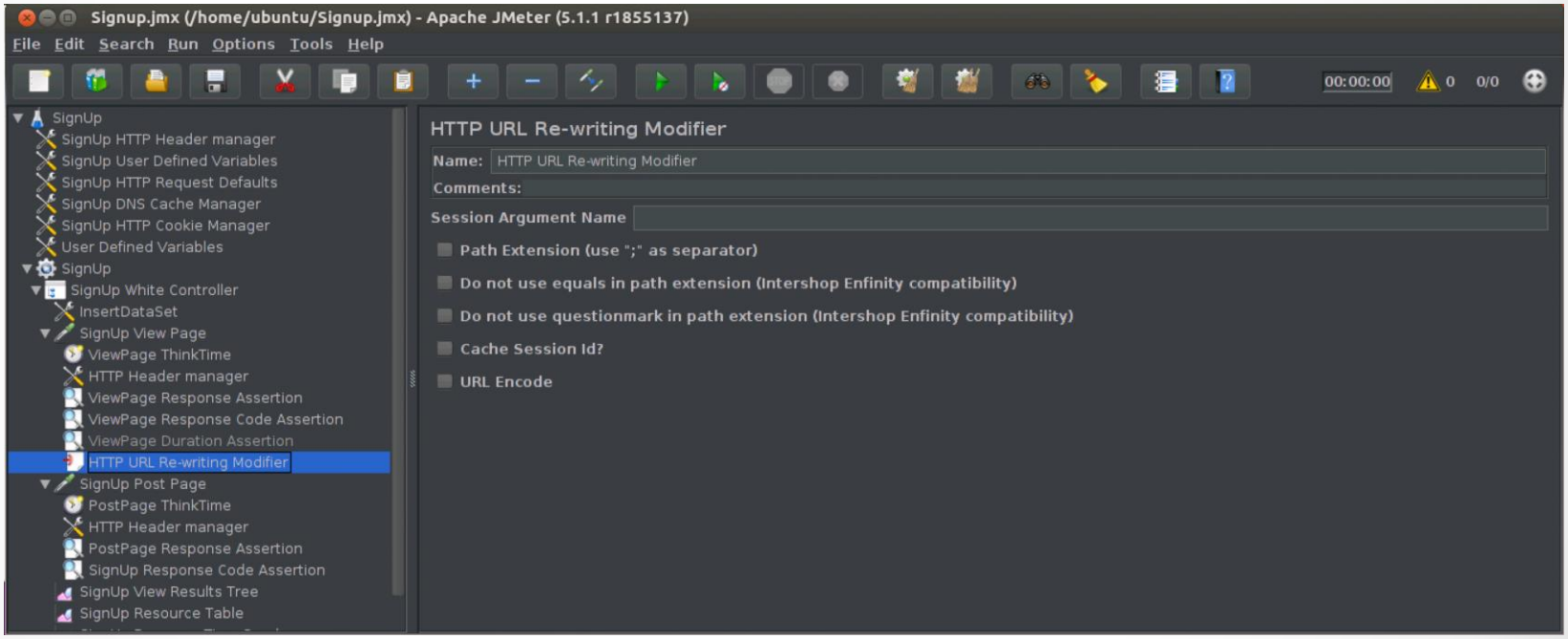




Sample1 (POST Form)

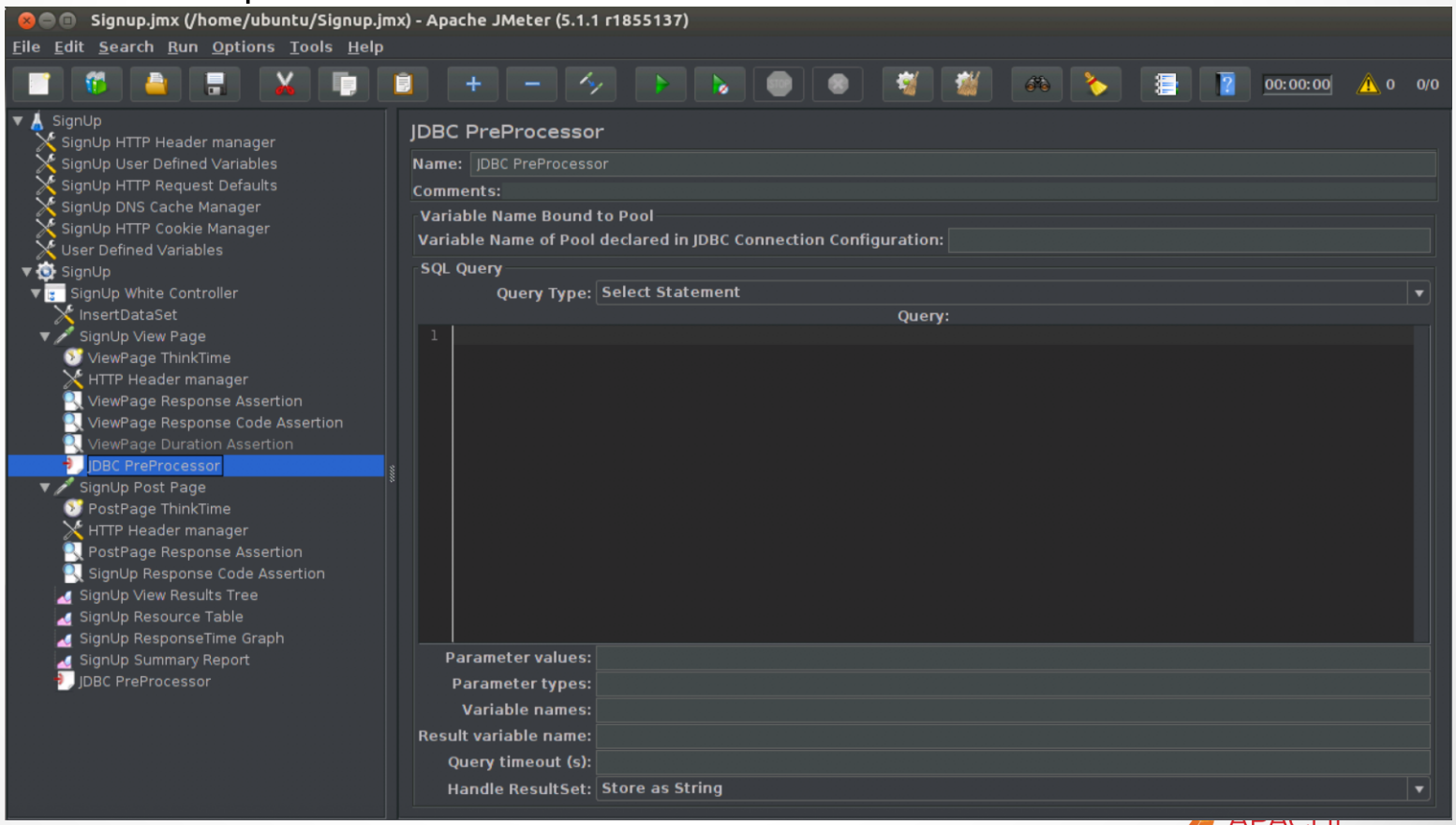
Jmeter's element part 2 (Advance)

- Pre Process: HTTP URL Re-writing Modifier
  - Similar as HTML Link Parser but we can specific argument and how to manage this



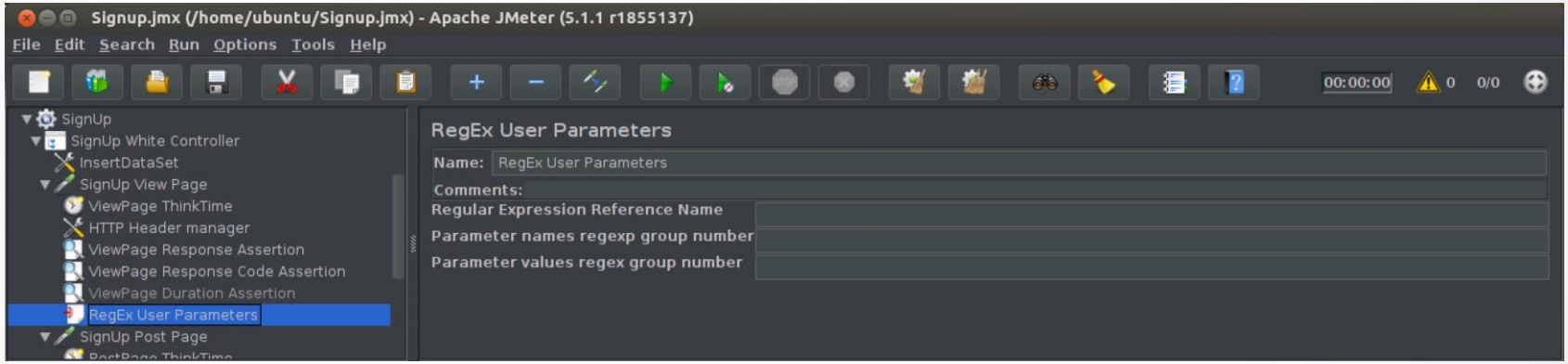
Jmeter's element part 2 (Advance)

- Pre Process: JDBC PreProcessor
  - Run some sql statement for produce data before use in JDBC sampler



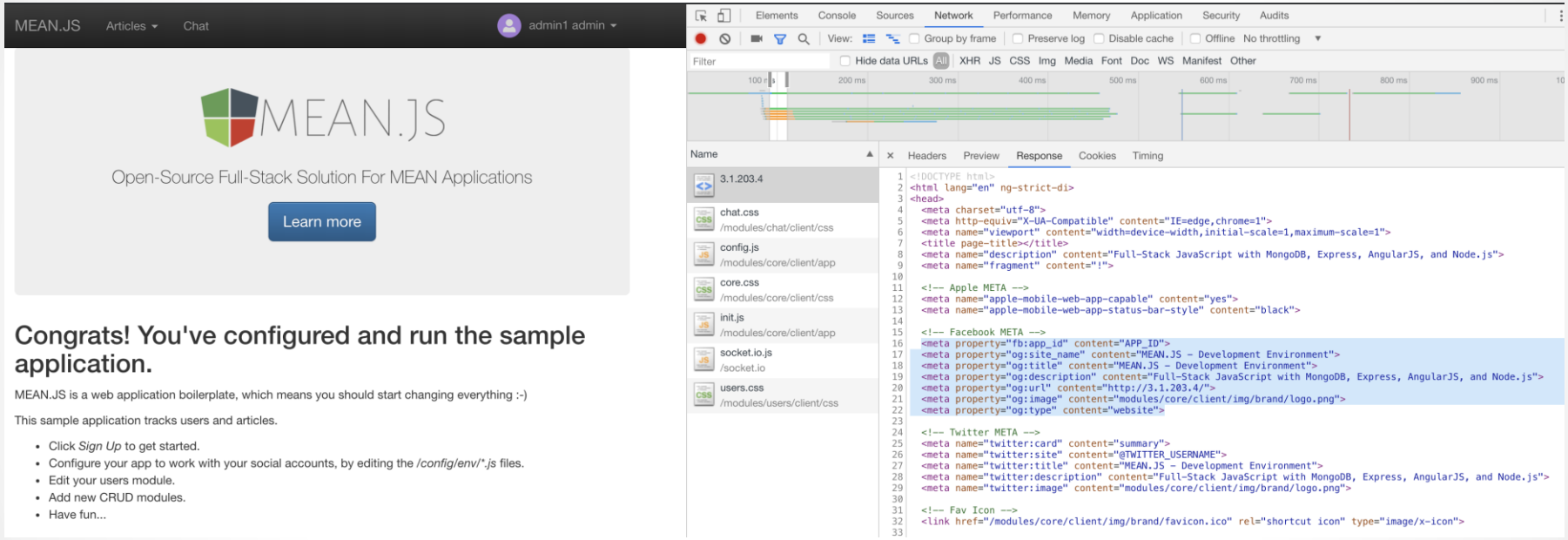
Jmeter's element part 2 (Advance)

- Pre Process: RegEx User Parameter
  - Get dynamic value from previous HTTP request with regular expression (Retrieve from post process (regular expression extract))



Jmeter's element part 2 (Advance)

- Pre Process: RegEx User Parameter
- Example: Feedback from MEAN.JS



<meta property="og:**title**" content="**MEAN.JS - Development Environment**">
<meta property="og:**description**" content="**Full-Stack JavaScript …**">
<meta property="og:**url**" content="**http://3.1.203.4/**">
<meta property="og:**image**" content="**modules/core/client/img/brand/logo.png**">
<meta property="og:**type**" content="**website**">

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example: Feedback from MEAN.JS

  Result:
  FBField=
  FBField_1=titleMEAN.JS - Development Environment
  FBField_1_g=2
  FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
  FBField_1_g1=title
  FBField_1_g2=MEAN.JS - Development Environment
  FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
  FBField_2_g=2
  FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
  FBField_2_g1=description
  FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
  FBField_3=urlhttp://10.21.1.85/
  FBField_3_g=2
  FBField_3_g0=<meta property="og:url" content="http://10.21.1.85/">
  FBField_3_g1=url
  FBField_3_g2=http://10.21.1.85/
  FBField_4=imagemodules/core/client/img/brand/logo.png
  FBField_4_g=2
  FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
  FBField_4_g1=image
  FBField_4_g2=modules/core/client/img/brand/logo.png
  FBField_5=typewebsite
  FBField_5_g=2
  FBField_5_g0=<meta property="og:type" content="website">
  FBField_5_g1=type
  FBField_5_g2=website
  FBField_matchNr=5

Jmeter's element part 2 (Advance)

- Post Process: Regular Expression Extractor

  Example: Feedback from MEAN.JS

  Expectation:

  FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js

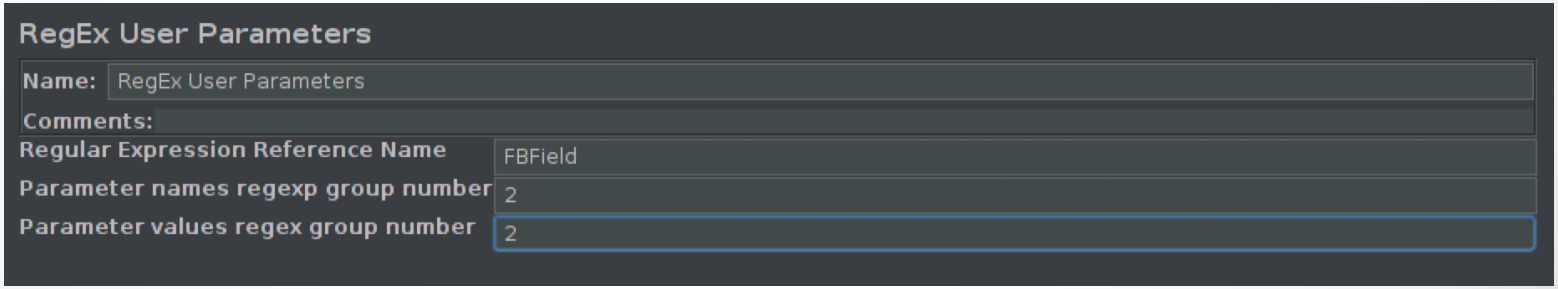
  FBField_2_g=2

  FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">

  FBField_2_g1=description

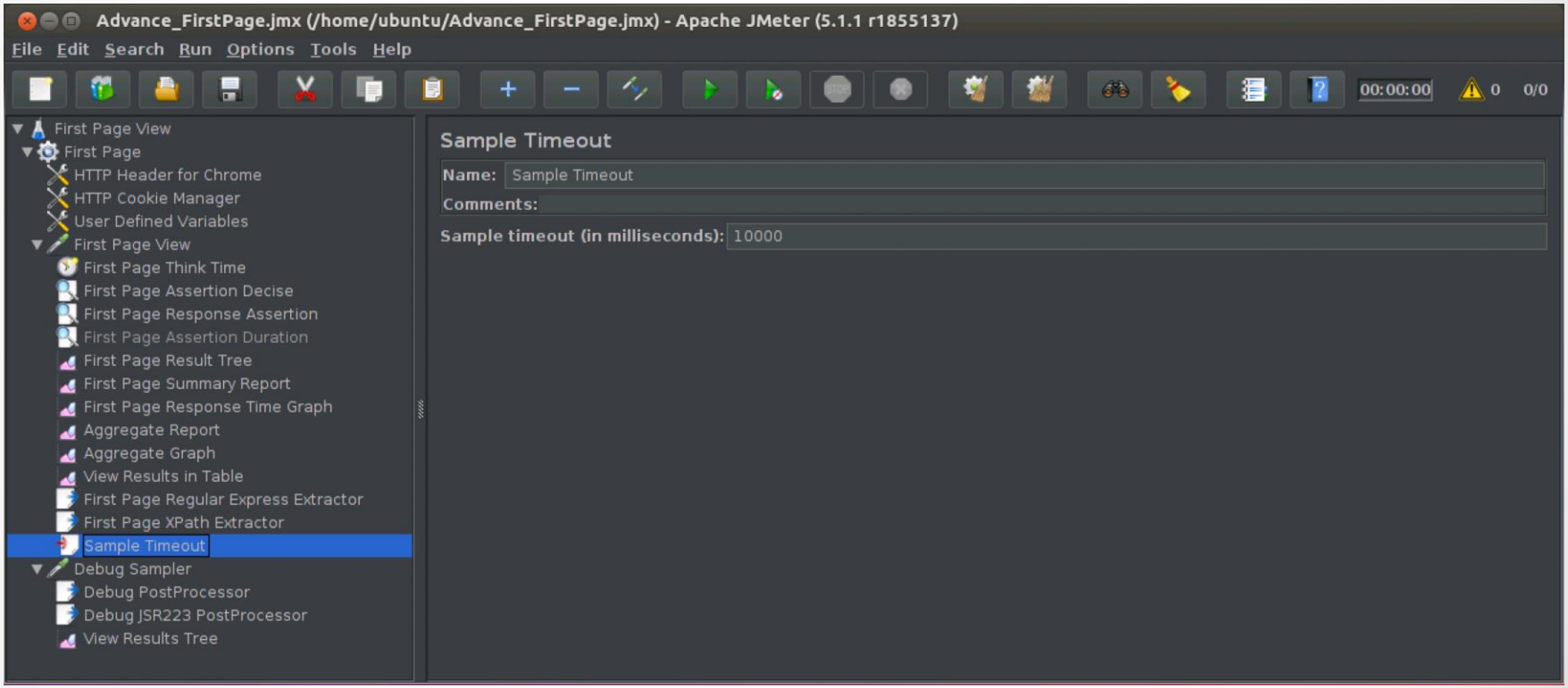
  FBField_2_g2=**Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js**

  Ans:



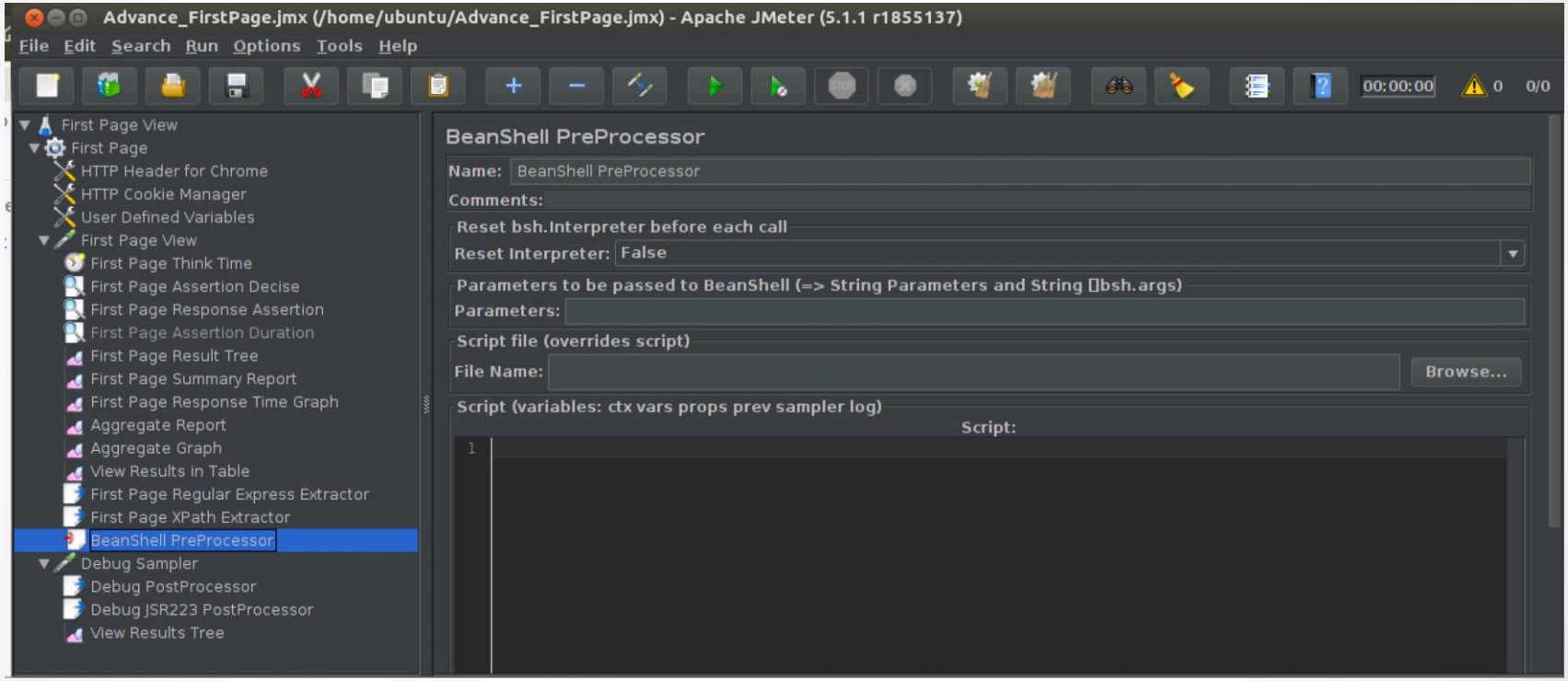
Jmeter's element part 2 (Advance)

- Pre Process: Sample Timeout
  - Set timer for any sample that run more than timeout



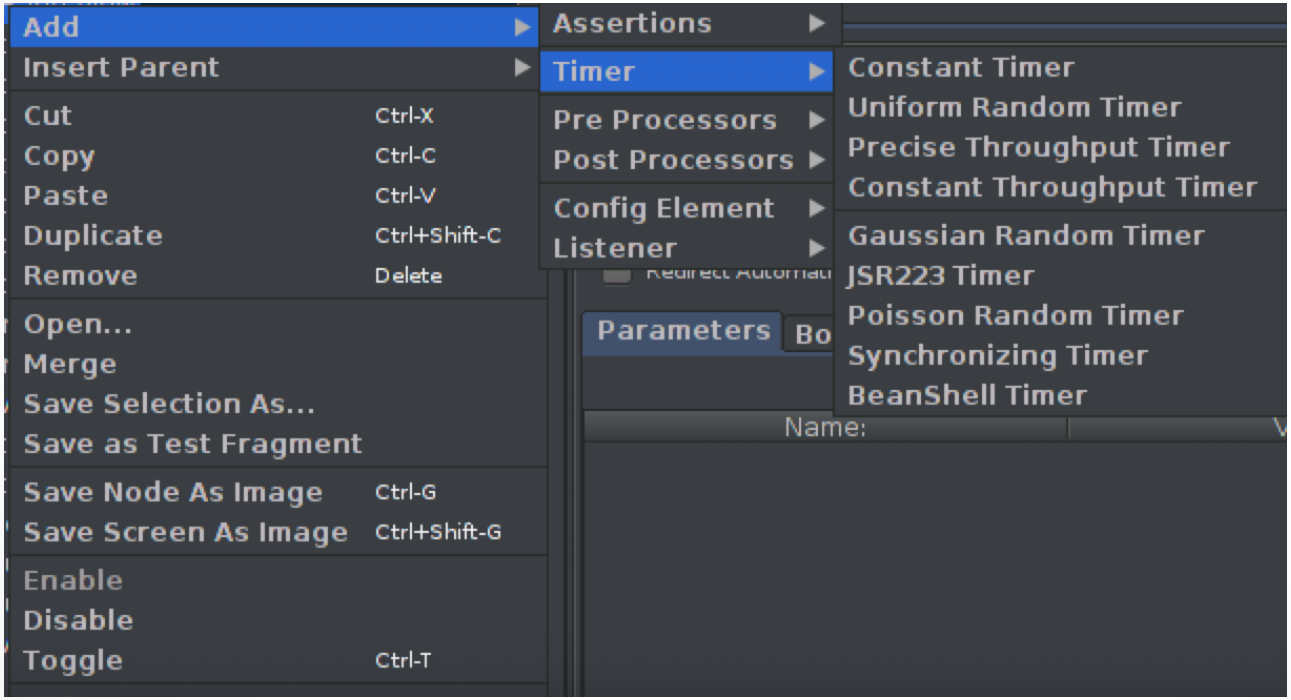
Jmeter's element part 2 (Advance)

- Pre Process: BeanShell PreProcessor
  - Script beanshell before sampler



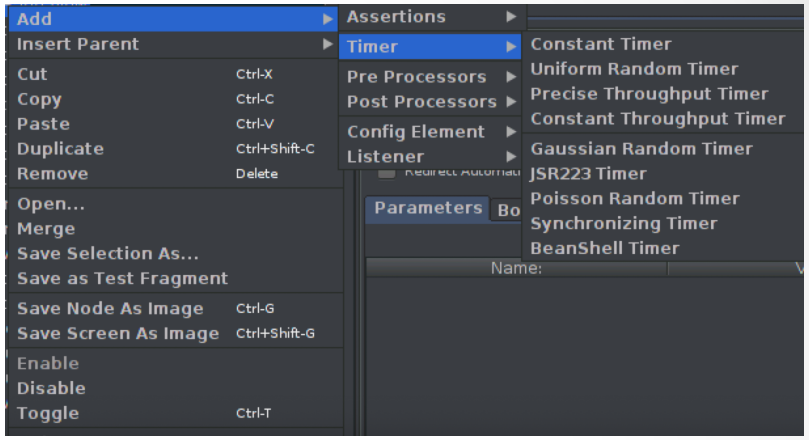
Jmeter's element part 2 (Advance)

- **Timer**
  - Purpose for simulate user activity for "Thinking or Wait" before interactive with system



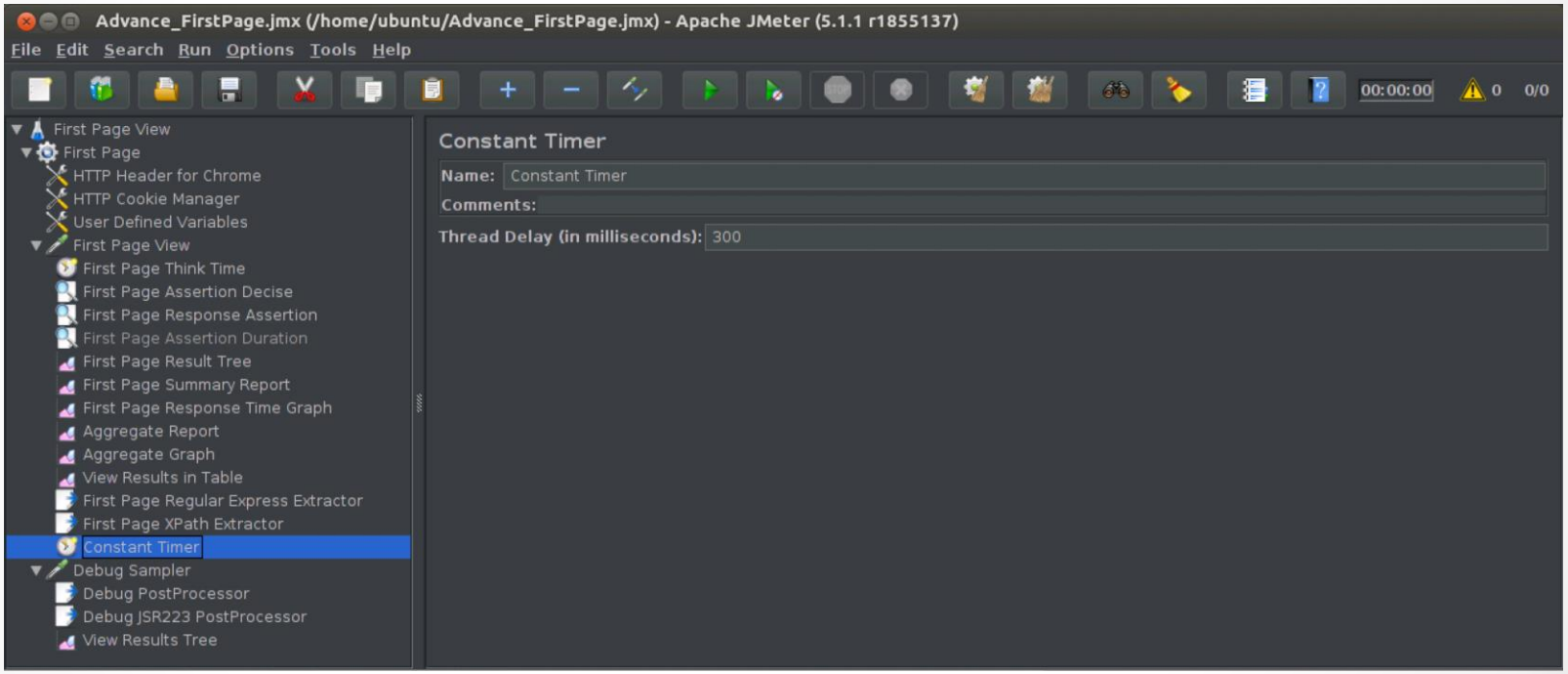
Jmeter's element part 2 (Advance)

- **Timer**
  - Constant Timer:
  - **Uniform Random Timer:**
  - **Precise Throughput Timer:**
  - Constant Throughput Timer:
  - Gaussian Random Timer:
  - JSR223 Timer:
  - Poisson Random Timer:
  - **Synchronizing Timer:**
  - BeanShell Timer:



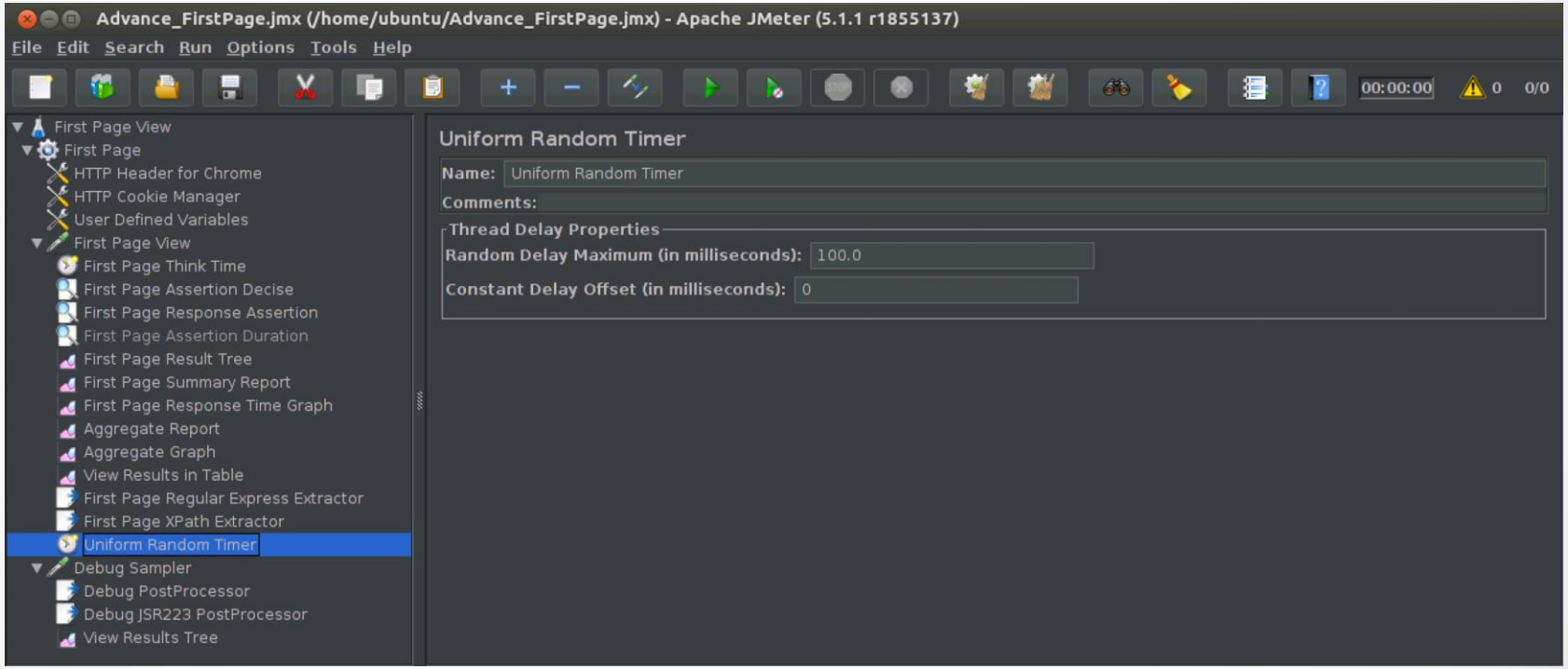
Jmeter's element part 2 (Advance)

- Timer: Constant Timer
  - Add static pause time for sampler



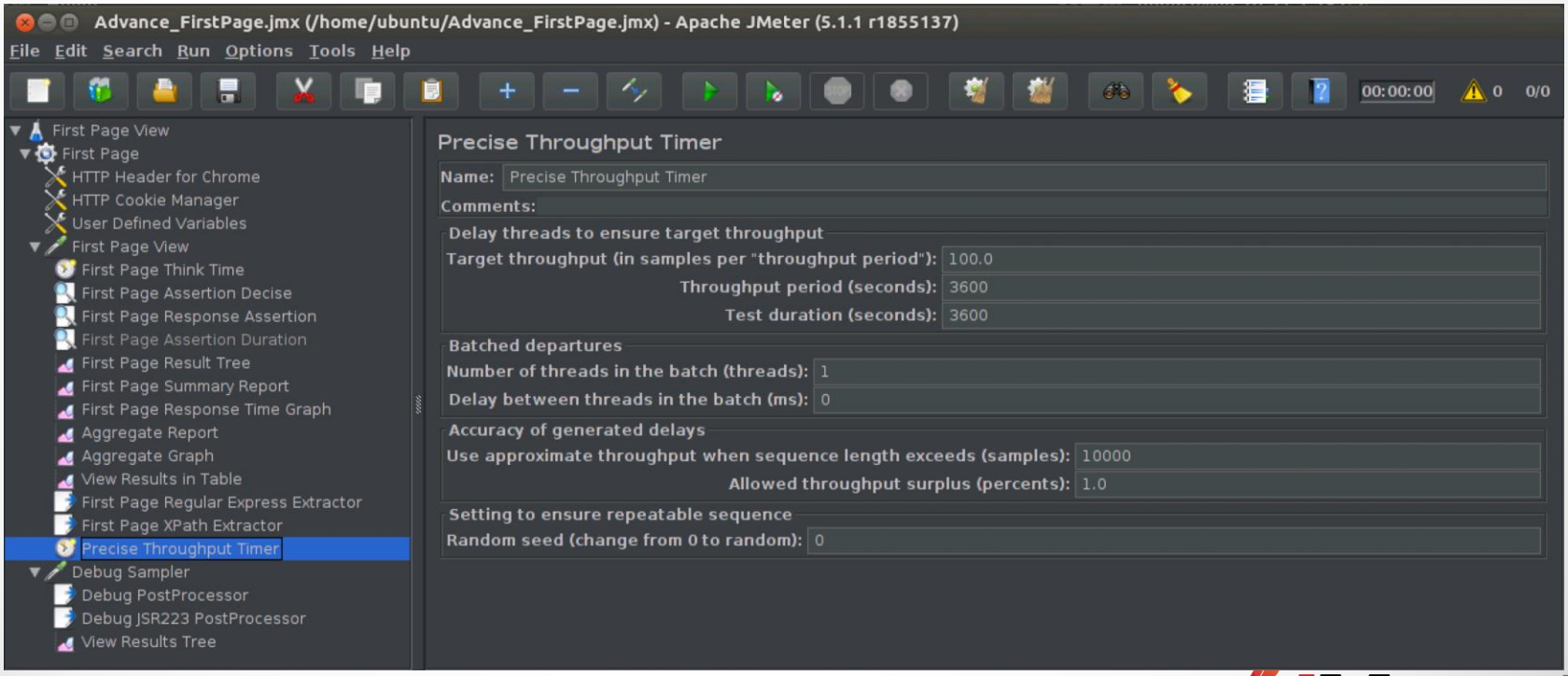
Jmeter's element part 2 (Advance)

- Timer: Unified Random Timer
  - Add random pause time for sampler



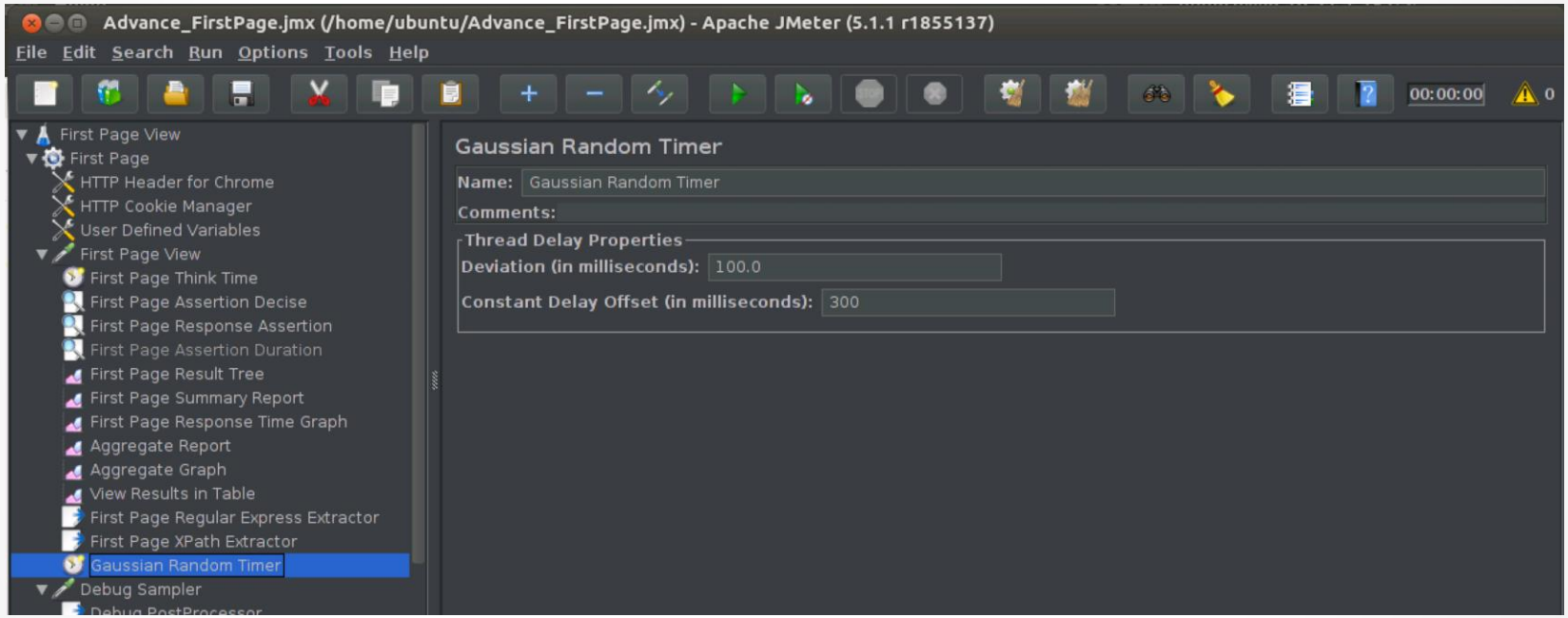
Jmeter's element part 2 (Advance)

- Timer: Precise Throughput Timer
  - Opposite with other timer. This will base on how many actual throughput that you want in test. Jmeter will calculate delay time for close as possible (Place on first sampler)
  - Recommend less than 36,000 req/hours



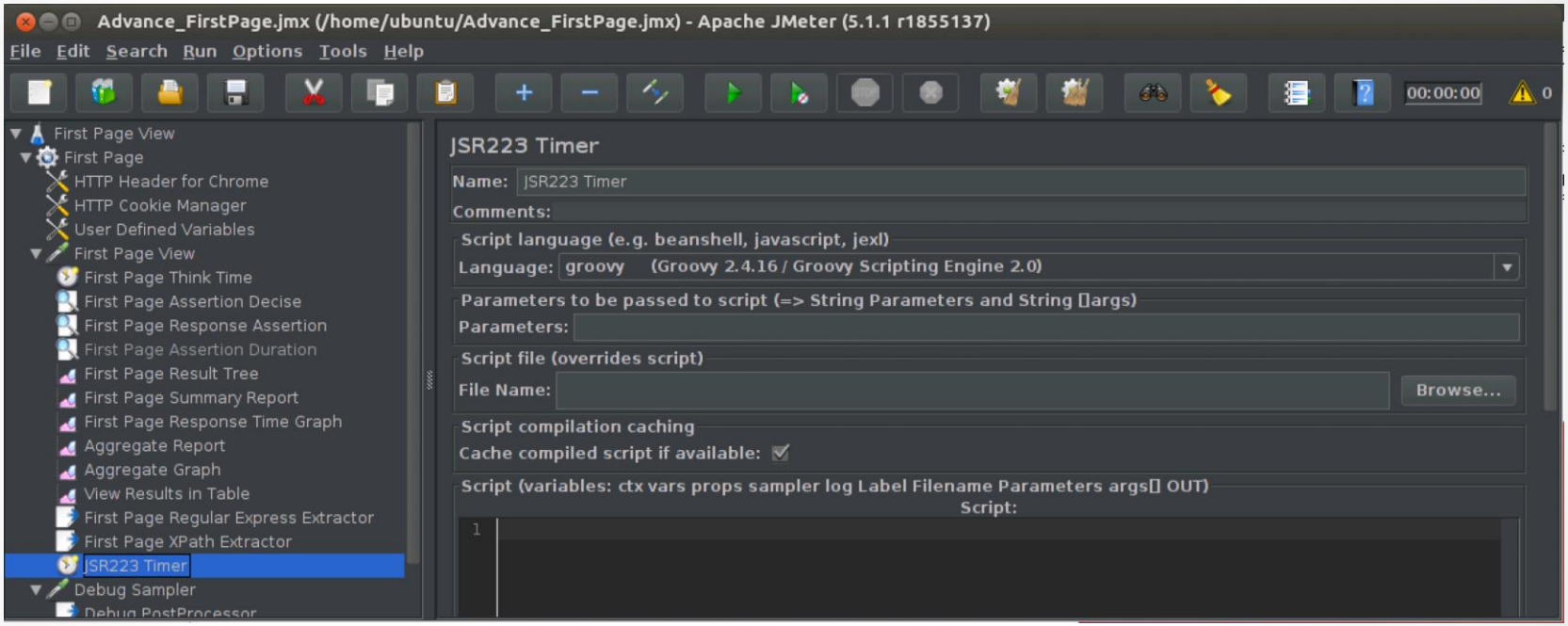
Jmeter's element part 2 (Advance)

- Timer: Constant Throughput Timer
  - Similar to Precise Throughput Timer. Fewer option for operate



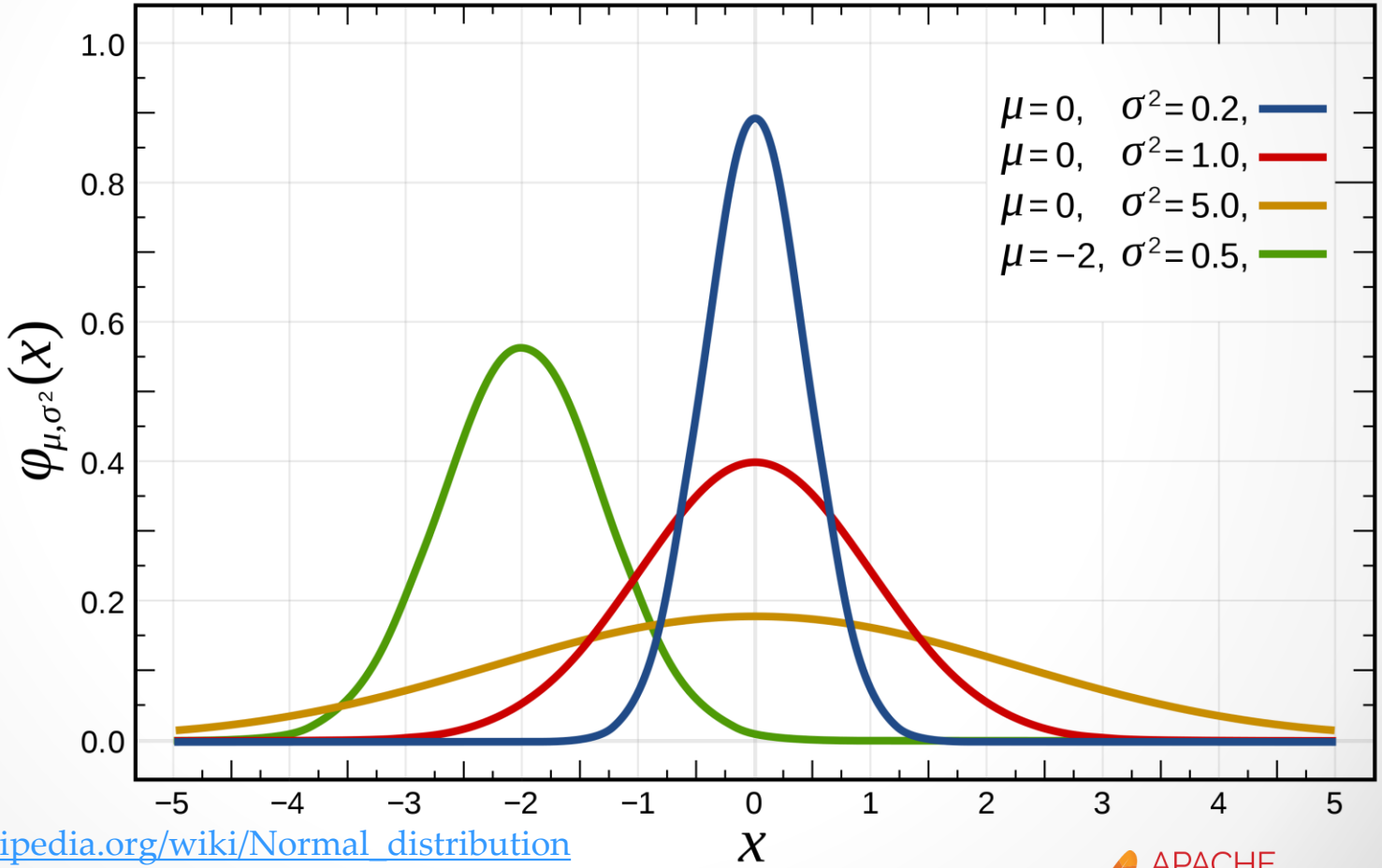
Jmeter's element part 2 (Advance)

- Timer: Gaussian random timer
  - Reference random from "Normal Distribution"



Jmeter's element part 2 (Advance)

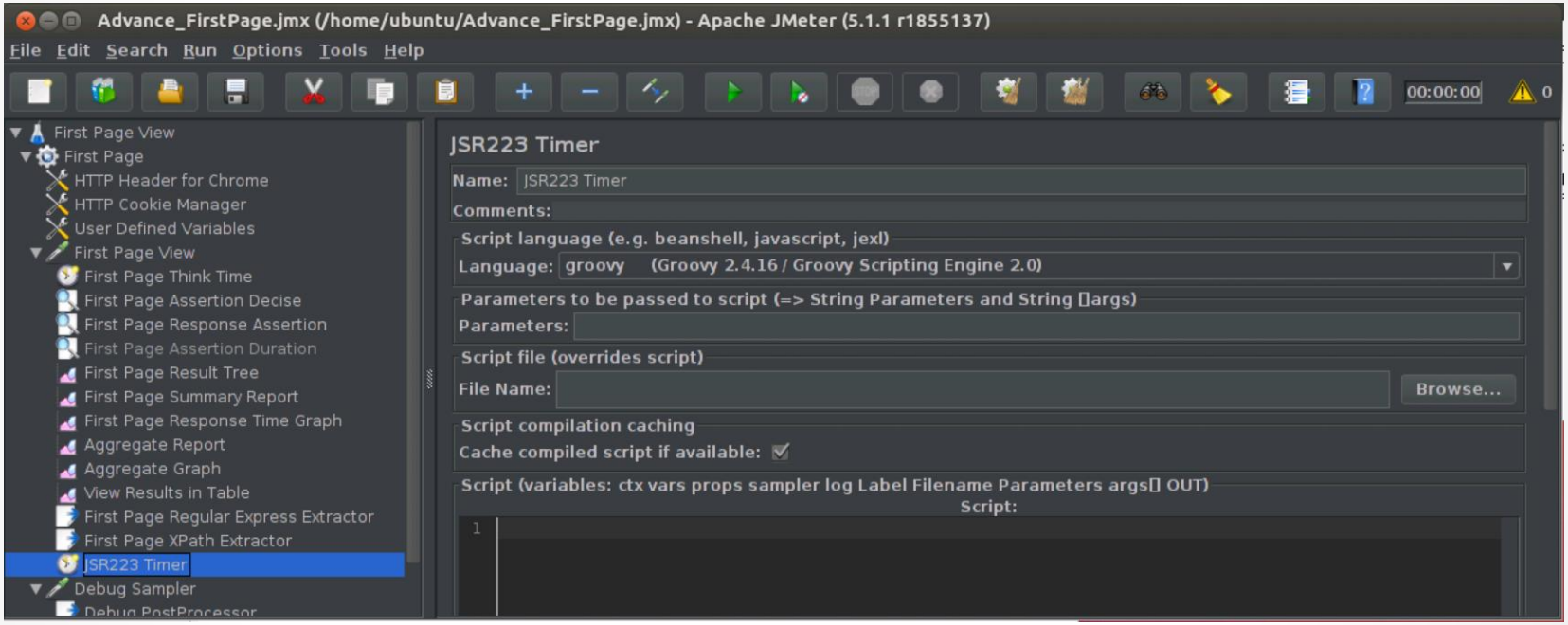
- Timer: Gaussian random timer
  - Reference random from "Normal Distribution"



Ref: https://en.wikipedia.org/wiki/Normal_distribution

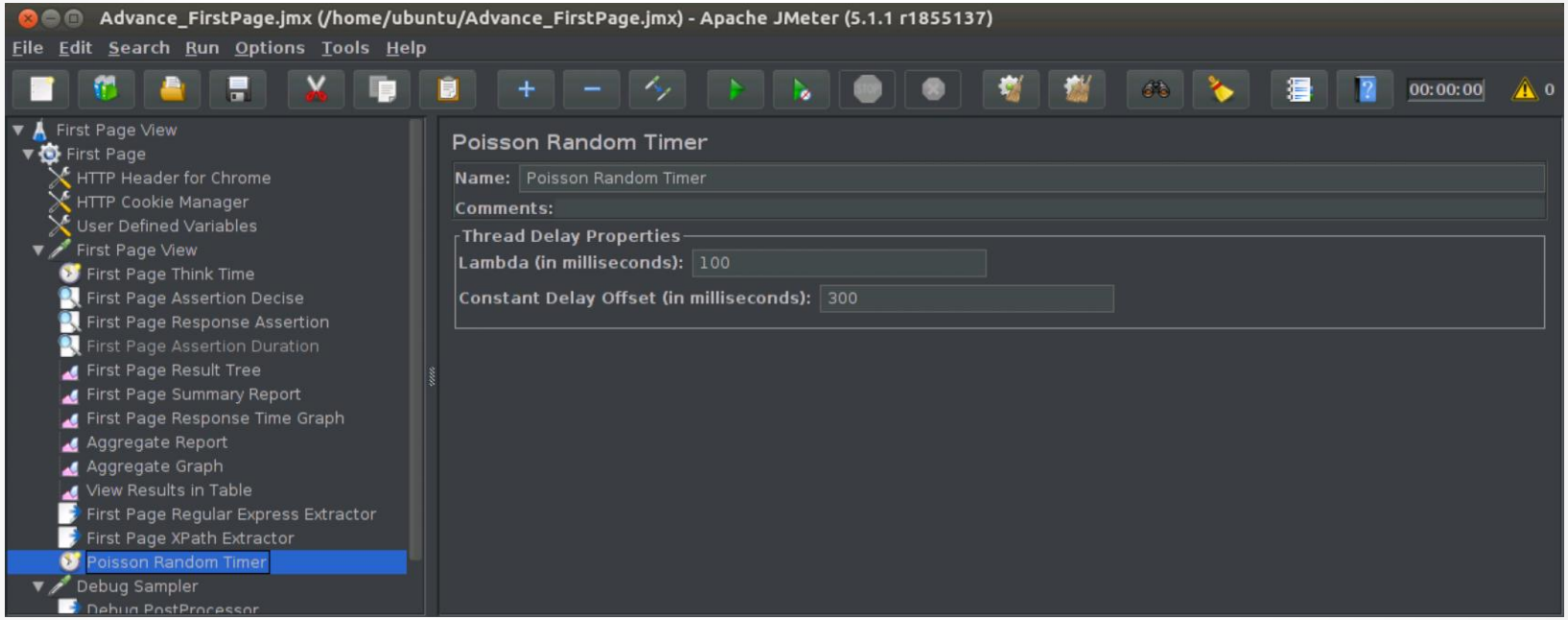
Jmeter's element part 2 (Advance)

- Timer: JSR223 Timer
  - Scripting Timer via Groovy



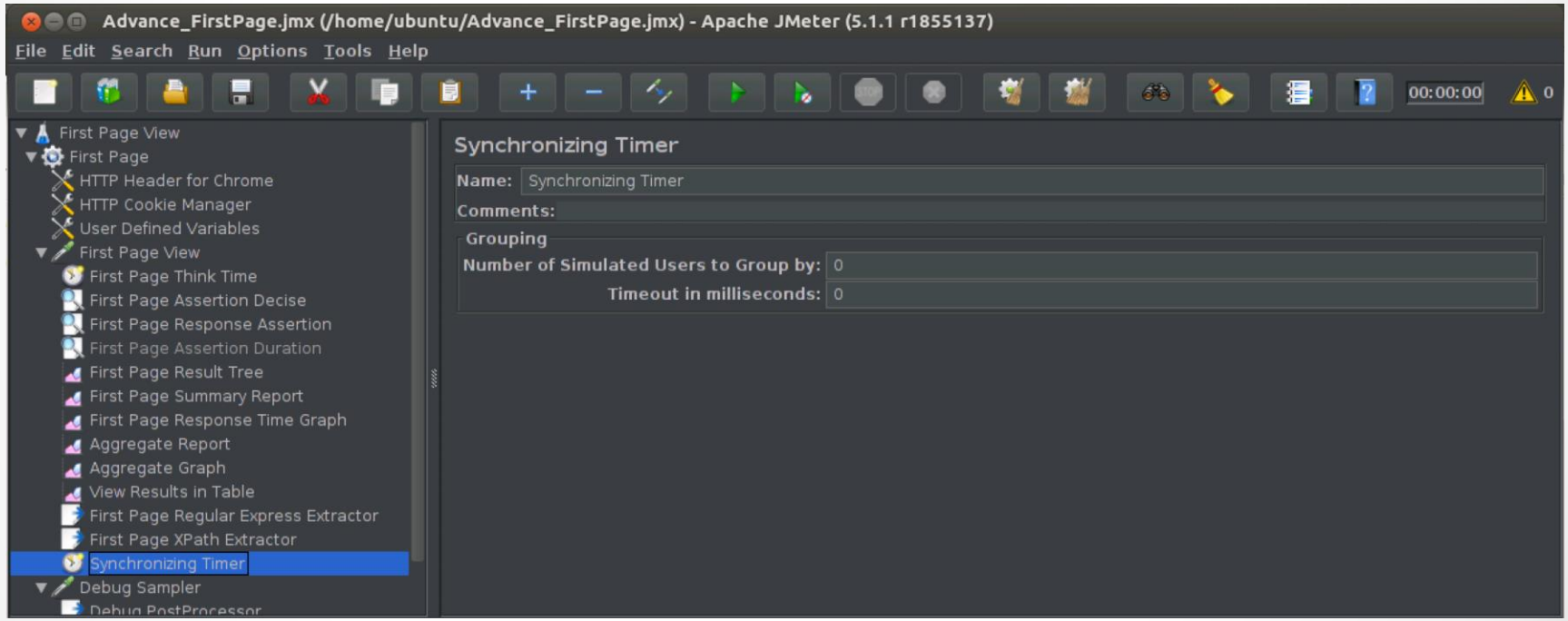
Jmeter's element part 2 (Advance)

- Timer: Poisson Random Timer
  - Random timer via poisson distribution



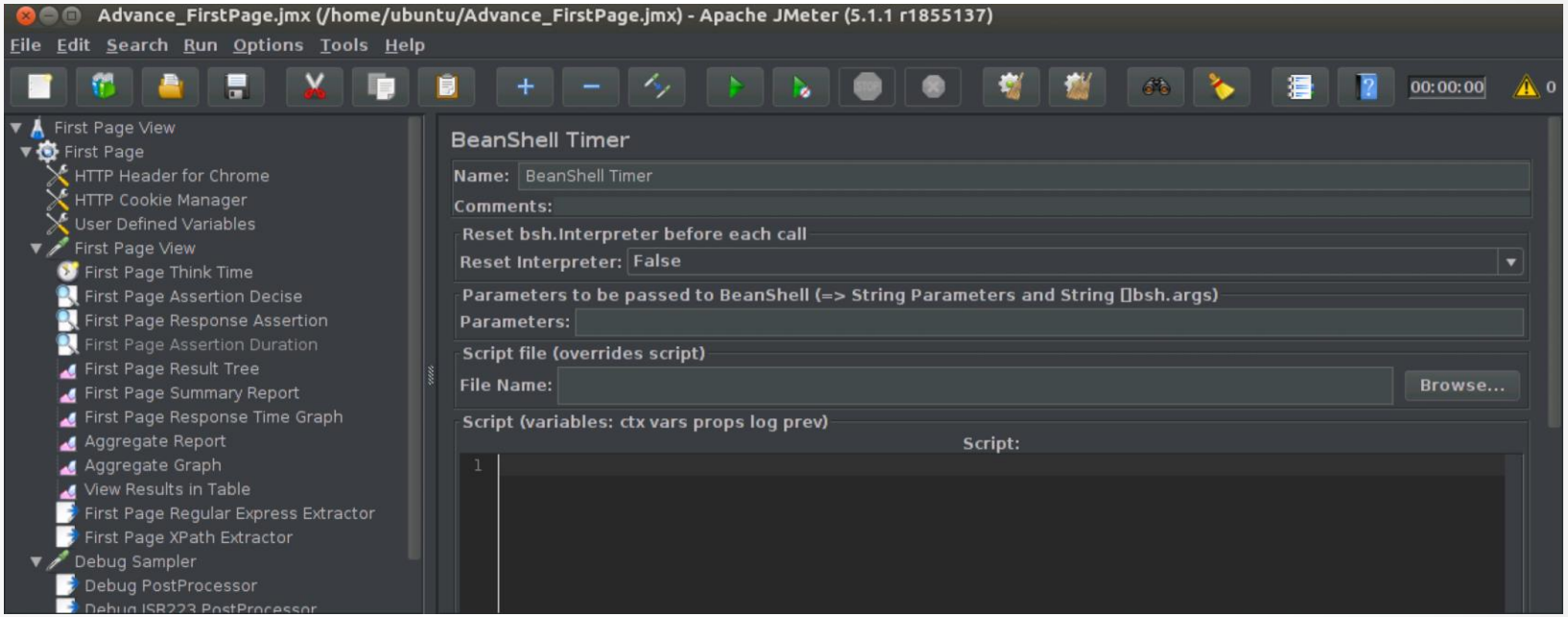
Jmeter's element part 2 (Advance)

- Timer: Synchronizing Timer
  - Hold all thread until reach number of simulated and release all at the same time



Jmeter's element part 2 (Advance)

- Timer: BeanShell Timer
  - Set timer via beanshell script



WorkShop: 2-2 RegEx for MEAN.JS

- **User Journey for Create Account / Login Magento**
- Step 1: Open FirstPage, and extract Facebook Meta Tag

MEAN.JS Articles Sign Up Sign In

MEAN.JS

Open-Source Full-Stack Solution For MEAN Applications

Learn more

Congrats! You've configured and run the sample application.

MEAN.JS is a web application boilerplate, which means you should start changing everything :-)

This sample application tracks users and articles.

- Click *Sign Up* to get started.
- Configure your app to work with your social accounts, by editing the */config/env/*.js* files.
- Edit your users module.
- Add new CRUD modules.
- Have fun...

MongoDB

MongoDB is a NoSQL database. MongoDB's great manual is the place to get started with NoSQL and MongoDB.

Express

Express is a NodeJS server-side application web framework. Check out The ExpressJS API reference for more information.

AngularJS

AngularJS is client-side web application framework. The Thinkster Popular Guide and Egghead Videos are great

Inspector Console Debugger Style Editor Network

Filter URLs | Persist Logs Disable cache No throttling HAR

All HTML CSS JS XHR Fonts Images Media WS Other

Status	Method	Domain	File
304	GET	10.21.1.93:3000	/
304	GET	10.21.1.93:3000	header.client.view.html
304	GET	10.21.1.93:3000	home.client.view.html

3 requests 15.73 KB / 0 B transferred Finish: 791 ms DOMContentLoaded: 537 ms load: 642 ms

Headers Cookies Params Response Cache Timings Stack Trace

```
1  <!DOCTYPE html>
2  <html lang="en" ng-strict-di>
3  <head>
4    <meta charset="utf-8">
5    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
6    <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1">
7    <title page-title></title>
8    <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, Angular
9    <meta name="fragment" content="!">
10
11   <!-- Apple META -->
12   <meta name="apple-mobile-web-app-capable" content="yes">
13   <meta name="apple-mobile-web-app-status-bar-style" content="black">
14
15   <!-- Facebook META -->
16   <meta property="fb:app_id" content="APP_ID">
17   <meta property="og:site_name" content="MEAN.JS - Development Environment">
18   <meta property="og:title" content="MEAN.JS - Development Environment">
19   <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, A
20   <meta property="og:url" content="http://10.21.1.93:3000/">
21   <meta property="og:image" content="modules/core/client/img/brand/logo.png">
22   <meta property="og:type" content="website">
23
24   <!-- Twitter META -->
25   <meta name="twitter:card" content="summary">
26   <meta name="twitter:site" content="@TWITTER_USERNAME">
27   <meta name="twitter:title" content="MEAN.JS - Development Environment">
28   <meta name="twitter:description" content="Full-Stack JavaScript with MongoDB, Express,
29   <meta name="twitter:image" content="modules/core/client/img/brand/logo.png">
30
```

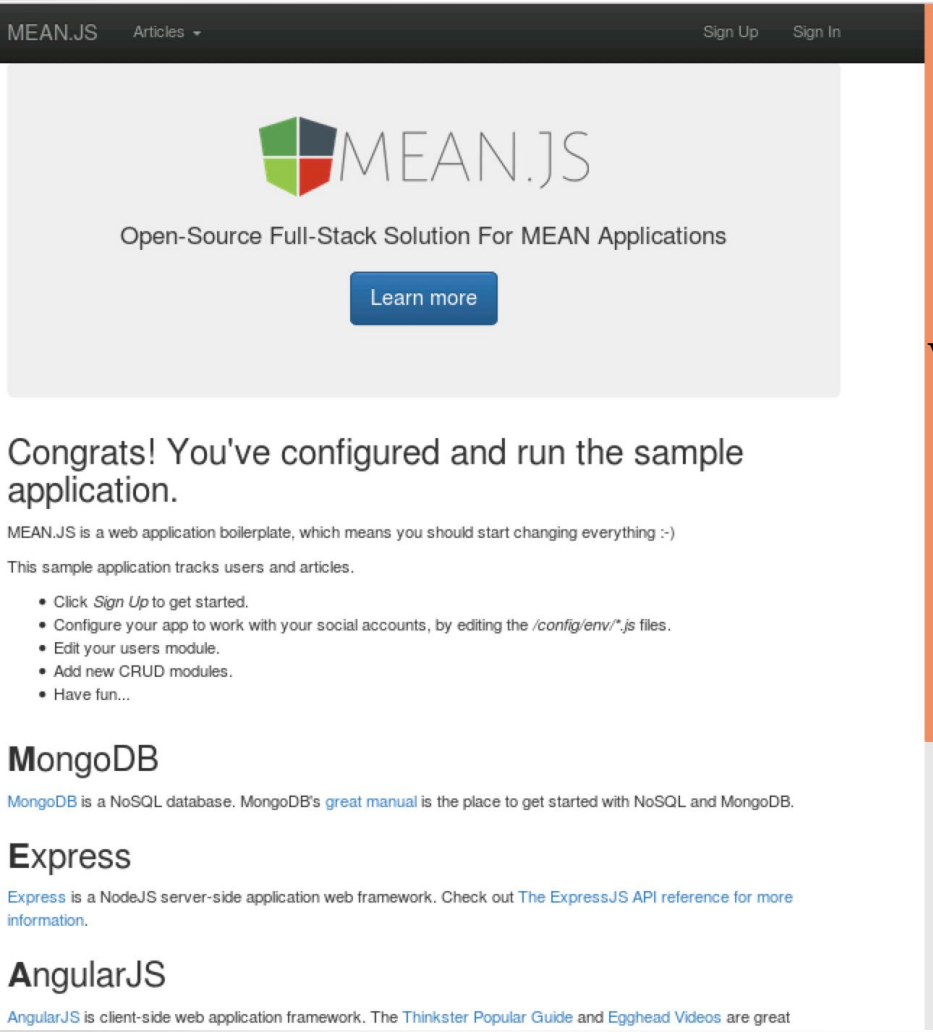
WorkShop: 2-2 RegEx for MEAN.JS

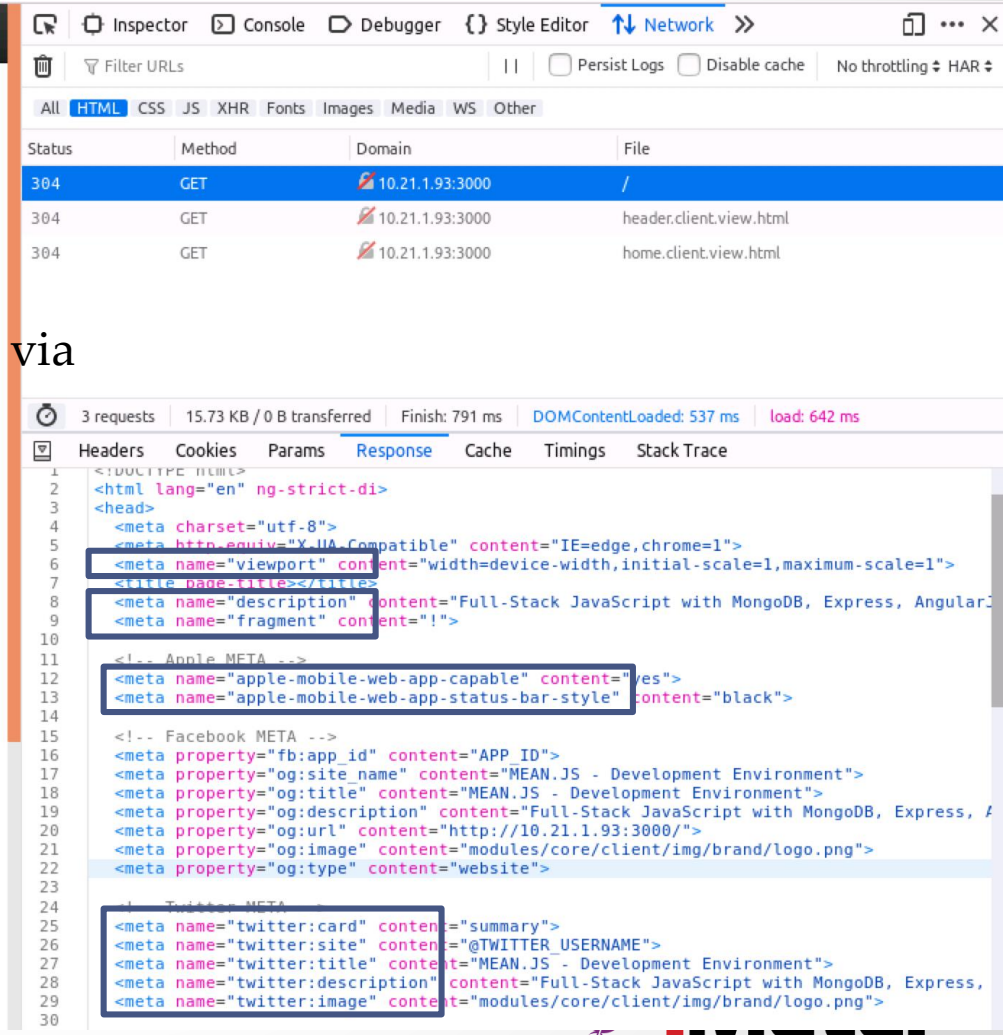
- **User Journey for Create Account / Login Magento**
- Step 2: As found from meta tag. We realize that the path of logo and url can extract and direct access

```
<!-- Facebook META -->
<meta property="fb:app_id" content="APP_ID">
<meta property="og:site_name" content="MEAN.JS - Development Environment">
<meta property="og:title" content="MEAN.JS - Development Environment">
<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, A
<meta property="og:url" content="http://10.21.1.93:3000/">
<meta property="og:image" content="modules/core/client/img/brand/logo.png">
<meta property="og:type" content="website">
```

WorkShop: 2-2 RegEx for MEAN.JS

- **User Journey for Create Account / Login Magento**
- Step 3: Extract Xpath <html> ➔ <head> ➔ <meta name=xxx>





WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- From Facebook Meta Tag, We interest on
- <mata property="og:xxx" content="yyy">

```
<!-- Facebook META -->
<meta property="fb:app_id" content="APP_ID">
<meta property="og:site_name" content="MEAN.JS - Development Environment">
<meta property="og:title" content="MEAN.JS - Development Environment">
<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, A
<meta property="og:url" content="http://10.21.1.93:3000/">
<meta property="og:image" content="modules/core/client/img/brand/logo.png">
<meta property="og:type" content="website">
```

- So we will extract from post process

Regular Expression Extractor

Name: First Page Regular Express Extractor

Comments:

Apply to:

Main sample and sub-samples | Main sample only | Sub-samples only | JMeter Variable Name to use

Field to check

Body | Body (unescaped) | Body as a Document | Response Headers | Request Headers | URL | Response Code | Response Message

Name of created variable:	FBField
Regular Expression:	<meta property="og:([a-z]+)" content="(.+)">
Template (i where i is capturing group number, starts at 1):	$1$$2$
Match No. (0 for Random):	-1
Default Value:	Use empty default value

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- For extract <html> <head> <meta name="xxx">

```
1  <!DOCTYPE html>
2  <html lang="en" ng-strict-di>
3  <head>
4    <meta charset="utf-8">
5    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
6    <meta name="viewport" content="width=device-width,initial-scale=1,maximum-scale=1">
7    <title page-title></title>
8    <meta name="description" content="Full-Stack JavaScript with MongoDB, Express, Angular
9    <meta name="fragment" content="!">
10
11   <!-- Apple META -->
12   <meta name="apple-mobile-web-app-capable" content="yes">
13   <meta name="apple-mobile-web-app-status-bar-style" content="black">
14
15   <!-- Facebook META -->
16   <meta property="fb:app_id" content="APP_ID">
17   <meta property="og:site_name" content="MEAN.JS - Development Environment">
18   <meta property="og:title" content="MEAN.JS - Development Environment">
19   <meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, A
20   <meta property="og:url" content="http://10.21.1.93:3000/">
21   <meta property="og:image" content="modules/core/client/img/brand/logo.png">
22   <meta property="og:type" content="website">
23
24   <!-- Twitter META -->
25   <meta name="twitter:card" content="summary">
26   <meta name="twitter:site" content="@TWITTER_USERNAME">
27   <meta name="twitter:title" content="MEAN.JS - Development Environment">
28   <meta name="twitter:description" content="Full-Stack JavaScript with MongoDB, Express,
29   <meta name="twitter:image" content="modules/core/client/img/brand/logo.png">
30
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- We will use "Xpath Extractor" for extract /html/head/meta/@name

XPath Extractor

Name: First Page XPath Extractor

Comments:

Apply to:

Main sample and sub-samples | Main sample only | Sub-samples only | JMeter Variable Name to use

XML Parsing Options

Use Tidy (tolerant parser) | Quiet | Report errors | Show warnings

Use Namespaces | Validate XML | Ignore Whitespace | Fetch external DTDs

Return entire XPath fragment instead of text content?

Name of created variable: XPath

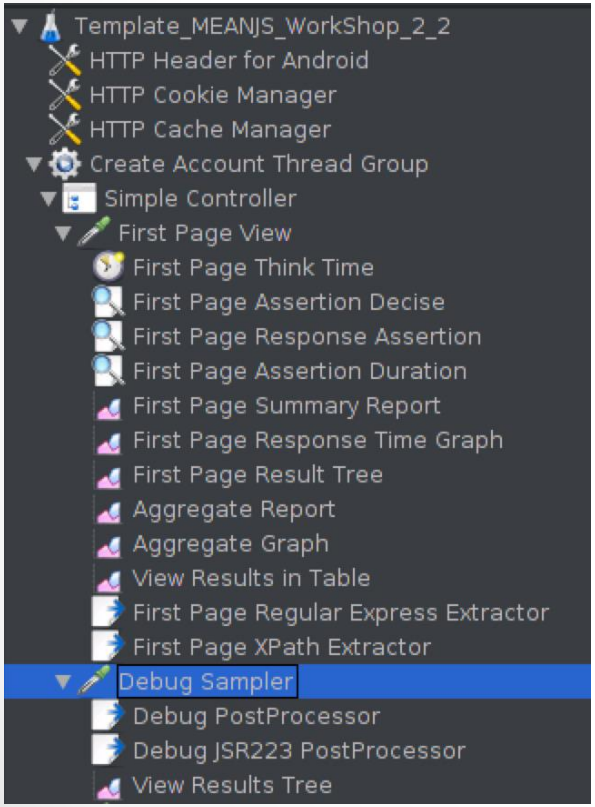
XPath query: /html/head/meta/@name

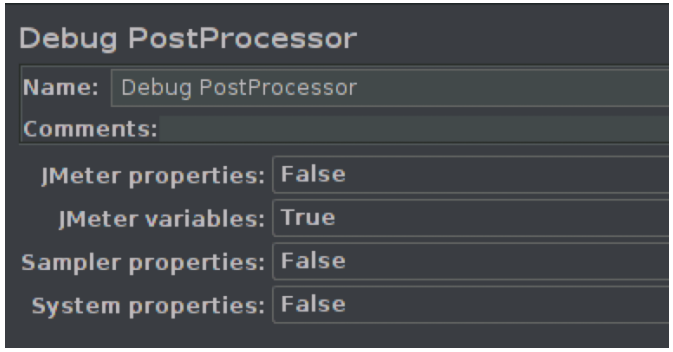
Match No. (0 for Random): -1

Default Value: NoDefind

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- For show output from both postprocess. We will create "Debug Sampler" with Debug PostProcess / View Results Tree for display all "Jmeter variable"





WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**

View Results Tree

Name: View Results Tree

Comments:

Write results to file / Read from file

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

Search: Case sensitive Regular exp. Search Reset

Text

Debug Sampler

Debug Sampler-0

Sampler result | Request | Response data

Response Body | Response headers

Find Case sensitive Regular exp.

Response Body | Response headers

Find Case sensitive Regular exp.

```
JMeterVariables:
BaseIP=10.21.1.93
FBField=
FBField_1=titleMEAN.JS - Development Environment
FBField_1_g=2
FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
FBField_1_g1=title
FBField_1_g2=MEAN.JS - Development Environment
FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_2_g=2
FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
FBField_2_g1=description
FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_3=urlhttp://10.21.1.93:3000/
FBField_3_g=2
FBField_3_g0=<meta property="og:url" content="http://10.21.1.93:3000/">
FBField_3_g1=url
FBField_3_g2=http://10.21.1.93:3000/
FBField_4=imagemodules/core/client/img/brand/logo.png
FBField_4_g=2
FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
FBField_4_g1=image
FBField_4_g2=modules/core/client/img/brand/logo.png
FBField_5=typewebsite
FBField_5_g=2
FBField_5_g0=<meta property="og:type" content="website">
FBField_5_g1=type
FBField_5_g2=website
FBField_matchNr=5
```

```
JMeterThread.last_sample_ok=true
JMeterThread.pack=org.apache.jmeter.threads.SamplePackage@14205410
MagentoPort=80
MariaPassWord=magento
MariaPort=3306
MariaUserName=magento
MeanPort=3000
MongoDBPort=27017
NEXTOBJ=N/A
NEXTPORT=N/A
NEXTURL=N/A
START.HMS=194958
START.MS=1560170998449
START.YMD=20190610
TESTSTART.MS=1560182459154
XPath=generator
XPath_1=generator
XPath_10=twitter:description
XPath_11=twitter:image
XPath_2=viewport
XPath_3=description
XPath_4=fragment
XPath_5=apple-mobile-web-app-capable
XPath_6=apple-mobile-web-app-status-bar-style
XPath_7=twitter:card
XPath_8=twitter:site
XPath_9=twitter:title
XPath_matchNr=11
__jm__Create Account Thread Group__idx=0
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- Create JSR223 PostProcessor for show variable to operate

JSR223 PostProcessor

Name: Debug JSR223 PostProcessor

Comments:

Script language (e.g. groovy, jexl, javascript (avoid for performances), ...)

Language: groovy (Groovy 2.4.16 / Groovy Scripting Engine 2.0)

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

Parameters:

Script file (overrides script)

File Name: Browse...

Script compilation caching

Cache compiled script if available:

Script (variables: ctx vars props prev sampler log Label Filename Parameters args[] OUT)

Script:

```
int count = Integer.parseInt(vars.get("FBField_matchNr"));
log.info("<=========================Regular Express Extractor:Total Vault Iteration "+count+"<=========================>");
String g1="";
String g2="";
for(int i=1;i<=count;i++)
{
     g1=vars.get("FBField_"+i+"_g1");
     g2=vars.get("FBField_"+i+"_g2");
     log.info("FBField Iteration:"+i+"  Group 1:"+g1);
     log.info("FBField Iteration:"+i+"  Group 2:"+g2);
}
log.info("<=========================Regular Express Extractor:END Record<=========================>");
count = Integer.parseInt(vars.get("XPath_matchNr"));
log.info("<=========================Regular XPath:Total Vault Iteration "+count+"<=========================>");
String g3="";
for(int i=1;i<=count;i++)
{
     g3=vars.get("XPath_"+i);
     log.info("XPath No:"+i+" Value:"+g3);
}
log.info("<=========================Regular XPath:END Record<=========================>");
```

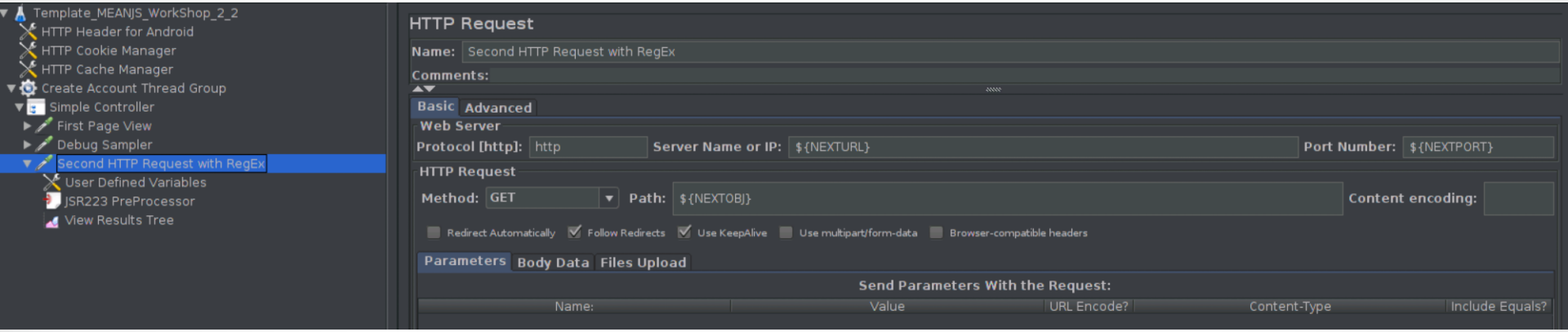
WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- Create JSR223 PostProcessor for show variable to operate

```
2019-06-10 23:00:59,154 INFO o.a.j.e.StandardJMeterEngine: Running the test!
2019-06-10 23:00:59,154 INFO o.a.j.s.SampleEvent: List of sample_variables: []
2019-06-10 23:00:59,156 INFO o.a.j.g.u.JMeterMenuBar: setRunning(true, *local*)
2019-06-10 23:00:59,407 INFO o.a.j.e.StandardJMeterEngine: Starting ThreadGroup: 1 : Create Account Thread Group
2019-06-10 23:00:59,407 INFO o.a.j.e.StandardJMeterEngine: Starting 1 threads for group Create Account Thread Group.
2019-06-10 23:00:59,407 INFO o.a.j.e.StandardJMeterEngine: Thread will continue on error
2019-06-10 23:00:59,408 INFO o.a.j.t.ThreadGroup: Starting thread group... number=1 threads=1 ramp-up=1 delayedStart=false
2019-06-10 23:00:59,408 INFO o.a.j.t.ThreadGroup: Started thread group number 1
2019-06-10 23:00:59,408 INFO o.a.j.e.StandardJMeterEngine: All thread groups have been started
2019-06-10 23:00:59,408 INFO o.a.j.t.JMeterThread: Thread started: Create Account Thread Group 1-1
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular Express Extractor:Total Vault Iteration 5<=
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, Ang
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.93:3000/
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 2:website
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular Express Extractor:END Record<==============
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular XPath:Total Vault Iteration 11<============
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:1 Value:generator
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:2 Value:viewport
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:3 Value:description
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:4 Value:fragment
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:5 Value:apple-mobile-web-app-capable
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:6 Value:apple-mobile-web-app-status-bar-style
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:7 Value:twitter:card
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:8 Value:twitter:site
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:9 Value:twitter:title
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:10 Value:twitter:description
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:11 Value:twitter:image
2019-06-10 23:01:01,453 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular XPath:END Record<=========================>
2019-06-10 23:01:01,462 INFO o.a.j.t.JMeterThread: Thread is done: Create Account Thread Group 1-1
2019-06-10 23:01:01,462 INFO o.a.j.t.JMeterThread: Thread finished: Create Account Thread Group 1-1
2019-06-10 23:01:01,462 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
2019-06-10 23:01:01,462 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- Create another http_request for request logo from RegEx
  - ${NEXTURL} ➔ Server IP/URL
  - ${NEXTPORT} ➔ Server Port
  - ${NEXTOBJ} ➔ Path of Object



WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- Create user define variable for all require and JSR233 Preprocess Script

- Value from RegEx PostProcess
  - URL: Iteration 3, Group 2: http://10.21.1.93:3000
  - OBJECT: Iteration 3, Group 2: modules/core/client/img/brand/logo.png

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- Value from RegEx PostProcess
  - URL: Iteration 3, Group 2: http://10.21.1.93:3000
    - Substring (Start:7, Stop:17)➔ 10.21.1.93
    - Substring (Start: 18, Stop:22) ➔ 3000
  - OBJECT: Iteration 3, Group 2: modules/core/client/img/brand/logo.png
    - Add "/" before

```
JSR223 PostProcessor: <=========================Regular Express Extractor:Total Vault Iteration 5<=========
JSR223 PostProcessor: FBField Iteration:1  Group 1:title
JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
JSR223 PostProcessor: FBField Iteration:2  Group 1:description
JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, AngularJS,
JSR223 PostProcessor: FBField Iteration:3  Group 1:url
JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.93:3000/
JSR223 PostProcessor: FBField Iteration:4  Group 1:image
JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
JSR223 PostProcessor: FBField Iteration:5  Group 1:type
JSR223 PostProcessor: FBField Iteration:5  Group 2:website
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**
- JSR223 PreProcessor Script

JSR223 PreProcessor

Name: JSR223 PreProcessor

Comments:

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

Language: groovy (Groovy 2.4.16 / Groovy Scripting Engine 2.0)

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

Parameters:

Script file (overrides script)

File Name: Browse...

Script compilation caching

Cache compiled script if available: ☑

Script (variables: ctx vars props sampler log Label Filename Parameters args[] OUT)

Script:

```
int count = Integer.parseInt(vars.get("FBField_matchNr"));

String TempText="";
String FinalText="";
String g2="";
for(int i=3;i<=count;i++)
{
    if(i==3)
    {
    TempText=vars.get("FBField_"+i+"_g2");
    //Template = http://10.0.1.44:3000/
    vars.put("NEXTURL",TempText.substring(TempText.indexOf('/')+2,TempText.indexOf(':',5)));
    vars.put("NEXTPORT",TempText.substring(TempText.indexOf(':',5)+1,TempText.indexOf(':',5)+5));
    log.info("NEXTURL:"+TempText.substring(TempText.indexOf('/')+2,TempText.indexOf(':',5)));
    log.info("NEXTPORT:"+TempText.substring(TempText.indexOf(':',5)+1,TempText.indexOf(':',5)+5));
    }
    if(i==4)
    {
    TempText=vars.get("FBField_"+i+"_g2");
    vars.put("NEXTOBJ","/"+TempText);

    }
}
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**

Thread Group
Name: Create Account Thread Group
Comments:
Action to be taken after a Sampler error
Continue | Start Next Thread Loop | Stop Thread | Stop Test | Stop Test Now
Thread Properties
Number of Threads (users): 1
Ramp-Up Period (in seconds): 1
Loop Count: Forever 1
Delay Thread creation until needed
Scheduler
Scheduler Configuration
If Loop Count is not -1 or Forever, duration will be min(Duration, Loop Count * iteration duration)
Duration (seconds) 0
Startup delay (seconds) 0

View Results Tree
Name: First Page Result Tree
Comments:
Write results to file / Read from file
Filename
Search: Case sensitive Regular exp. Search Reset
Text
First Page View
Sampler result | Request | Response data
Thread Name: Create Account Thread Group 1-1
Sample Start: 2019-06-10 23:17:10 ICT
Load time: 11
Connect Time: 0
Latency: 11
Size in bytes: 2399
Sent bytes:399
Headers size in bytes: 600
Body size in bytes: 1799
Sample Count: 1
Error Count: 0
Data type ("text"|"bin"|""): text
Response code: 200
Response message: OK

HTTPSampleResult fields:
ContentType: text/html; charset=utf-8
DataEncoding: utf-8

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**

View Results Tree

Name: View Results Tree

Comments:

Write results to file / Read from file

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

Search: | Case sensitive | Regular exp. | Search | Reset

Text

Debug Sampler

Debug Sampler-0

Sampler result | Request | Response data

Response Body | Response headers

Find | Case sensitive | Regular exp.

```
JMeterVariables:
BaseIP=10.21.1.93
FBField=
FBField_1=titleMEAN.JS - Development Environment
FBField_1_g=2
FBField_1_g0=<meta property="og:title" content="MEAN.JS - Development Environment">
FBField_1_g1=title
FBField_1_g2=MEAN.JS - Development Environment
FBField_2=descriptionFull-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_2_g=2
FBField_2_g0=<meta property="og:description" content="Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js">
FBField_2_g1=description
FBField_2_g2=Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node.js
FBField_3=urlhttp://10.21.1.93:3000/
FBField_3_g=2
FBField_3_g0=<meta property="og:url" content="http://10.21.1.93:3000/">
FBField_3_g1=url
FBField_3_g2=http://10.21.1.93:3000/
FBField_4=imagemodules/core/client/img/brand/logo.png
FBField_4_g=2
FBField_4_g0=<meta property="og:image" content="modules/core/client/img/brand/logo.png">
FBField_4_g1=image
FBField_4_g2=modules/core/client/img/brand/logo.png
FBField_5=typewebsite
FBField_5_g=2
FBField_5_g0=<meta property="og:type" content="website">
FBField_5_g1=type
FBField_5_g2=website
FBField_matchNr=5
```

Scroll automatically?

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**

```
2019-06-10 23:17:08,355 INFO o.a.j.e.StandardJMeterEngine: Running the test!
2019-06-10 23:17:08,356 INFO o.a.j.s.SampleEvent: List of sample_variables: []
2019-06-10 23:17:08,356 INFO o.a.j.g.u.JMeterMenuBar: setRunning(true, *local*)
2019-06-10 23:17:08,610 INFO o.a.j.e.StandardJMeterEngine: Starting ThreadGroup: 1 : Create Account Thread Group
2019-06-10 23:17:08,610 INFO o.a.j.e.StandardJMeterEngine: Starting 1 threads for group Create Account Thread Group.
2019-06-10 23:17:08,610 INFO o.a.j.e.StandardJMeterEngine: Thread will continue on error
2019-06-10 23:17:08,610 INFO o.a.j.t.ThreadGroup: Starting thread group... number=1 threads=1 ramp-up=1 delayedStart=false
2019-06-10 23:17:08,610 INFO o.a.j.t.ThreadGroup: Started thread group number 1
2019-06-10 23:17:08,610 INFO o.a.j.e.StandardJMeterEngine: All thread groups have been started
2019-06-10 23:17:08,610 INFO o.a.j.t.JMeterThread: Thread started: Create Account Thread Group 1-1
2019-06-10 23:17:10,728 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular Express Extractor:Total Vault Iteration 5<==================
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 1:title
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:1  Group 2:MEAN.JS - Development Environment
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 1:description
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:2  Group 2:Full-Stack JavaScript with MongoDB, Express, AngularJS, and Node
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 1:url
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:3  Group 2:http://10.21.1.93:3000/
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 1:image
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:4  Group 2:modules/core/client/img/brand/logo.png
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 1:type
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: FBField Iteration:5  Group 2:website
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular Express Extractor:END Record<=========================>
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular XPath:Total Vault Iteration 11<=========================>
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:1 Value:generator
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:2 Value:viewport
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:3 Value:description
2019-06-10 23:17:10,729 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:4 Value:fragment
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:5 Value:apple-mobile-web-app-capable
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:6 Value:apple-mobile-web-app-status-bar-style
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:7 Value:twitter:card
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:8 Value:twitter:site
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:9 Value:twitter:title
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:10 Value:twitter:description
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: XPath No:11 Value:twitter:image
2019-06-10 23:17:10,730 INFO o.a.j.e.J.Debug JSR223 PostProcessor: <=========================Regular XPath:END Record<=========================>
2019-06-10 23:17:10,739 INFO o.a.j.t.JMeterThread: Thread is done: Create Account Thread Group 1-1
2019-06-10 23:17:10,739 INFO o.a.j.t.JMeterThread: Thread finished: Create Account Thread Group 1-1
2019-06-10 23:17:10,740 INFO o.a.j.e.StandardJMeterEngine: Notifying test listeners of end of test
2019-06-10 23:17:10,740 INFO o.a.j.g.u.JMeterMenuBar: setRunning(false, *local*)
```

WorkShop: 2-2 RegEx for MEAN.JS

- **Setup TestPlan**

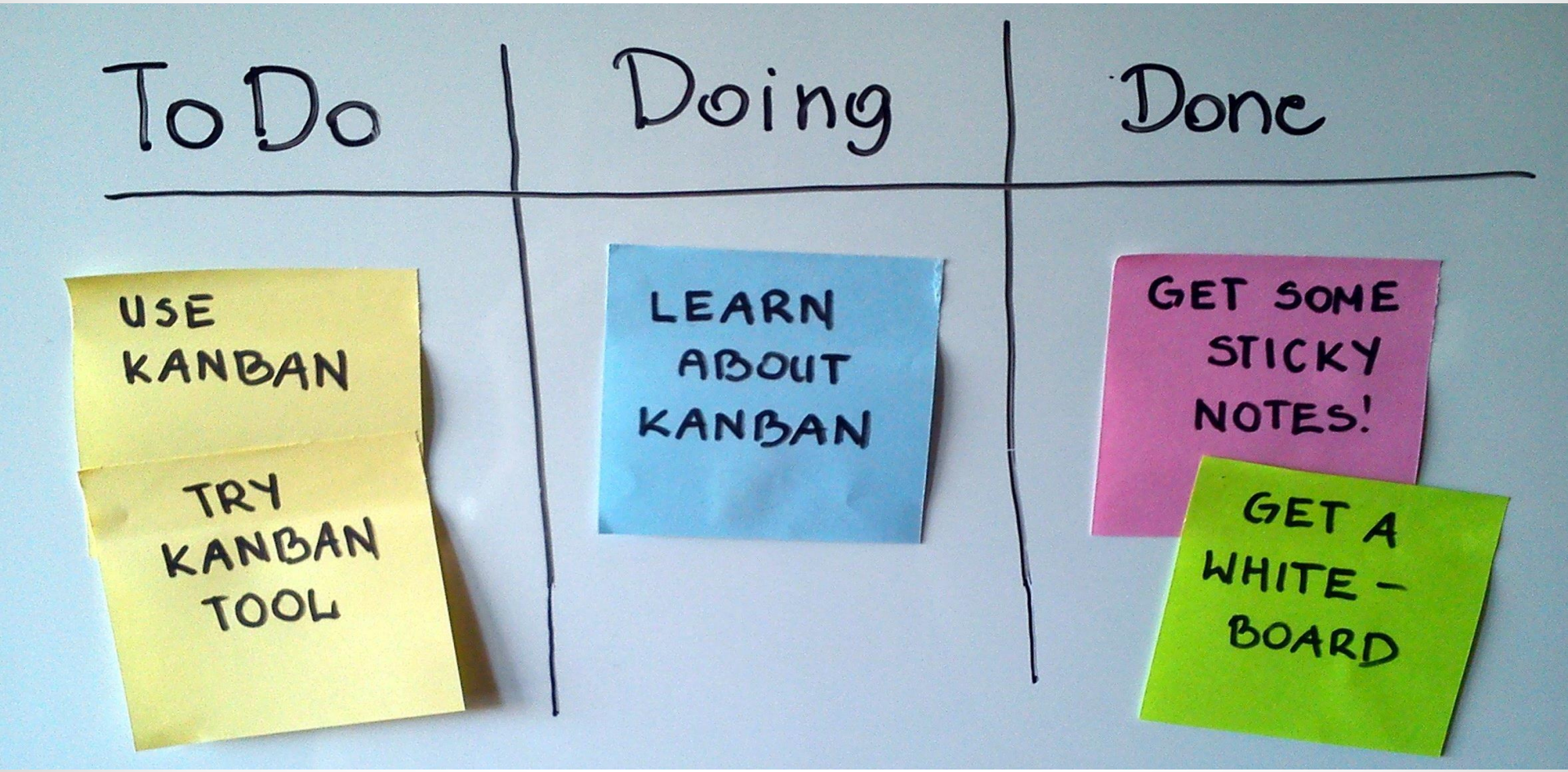
Template_MEANJS_WorkShop_2_2
HTTP Header for Android
HTTP Cookie Manager
HTTP Cache Manager
Create Account Thread Group
Simple Controller
First Page View
First Page Think Time
First Page Assertion Decise
First Page Response Assertion
First Page Assertion Duration
First Page Summary Report
First Page Response Time Grap
First Page Result Tree
Aggregate Report
Aggregate Graph
View Results in Table
First Page Regular Express Extr
First Page XPath Extractor
Debug Sampler
Debug PostProcessor
Debug JSR223 PostProcessor
View Results Tree
Second HTTP Request with RegE
User Defined Variables
JSR223 PreProcessor
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 Configure
Search: Case sensitive Regular exp. Search Reset
Text
Second HTTP Request with Re
Sampler result Request Response data
Response Body Response headers
Find Case sensitive Regular exp.

MEAN.JS

APACHE JMeter™

Full Load Test Part 2 (Complex)



WorkShop: 2-3 Full Process MEAN

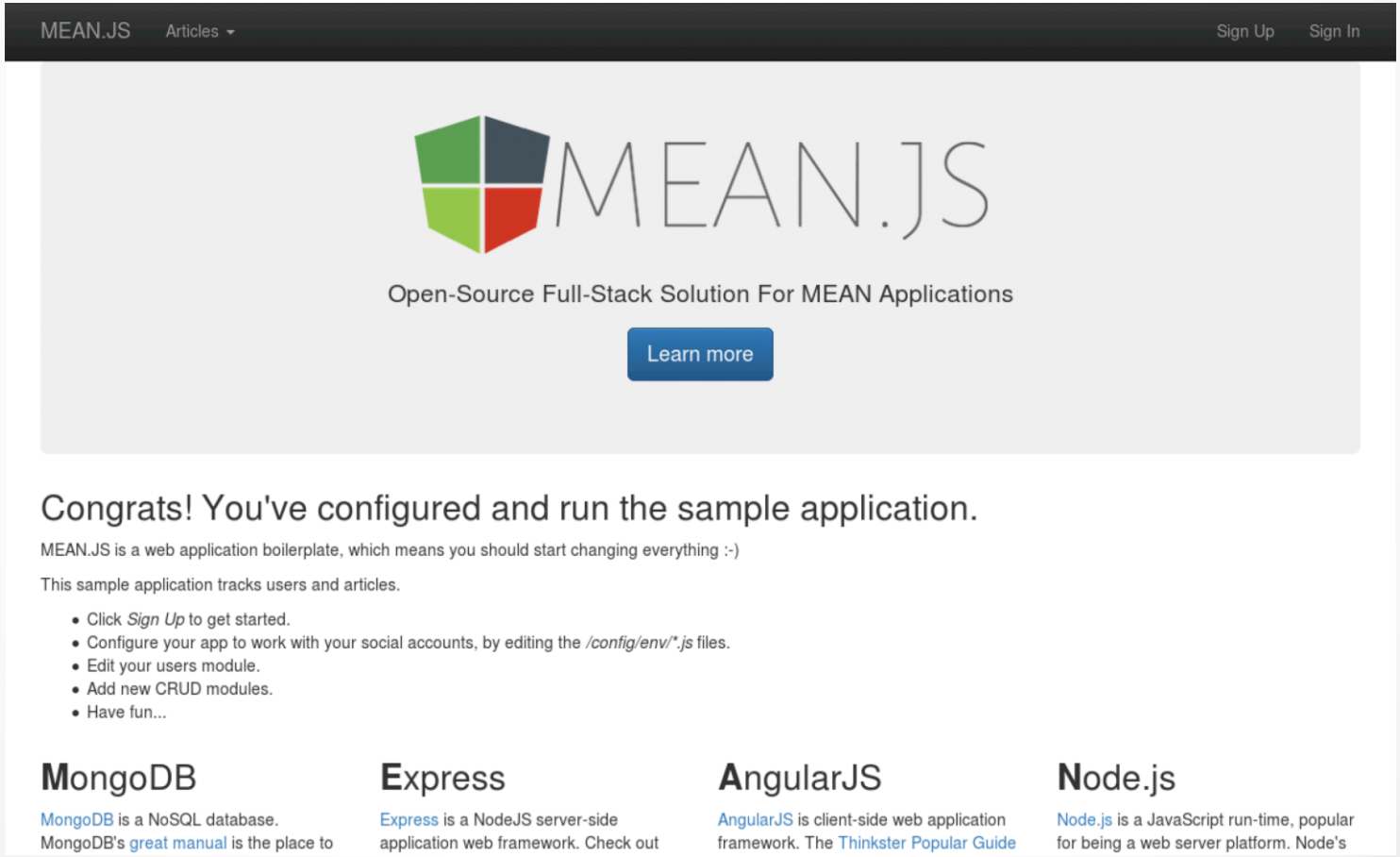
- Purpose for Test
  - Start load test on Login Page of MEAN.JS at lease 5 min duration
  - Think time vary between 200 ms – 2 seconds
  - Validate for make sure each response for make surly to get complete result
  - Simulate similar with android phone with chrome browser environment
  - Concurrent user was tested vary between 100 Users (10% of 1,000) to 1000 Users (10% of 10,000) with lamp-up period within 120 seconds until error more than 5%
  - Monitor resource of application side for tuning

WorkShop: 2-3 Full Process MEAN

- **User Journey for Create Account / Login MEANJS / Change Name&Surname**
- Phase 1: Sign Up (Similar WorkShop: 2-1) for 5000 Users Data
  - First page
  - Signup page
  - Input Information for singup
  - Select signout and redirect to mainpage
- Phase 2: Login Process
  - Login page
  - Input username/password for login
  - View account detail page
  - Change firstname/surname
    - Random view page
      - Manage social account
      - Change password
      - Change profile picture
  - Logout page
- Phase 3: CleanUp Data on MongoDB

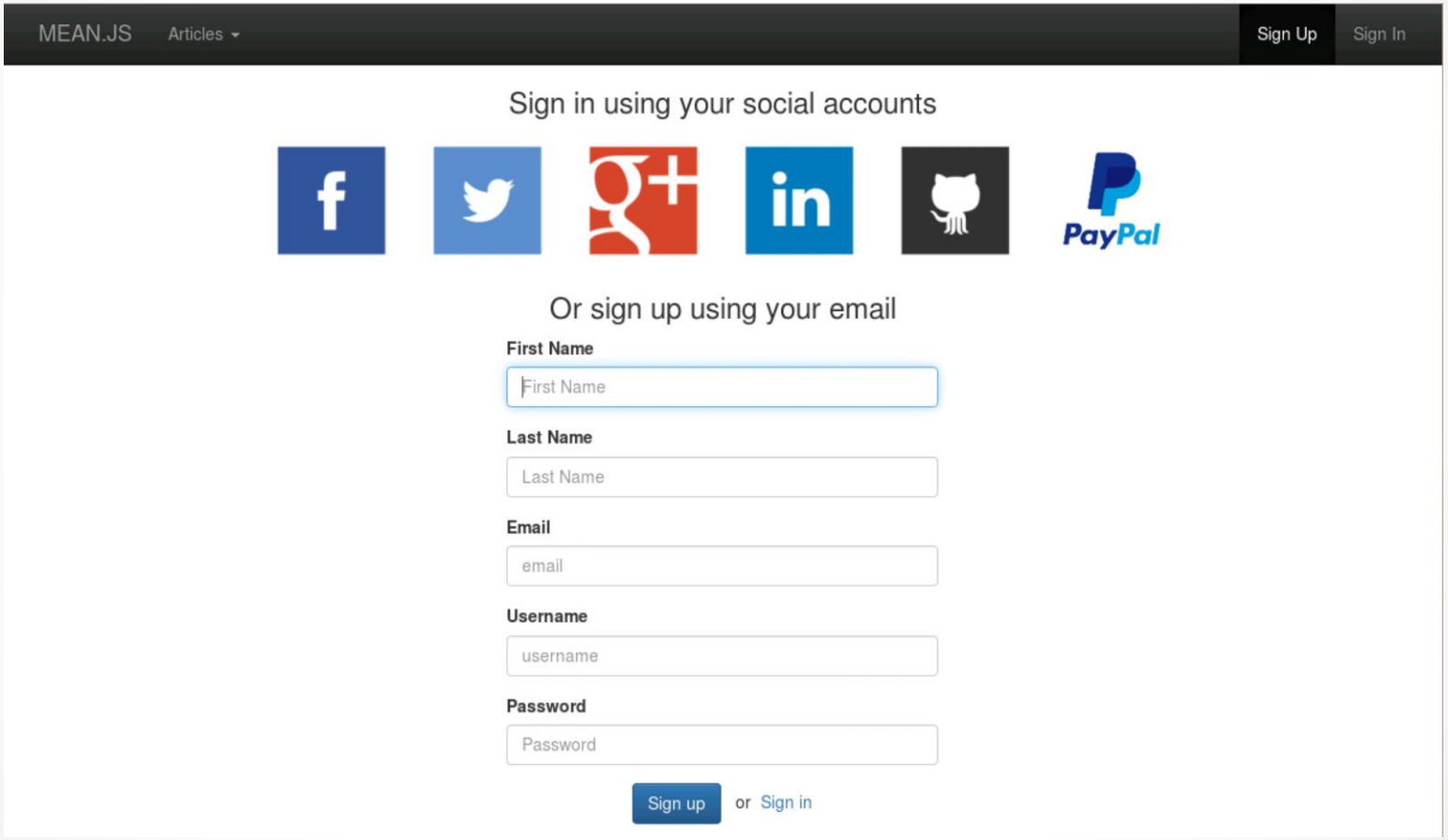
WorkShop: 2-3 Full Process MEAN

- **Phase 1**
- Step 1: Open FirstPage



WorkShop: 2-3 Full Process MEAN

- Step 2: Open Menu "SignUp"



WorkShop: 2-3 Full Process MEAN

- Step 3: Input information and SignUp

Or sign up using your email

First Name

TestName

Last Name

TestLastName

Email

test@test.test

Username

testname

Password

••••••••••••

Password Requirements

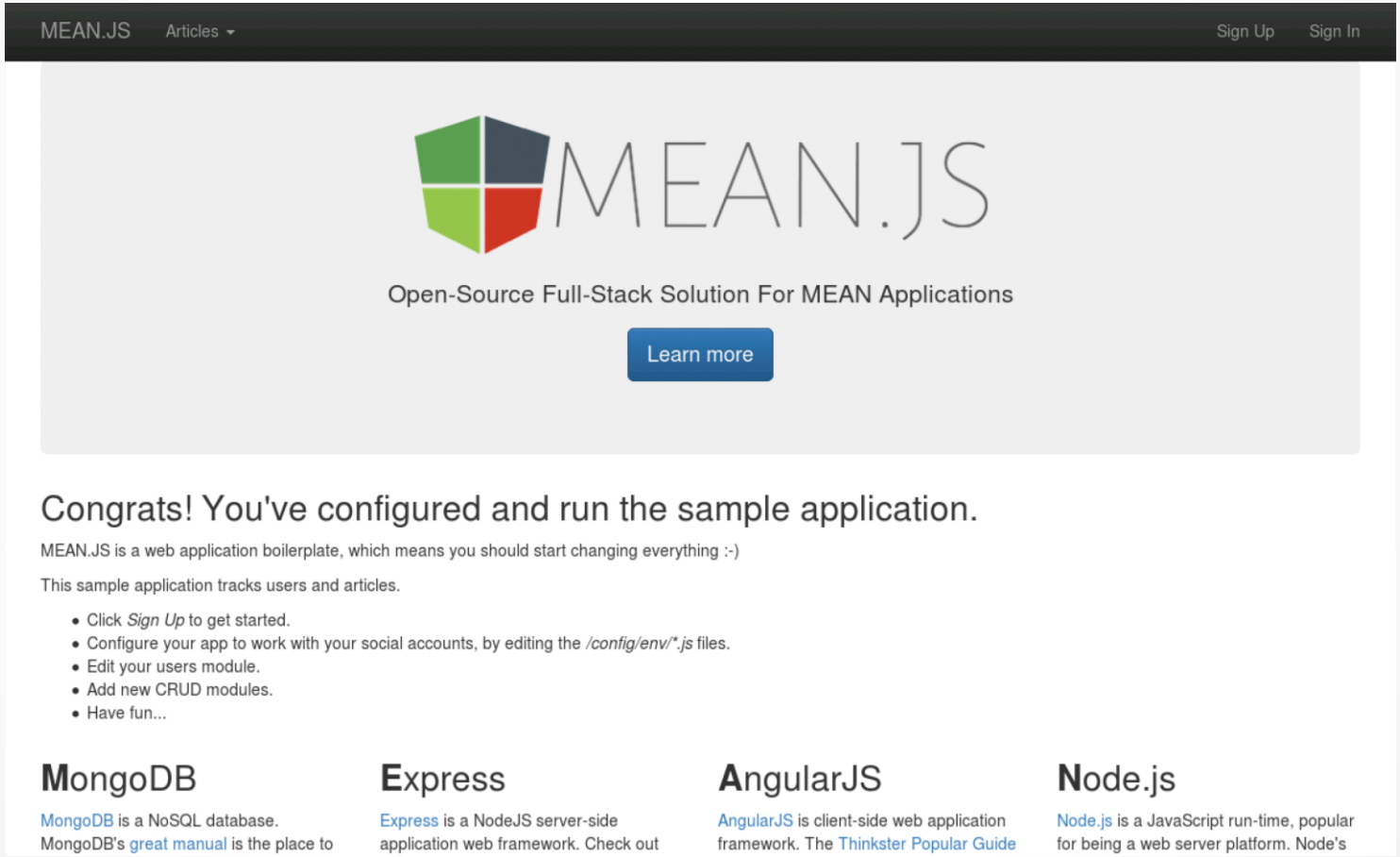
100%

WorkShop: 2-3 Full Process MEAN

- Step 4: After signup. MEAN.JS will login and back to MEAN.JS

WorkShop: 2-3 Full Process MEAN

- Step 5: Choose Signout and Back to Main page again



WorkShop: 2-3 Full Process MEAN

- **Phase1**
- Data for Load Test about 5,000 records

MEANJSData.csv - LibreOffice Calc

	A	B	C	D	E
1	firstName	lastName	email	username	password
2	Usertest_1	SurnameTest_1	Usertest_1@loadtest.com	usertest1	P@ssw0rdforTest
3	Usertest_2	SurnameTest_2	Usertest_2@loadtest.com	usertest2	P@ssw0rdforTest
4	Usertest_3	SurnameTest_3	Usertest_3@loadtest.com	usertest3	P@ssw0rdforTest
5	Usertest_4	SurnameTest_4	Usertest_4@loadtest.com	usertest4	P@ssw0rdforTest
6	Usertest_5	SurnameTest_5	Usertest_5@loadtest.com	usertest5	P@ssw0rdforTest
7	Usertest_6	SurnameTest_6	Usertest_6@loadtest.com	usertest6	P@ssw0rdforTest
8	Usertest_7	SurnameTest_7	Usertest_7@loadtest.com	usertest7	P@ssw0rdforTest
9	Usertest_8	SurnameTest_8	Usertest_8@loadtest.com	usertest8	P@ssw0rdforTest
10	Usertest_9	SurnameTest_9	Usertest_9@loadtest.com	usertest9	P@ssw0rdforTest
11	Usertest_10	SurnameTest_10	Usertest_10@loadtest.com	usertest10	P@ssw0rdforTest
12	Usertest_11	SurnameTest_11	Usertest_11@loadtest.com	usertest11	P@ssw0rdforTest
13	Usertest_12	SurnameTest_12	Usertest_12@loadtest.com	usertest12	P@ssw0rdforTest
14	Usertest_13	SurnameTest_13	Usertest_13@loadtest.com	usertest13	P@ssw0rdforTest
15	Usertest_14	SurnameTest_14	Usertest_14@loadtest.com	usertest14	P@ssw0rdforTest

……

WorkShop: 2-3 Full Process MEAN

- **Phase2**
- Step1: Open SignIn page

MEAN.JS Articles Sign Up Sign In

Sign in using your social accounts

Or with your account

Username or Email

Username or Email

Password

Password

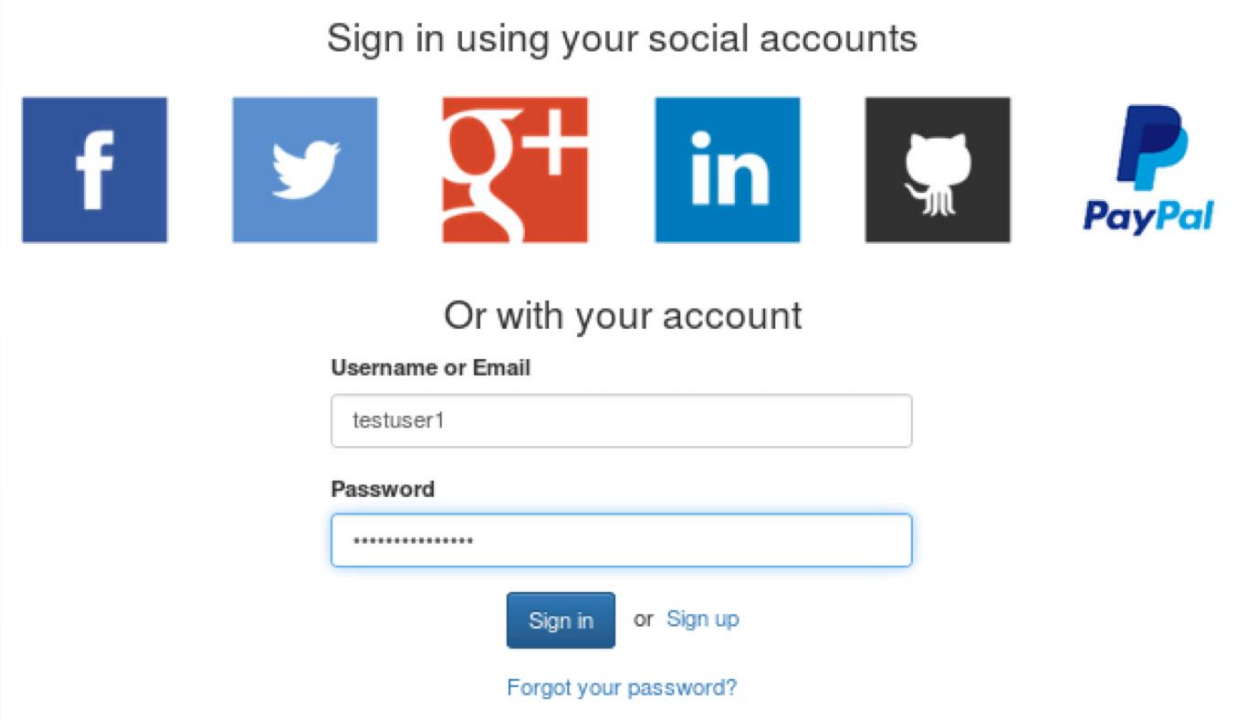
Sign in or Sign up

Forgot your password?

APACHE JMeter™

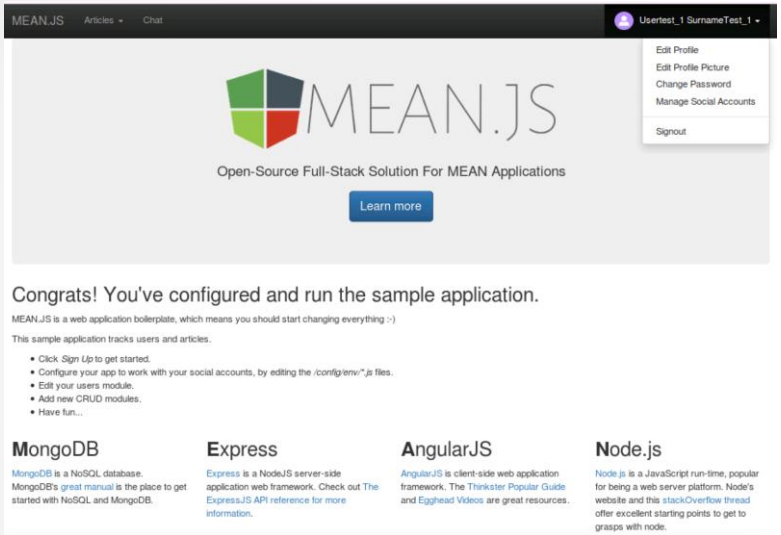
WorkShop: 2-3 Full Process MEAN

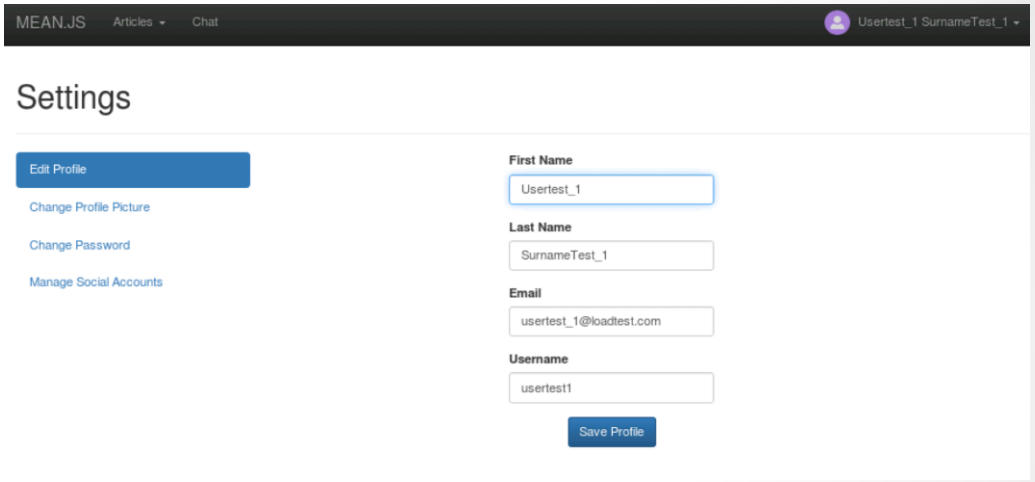
- **Phase2**
- Step2: Input username/password and Sign in



WorkShop: 2-3 Full Process MEAN

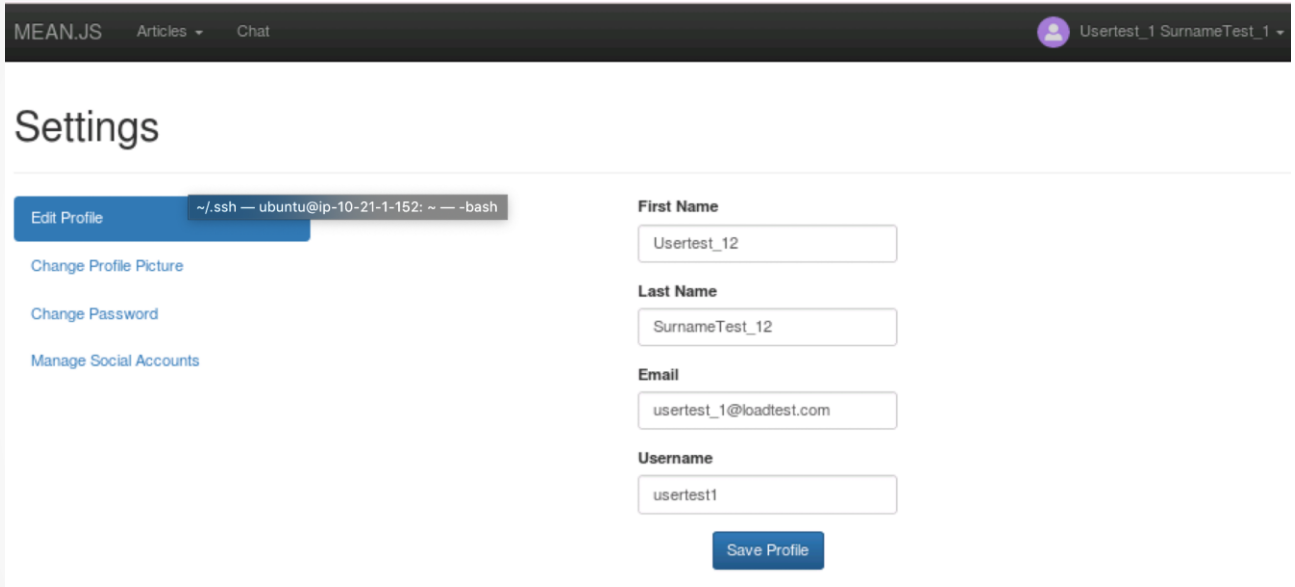
- **Phase2**
- Step3: Open view account profile page

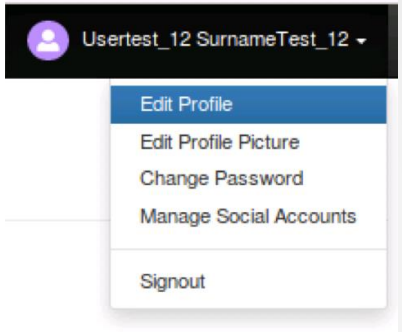




WorkShop: 2-3 Full Process MEAN

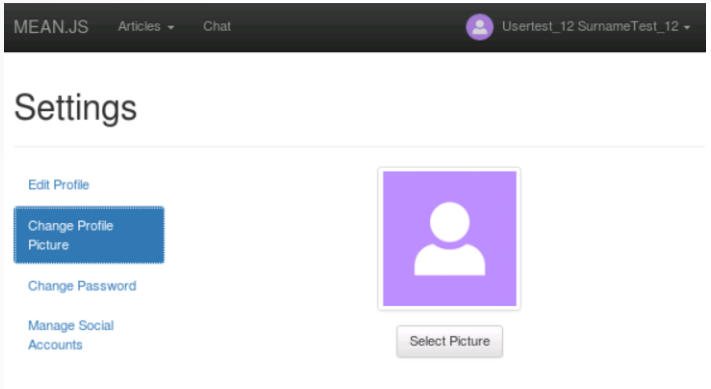
- **Phase2**
- Step4: Change Name / Surname and Save Profile

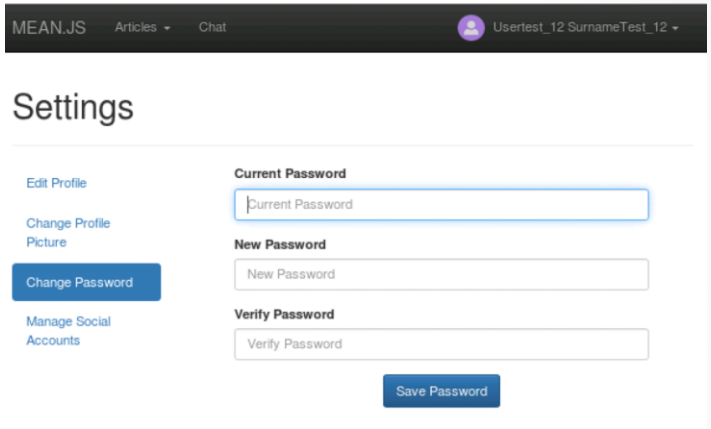


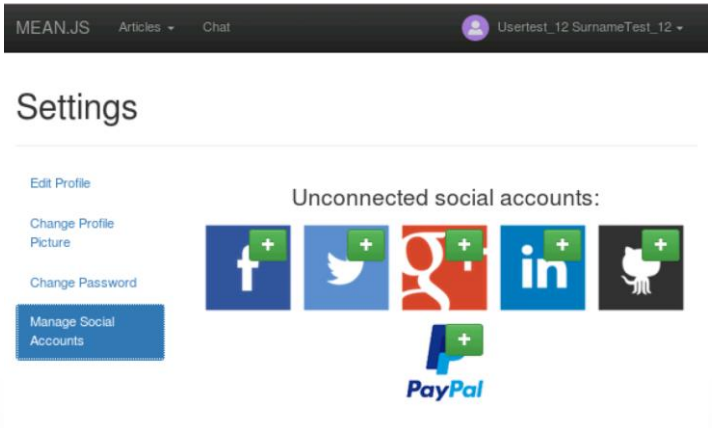


WorkShop: 2-3 Full Process MEAN

- **Phase2**
- Step5: Random View Page (Select 1 of 3) for each user

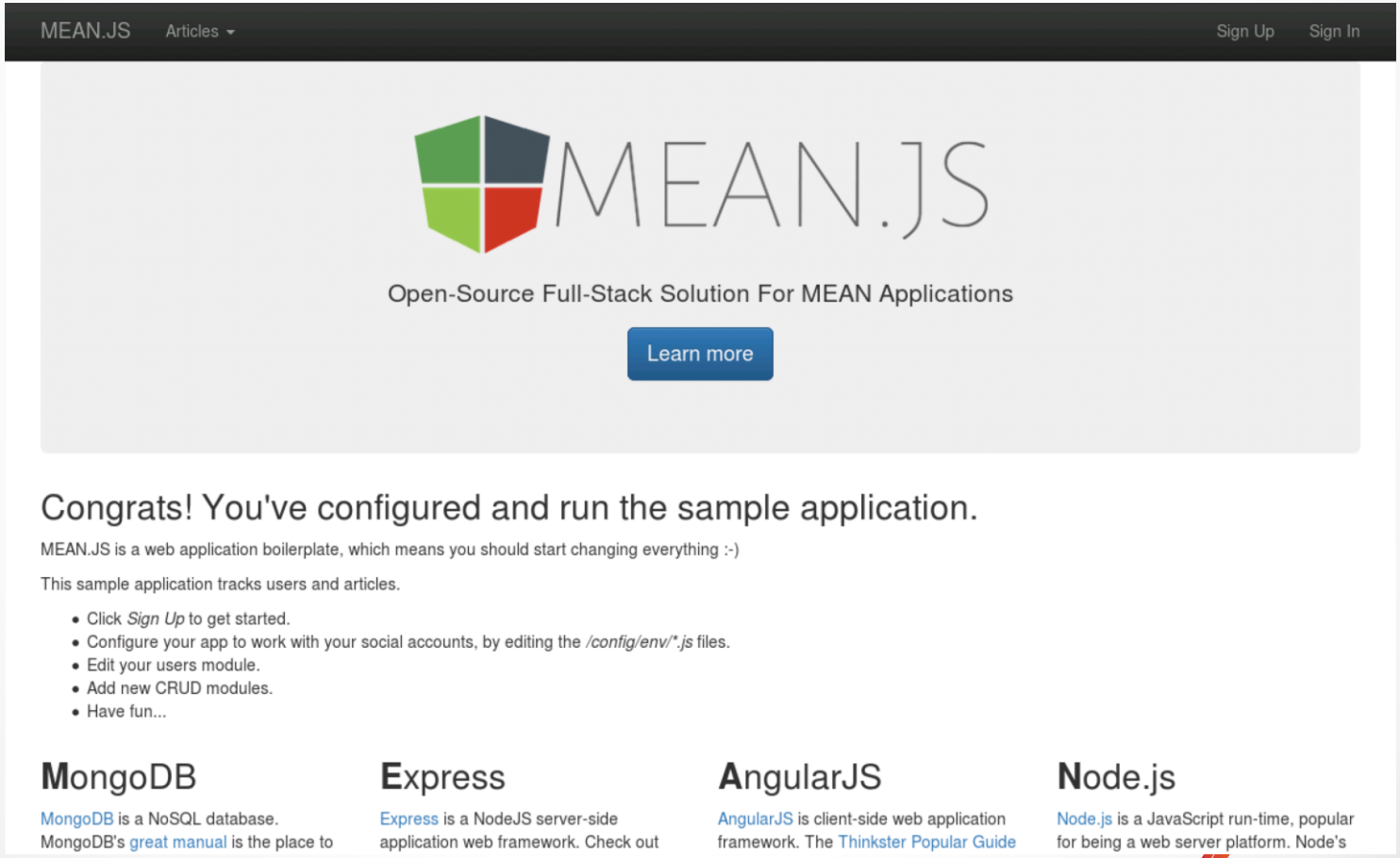






WorkShop: 2-3 Full Process MEAN

- **Phase3**
- Step1: Select Singout from Menu and Back to Main Page again



WorkShop: 2-3 Full Process MEAN

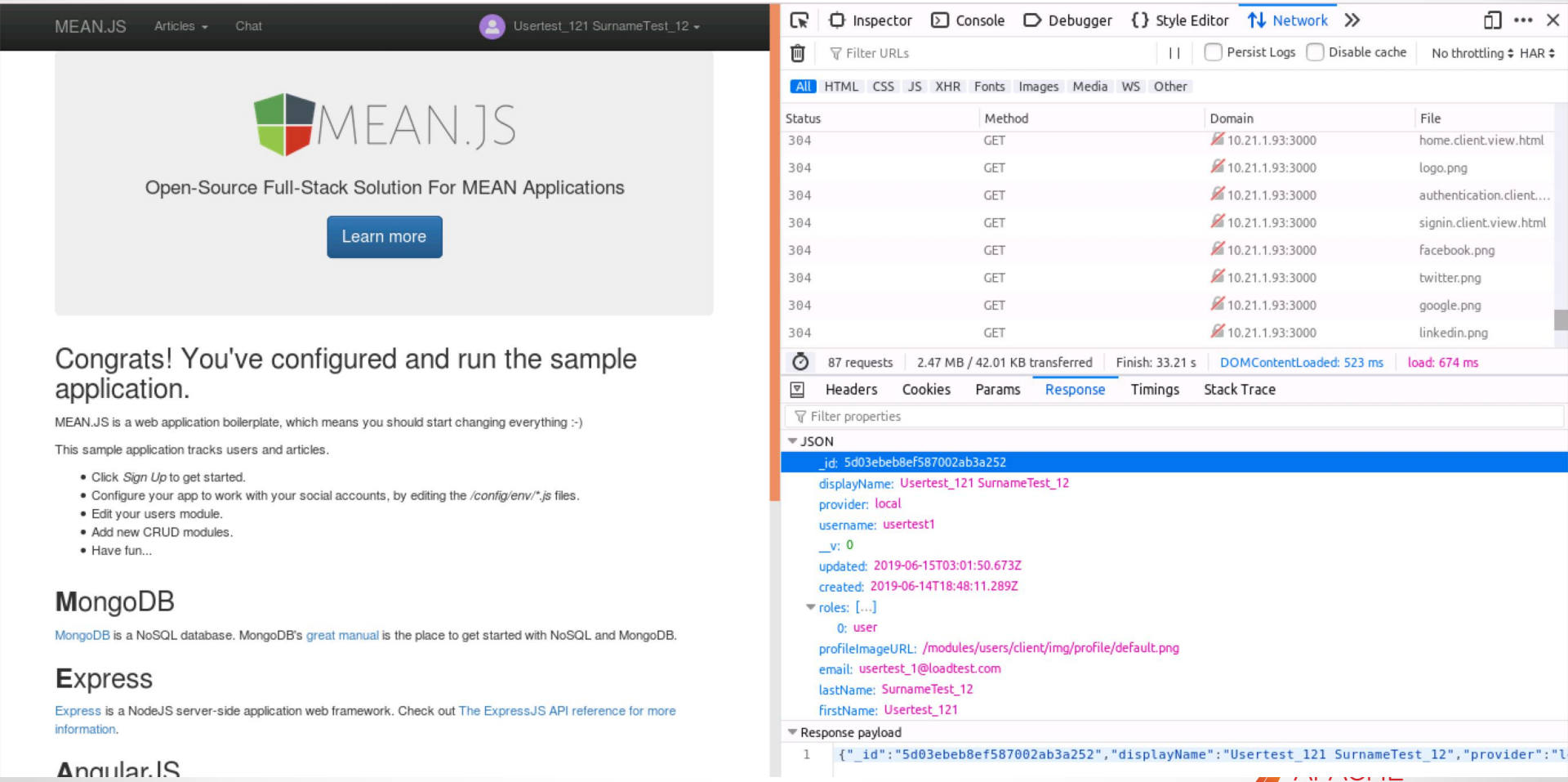
- **Setup Test Plan (Phase 2)**
- Data for change firstname, lastname about 5000 records

MEANJSData_Modified.csv - LibreOffice Calc

	A	B	C	D	E	F	G
1	firstName	lastName	email	username	password	firstName2	lastName2
2	Usertest_1	SurnameTest_1	Usertest_1@loadtest.com	usertest1	P@ssw0rdforTest	Usertest_12	SurnameTest_12
3	Usertest_2	SurnameTest_2	Usertest_2@loadtest.com	usertest2	P@ssw0rdforTest	Usertest_22	SurnameTest_22
4	Usertest_3	SurnameTest_3	Usertest_3@loadtest.com	usertest3	P@ssw0rdforTest	Usertest_32	SurnameTest_32
5	Usertest_4	SurnameTest_4	Usertest_4@loadtest.com	usertest4	P@ssw0rdforTest	Usertest_42	SurnameTest_42
6	Usertest_5	SurnameTest_5	Usertest_5@loadtest.com	usertest5	P@ssw0rdforTest	Usertest_52	SurnameTest_52
7	Usertest_6	SurnameTest_6	Usertest_6@loadtest.com	usertest6	P@ssw0rdforTest	Usertest_62	SurnameTest_62
8	Usertest_7	SurnameTest_7	Usertest_7@loadtest.com	usertest7	P@ssw0rdforTest	Usertest_72	SurnameTest_72
9	Usertest_8	SurnameTest_8	Usertest_8@loadtest.com	usertest8	P@ssw0rdforTest	Usertest_82	SurnameTest_82
10	Usertest_9	SurnameTest_9	Usertest_9@loadtest.com	usertest9	P@ssw0rdforTest	Usertest_92	SurnameTest_92
11	Usertest_10	SurnameTest_10	Usertest_10@loadtest.com	usertest10	P@ssw0rdforTest	Usertest_102	SurnameTest_102
12	Usertest_11	SurnameTest_11	Usertest_11@loadtest.com	usertest11	P@ssw0rdforTest	Usertest_112	SurnameTest_112
13	Usertest_12	SurnameTest_12	Usertest_12@loadtest.com	usertest12	P@ssw0rdforTest	Usertest_122	SurnameTest_122
14	Usertest_13	SurnameTest_13	Usertest_13@loadtest.com	usertest13	P@ssw0rdforTest	Usertest_132	SurnameTest_132
15	Usertest_14	SurnameTest_14	Usertest_14@loadtest.com	usertest14	P@ssw0rdforTest	Usertest_142	SurnameTest_142
16	Usertest_15	SurnameTest_15	Usertest_15@loadtest.com	usertest15	P@ssw0rdforTest	Usertest_152	SurnameTest_152
17	Usertest_16	SurnameTest_16	Usertest_16@loadtest.com	usertest16	P@ssw0rdforTest	Usertest_162	SurnameTest_162
18	Usertest_17	SurnameTest_17	Usertest_17@loadtest.com	usertest17	P@ssw0rdforTest	Usertest_172	SurnameTest_172
19	Usertest_18	SurnameTest_18	Usertest_18@loadtest.com	usertest18	P@ssw0rdforTest	Usertest_182	SurnameTest_182
20	Usertest_19	SurnameTest_19	Usertest_19@loadtest.com	usertest19	P@ssw0rdforTest	Usertest_192	SurnameTest_192
21	Usertest_20	SurnameTest_20	Usertest_20@loadtest.com	usertest20	P@ssw0rdforTest	Usertest_202	SurnameTest_202
22	Usertest_21	SurnameTest_21	Usertest_21@loadtest.com	usertest21	P@ssw0rdforTest	Usertest_212	SurnameTest_212
23	Usertest_22	SurnameTest_22	Usertest_22@loadtest.com	usertest22	P@ssw0rdforTest	Usertest_222	SurnameTest_222
24	Usertest_23	SurnameTest_23	Usertest_23@loadtest.com	usertest23	P@ssw0rdforTest	Usertest_232	SurnameTest_232
25	Usertest_24	SurnameTest_24	Usertest_24@loadtest.com	usertest24	P@ssw0rdforTest	Usertest_242	SurnameTest_242

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- When login process success. MEAN.JS will return _id for ref.



WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Any update information on MEAN.JS will use this _id for ref.

MEAN.JS Articles Chat Usertest_12 SurnameTest_12

Settings

Edit Profile
Change Profile Picture
Change Password
Manage Social Accounts

First Name: Usertest_12
Last Name: SurnameTest_12
Email: usertest_1@loadtest.com
Username: usertest1

Save Profile

Inspector | Console | Debugger | Style Editor | Network

Filter URLs | Persist Logs | Disable cache | No throttling | HAR

All | HTML | CSS | JS | XHR | Fonts | Images | Media | WS | Other

Status	Method	Domain	File
304	GET	10.21.1.93:3000	paypal.png
422	POST	10.21.1.93:3000	signin
200	POST	10.21.1.93:3000	signin
304	GET	10.21.1.93:3000	logo.png
304	GET	10.21.1.93:3000	default.png
304	GET	10.21.1.93:3000	settings.client.view.h...
304	GET	10.21.1.93:3000	edit-profile.client.vie...
200	PUT	10.21.1.93:3000	users

90 requests | 2.48 MB / 42.78 KB transferred | Finish: 2.49 min | DOMContentLoaded: 523 ms | load: 674 ms

Headers | Cookies | Params | Response | Timings | Stack Trace

Filter request parameters

JSON

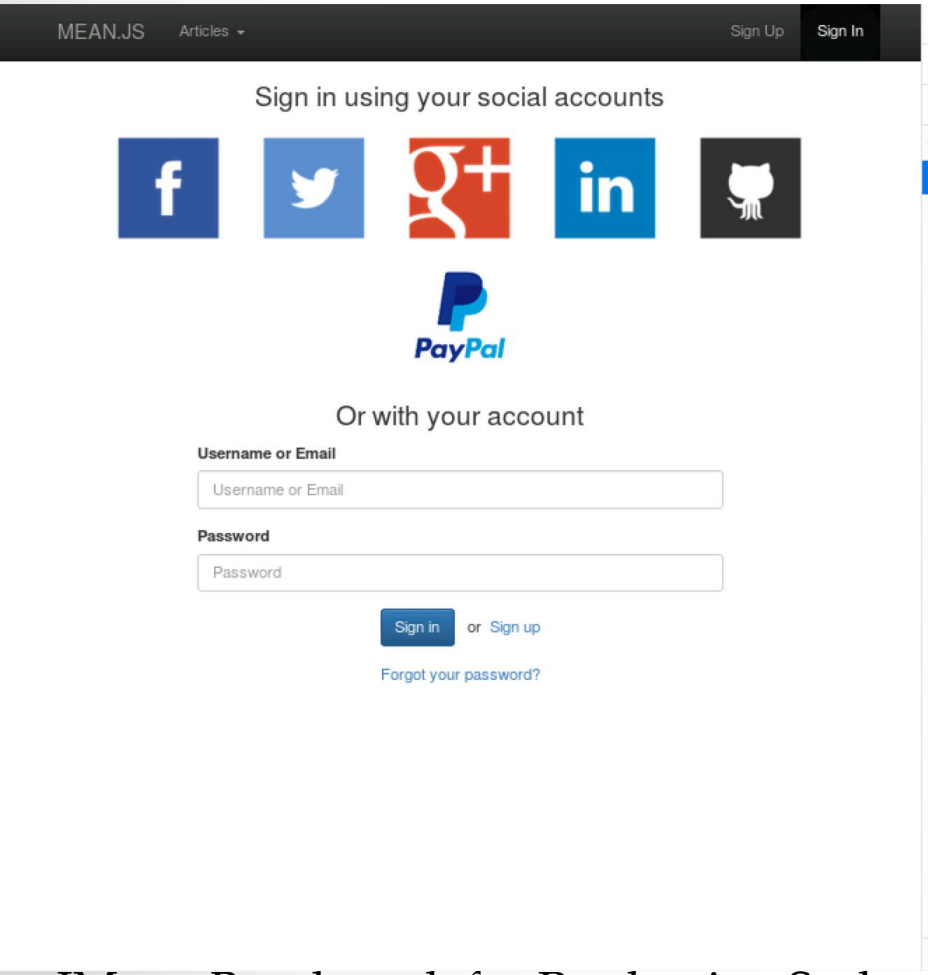
```
__v: 0
_id: 5d03ebeb8ef587002ab3a252
created: 2019-06-14T18:48:11.289Z
displayName: Usertest_121 SurnameTest_12
email: usertest_1@loadtest.com
firstName: Usertest_12
lastName: SurnameTest_12
profileImageURL: /modules/users/client/img/profile/default.png
provider: local
roles: [...]
  0: user
updated: 2019-06-15T03:01:50.673Z
username: usertest1
```

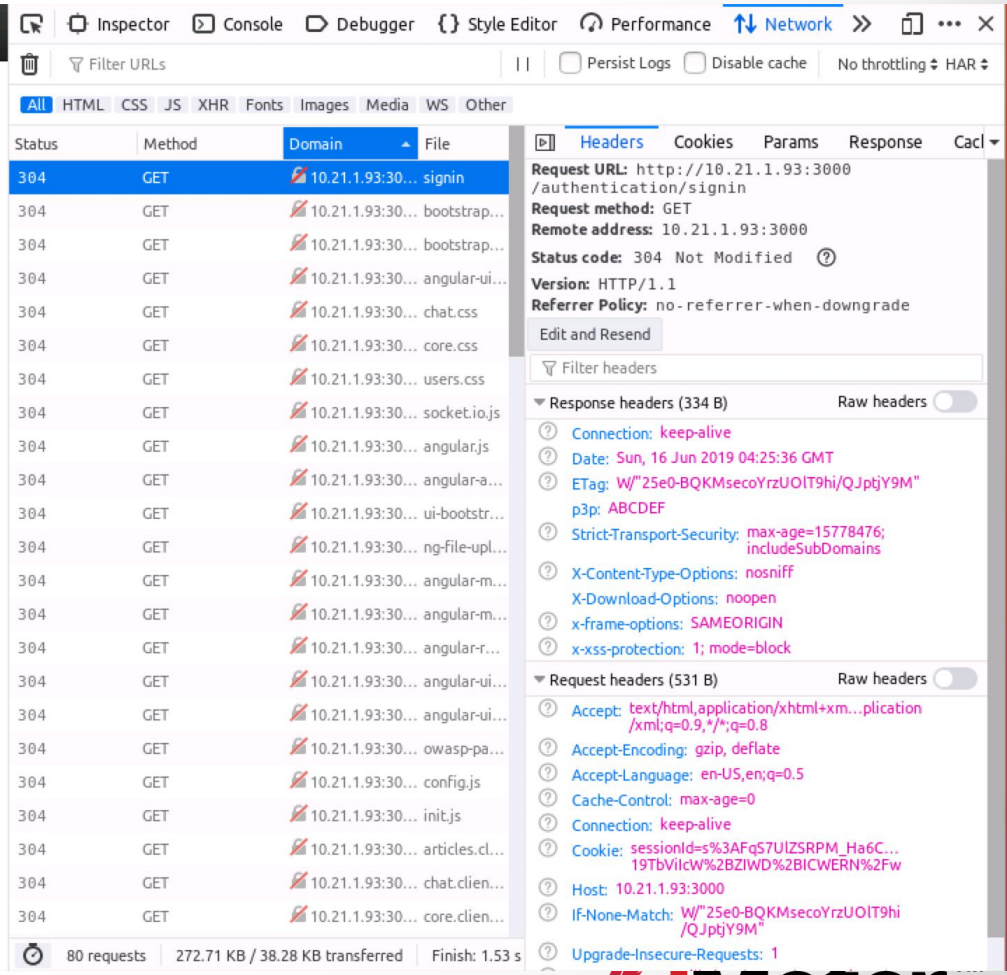
Request payload

```
1 {"_id":"5d03ebeb8ef587002ab3a252","displayName":"Usertest_121 SurnameTest_12","provider":"l
```

WorkShop: 2-3 Full Process MEAN

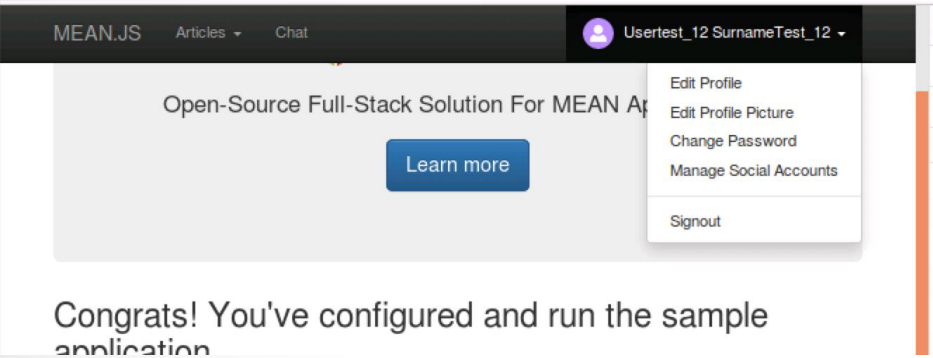
- **Setup Test Plan (Phase 2)**
- Detail in post form: http://x.x.x.x/authentication/signin

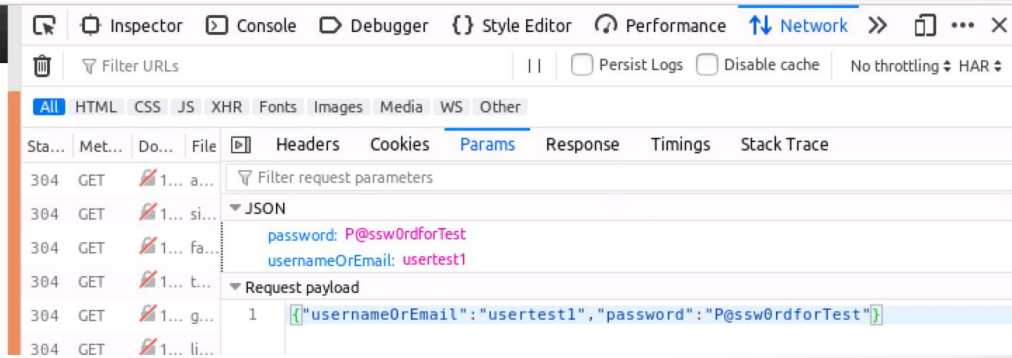




WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Detail in post form (Login):
  - usernameOrEmail: <xxxxxx>
  - password: <xxxxxx>



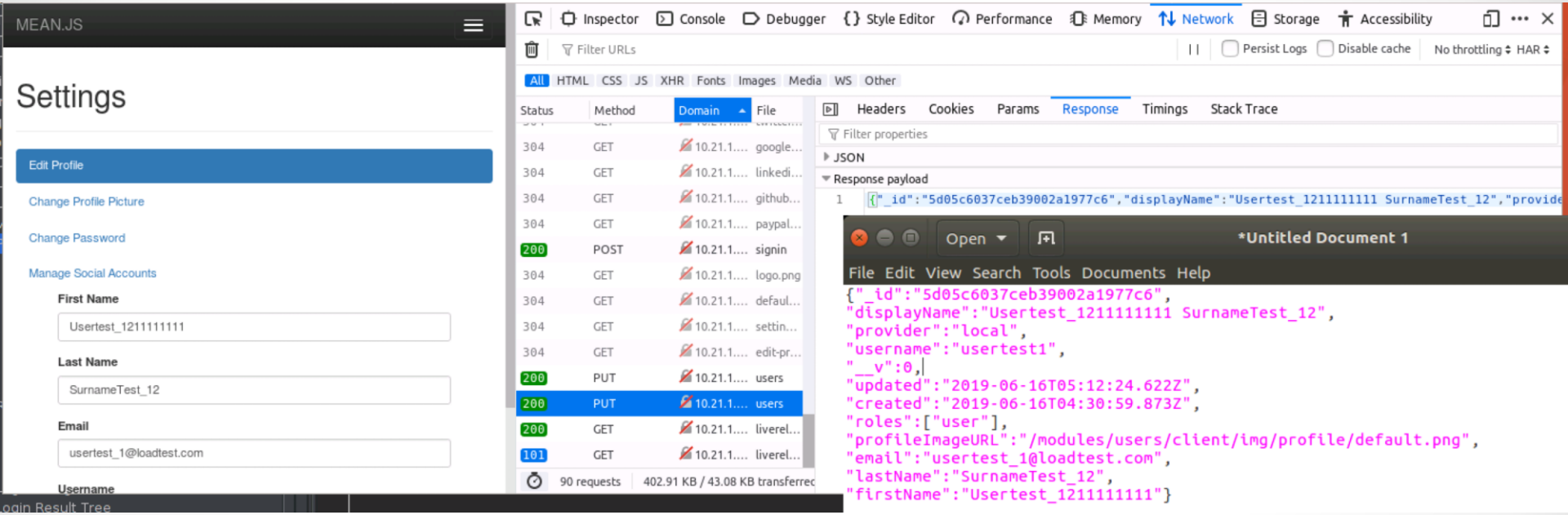


WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Detail in post form (Edit Profile):
  - id: <xxxxxx>
  - displayName: <xxxxxx>
  - provider: <xxxxxx>
  - username: <xxxxxx>
  - __v: <xxxxxx>
  - email: <xxxxxxx>
  - lastname: <xxxxxxx>
  - firstname: <xxxxxxx>

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**



WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Import CSV2 for retrieve variable

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:11:41 0 0/1

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
    - SignUp While Controller
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
        - HTTP Header manager
        - Login ThinkTime
        - Login View Response Code Assertion
        - Login View Response Assertion
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login Duration Assertion
      - Login Post Data
      - View Setting Profile
      - Random Controller ViewPage
      - Post Setting Profile
      - Logout Page
      - Login Result Tree
      - Login Response Time
      - Login Result Table
      - Login Summary Report
  - tearDown Thread Group
  - View Results Tree
  - Summary Report
  - Response Time Graph

CSV Data Set Config

Name: CSV Data Set2 Config

Comments:

Configure the CSV Data Source

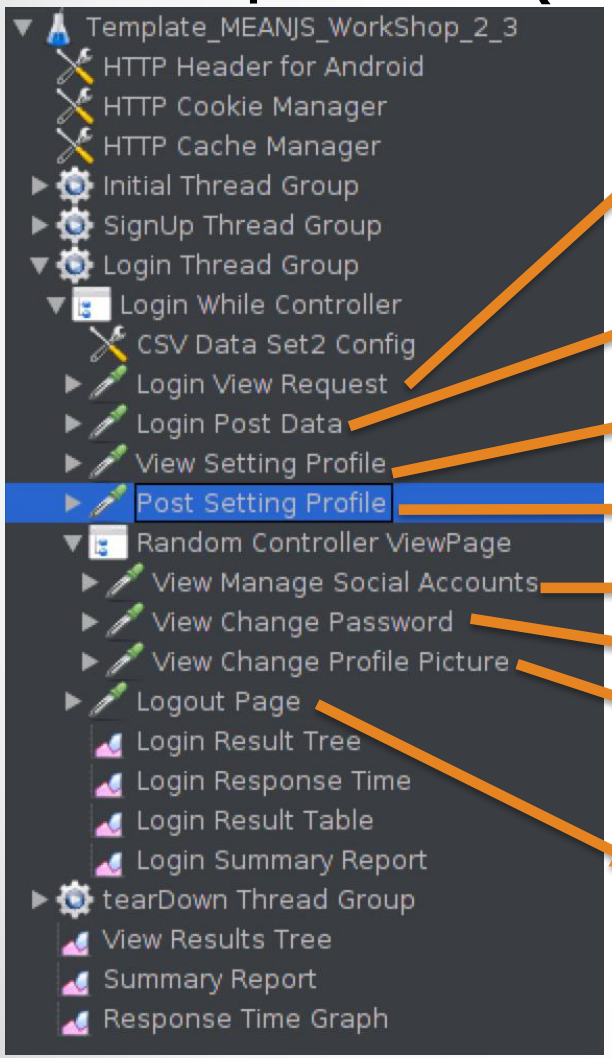
Filename:	/home/ubuntu/jmeter-workshop-062019/jmeter/MEANJSData_Modified.csv
File encoding:	UTF-8
Variable Names (comma-delimited):	firstName,lastName,email,username,password,firstName2,lastName2
Ignore first line (only used if Variable Names is not empty):	True
Delimiter (use '\t' for tab):	,
Allow quoted data?:	False
Recycle on EOF ?:	False
Stop thread on EOF ?:	True
Sharing mode:	All threads

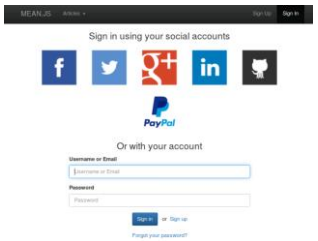
WorkShop: 2-3 Full Process MEAN

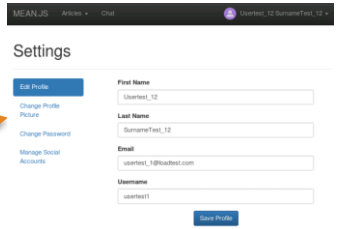
- **Setup Test Plan (Phase 2)**
- Create 3 Part of Activity, 1 Signout
  - Login Part
    - Login Page (Get Login Page)
    - Login Post Page (Post username/password to MEAN.JS)
  - Setting Profile
    - Setting profile (Get Setting Page)
    - Setting Post profile (Post update information to MEAN.JS)
  - View Page (Random)
    - Social Account Page (Get Social Account Page)
    - Change Password Page (Get Change Password Page)
    - View Picture Page (Get Picture Profile Page)
  - SignOut

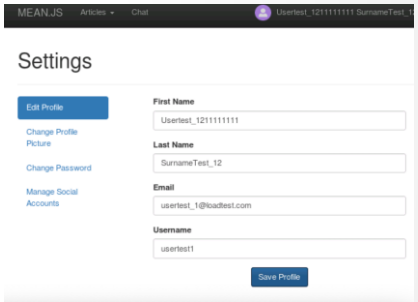
WorkShop: 2-3 Full Process MEAN

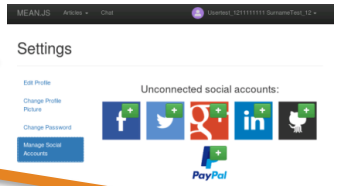
- **Setup Test Plan (Phase 2)**

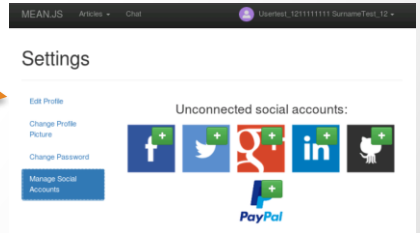


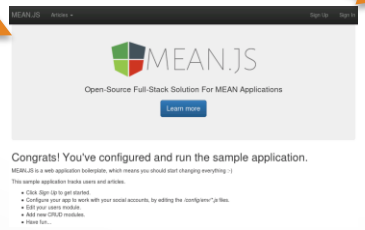


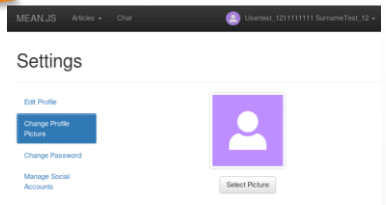












JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Import CSV2 for retrieve variable

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:11:41 0 0/1

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
    - SignUp While Controller
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
        - HTTP Header manager
        - Login ThinkTime
        - Login View Response Code Assertion
        - Login View Response Assertion
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login Duration Assertion
      - Login Post Data
      - View Setting Profile
      - Random Controller ViewPage
      - Post Setting Profile
      - Logout Page
      - Login Result Tree
      - Login Response Time
      - Login Result Table
      - Login Summary Report
  - tearDown Thread Group
  - View Results Tree
  - Summary Report
  - Response Time Graph

CSV Data Set Config

Name: CSV Data Set2 Config

Comments:

Configure the CSV Data Source

Filename:	/home/ubuntu/jmeter-workshop-062019/jmeter/MEANJSData_Modified.csv
File encoding:	UTF-8
Variable Names (comma-delimited):	firstName,lastName,email,username,password,firstName2,lastName2
Ignore first line (only used if Variable Names is not empty):	True
Delimiter (use '\t' for tab):	,
Allow quoted data?:	False
Recycle on EOF ?:	False
Stop thread on EOF ?:	True
Sharing mode:	All threads

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Login Post Data

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:20 0 114/2

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
      - Login Post Data
        - HTTP Header manager
        - Login Post Think Time
        - Login Post Response Code Assertion
        - Login Post Response Assertion
        - Login JSON Extractor Session ID
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login Post Duration Assertion

HTTP Request

Name: Login Post Data

Comments:

Basic | Advanced

Web Server

Protocol [http]: http Server Name or IP: ${BaseIP} Port Number: MeanPort}

HTTP Request

Method: POST Path: api/auth/signin Content encoding:

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

Parameters | Body Data | Files Upload

```
1 {"usernameOrEmail":"${username}","password":"${password}"}
```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WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- View Setting Profile

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:05:27 0 78/50

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
      - Login Post Data
        - HTTP Header manager
        - Login Post Think Time
        - Login Post Response Code Assertion
        - Login Post Response Assertion
        - Login JSON Extractor Session ID
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login Post Duration Assertion
      - View Setting Profile

HTTP Request

Name: View Setting Profile

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: MeanPort}

HTTP Request

Method: GET | Path: settings/profile | Content encoding:

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

Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

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WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- View Setting Profile

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:05:27 0 78/50

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
      - Login Post Data
        - HTTP Header manager
        - Login Post Think Time
        - Login Post Response Code Assertion
        - Login Post Response Assertion
        - Login JSON Extractor Session ID
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login Post Duration Assertion
      - View Setting Profile

HTTP Request

Name: View Setting Profile

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: MeanPort}

HTTP Request

Method: GET | Path: settings/profile | Content encoding:

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

Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

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WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Post Setting Profile

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:06:59 0 300/5

- Template_MEANJS_WorkShop_2_3
  - HTTP Header for Android
  - HTTP Cookie Manager
  - HTTP Cache Manager
  - Initial Thread Group
  - SignUp Thread Group
  - Login Thread Group
    - Login While Controller
      - CSV Data Set2 Config
      - Login View Request
      - Login Post Data
      - View Setting Profile
      - Post Setting Profile
        - Post Setting Think Time
        - HTTP Header manager
        - Login View Response Code Assertion
        - Login View Response Assertion
        - Size Assertion Minimum
        - Size Assertion Maximum
        - Login View Duration Assertion
    - Random Controller ViewPage
    - Logout Page
    - Login Result Tree
    - Login Response Time
    - Login Result Table
    - Login Summary Report

HTTP Request

Name: Post Setting Profile

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: MeanPort}

HTTP Request

Method: PUT | Path: api/users | Content encoding:

☐ Redirect Automatically ☑ Follow Redirects ☑ Use KeepAlive ☐ Use multipart/form-data ☐ Browser-compatible headers

Parameters | Body Data | Files Upload

```
1 {"_id":"${idextract}","displayName":"${firstName} ${lastName}","provider":"local","username":
"${username}","__v":0,"email":"${email}","lastName":"${lastName2}","firstName":"${firstName2}"}
```


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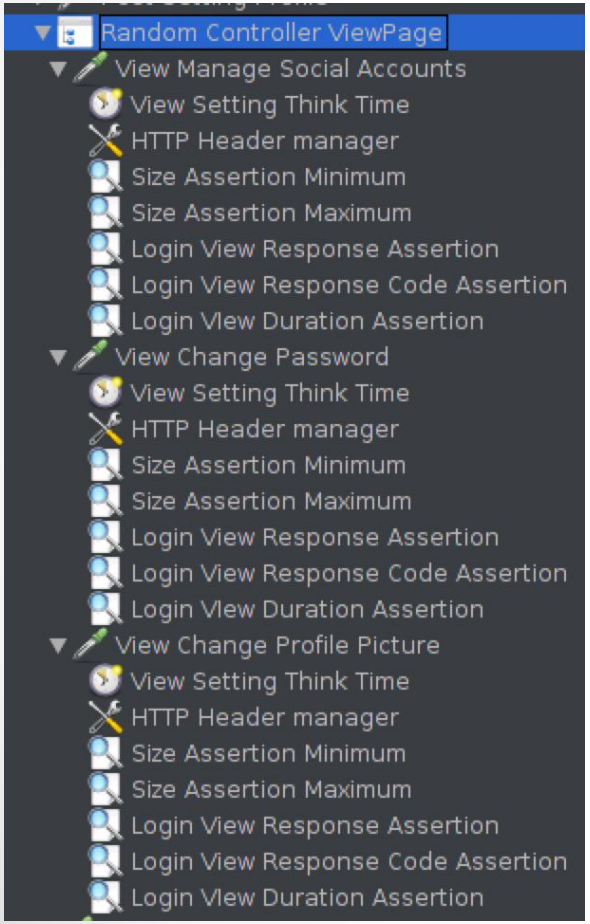
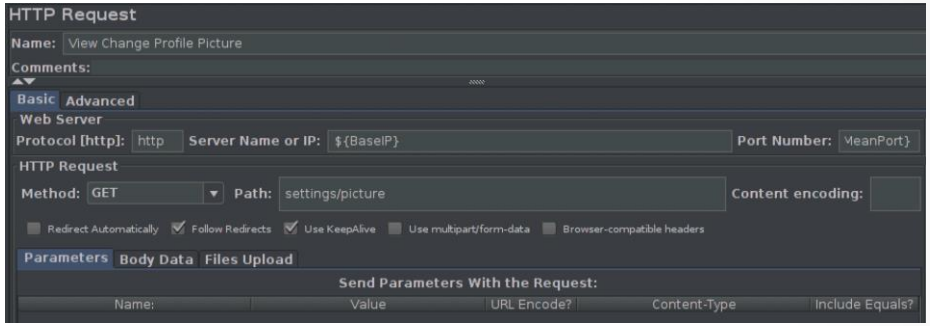
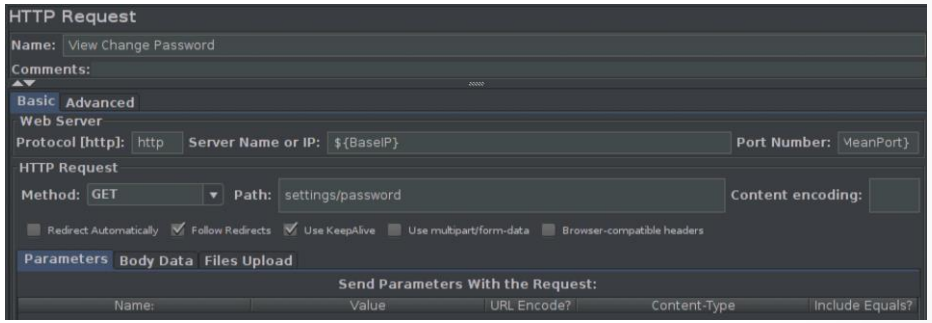
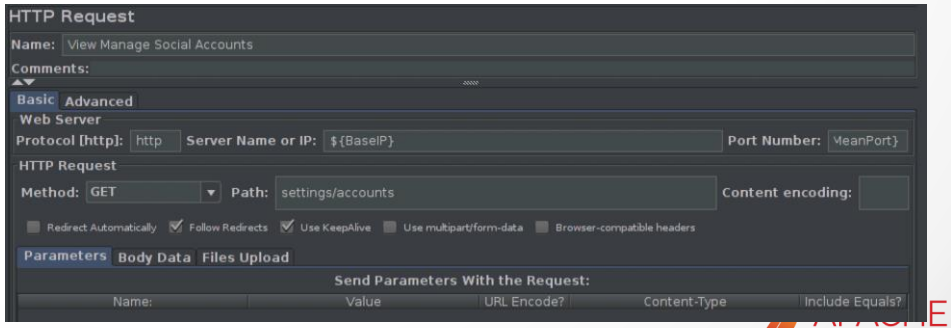
WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Random View Page









WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Logout Page

Template_MEANJS_Workshop_2_3.jmx (/home/ubuntu/jmeter-workshop-062019/jmeter/Template_MEANJS_Workshop_2_3.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:10:16 0 300/5

- View Setting Profile
- Post Setting Profile
- Random Controller ViewPage
  - View Manage Social Accounts
    - View Setting Think Time
    - HTTP Header manager
    - Size Assertion Minimum
    - Size Assertion Maximum
    - Login View Response Assertion
    - Login View Response Code Assertion
    - Login View Duration Assertion
  - View Change Password
    - View Setting Think Time
    - HTTP Header manager
    - Size Assertion Minimum
    - Size Assertion Maximum
    - Login View Response Assertion
    - Login View Response Code Assertion
    - Login View Duration Assertion
  - View Change Profile Picture
    - View Setting Think Time
    - HTTP Header manager
    - Size Assertion Minimum
    - Size Assertion Maximum
    - Login View Response Assertion
    - Login View Response Code Assertion
    - Login View Duration Assertion
  - Logout Page

HTTP Request

Name: Logout Page

Comments:

Basic | Advanced

Web Server

Protocol [http]: http | Server Name or IP: ${BaseIP} | Port Number: MeanPort}

HTTP Request

Method: GET | Path: api/auth/signout | Content encoding:

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

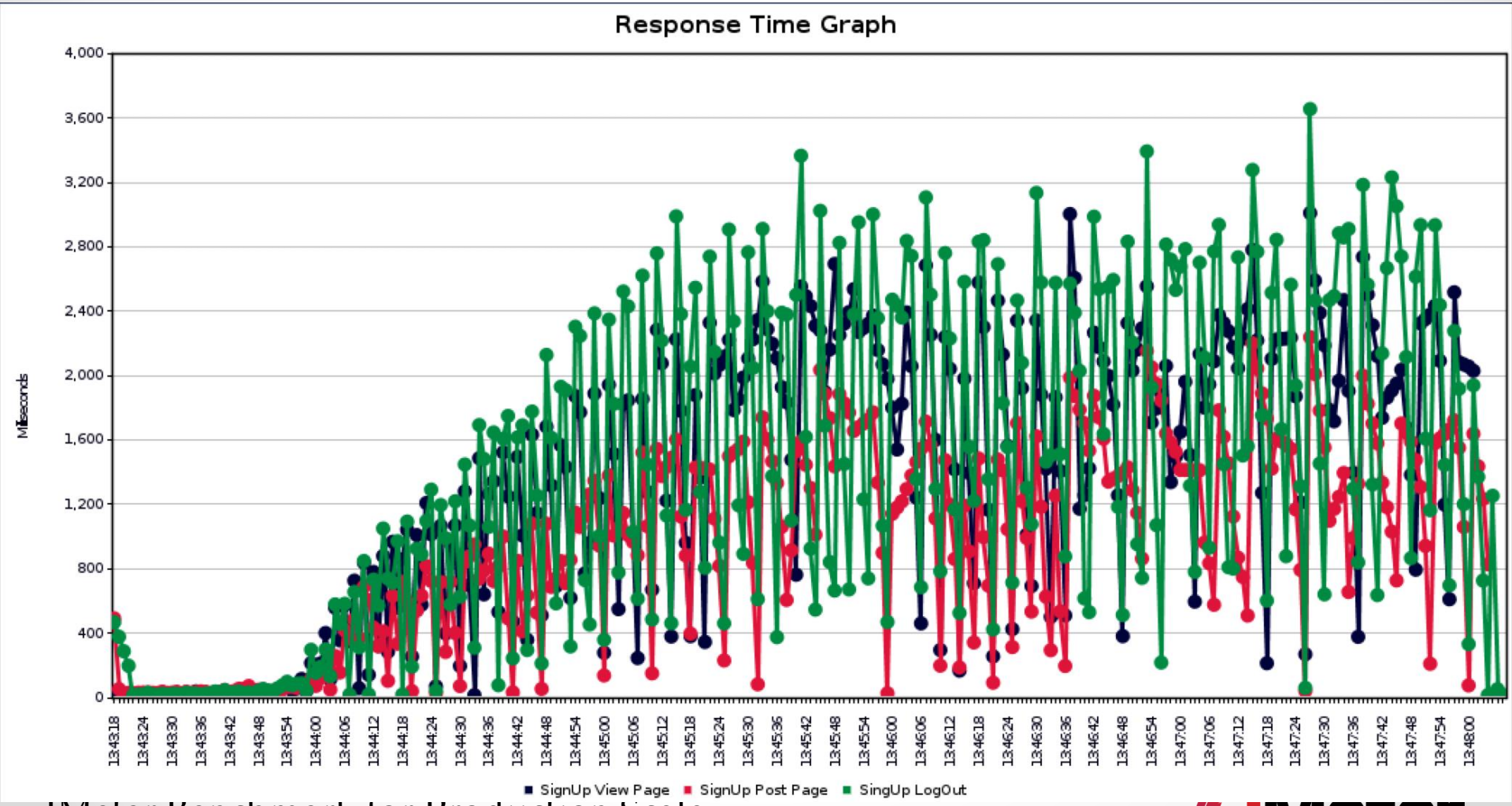
Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

WorkShop: 2-3 Full Process MEAN

- **Result Test Plan (Phase 2)**
- SignUp (Insert 5000 Users)



WorkShop: 2-3 Full Process MEAN

- **Result Test Plan (Phase 2)**
- SignUp (Insert 5000 Users)

.ssh — ubuntu@ip-10-21-1-93: ~ — ssh -i lab_gluster.pem ubuntu@ec2-3-1-81-32.ap-southeast-1.compute.amazonaws.com — 147×47

...outheast-1.compute.amazonaws.com | ...ubuntu@ip-10-21-1-93: ~ — -bash | ...buntu@ip-10-21-1-152: ~ — -bash | ...ubuntu@ip-10-21-1-93: ~ — -bash

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
49a7dcf906a3	mean	99.05%	299.1MiB / 7.719GiB	3.78%	420MB / 531MB	101MB / 319kB	33
69fa72db72a9	cadvisor	14.98%	55.93MiB / 7.719GiB	0.71%	7.19MB / 1.52GB	19.8MB / 0B	12
2fae67db70ce	webmongo	0.00%	43.07MiB / 7.719GiB	0.54%	1.74MB / 2.54MB	38.8MB / 16.4kB	11
4514ee42b5ca	db	3.66%	88.06MiB / 7.719GiB	1.11%	253MB / 205MB	56.4MB / 247MB	36

JMeter Benchmark for Production Scale

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- SignUp (Insert 5000 Users)

Summary Report

Name: SignUp Summary Report

Comments:

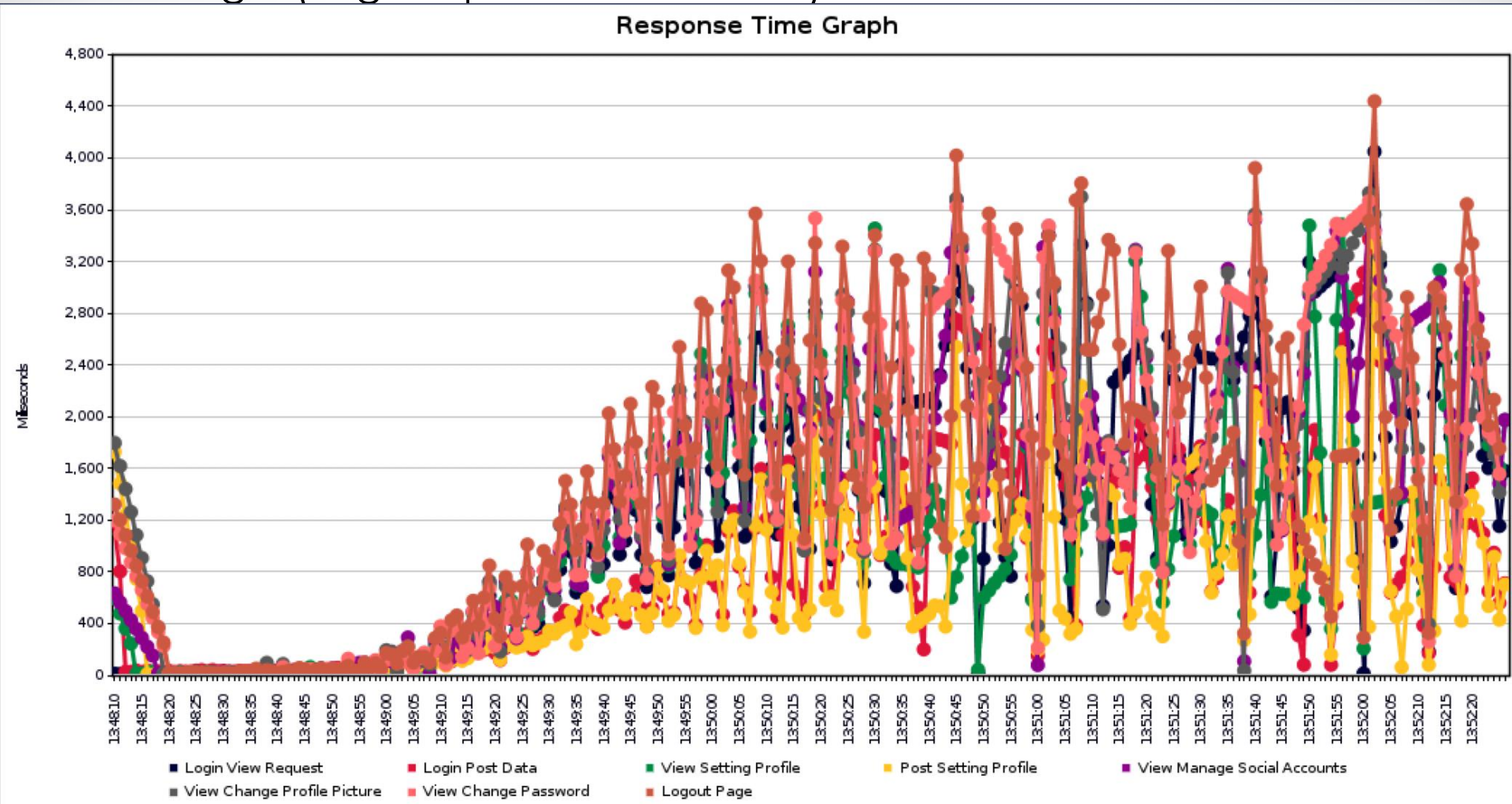
Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/...	Sent KB/sec	Avg. Bytes
SignUp View Page	5000	1750	10	3283	772.18	0.00%	17.5/sec	7.15	9.09	417.1
SignUp Post Page	5000	1263	25	2787	699.86	0.00%	17.5/sec	16.20	13.32	949.1
SingUp LogOut	5000	1902	14	3897	1139.51	0.00%	17.5/sec	17.17	18.25	1006.6
TOTAL	15000	1638	10	3897	932.32	0.00%	51.8/sec	40.02	40.15	790.9

WorkShop: 2-3 Full Process MEAN

- **Result Test Plan (Phase 2)**
- Login (Login/Update 5000 Users)



WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**
- Login (Login/Update 5000 Users)

Summary Report

Name: Login Summary Report

Comments:

Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received ...	Sent K...	Avg. B...
Login View Request	5000	1659	10	3829	938.66	0.00%	12.5/sec	5.62	6.49	458.6
Login Post Data	5000	1318	25	3394	829.70	0.00%	12.5/sec	11.60	8.34	949.2
View Setting Profile	5000	979	12	3827	751.37	0.00%	12.5/sec	29.41	6.14	2406.7
Post Setting Profile	5000	907	4	3100	614.00	0.00%	12.5/sec	9.81	9.46	802.7
View Change Password	1687	1833	12	4349	1142.95	0.00%	4.2/sec	9.92	2.05	2407.5
View Change Profile Picture	1652	1861	12	4354	1151.39	0.00%	4.1/sec	9.75	2.01	2408.3
View Manage Social Accounts	1661	1862	12	4344	1102.58	0.00%	4.2/sec	9.81	2.03	2407.3
Logout Page	5000	1747	14	4937	1167.79	0.00%	12.5/sec	12.75	15.07	1044.8
TOTAL	30000	1410	4	4937	997.88	0.00%	73.1/sec	96.04	50.23	1344.9

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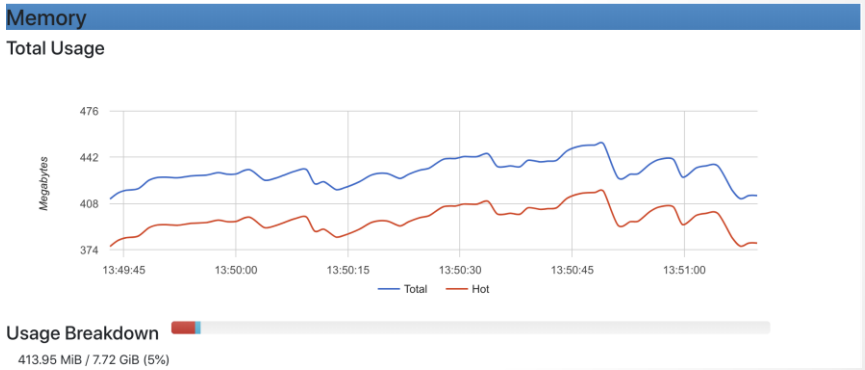
WorkShop: 2-3 Full Process MEAN

- **Result Test Plan (Phase 2)**
- Login (Login/Update 5000 Users)

.ssh — ubuntu@ip-10-21-1-93: ~ — ssh -i lab_gluster.pem ubuntu@ec2-3-1-81-32.ap-southeast-1.compute.amazonaws.com — 147×47

...outheast-1.compute.amazonaws.com | ...ubuntu@ip-10-21-1-93: ~ — -bash | ...buntu@ip-10-21-1-152: ~ — -bash | ...ubuntu@ip-10-21-1-93: ~ — -bash

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
49a7dcf906a3	mean	104.69%	315.6MiB / 7.719GiB	3.99%	445MB / 563MB	101MB / 319kB	33
69fa72db72a9	cadvisor	17.64%	56.05MiB / 7.719GiB	0.71%	9.29MB / 2.04GB	19.8MB / 0B	12
2fae67db70ce	webmongo	0.05%	43.38MiB / 7.719GiB	0.55%	1.75MB / 2.55MB	38.8MB / 16.4kB	11
4514ee42b5ca	db	7.87%	87.54MiB / 7.719GiB	1.11%	268MB / 218MB	56.4MB / 259MB	36

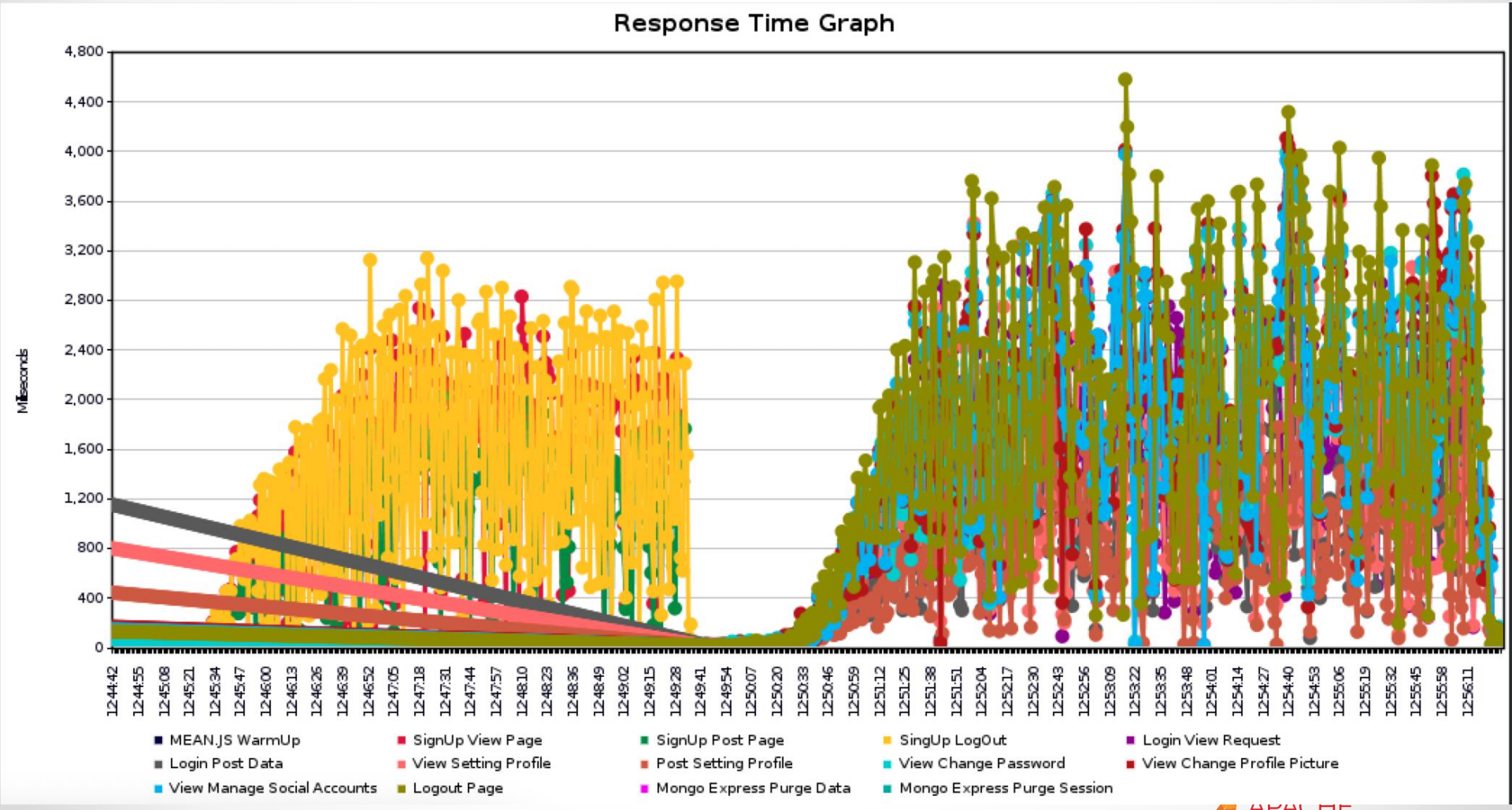


JMeter Benchmark for Production Scale

APACHE JMeter™

WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**



WorkShop: 2-3 Full Process MEAN

- **Setup Test Plan (Phase 2)**

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

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

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB...	Sent KB/sec	Avg. Bytes
Mongo Express Purge Data	1	20	20	20	0.00	0.00%	50.0/sec	539.11	56.93	11041.0
Mongo Express Purge Session	1	57	57	57	0.00	0.00%	17.5/sec	159.37	22.75	9302.0
MEAN.JS WarmUp	200	14	10	43	5.80	0.00%	20.1/sec	47.17	7.84	2401.7
View Change Profile Picture	1652	1861	12	4354	1151.39	0.00%	4.1/sec	9.75	2.01	2408.3
View Manage Social Accounts	1661	1862	12	4344	1102.58	0.00%	4.2/sec	9.81	2.03	2407.3
View Change Password	1687	1833	12	4349	1142.95	0.00%	4.2/sec	9.92	2.05	2407.5
SignUp View Page	5000	1670	10	3116	713.05	0.00%	18.0/sec	7.32	9.31	417.1
SignUp Post Page	5000	1222	25	2534	676.81	0.00%	17.9/sec	16.55	13.61	949.4
SingUp LogOut	5000	1807	13	3494	1097.40	0.00%	17.8/sec	17.53	18.64	1006.9
Login View Request	5000	1659	10	3829	938.66	0.00%	12.5/sec	5.62	6.49	458.6
Login Post Data	5000	1318	25	3394	829.70	0.00%	12.5/sec	11.60	8.34	949.2
View Setting Profile	5000	979	12	3827	751.37	0.00%	12.5/sec	29.41	6.14	2406.7
Post Setting Profile	5000	907	4	3100	614.00	0.00%	12.5/sec	9.81	9.46	802.7
Logout Page	5000	1747	14	4937	1167.79	0.00%	12.5/sec	12.75	15.07	1044.8
TOTAL	45202	1456	4	4937	967.70	0.00%	63.9/sec	72.78	45.69	1166.2

WorkShop: 2-3 Full Process MEAN

- MEAN.JS Result
  - Stress Test Table (10% Active user ,Accept with 5% failure ,View response time less than 5.4 seconds (AVG) and less than 5.4 seconds (MAX))

Concurrent/ Duration	Action	Page	Fail Rate	Response Time (AVG)	Response Time (MAX)
200 User (5K Users)	Read	Login Page	0.00%	868 ms	1761 ms
	Write	Post Login Page	0.00%	512 ms	1347 ms
	Read	View Setting	0.00%	72 ms	1619 ms
	Write	Post View Setting	0.00%	248 ms	1258 ms
	Read	Random View	0.00%	9 ms	1907 ms
	Read	Logout Page	0.00%	915 ms	2017 ms
400 User (5K Users)	Read	Login Page	0.00%	868 ms	1761 ms
	Write	Post Login Page	0.00%	512 ms	1347 ms
	Read	View Setting	0.00%	72 ms	1619 ms
	Write	Post View Setting	0.00%	248 ms	1258 ms
	Read	Random View	0.00%	9 ms	1907 ms
	Read	Logout Page	0.00%	915 ms	2017 ms

Present by: Praparn L. (eva10409@gmail.com)

WorkShop: 2-3 Full Process MEAN

- MEAN.JS Result
  - Stress Test Table (10% Active user ,Accept with 5% failure ,View response time less than 5.4 seconds (AVG) and less than 5.4 seconds (MAX))

Concurrent/ Duration	Action	Page	Fail Rate	Response Time (AVG)	Response Time (MAX)
500 User (5K Users)	Read	Login Page	0.42%	2400ms	5753 ms
	Write	Post Login Page	0.42%	1848 ms	4374 ms
	Read	View Setting	1.36%	1905 ms	6518 ms
	Write	Post View Setting	0.00%	1421 ms	4542 ms
	Read	Random View	6.61%	2758 ms	6463 ms
	Read	Logout Page	13.06%	3096 ms	7502 ms
600 User (5K Users)	Read	Login Page	7.92%	3089 ms	8231 ms
	Write	Post Login Page	1.76%	2223 ms	5950 ms
	Read	View Setting	9.92%	2920 ms	8579 ms
	Write	Post View Setting	7.92%	3089 ms	8231 ms
	Read	Random View	24.25%	3707 ms	8575 ms
	Read	Logout Page	38.06%	4117 ms	9627 ms

Present by: Praparn L. (eva10409@gmail.com)

APACHE JMeter™

Jmeter's for Production

JMeter Benchmark for Production Scale

APACHE JMeter™

Testing with Plugin

- At some complicate environment, the default component from JMeter is not enough.
- You can visit https://jmeter-plugins.org/ for seek more plugin to suit with your test plan (Such as sampler, listener, timer etc)
- You can install plugin via command line or gui mode
- Normally plugin will come with ".jar" that place on <JMeter Directory>/lib/ext
- JMeter will recommend us for install "JMeter Plugin Manager" for provide gui to manage/install plugin

Testing with Plugin

- JMeter-Plugin

JMeter Plugins

jmeter-plugins.org

Every load test needs some sexy features!

Sponsored in part by BlazeMeter

Install | Browse Plugins | Documentation | Usage Statistics | Support Forums | Star

Custom Plugins for Apache JMeter™

This project is an independent set of plugins for Apache JMeter, the popular Open-Source load and performance testing tool.

This catalogue lists plugins available for use with Plugins Manager. If you're first time here, consider installing Plugins Manager into your JMeter.

Items found: 73

Search...

XML Plugins

Currently ships XMLFormatPostProcessor

Download Versions: 0.1

Maven Artifact: kg.apc:jmeter-plugins-xml:0.1

ID: jpgc-xml

Users: 8953

jmeter - FTP Protocol Support

This controller lets you send an FTP 'retrieve file' or 'upload file' request to an FTP server.

ID: jmeter-ftp

Users: 37699

Weighted Switch Controller

This controller takes the information about child elements and offers managing relative weights for them.

Download Versions: 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7

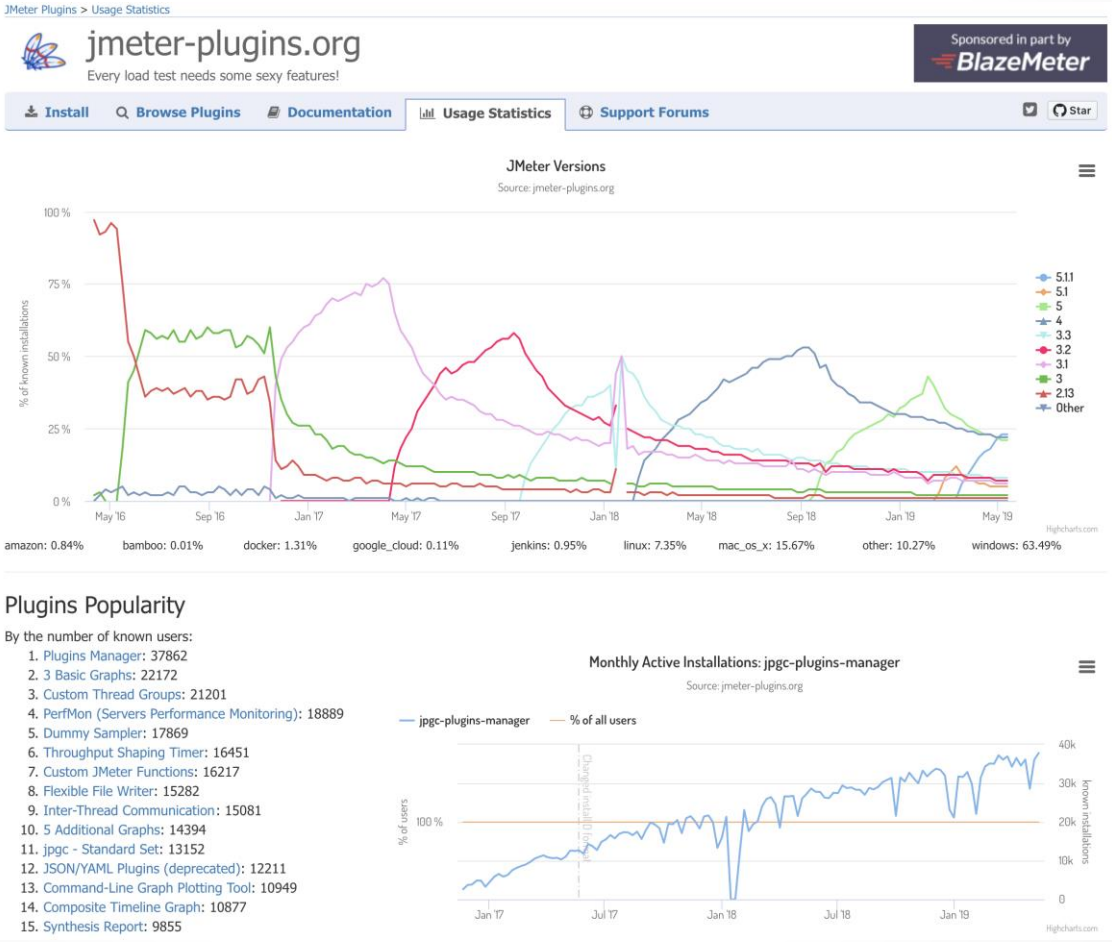
Maven Artifact: com.blazemeter:jmeter-plugins-wsc:0.7

ID: jpgc-wsc

Users: 7440

Testing with Plugin

- JMeter-Plugin



Testing with Plugin

- JMeter-Plugin

JMeter Plugins > Documentation > Start

jmeter-plugins.org

Every load test needs some sexy features!

Sponsored in part by BlazeMeter

Install | Browse Plugins | Documentation | Usage Statistics | Support Forums | Star

Project Documentation Wiki

- Plugins Manager
- Installation Procedure to have correct setup
- SettingsPanel GUI Customizing Graphs Plugins

Graphs

- PerfMon Metrics Collector
- Active Threads Over Time
- Response Times Over Time
- Transactions per Second
- Server Hits per Seconds
- Composite Timeline Graph
- Response Codes per Second
- Response Latencies Over Time
- Connect Times Over Time
- Bytes Throughput Over Time
- Extracted Data Over Time
- DbMon Sample Collector DataBase, get performance counters via sql
- JMX Monitoring Collector Java Management Extensions counters
- Response Times vs Threads
- Transaction Throughput vs Threads
- Response Times Distribution
- Response Times Percentiles

Thread Groups

- Stepping Thread Group
- Ultimate Thread Group
- Concurrency Thread Group
- Arrivals Thread Group
- Free-Form Arrivals Thread Group

On this page:

1. Project Documentation Wiki
    1. Graphs
    2. Thread Groups
    3. Timers
    4. Listeners
    5. Tools
    6. Functions
    7. Logic Controllers
    8. Samplers
    9. Config Items
    10. Pre-Processors
    11. Post-Processors
    12. Assertions
2. Developing Plugins

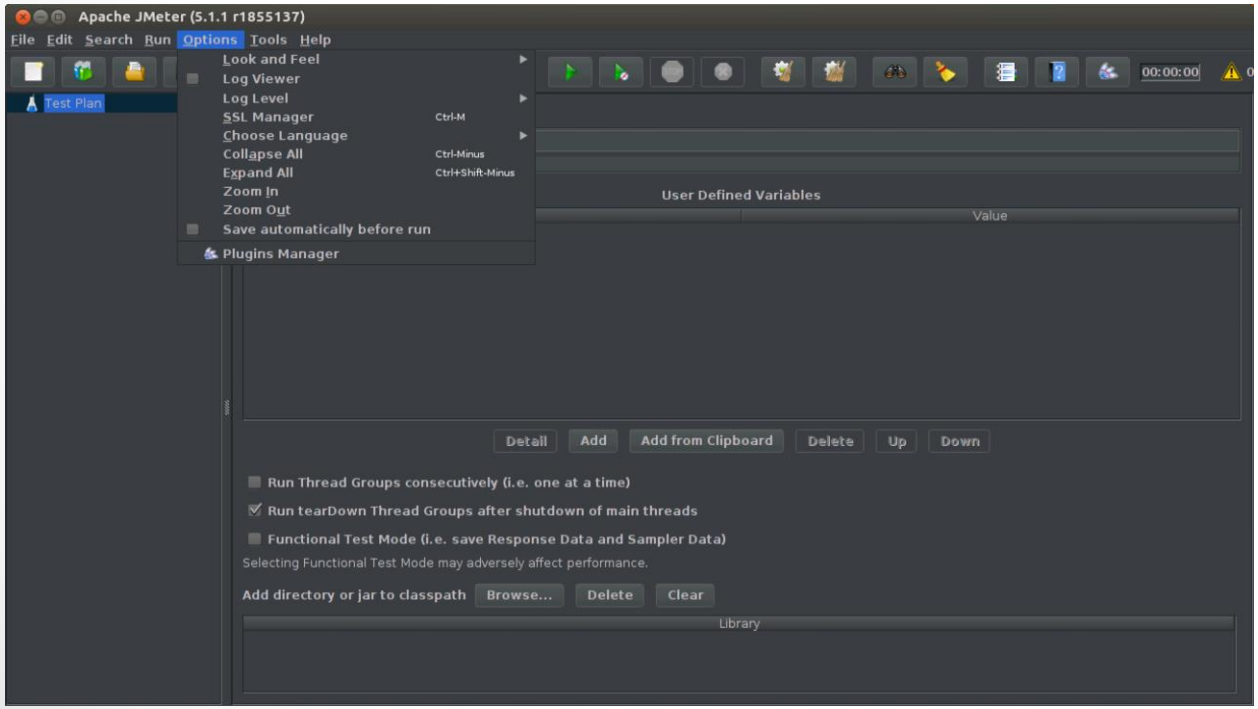
Follow us on Twitter

Testing with Plugin

- Install Plugin Manager / Reopen Jmeter

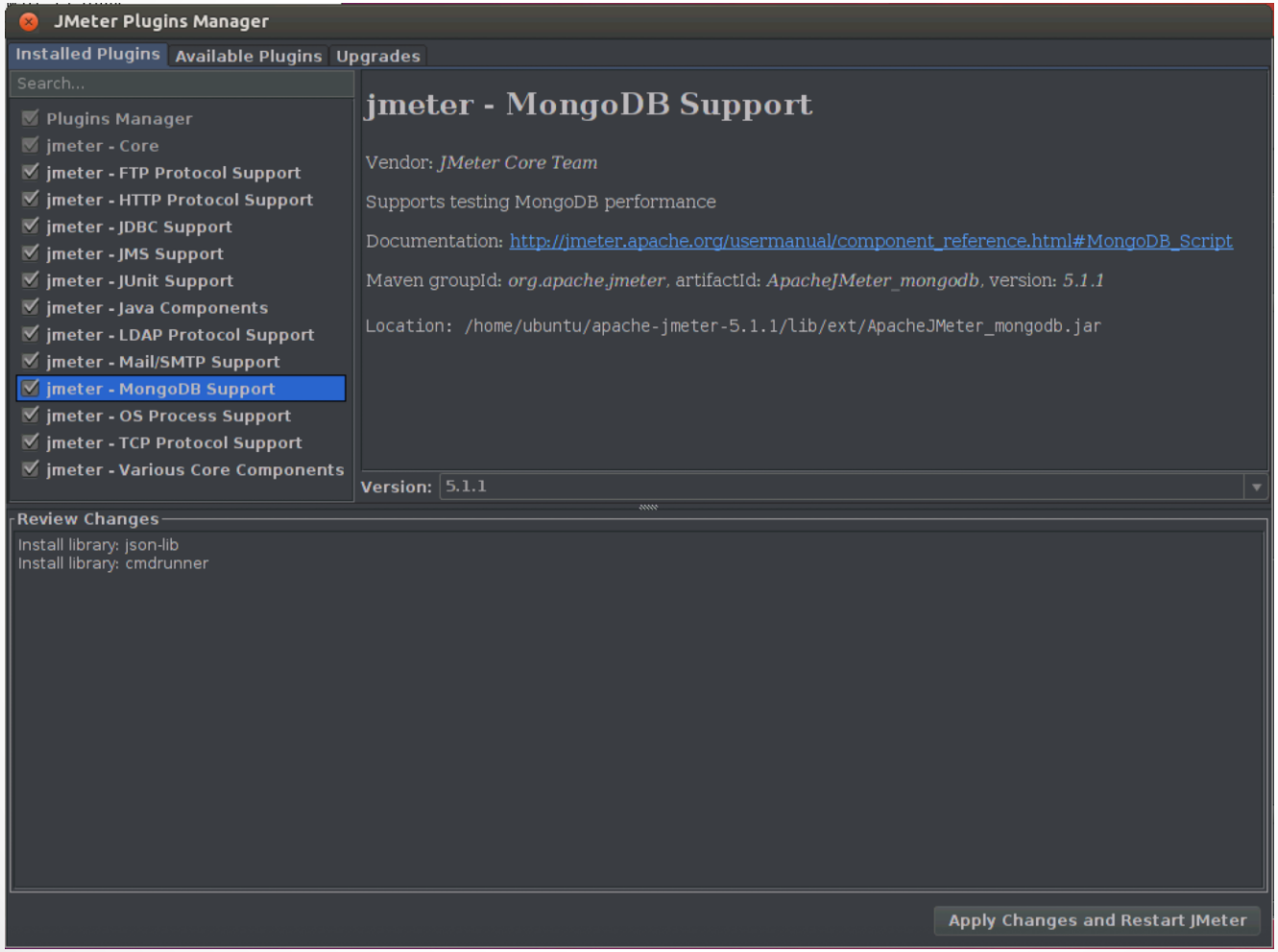
```
ubuntu@ip-10-21-1-151:~$ curl https://raw.githubusercontent.com/praparn/jmeter-workshop-062019/master/Workshop-2-5-Plugin/jmeter-plugins-manager-1.3.jar > ~/apache-jmeter-5.1.1/lib/ext/jmeter-plugins-manager-1.3.jar
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  872k  100  872k    0     0   638k      0  0:00:01  0:00:01 --:--:--  638k
```

- Menu: Options ➔ Plugin Manager



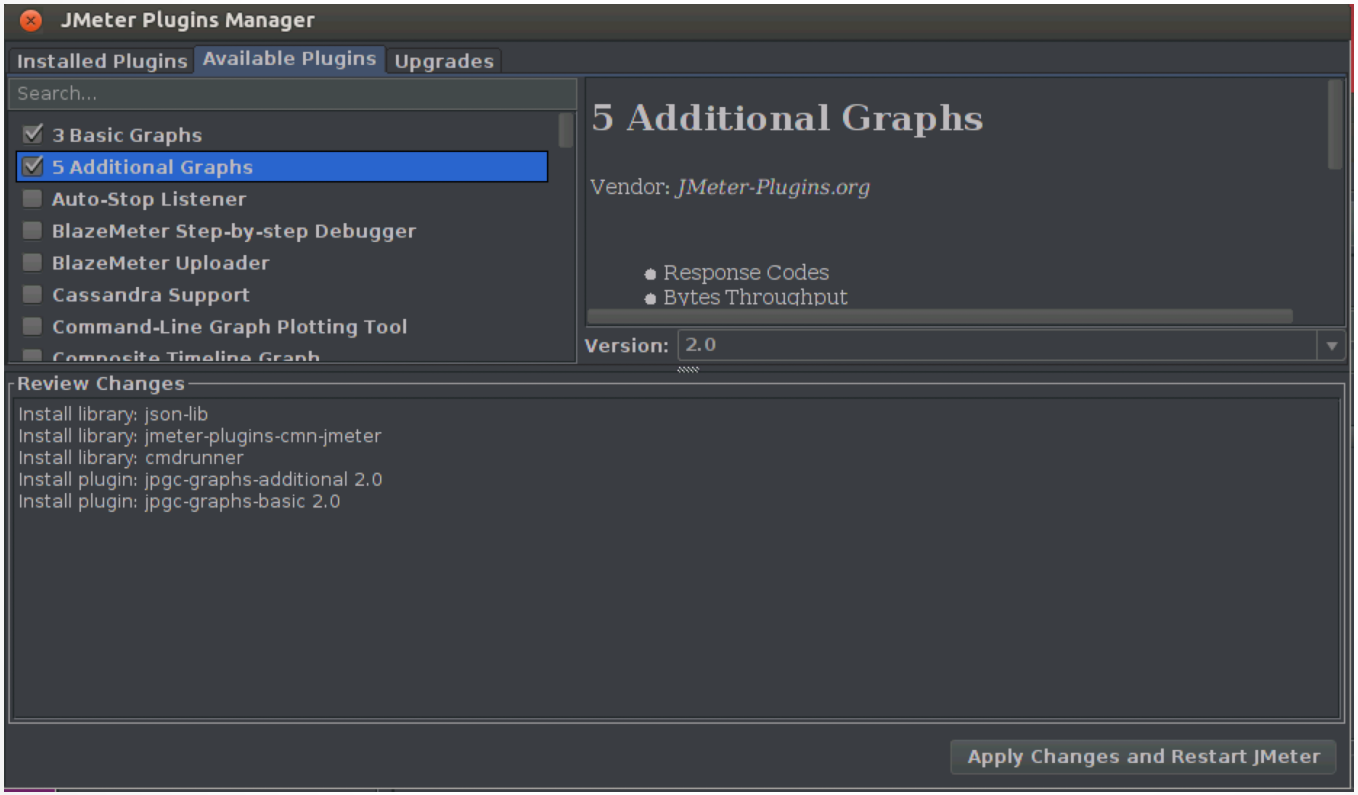
Testing with Plugin

- Check installed plugin



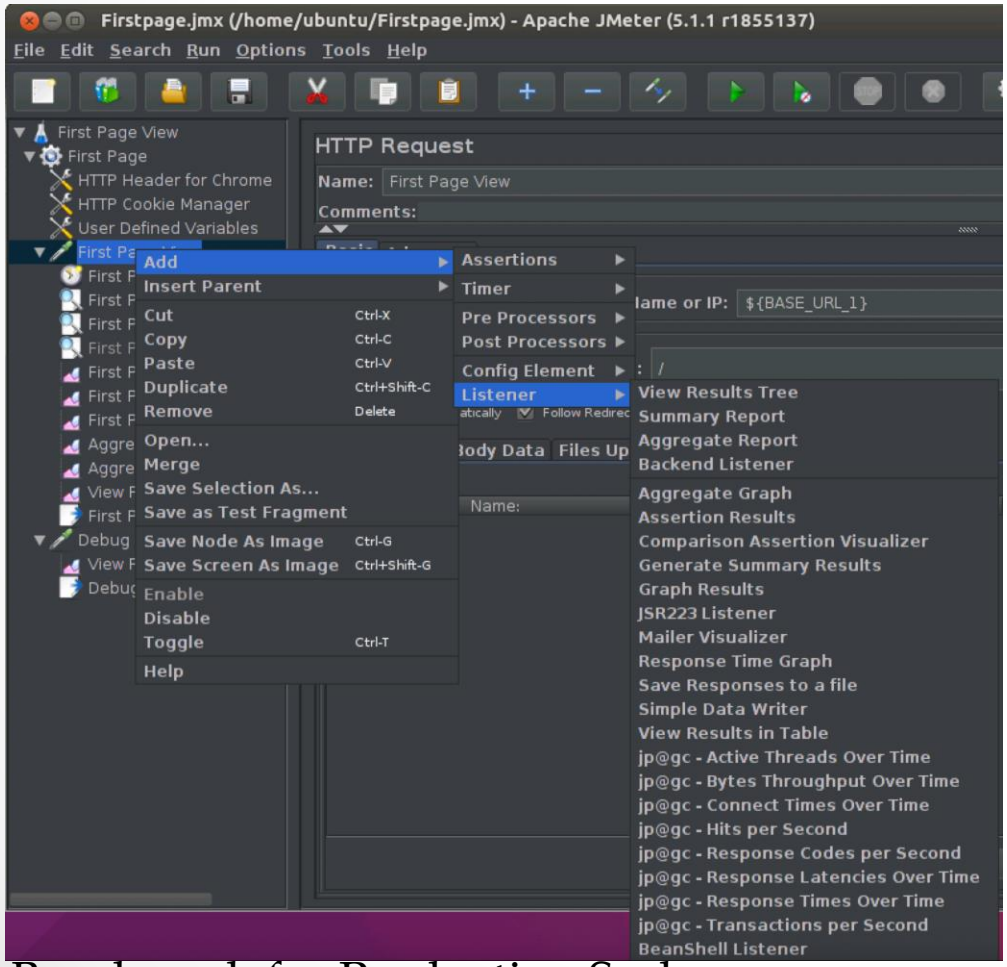
Testing with Plugin

- Install additional plugin and apply changes and restart jmeter



Testing with Plugin

- After JMeter restart we can add element by new plugins on test plan



Testing with Plugin

- jp@gc – Hits per Second

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:04 0 10/10

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
  - First Page View
    - First Page Think Time
    - First Page Assertion Decise
    - First Page Response Assertion
    - First Page Assertion Duration
    - First Page Result Tree
    - First Page Summary Report
    - First Page Response Time Graph
    - Aggregate Report
    - Aggregate Graph
    - View Results in Table
    - First Page Regular Express Extractor
    - jp@gc - Hits per Second
    - jp@gc - Response Latencies Over Time
    - jp@gc - Response Times Over Time
  - Debug Sampler
    - View Results Tree
    - Debug JSR223 PostProcessor

jp@gc - Hits per Second

Name: jp@gc - Hits per Second

Comments:

Help on this plugin

Write results to file / Read from file

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

Chart Rows Settings

Server Hits per Second

Number of hits/sec: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

00:00:00 00:00:12 00:00:25 00:00:37 00:00:50 00:01:02 00:01:15 00:01:27 00:01:40 00:01:52 00:02:05

Elapsed time (granularity: 1 sec)

APACHE JMeter™

Testing with Plugin

- jp@gc – Response Latencies Over Time

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:21 0 10/10

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
      - jp@gc - Hits per Second
      - jp@gc - Response Latencies Over Time
      - jp@gc - Response Times Over Time
  - Debug Sampler
    - View Results Tree
    - Debug JSR223 PostProcessor

jp@gc - Response Latencies Over Time

Name: jp@gc - Response Latencies Over Time

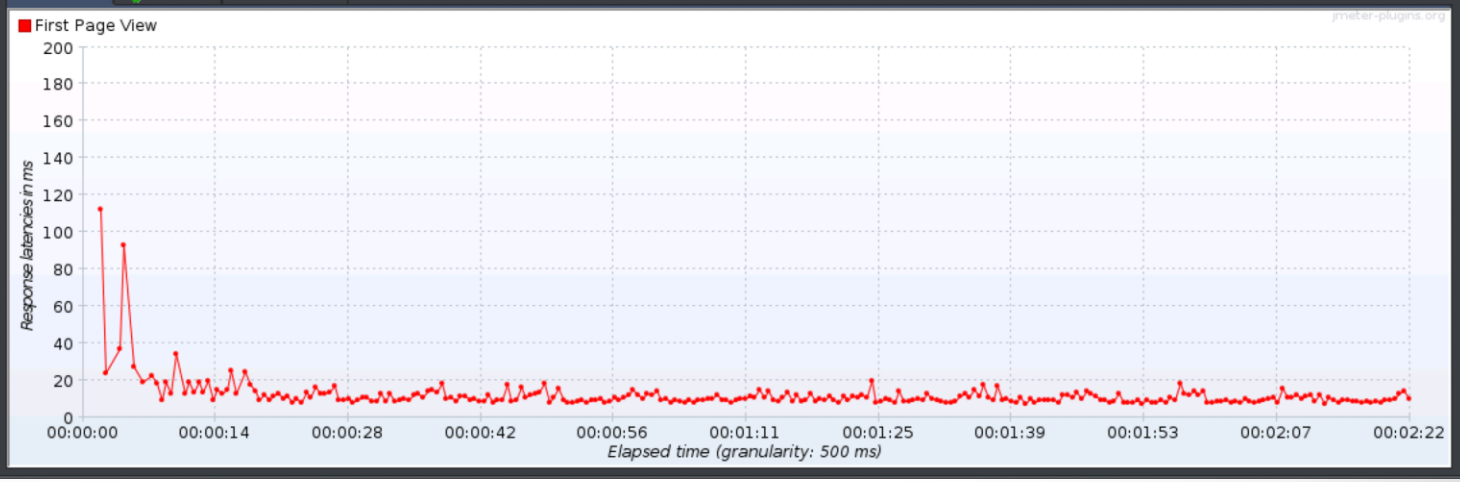
Comments:

Help on this plugin

Write results to file / Read from file

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

Chart Rows Settings



APACHE JMeter™

Testing with Plugin

- jp@gc – Response Times Over Time

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:02:31 0 10/10

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
  - First Page View
    - First Page Think Time
    - First Page Assertion Decise
    - First Page Response Assertion
    - First Page Assertion Duration
    - First Page Result Tree
    - First Page Summary Report
    - First Page Response Time Graph
    - Aggregate Report
    - Aggregate Graph
    - View Results in Table
    - First Page Regular Express Extractor
    - jp@gc - Hits per Second
    - jp@gc - Response Latencies Over Time
    - jp@gc - Response Times Over Time
  - Debug Sampler
    - View Results Tree
    - Debug JSR223 PostProcessor

jp@gc - Response Times Over Time

Name: jp@gc - Response Times Over Time

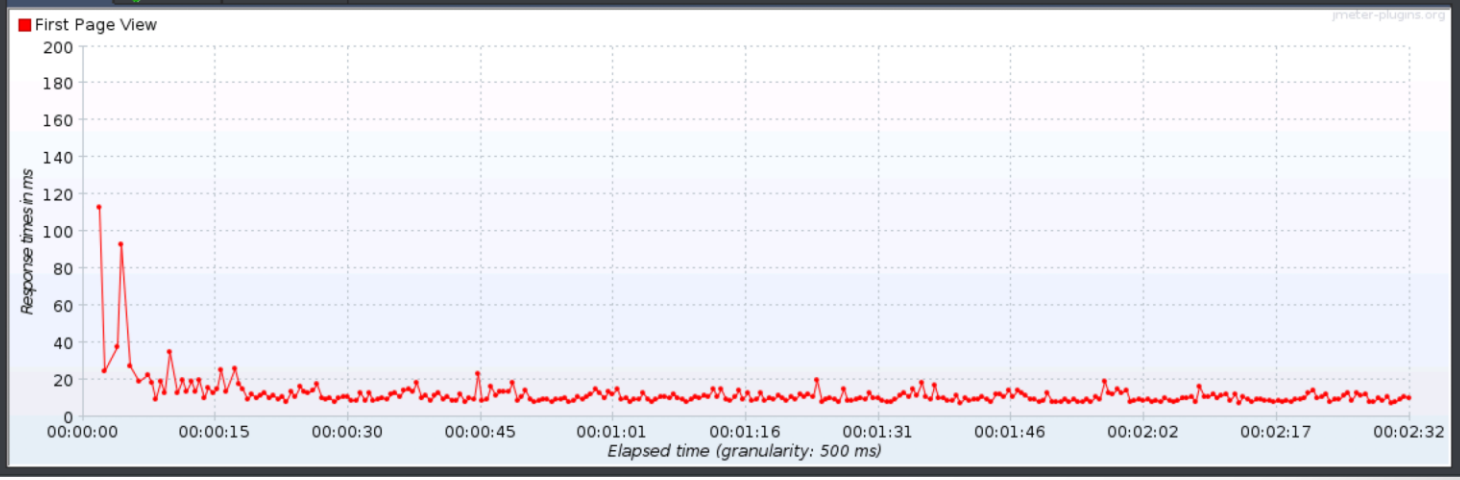
Comments:

Help on this plugin

Write results to file / Read from file

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

Chart Rows Settings



Testing with Plugin

- jp@gc – Response Codes per Second

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:01:40 0 0/10

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
      - jp@gc - Hits per Second
      - jp@gc - Response Latencies Over Time
      - jp@gc - Response Times Over Time
      - jp@gc - Response Codes per Second
    - Debug Sampler
      - View Results Tree
      - Debug JSR223 PostProcessor

jp@gc - Response Codes per Second

Name: jp@gc - Response Codes per Second

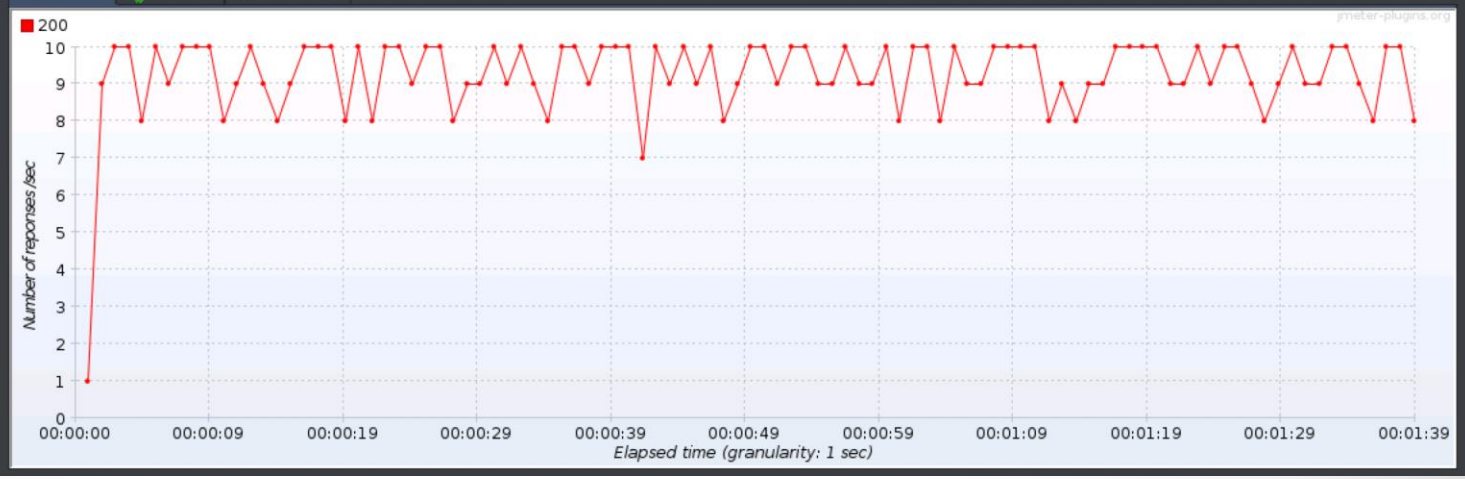
Comments:

Help on this plugin

Write results to file / Read from file

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

Chart Rows Settings



APACHE JMeter™

Testing with Plugin

- Install plugin via command line
- Ex: Custom Thread Groups

Custom Plugins for Apache JMeter™

This project is an independent set of plugins for Apache JMeter, the popular Open-Source load and performance testing tool.

This catalogue lists plugins available for use with Plugins Manager. If you're first time here, consider installing Plugins Manager into your JMeter.

Items found: 1

jpgc-casutg

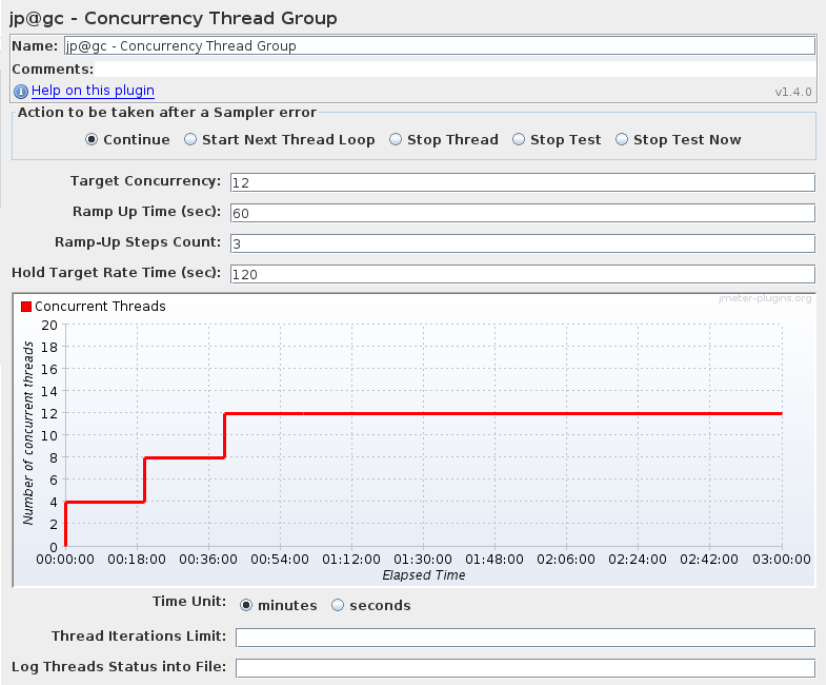
Custom Thread Groups

Adds new Thread Groups:

- Stepping Thread Group
- Ultimate Thread Group
- Concurrency Thread Group
- Arrivals Thread Group
- Free-Form Arrivals Thread Group

Download Versions: 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8

Maven Artifact: kg.apc:jmeter-plugins-casutg:2.8



Testing with Plugin

- Install plugin via command line and restart JMeter

```
ubuntu@ip-10-21-1-151:~$ curl https://jmeter-plugins.org/files/packages/jpgc-casutg-2.8.zip > ~/jpgc-casutg-2.8.zip
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 1033k  100 1033k    0     0   149k      0  0:00:06  0:00:06 --:--:--  200k
ubuntu@ip-10-21-1-151:~$     sudo apt-get install -y unzip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  ant ant-optional jmeter-help libapache-pom-java libavalon-framework-java libbcmail-java libbcpkix-java libbcprov-java libbsf-java libcommons-codec-java libcommons-collections3-java libcommons-httpclient-java libcommons-io-java libcommons-jexl-java
  libcommons-jexl2-java libcommons-lang3-java libcommons-logging-java libcommons-parent-java libdom4j-java libexcalibur-logger-java libexcalibur-logkit-java libgnuinet-java libgnumail-java libhtmlparser-java libhttpclient-java libhttpcore-java libhttpmime-java
  libjaxen-java libjaxp1.3-java libjdom1-java libjline-java libjsoup-java libjtidy-java liblog4j1.2-java libmail-java liboro-java librhino-java librsyntaxtextarea-java libxalan2-java libxerces2-java libxml-commons-external-java libxml-commons-resolver1.1-java
  libxmlgraphics-commons-java libxom-java libxpp2-java libxpp3-java libxstream-java linux-aws-headers-4.4.0-1077 linux-headers-4.4.0-1077-aws linux-image-4.4.0-1077-aws linux-modules-4.4.0-1077-aws rhino
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  unzip
0 upgraded, 1 newly installed, 0 to remove and 72 not upgraded.
Need to get 158 kB of archives.
After this operation, 530 kB of additional disk space will be used.
Get:1 http://ap-southeast-1.ec2.archive.ubuntu.com/ubuntu xenial/main amd64 unzip amd64 6.0-20ubuntu1 [158 kB]
Fetched 158 kB in 0s (0 B/s)
perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
        LANGUAGE = (unset),
        LC_ALL = (unset),
        LC_CTYPE = "UTF-8",
        LANG = "en_US.UTF-8"
    are supported and installed on your system.
perl: warning: Falling back to a fallback locale ("en_US.UTF-8").
locale: Cannot set LC_CTYPE to default locale: No such file or directory
locale: Cannot set LC_ALL to default locale: No such file or directory
Selecting previously unselected package unzip.
(Reading database ... 253227 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-20ubuntu1_amd64.deb ...
Unpacking unzip (6.0-20ubuntu1) ...
Processing triggers for mime-support (3.59ubuntu1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up unzip (6.0-20ubuntu1) ...
ubuntu@ip-10-21-1-151:~$ unzip jpgc-casutg-2.8.zip -d jpgc-casutg-2.8
Archive:  jpgc-casutg-2.8.zip
  inflating: jpgc-casutg-2.8/lib/jmeter-plugins-cmn-jmeter-0.4.jar
  inflating: jpgc-casutg-2.8/lib/ext/jmeter-plugins-casutg-2.8.jar
  inflating: jpgc-casutg-2.8/lib/ext/jmeter-plugins-manager-1.3.jar
ubuntu@ip-10-21-1-151:~$ cp ~/jpgc-casutg-2.8/lib/ext/jmeter-plugins-casutg-2.8.jar ~/apache-jmeter-5.1.1/lib/ext/
ubuntu@ip-10-21-1-151:~$
```

Testing with Plugin

- Install plugin via command line and restart JMeter

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00

First Page View
First Pa
HTTP
HTTP
User
First F
First
First
First
First
First
First
First
Aggregate Report
Aggregate Graph
View Results in Table
First Page Regular Express Extractor
jp@gc - Hits per Second
jp@gc - Response Latencies Over Time
jp@gc - Response Times Over Time
jp@gc - Response Codes per Second
Debug Sampler
View Results Tree
Debug JSR223 PostProcessor

Add
Paste Ctrl-V
Open...
Merge
Save Selection As...
Save Node As Image Ctrl-G
Save Screen As Image Ctrl+Shift-G
Enable
Disable
Toggle Ctrl-T
Help

Threads (Users)
Config Element
Listener
Timer
Pre Processors
Post Processors
Assertions
Test Fragment
Non-Test Elements

Thread Group
bzm - Arrivals Thread Group
bzm - Concurrency Thread Group
bzm - Free-Form Arrivals Thread Group
jp@gc - Stepping Thread Group (deprecated)
jp@gc - Ultimate Thread Group
setUp Thread Group
tearDown Thread Group

ariables
Value

Detail Add Add from Clipboard Delete Up Down

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 Browse... Delete Clear

Library

APACHE JMeter™

Testing with Plugin

- Install plugin via command line and restart JMeter

Firstpage_plugin.jmx (/home/ubuntu/Firstpage_plugin.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

- First Page View
  - jp@gc - Ultimate Thread Group
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
      - jp@gc - Hits per Second
      - jp@gc - Response Latencies Over Time
      - jp@gc - Response Times Over Time
      - jp@gc - Response Codes per Second
    - Debug Sampler
      - View Results Tree
      - Debug JSR223 PostProcessor

jp@gc - Ultimate Thread Group

Name: jp@gc - Ultimate Thread Group

Comments:

Help on this plugin

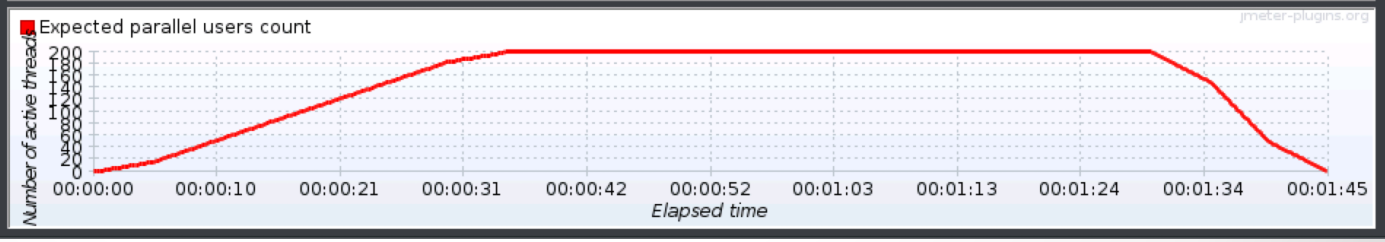
Action to be taken after a Sampler error

Continue | Start Next Thread Loop | 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	5	30	60	10
50	0	30	60	10

Add Row | Copy Row | Delete Row



APACHE JMeter™

Testing with Plugin

- Install plugin via command line and restart JMeter

Firstpage_plugin.jmx (/home/ubuntu/Firstpage_plugin.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

- First Page View
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    - First Page View
      - First Page Think Time
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      - First Page Assertion Duration
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      - First Page Summary Report
      - First Page Response Time Graph
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      - jp@gc - Response Latencies Over Time
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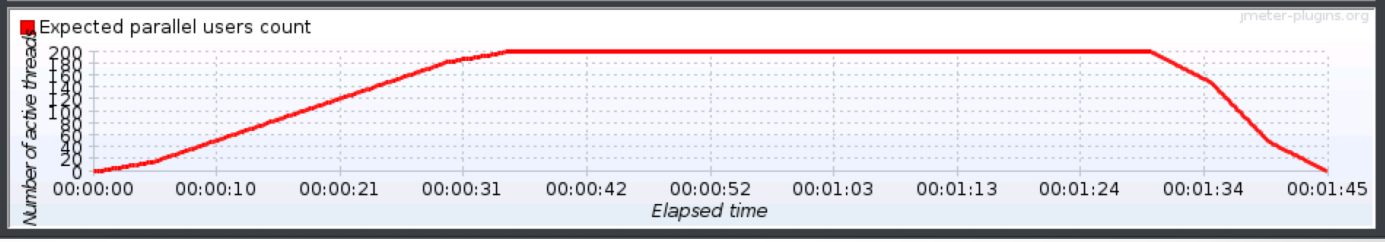
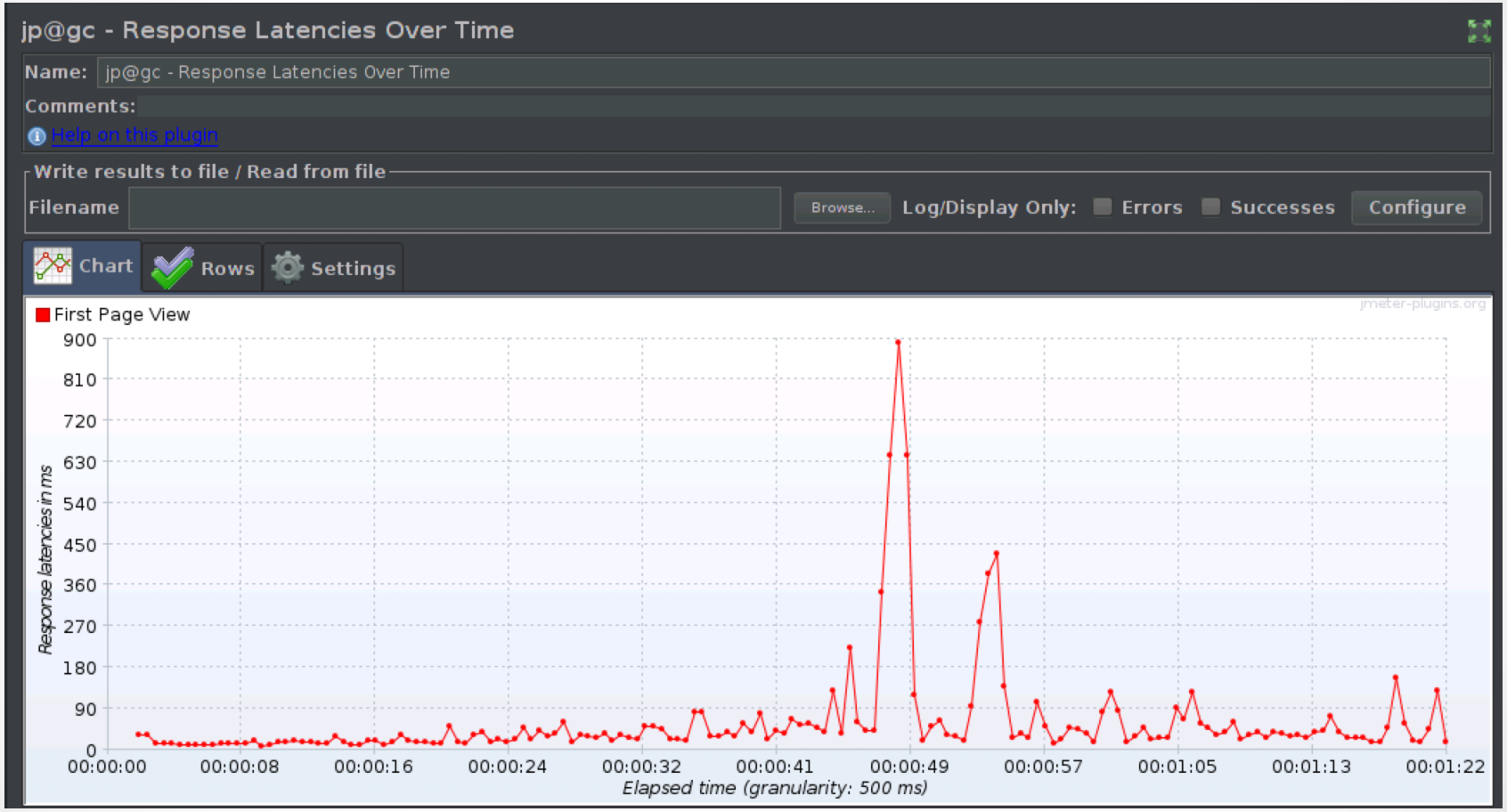
Add Row | Copy Row | Delete Row



APACHE JMeter™

Testing with Plugin

- Install plugin via command line and restart JMeter

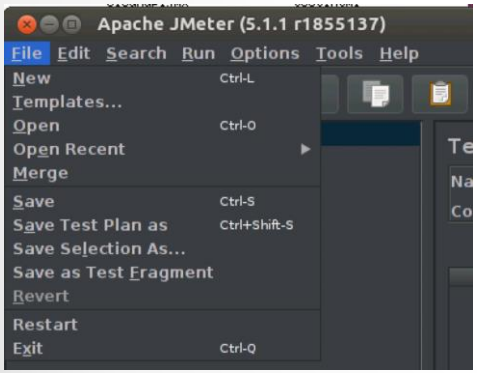


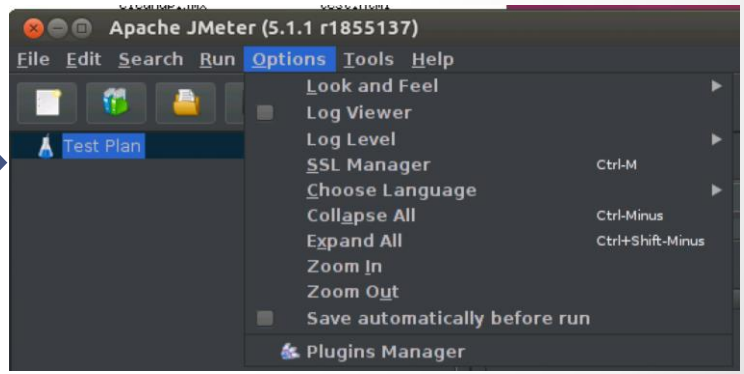
WorkShop: 2-4 Plugin

- Step 1: Download Jmeter plugin manager and install on path <Jmter home>/lib/ext

```
ubuntu@ip-10-21-1-152:~$     curl http://search.maven.org/remotecontent?filepath=kg/apc/jmeter-plugins-manager/1.3/jmeter-plugins-manager-1.3.jar > ~/apache-jmeter-5.1.1/lib/ext/jmeter-plugins-manager-1.3.jar
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  872k  100  872k    0     0   431k      0  0:00:02  0:00:02 --:--:--  431k
ubuntu@ip-10-21-1-152:~$ ls ~/apache-jmeter-5.1.1/lib/ext/
ApacheJMeter_components.jar  ApacheJMeter_ftp.jar        ApacheJMeter_http.jar  ApacheJMeter_jdbc.jar  ApacheJMeter_junit.jar  ApacheJMeter_mail.jar     ApacheJMeter_native.jar  jmeter-plugins-manager-1.3.jar
ApacheJMeter_core.jar        ApacheJMeter_functions.jar  ApacheJMeter_java.jar  ApacheJMeter_jms.jar   ApacheJMeter_ldap.jar   ApacheJMeter_mongodb.jar  ApacheJMeter_tcp.jar     readme.txt
ubuntu@ip-10-21-1-152:~$
```

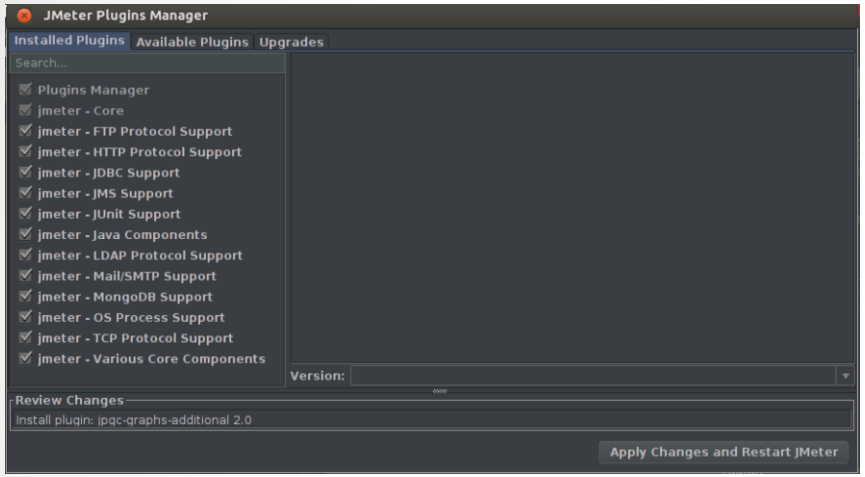
- Step 2: Restart Jmeter GUI and check plugin manager from menu "options" ==> "plugin manager"

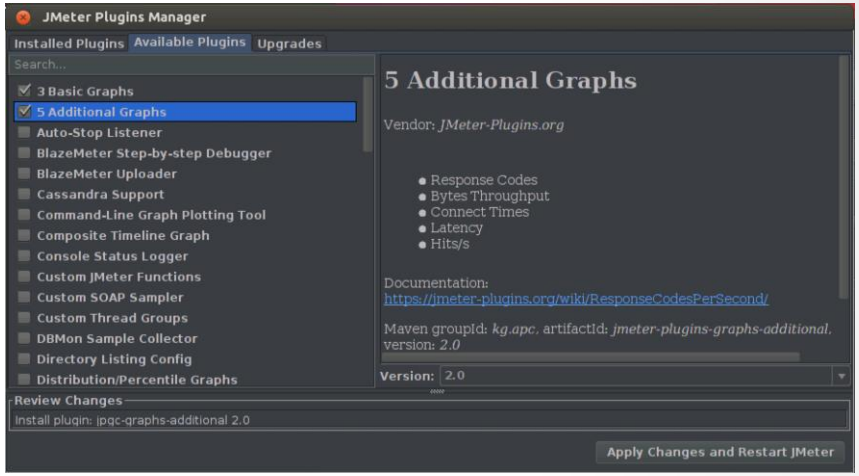




WorkShop: 2-4 Plugin

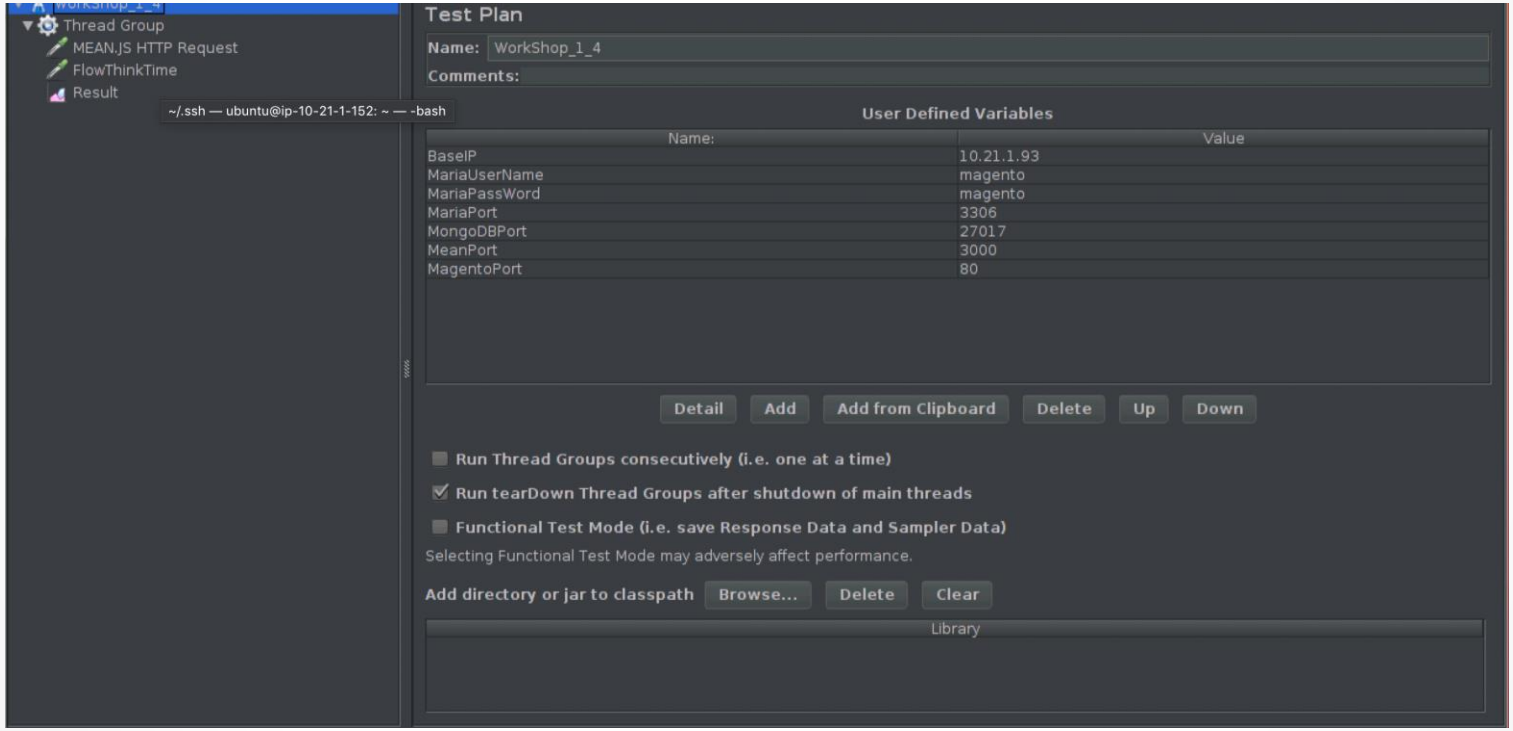
- Step 3: Open Plugin Manager and install “3 Basic Graphs”, “5 Additional Graphs”, Click Apply Changes and Restart Jmeter





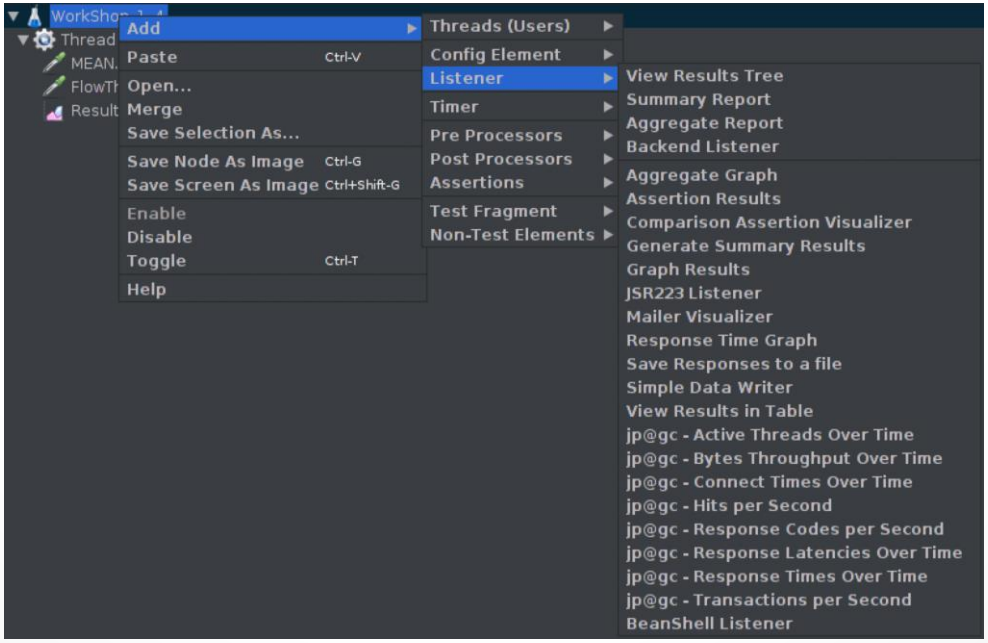
WorkShop: 2-4 Plugin

- Step 4: Open TestPlan "KickStart_WorkShop_2_4xxx.jmx" and Config user defined variables



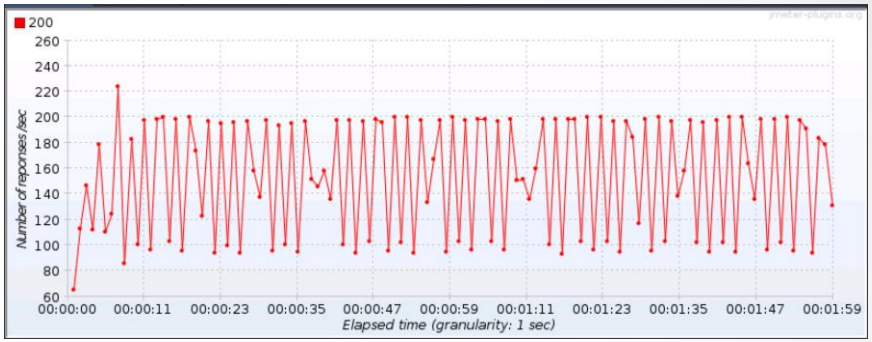
WorkShop: 2-4 Plugin

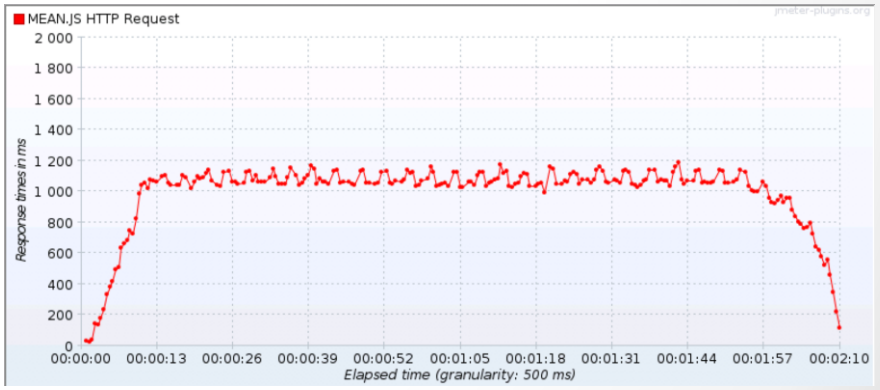
- Step 5: Add Listener from plugin to Thread Group
  - jp@gc - Hits per Second
  - jp@gc - Response Latencies Over Time
  - jp@gc - Response Times Over Time
  - jp@gc - Response Codes per Second
  - jp@gc - Active Threads Over Time



WorkShop: 2-4 Plugin

- Step 6: Start Performance Test and Check new listener

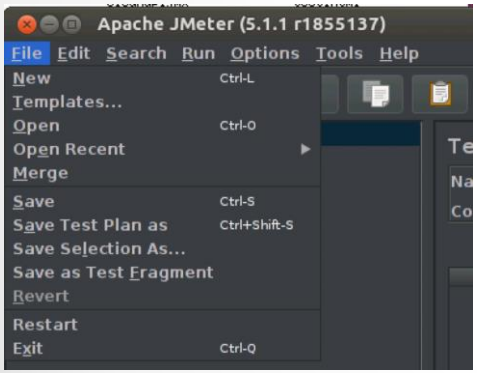




WorkShop: 2-4 Plugin

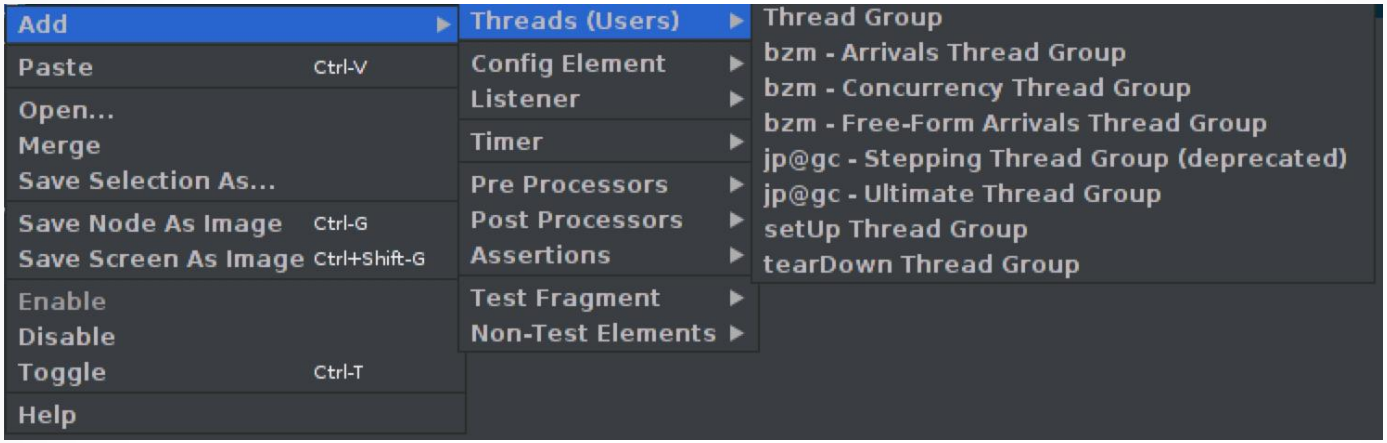
- Step 7: Download and Install Plugin via command line and Restart Jmeter again

```
ubuntu@ip-10-21-1-152:~$ curl https://jmeter-plugins.org/files/packages/jpgc-casutg-2.8.zip > ~/jpgc-casutg-2.8.zip
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 1033k  100 1033k    0     0   355k      0  0:00:02  0:00:02 --:--:--  355k
ubuntu@ip-10-21-1-152:~$ unzip jpgc-casutg-2.8.zip -d jpgc-casutg-2.8
Archive:  jpgc-casutg-2.8.zip
  inflating: jpgc-casutg-2.8/lib/jmeter-plugins-cmn-jmeter-0.4.jar
  inflating: jpgc-casutg-2.8/lib/ext/jmeter-plugins-casutg-2.8.jar
  inflating: jpgc-casutg-2.8/lib/ext/jmeter-plugins-manager-1.3.jar
ubuntu@ip-10-21-1-152:~$ cp ~/jpgc-casutg-2.8/lib/ext/jmeter-plugins-casutg-2.8.jar ~/apache-jmeter-5.1.1/lib/ext/
ubuntu@ip-10-21-1-152:~$ ls ~/apache-jmeter-5.1.1/lib/ext/
ApacheJMeter_components.jar  ApacheJMeter_functions.jar  ApacheJMeter_jdbc.jar   ApacheJMeter_ldap.jar     ApacheJMeter_native.jar        jmeter-plugins-graphs-additional-2.0.jar  readme.txt
ApacheJMeter_core.jar        ApacheJMeter_http.jar       ApacheJMeter_jms.jar    ApacheJMeter_mail.jar     ApacheJMeter_tcp.jar           jmeter-plugins-graphs-basic-2.0.jar
ApacheJMeter_ftp.jar         ApacheJMeter_java.jar       ApacheJMeter_junit.jar  ApacheJMeter_mongodb.jar  jmeter-plugins-casutg-2.8.jar  jmeter-plugins-manager-1.3.jar
ubuntu@ip-10-21-1-152:~$
```



WorkShop: 2-4 Plugin

- Step 8: Add plugin thread group: “jp@gc-Ultimate Thread Group”

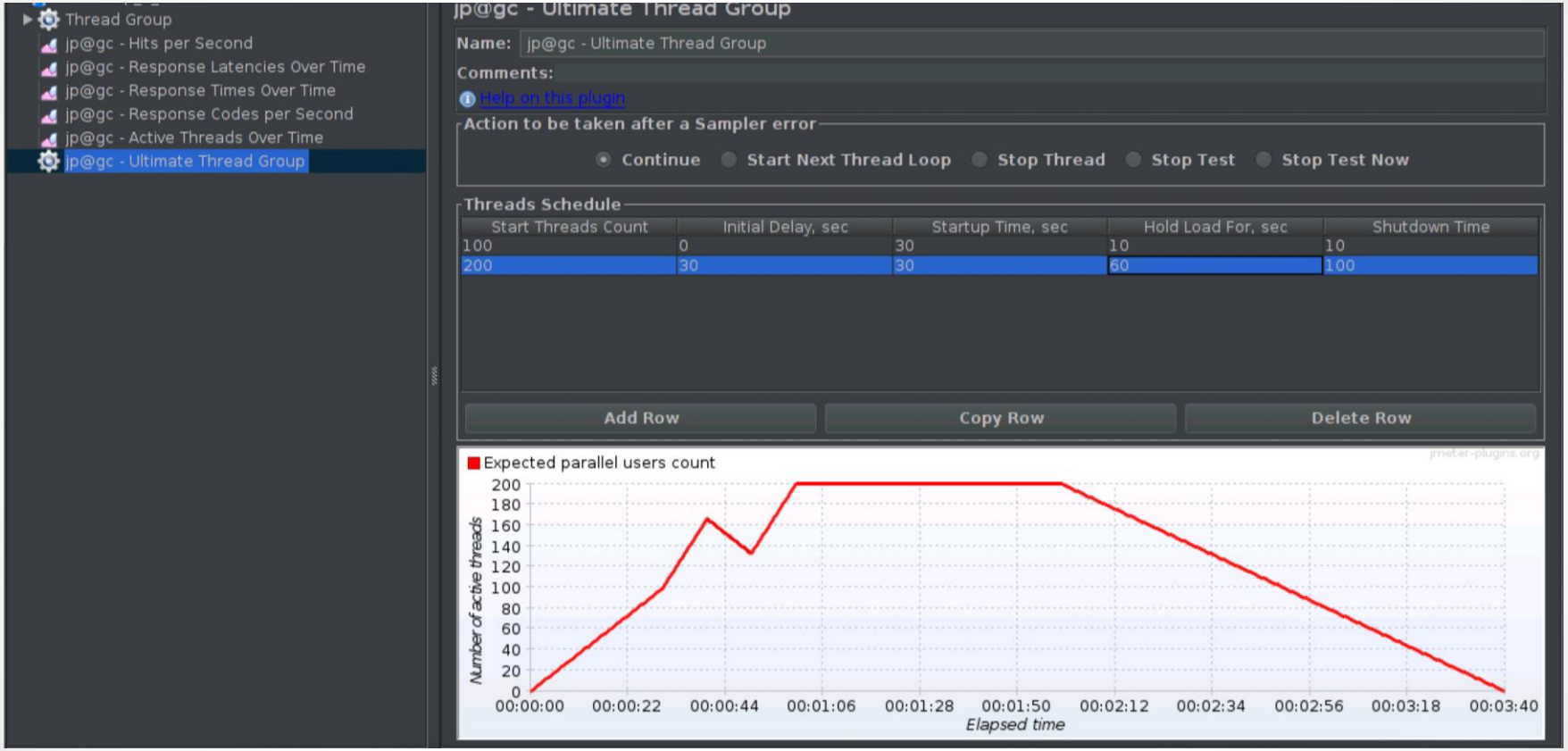


WorkShop: 2-4 Plugin

- Step 9: Add 2 set of thread as detail below
  - Add First Group 100 User
    - Start Thread Count: 100
    - Initial Delay,sec: 0 (default)
    - Startup Time,sec: 30 (default)
    - Hold Load For.sec: 10
    - Shutdown Time: 10 (deault)
  - Add Second Group 200 User
    - Start Thread Count: 200
    - Initial Delay,sec: 30
    - Startup Time,sec: 30 (default)
    - Hold Load For.sec: 60 (default)
    - Shutdown Time: 100

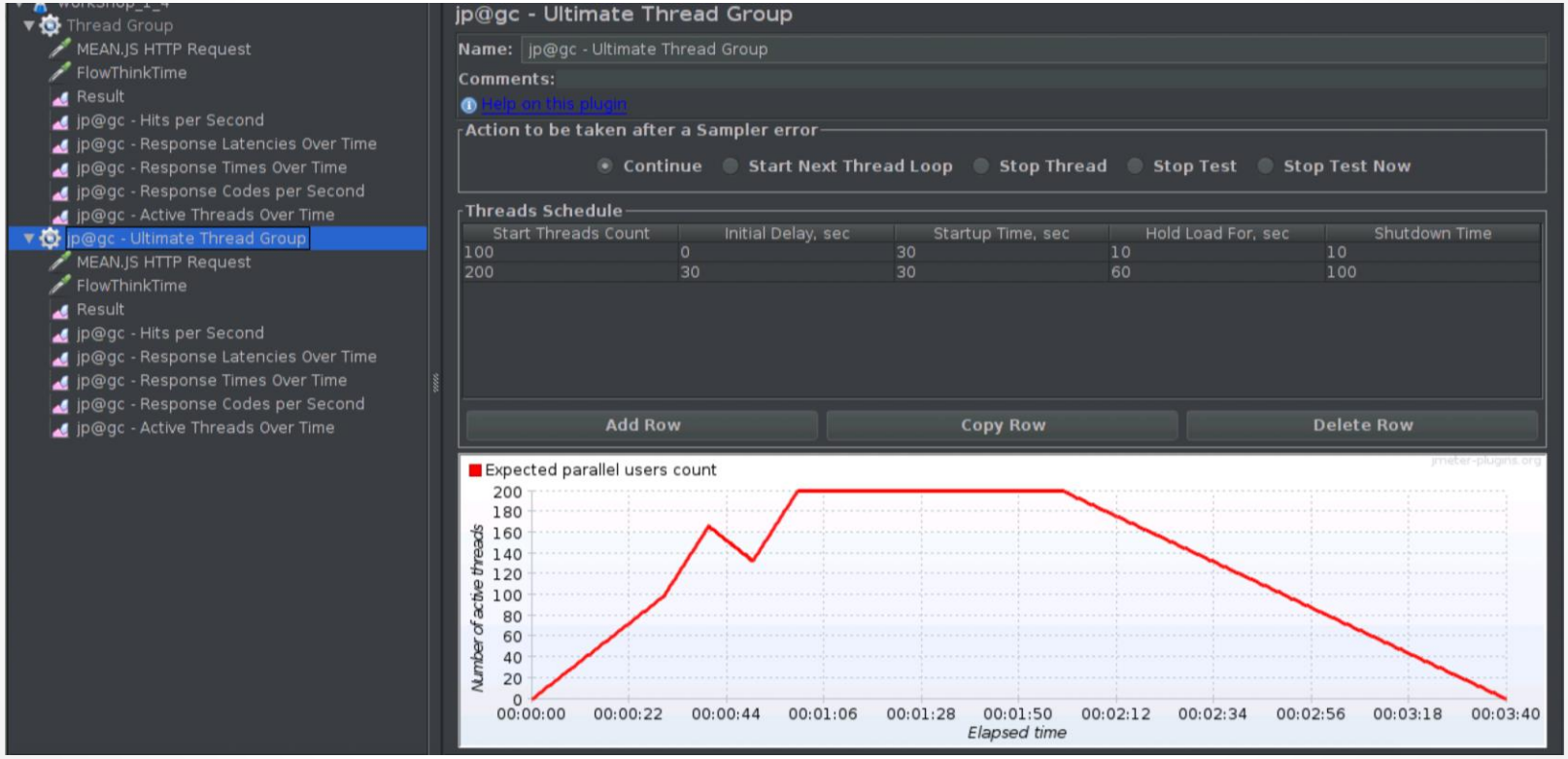
WorkShop: 2-4 Plugin

- Step 9: Add 2 set of thread as detail below



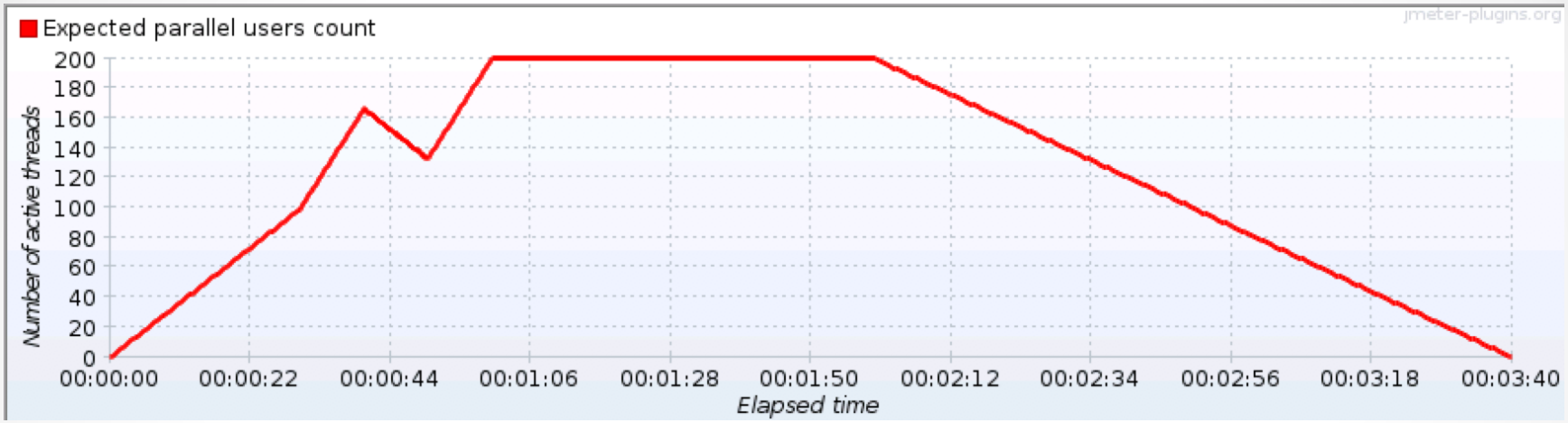
WorkShop: 2-4 Plugin

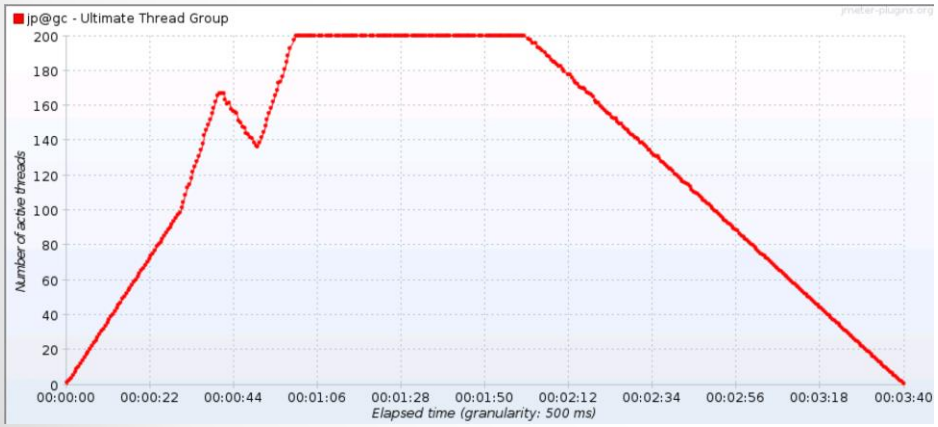
- Step 10: Copy all test element from existing thread group to this new and disable existing one.

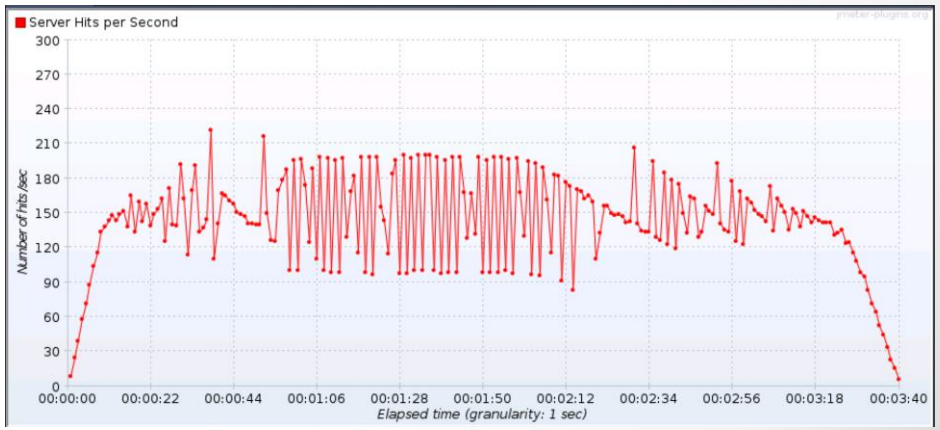


WorkShop: 2-4 Plugin

- Step 11: Start performance test and monitor result



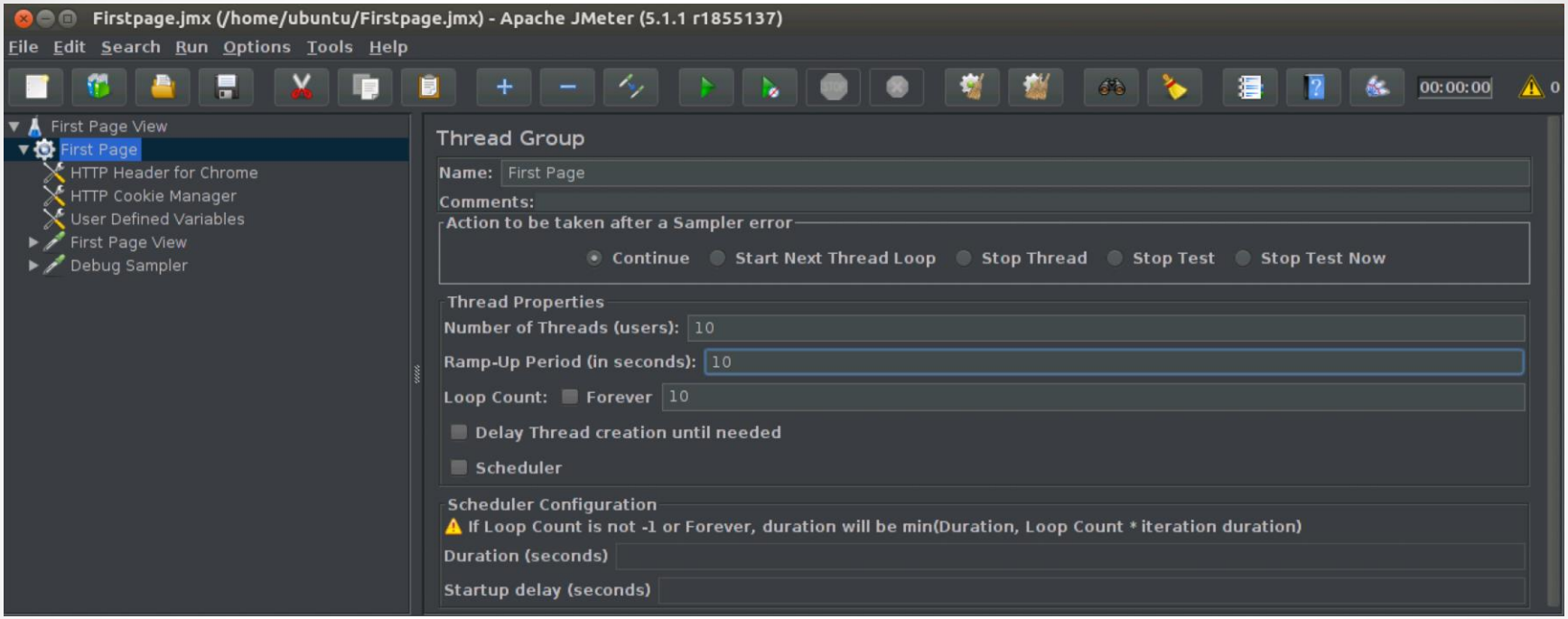




Non-GUI Mode

- GUI mode is very friendly for develop test plan and pilot test purpose
- However, the GUI mode will take more resource on CPU, Memory for render GUI and collect result on multiple listener in script will effect to JMeter performance.
- So for execute load test on production environment. We usually run in non-GUI mode that get more advantage
  - Support heavy & complex load
  - Increase durability for load test (No crash)
  - Increase capability for JMeter
- All testplan should be limit round for test
- Remove / Disable listener as much as possible
- Consideration Pre/Post process with nessesary
- Syntax will be
- "jmeter –n –t <testplan.jmx> -l <result.jtl>"

Non-GUI Mode




```
ubuntu@ip-10-21-1-151:~$ ./apache-jmeter-5.1.1/bin/jmeter -n -t Firstpage.jmx -l Firstpage_result.jtl
Creating summariser <summary>
Created the tree successfully using Firstpage.jmx
Starting the test @ Wed May 22 22:55:06 ICT 2019 (1558540506318)
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
May 22, 2019 10:55:08 PM org.apache.tika.config.InitializableProblemHandler$3 handleInitializableProblem
WARNING: org.xerial's sqlite-jdbc is not loaded.
Please provide the jar on your classpath to parse sqlite files.
See tika-parsers/pom.xml for the correct version.
summary =     200 in 00:00:20 =    10.0/s Avg:     6 Min:     0 Max:    76 Err:     0 (0.00%)
Tidying up ...    @ Wed May 22 22:55:27 ICT 2019 (1558540527221)
... end of run
ubuntu@ip-10-21-1-151:~$
```

Non-GUI Mode

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
      - View Results in Table
      - First Page Regular Express Extractor
      - jp@gc - Hits per Second
      - jp@gc - Response Latencies Over Time
      - jp@gc - Response Times Over Time
      - jp@gc - Response Codes per Second
    - Debug Sampler
      - View Results Tree
      - Debug JSR223 PostProcessor

View Results Tree

Name: First Page Result Tree

Comments:

Write results to file / Read from file

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

Search: | Case sensitive | Regular exp. | Search | Reset

Text

Open

Look In: ubuntu

apache-jmeter-5.1.1
Desktop
FlameGraph
jpgc-casutg-2.8
lib
MonitoringMemoryandDisk
Firstpage_result.jtl
MongoDB.csv
SignUpData.csv

File Name: Firstpage_result.jtl

Files of Type: JMeter [.xml, .jtl, .csv]

Open | Cancel

Scroll automatically?

Raw | Parsed

APACHE JMeter™

Non-GUI Mode

Firstpage.jmx (/home/ubuntu/Firstpage.jmx) - Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00

- First Page View
  - First Page
    - HTTP Header for Chrome
    - HTTP Cookie Manager
    - User Defined Variables
    - First Page View
      - First Page Think Time
      - First Page Assertion Decise
      - First Page Response Assertion
      - First Page Assertion Duration
      - First Page Result Tree
      - First Page Summary Report
      - First Page Response Time Graph
      - Aggregate Report
      - Aggregate Graph
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      - jp@gc - Response Codes per Second
    - Debug Sampler
      - View Results Tree
      - Debug JSR223 PostProcessor

View Results Tree

Name: First Page Result Tree

Comments:

Write results to file / Read from file

Filename /home/ubuntu/Firstpage_result.jtl Browse... Log/Display Only: Errors Successes Configure

Search: Case sensitive Regular exp. Search Reset

Text

- First Page View
- First Page View
- Debug Sampler
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler
- First Page View
- Debug Sampler

Sampler result | Request | Response data

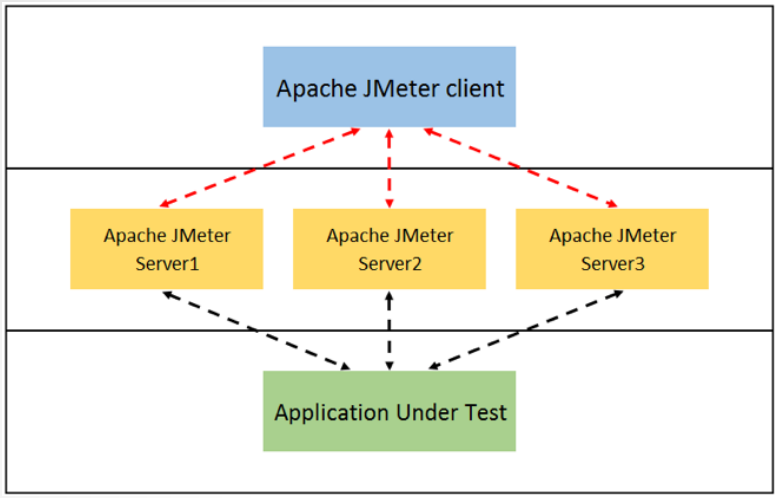
Thread Name: First Page 1-2
Sample Start: 2019-05-22 22:55:09 ICT
Load time: 0
Connect Time: 0
Latency: 0
Size in bytes: 1375
Sent bytes:0
Headers size in bytes: 0
Body size in bytes: 0
Sample Count: 1
Error Count: 0
Data type ("text"|"bin"|""): text
Response code: 200
Response message: OK

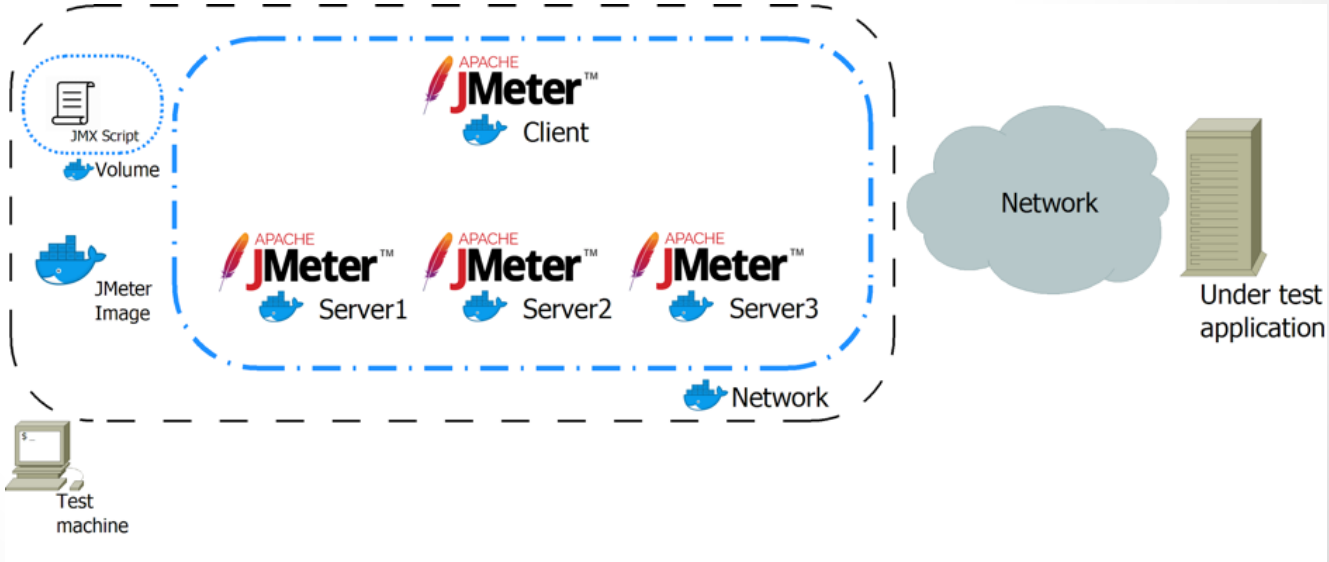
SampleResult fields:
ContentType:
DataEncoding: null

Distributed Load Model

- On production workload in many case. Single instance's resource is not enough for produce huge workload
- On single instance we're easy to reach limit in many way
  - CPU, Memory, I/O
  - Network Port
  - INODE
  - Total process per OS
  - etc
- Distributed load model was applied for brake resource limitation with 2 role
  - JMeter Client
  - JMeter Server
- With docker capability we can increate many container for support workload

Distributed Load Model





Ref: https://www.blazemeter.com/blog/jmeter-distributed-testing-with-docker

JMeter Benchmark for Production Scale

Distributed Load Model

- Create dockerfile/launch for container

instruction.txt | dockerfile | launch.sh

```
FROM alpine:3.9.4
LABEL maintainer="eva10409@gmail.com
ARG JMETER_VERSION="5.1.1"
ENV JMETER_HOME /opt/apache-jmeter-${JMETER_VERSION}
ENV JMETER_BIN  ${JMETER_HOME}/bin
ENV MIRROR_HOST http://mirrors.ocf.berkeley.edu/apache/jmeter
ENV JMETER_DOWNLOAD_URL ${MIRROR_HOST}/binaries/apache-jmeter-${JMETER_VERSION}.tgz
ENV JMETER_PLUGINS_DOWNLOAD_URL https://raw.githubusercontent.com/praparn/jmeter-workshop-062019/master/Workshop-2-5-Plugin
ENV JMETER_PLUGINS_FOLDER ${JMETER_HOME}/lib/ext/
RUN    apk update \
    && apk upgrade \
    && apk add ca-certificates \
    && update-ca-certificates \
            && apk add --update openjdk8-jre tzdata curl unzip bash \
            && cp /usr/share/zoneinfo/Europe/Rome /etc/localtime \
            && echo "Asia/Bangkok" >  /etc/timezone \
    && rm -rf /var/cache/apk/* \
    && mkdir -p /tmp/dependencies  \
    && curl -L --silent ${JMETER_DOWNLOAD_URL} >  /tmp/dependencies/apache-jmeter-${JMETER_VERSION}.tgz  \
    && mkdir -p /opt  \
    && tar -xzf /tmp/dependencies/apache-jmeter-${JMETER_VERSION}.tgz -C /opt  \
    && rm -rf /tmp/dependencies && chmod 777 -R ${JMETER_HOME}
RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-manager-1.3.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-manager-1.3.jar
RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-casutg-2.8.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-casutg-2.8.jar
RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-graphs-additional-2.0.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-graphs-additional-2.0.jar
RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-graphs-basic-2.0.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-graphs-basic-2.0.jar
ENV PATH $PATH:$JMETER_BIN
COPY launch.sh /
RUN chmod +x ./launch.sh
WORKDIR ${JMETER_HOME}
COPY user.properties ${JMETER_BIN}
ENTRYPOINT ["/launch.sh"]
```

Distributed Load Model

- Create dockerfile/launch for container

instruction.txt | dockerfile | launch.sh

```
#!/bin/bash

set -e
#freeMem=`awk '/MemFree/ { print int($2/1024) }' /proc/meminfo`
s=2
x=2
export JVM_ARGS="-Xms${s}g -Xmx${x}g -XX:MaxMetaspaceSize=512m"
echo "START Running Jmeter on `date`"
echo "JVM_ARGS=${JVM_ARGS}"
echo "jmeter args=$@"

jmeter $@
echo "END Running Jmeter on `date`"
```

Distributed Load Model

- Build dockerfile

```
ubuntu@ip-10-21-1-151:~$ cd ~/jmeter-workshop-062019/Workshop-2-6-Docker/dockerfile
ubuntu@ip-10-21-1-151:~/jmeter-workshop-062019/Workshop-2-6-Docker/dockerfile$     docker build -t jmeter ./
Sending build context to Docker daemon  12.29kB
Step 1/20 : FROM alpine:3.9.4
 ---> 055936d39205
Step 2/20 : LABEL maintainer="eva10409@gmail.com
 ---> Using cache
 ---> eba7291f23a5
Step 3/20 : ARG JMETER_VERSION="5.1.1"
 ---> Using cache
 ---> 514b1b87784f
Step 4/20 : ENV JMETER_HOME /opt/apache-jmeter-${JMETER_VERSION}
 ---> Using cache
 ---> 4911cd014aab
Step 5/20 : ENV JMETER_BIN  ${JMETER_HOME}/bin
 ---> Using cache
 ---> c55143f6a183
Step 6/20 : ENV MIRROR_HOST http://mirrors.ocf.berkeley.edu/apache/jmeter
 ---> Using cache
 ---> ccd7db74f4b8
Step 7/20 : ENV JMETER_DOWNLOAD_URL ${MIRROR_HOST}/binaries/apache-jmeter-${JMETER_VERSION}.tgz
 ---> Using cache
 ---> 2e421e8082e8
Step 8/20 : ENV JMETER_PLUGINS_DOWNLOAD_URL https://raw.githubusercontent.com/praparn/jmeter-workshop-062019/master/Workshop-2-5-Plugin
 ---> Using cache
 ---> f3c5516e642c
Step 9/20 : ENV JMETER_PLUGINS_FOLDER ${JMETER_HOME}/lib/ext/
 ---> Using cache
 ---> 5ed40e0752ed
Step 10/20 : RUN    apk update  && apk upgrade  && apk add ca-certificates      && update-ca-certificates            && apk add --update openjdk8-jre tzdata curl unzip bash            && cp /usr/share/zoneinfo/Europe/Rome /etc/localtime            && echo "Asia/Bangkok
" >  /etc/timezone      && rm -rf /var/cache/apk/*      && mkdir -p /tmp/dependencies   && curl -L --silent ${JMETER_DOWNLOAD_URL} >  /tmp/dependencies/apache-jmeter-${JMETER_VERSION}.tgz     && mkdir -p /opt        && tar -xzf /tmp/dependencies/apache-jmeter-${JMETER_VER
SION}.tgz -C /opt       && rm -rf /tmp/dependencies && chmod 777 -R ${JMETER_HOME}
 ---> Using cache
 ---> d81d8a0f56f9
Step 11/20 : RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-manager-1.3.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-manager-1.3.jar
 ---> Using cache
 ---> 10722dd2d779
Step 12/20 : RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-casutg-2.8.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-casutg-2.8.jar
 ---> Using cache
 ---> b7cde598ec17
Step 13/20 : RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-graphs-additional-2.0.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-graphs-additional-2.0.jar
 ---> Using cache
 ---> 824181157ead
Step 14/20 : RUN curl -L --silent ${JMETER_PLUGINS_DOWNLOAD_URL}/jmeter-plugins-graphs-basic-2.0.jar -o ${JMETER_PLUGINS_FOLDER}/jmeter-plugins-graphs-basic-2.0.jar
 ---> Using cache
 ---> 47fda067ab31
Step 15/20 : ENV PATH $PATH:$JMETER_BIN
 ---> Using cache
 ---> 4893fae7c4e1
Step 16/20 : COPY launch.sh /
 ---> Using cache
 ---> 34150462fd0a
Step 17/20 : RUN chmod +x ./launch.sh
 ---> Using cache
 ---> 87391da7763b
Step 18/20 : WORKDIR ${JMETER_HOME}
 ---> Using cache
 ---> 8ad7d10b18f2
Step 19/20 : COPY user.properties ${JMETER_BIN}
 ---> Using cache
 ---> 03d5d01ad6ae
Step 20/20 : ENTRYPOINT ["/launch.sh"]
 ---> Using cache
 ---> ba6bf9f12d86
Successfully built ba6bf9f12d86
Successfully tagged jmeter:latest
ubuntu@ip-10-21-1-151:~/jmeter-workshop-062019/Workshop-2-6-Docker/dockerfile$
```

Distributed Load Model

- Create init.sh for create cluster of docker container

Users ▸ praparnlueangphoonlap ▸ Work ▸ Apache_Jmeter_Performance ▸ Training ▸ Workshop-2-5-Cli_DistributedLoad ▸ init.sh

```
#!/bin/bash
echo "Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client"
CLIENT_IP=192.168.100.20
declare -a SERVER_IPS=("192.168.100.10" "192.168.100.11" "192.168.100.12")
timestamp=$(date +%Y%m%d_%H%M%S)
script_path=~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter
result_path=~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/result
jmeter_scriptpath=/mnt/jmeter
jmeter_resultpath=/mnt/result

echo "Step 2: Create JMeter server"
for IPADDR in "${SERVER_IPS[@]}"
do
  docker run --name $IPADDR \
  -dit --net jmeternet --ip $IPADDR \
  --mount type=bind,source=${result_path},target=${jmeter_resultpath} \
  --rm jmeter -n -s \
  -Jclient.rmi.localport=7000 -Jserver.rmi.localport=60000 -Jserver.rmi.ssl.disable=true \
  -j ${jmeter_resultpath}/server/slave_${timestamp}_${IPADDR}.log
done

echo "Step 3: Create JMeter client"
docker run --name $CLIENT_IP \
  --net jmeternet --ip $CLIENT_IP \
  --mount type=bind,source=${result_path},target=${jmeter_resultpath} \
  --mount type=bind,source=${script_path},target=${jmeter_scriptpath} \
  -v "${volume_path}":${jmeter_path} \
  --rm jmeter -n -X \
  -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true \
  -R $(echo $(printf ",%s" "${SERVER_IPS[@]}") | cut -c 2-) \
  -t ${jmeter_scriptpath}/Template_Workshop_2_5_FirstPage.jmx \
  -l ${jmeter_resultpath}/client/result_${timestamp}.jtl \
  -j ${jmeter_resultpath}/client/jmeter_${timestamp}.log
```

Distributed Load Model

- Review Log and Open Jmeter GUI for view result

```
ad66e858bb190348a741969b8e6f84a4ba13e08292ce0b6c20a0b10ed863e84c
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/dockerfile$  cd ~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLo
ad/
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$     chmod +x ./init.sh
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$ ./init.sh
Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client
Step 2: Create JMeter server
03c6f0f4b0fe197abd9942a88859cc6e888a52e80e6fb13204afd874cbe58bb9
58ad7f6da2ffdddf3dffe72bb84184bb77cea6d0fb5fff021d38339d8b2fe1f2
56176c166677edea8e9f2fb72e221072f3c45cdcc968e9df6cc2db5e294eb55b
Step 3: Create JMeter client
START Running Jmeter on Sun Aug  4 20:10:36 CEST 2019
JVM_ARGS=-Xms2g -Xmx2g -XX:MaxMetaspaceSize=512m
jmeter args=-n -X -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true -R 192.168.100.10,192.168.100.11,192.168.100.12 -t /mnt/jmeter/Template_Wo
rkshop_2_5_FirstPage.jmx -l /mnt/result/client/result_20190805_011031.jtl -j /mnt/result/client/jmeter_20190805_011031.log
Aug 05, 2019 1:10:42 AM java.util.prefs.FileSystemPreferences$1 run
INFO: Created user preferences directory.
Creating summariser <summary>
Created the tree successfully using /mnt/jmeter/Template_Workshop_2_5_FirstPage.jmx
Configuring remote engine: 192.168.100.10
Configuring remote engine: 192.168.100.11
Configuring remote engine: 192.168.100.12
Starting remote engines
Starting the test @ Mon Aug 05 01:10:43 ICT 2019 (1564942243797)
Remote engines have been started
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
summary +   1104 in 00:00:11 =  102.6/s Avg:  1279 Min:    25 Max:  2186 Err:     0 (0.00%) Active: 751 Started: 751 Finished: 0
summary +   8700 in 00:00:30 =  293.3/s Avg:  2473 Min:   591 Max:  7551 Err:   811 (9.32%) Active: 801 Started: 801 Finished: 0
summary =   9804 in 00:00:40 =  242.6/s Avg:  2339 Min:    25 Max:  7551 Err:   811 (8.27%)
summary +   8300 in 00:00:30 =  273.2/s Avg:  2675 Min:  1623 Max:  7174 Err:   286 (3.45%) Active: 790 Started: 801 Finished: 11
summary =  18104 in 00:01:11 =  255.7/s Avg:  2493 Min:    25 Max:  7551 Err:  1097 (6.06%)
Tidying up remote @ Mon Aug 05 01:12:20 ICT 2019 (1564942340688)
Exiting remote servers
Tidying up remote @ Mon Aug 05 01:12:21 ICT 2019 (1564942341128)
Exiting remote servers
... end of run
... end of run
END Running Jmeter on Sun Aug  4 20:12:27 CEST 2019
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$
```

WorkShop: 2-5 Cli-DistributedLoad

- Step 1: Open test plan "Template_Workshop_2_5_FirstPage.jmx" and configure variable as require

Template_Workshop_2_5_FirstPage.jmx (/home/ubuntu/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter/Template_Workshop_2_5_FirstPage.j

File Edit Search Run Options Tools Help

00:00:00

- WorkShop_2_5_FirstPage
  - Thread Group
    - MEAN.JS HTTP Request
    - FlowThinkTime
    - Result
    - Summary Report
    - Response Time Graph

Test Plan

Name: WorkShop_2_5_FirstPage

Comments:

User Defined Variables

Name:	Value
BaseIP	10.21.1.93
MariaUserName	magento
MariaPassWord	magento
MariaPort	3306
MongoDBPort	27017
MeanPort	3000
MagentoPort	80

Detail | Add | Add from Clipboard | Delete | Up | Down

☐ 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 | Browse... | Delete | Clear

Library

WorkShop: 2-5 Cli-DistributedLoad

- Step 2: Check Number of Thread (users), Ramp-Up Period (in seconds), Loop Count

Template_Workshop_2_5_FirstPage.jmx (/home/ubuntu/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter/Template_Workshop_2_5_FirstPage.j

File Edit Search Run Options Tools Help

00:00:00

- WorkShop_2_5_FirstPage
  - Thread Group
    - MEAN.JS HTTP Request
    - FlowThinkTime
    - Result
    - Summary Report
    - Response Time Graph

Thread Group

Name: Thread Group

Comments:

Action to be taken after a Sampler error

Continue | Start Next Thread Loop | Stop Thread | Stop Test | Stop Test Now

Thread Properties

Number of Threads (users): 800

Ramp-Up Period (in seconds): 10

Loop Count: Forever 30

Delay Thread creation until needed

Scheduler

Scheduler Configuration

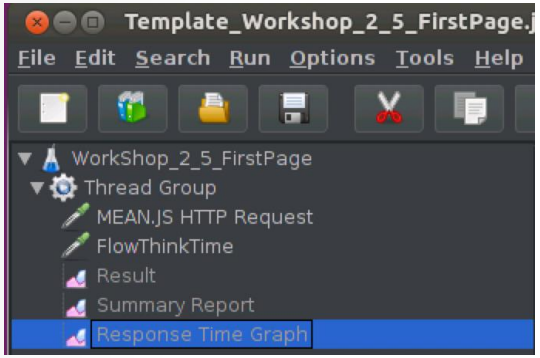
If Loop Count is not -1 or Forever, duration will be min(Duration, Loop Count * iteration duration)

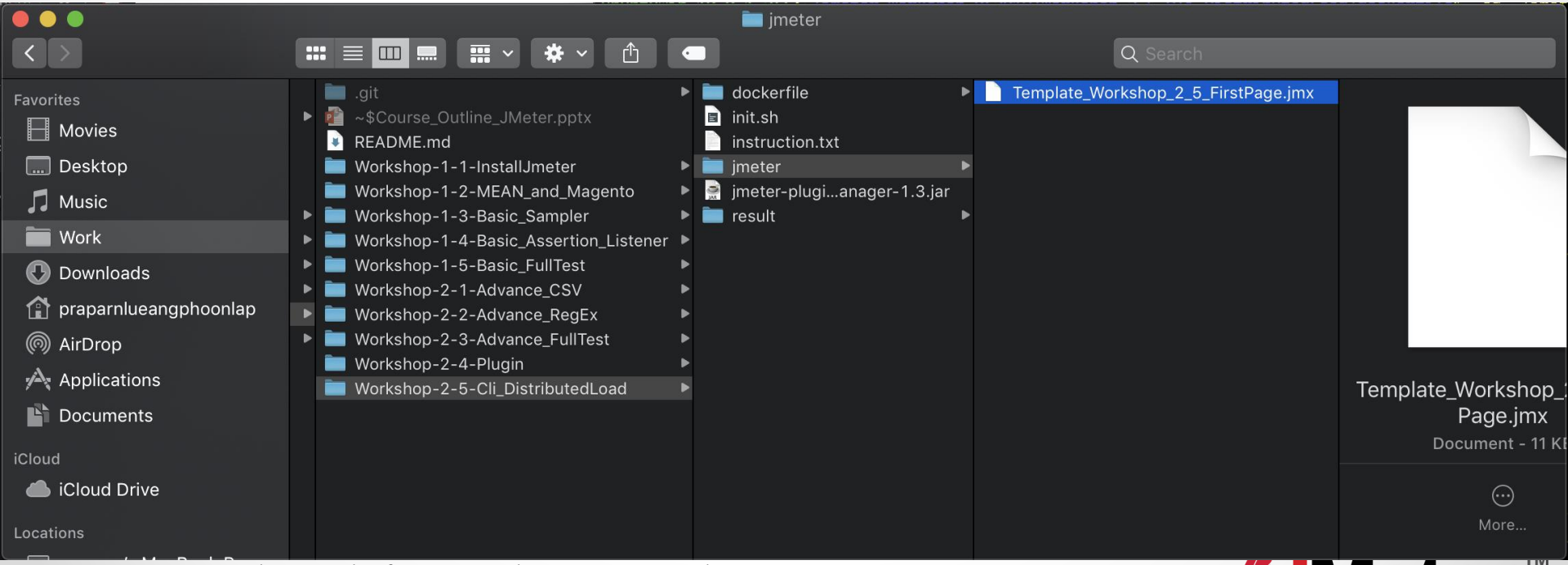
Duration (seconds)

Startup delay (seconds)

WorkShop: 2-5 Cli-DistributedLoad

- Step 3: Disable all listener and close test plan





WorkShop: 2-5 Cli-DistributedLoad

- Step 4: Run Jmeter on non-gui mode

```
ad66e858bb190348a741969b8e6f84a4ba13e08292ce0b6c20a0b10ed863e84c
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/dockerfile$  cd ~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLo
ad/
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$     chmod +x ./init.sh
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$ ./init.sh
Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client
Step 2: Create JMeter server
03c6f0f4b0fe197abd9942a88859cc6e888a52e80e6fb13204afd874cbe58bb9
58ad7f6da2ffdddf3dffe72bb84184bb77cea6d0fb5fff021d38339d8b2fe1f2
56176c166677edea8e9f2fb72e221072f3c45cdcc968e9df6cc2db5e294eb55b
Step 3: Create JMeter client
START Running Jmeter on Sun Aug  4 20:10:36 CEST 2019
JVM_ARGS=-Xms2g -Xmx2g -XX:MaxMetaspaceSize=512m
jmeter args=-n -X -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true -R 192.168.100.10,192.168.100.11,192.168.100.12 -t /mnt/jmeter/Template_Wo
rkshop_2_5_FirstPage.jmx -l /mnt/result/client/result_20190805_011031.jtl -j /mnt/result/client/jmeter_20190805_011031.log
Aug 05, 2019 1:10:42 AM java.util.prefs.FileSystemPreferences$1 run
INFO: Created user preferences directory.
Creating summariser <summary>
Created the tree successfully using /mnt/jmeter/Template_Workshop_2_5_FirstPage.jmx
Configuring remote engine: 192.168.100.10
Configuring remote engine: 192.168.100.11
Configuring remote engine: 192.168.100.12
Starting remote engines
Starting the test @ Mon Aug 05 01:10:43 ICT 2019 (1564942243797)
Remote engines have been started
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
summary +   1104 in 00:00:11 =  102.6/s Avg:  1279 Min:    25 Max:  2186 Err:     0 (0.00%) Active: 751 Started: 751 Finished: 0
summary +   8700 in 00:00:30 =  293.3/s Avg:  2473 Min:   591 Max:  7551 Err:   811 (9.32%) Active: 801 Started: 801 Finished: 0
summary =   9804 in 00:00:40 =  242.6/s Avg:  2339 Min:    25 Max:  7551 Err:   811 (8.27%)
summary +   8300 in 00:00:30 =  273.2/s Avg:  2675 Min:  1623 Max:  7174 Err:   286 (3.45%) Active: 790 Started: 801 Finished: 11
summary =  18104 in 00:01:11 =  255.7/s Avg:  2493 Min:    25 Max:  7551 Err:  1097 (6.06%)
Tidying up remote @ Mon Aug 05 01:12:20 ICT 2019 (1564942340688)
Exiting remote servers
Tidying up remote @ Mon Aug 05 01:12:21 ICT 2019 (1564942341128)
Exiting remote servers
... end of run
... end of run
END Running Jmeter on Sun Aug  4 20:12:27 CEST 2019
ubuntu@ip-10-0-1-246:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$
```

WorkShop: 2-5 Cli-DistributedLoad

- Step 5: Open Jmeter GUI and test plan (enable all listener)

Template_Workshop_2_5_FirstPage.jmx (/home/ubuntu/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter/Template_Workshop_2_5_FirstPage.j

File Edit Search Run Options Tools Help

00:00:00

- WorkShop_2_5_FirstPage
  - Thread Group
    - MEAN.JS HTTP Request
    - FlowThinkTime
    - Result
    - Summary Report
    - Response Time Graph

Test Plan

Name: WorkShop_2_5_FirstPage

Comments:

User Defined Variables

Name:	Value
BaseIP	10.21.1.93
MariaUserName	magento
MariaPassWord	magento
MariaPort	3306
MongoDBPort	27017
MeanPort	3000
MagentoPort	80

Detail | Add | Add from Clipboard | Delete | Up | Down

☐ 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.

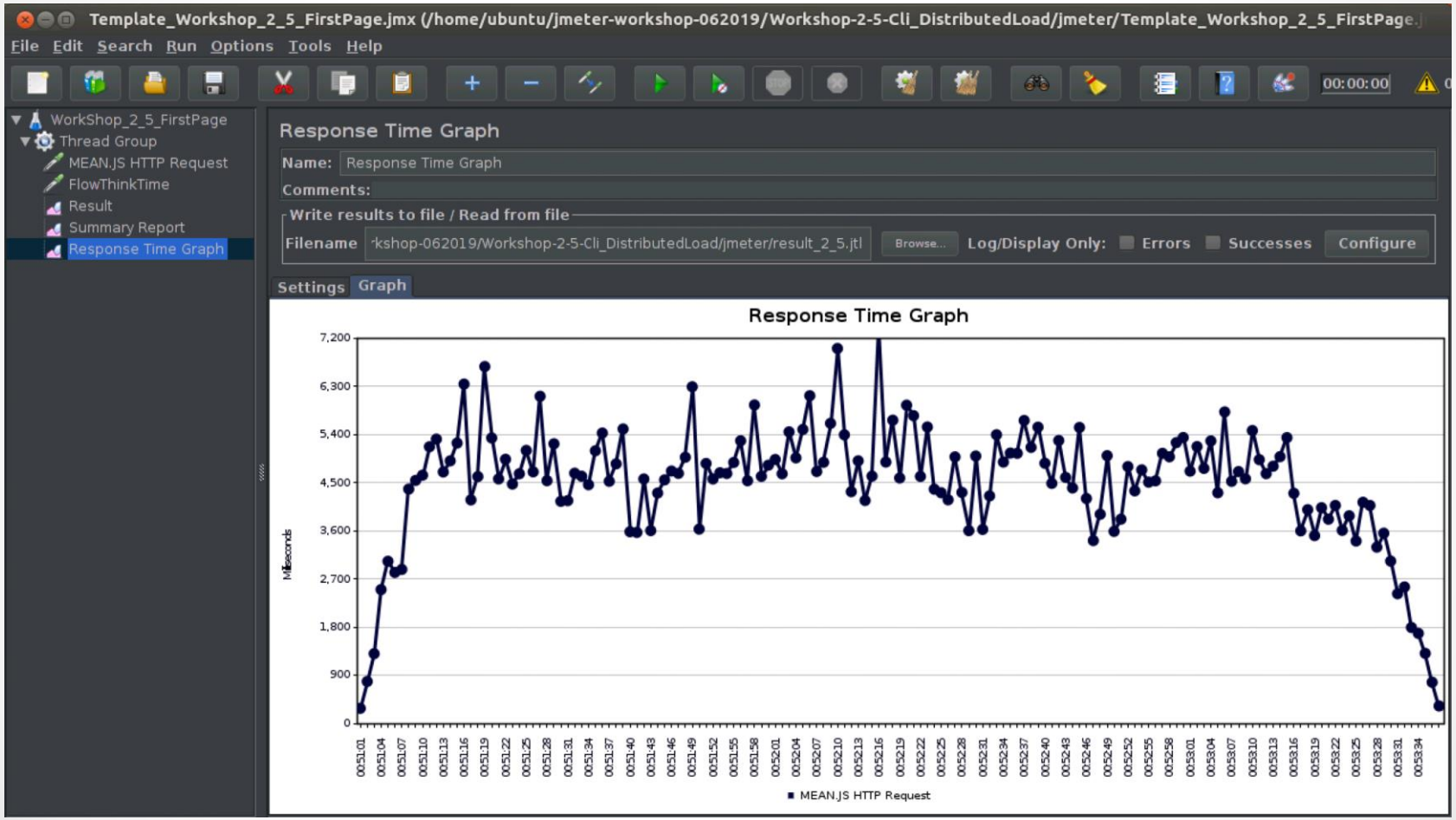
Add directory or jar to classpath | Browse... | Delete | Clear

Library

APACHE JMeter™

WorkShop: 2-5 Cli-DistributedLoad

- Step 7: Check result from result file “result_2_5.jtl



WorkShop: 2-5 Cli-DistributedLoad

- Step 8: Disable all listener and configure Thread Group for 3 load test server (Docker)

Template_Workshop_2_5_FirstPage.jmx (/home/ubuntu/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter/Template_Workshop_2_5_FirstPage.j

File Edit Search Run Options Tools Help

00:00:00

- WorkShop_2_5_FirstPage
  - Thread Group
    - MEAN.JS HTTP Request
    - FlowThinkTime
    - Result
    - Summary Report
    - Response Time Graph

Thread Group

Name: Thread Group

Comments:

Action to be taken after a Sampler error

Continue | Start Next Thread Loop | Stop Thread | Stop Test | Stop Test Now

Thread Properties

Number of Threads (users): 267

Ramp-Up Period (in seconds): 10

Loop Count: Forever 30

Delay Thread creation until needed

Scheduler

Scheduler Configuration

If Loop Count is not -1 or Forever, duration will be min(Duration, Loop Count * iteration duration)

Duration (seconds)

Startup delay (seconds)

APACHE JMeter™

WorkShop: 2-5 Cli-DistributedLoad

- Step 9: Build docker image for Jmeter

```bash
#!/bin/bash
echo "Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client"
CLIENT_IP=192.168.100.20
declare -a SERVER_IPS=("192.168.100.10" "192.168.100.11" "192.168.100.12")
timestamp=$(date +%Y%m%d_%H%M%S)
script_path=~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/jmeter
result_path=~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/result
jmeter_scriptpath=/mnt/jmeter
jmeter_resultpath=/mnt/result

echo "Step 2: Create JMeter server"
for IPADDR in "${SERVER_IPS[@]}"
do
  docker run --name $IPADDR \
  -dit --net jmeternet --ip $IPADDR \
  --mount type=bind,source=${result_path},target=${jmeter_resultpath} \
  --rm jmeter -n -s \
  -Jclient.rmi.localport=7000 -Jserver.rmi.localport=60000 -Jserver.rmi.ssl.disable=true \
  -j ${jmeter_resultpath}/server/slave_${timestamp}_${IPADDR}.log
done

echo "Step 3: Create JMeter client"
docker run --name $CLIENT_IP \
  --net jmeternet --ip $CLIENT_IP \
  --mount type=bind,source=${result_path},target=${jmeter_resultpath} \
  --mount type=bind,source=${script_path},target=${jmeter_scriptpath} \
  -v "${volume_path}":${jmeter_path} \
  --rm jmeter -n -X \
  -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true \
  -R $(echo $(printf ",%s" "${SERVER_IPS[@]}") | cut -c 2-) \
  -t ${jmeter_scriptpath}/Template_Workshop_2_5_FirstPage.jmx \
  -l ${jmeter_resultpath}/client/result_${timestamp}.jtl \
  -j ${jmeter_resultpath}/client/jmeter_${timestamp}.log
```

```
ubuntu@ip-10-21-1-152:~$ cd ~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/dockerfile
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/dockerfile$     docker build -t jmeter ./
Sending build context to Docker daemon  12.29kB
Step 1/20 : FROM alpine:3.9.4
3.9.4: Pulling from library/alpine
e7c96db7181b: Pull complete
Digest: sha256:769fddc7cc2f0a1c35abb2f91432e8beecf83916c421420e6a6da9f8975464b6
Status: Downloaded newer image for alpine:3.9.4
 ---> 055936d39205
Step 2/20 : LABEL maintainer="eva10409@gmail.com
 ---> Running in 4f7e35d45e17
Removing intermediate container 4f7e35d45e17
 ---> 0d038baf0c9c
Step 3/20 : ARG JMETER_VERSION="5.1.1"
 ---> Running in b01ed089d2bf
Removing intermediate container b01ed089d2bf
 ---> d0c66da71eb3
Step 4/20 : ENV JMETER_HOME /opt/apache-jmeter-${JMETER_VERSION}
 ---> Running in 19e1bef6bed0
Removing intermediate container 19e1bef6bed0
 ---> afccb2be4469
Step 5/20 : ENV JMETER_BIN  ${JMETER_HOME}/bin
 ---> Running in 8e41a4d4e007
Removing intermediate container 8e41a4d4e007
 ---> f9bf1ece281f
Step 6/20 : ENV MIRROR_HOST http://mirrors.ocf.berkeley.edu/apache/jmeter
 ---> Running in 314c158f0bc9
Removing intermediate container 314c158f0bc9
 ---> e0b1f8818e55
Step 7/20 : ENV JMETER_DOWNLOAD_URL ${MIRROR_HOST}/binaries/apache-jmeter-${JMETER_VERSION}.tgz
 ---> Running in d8745d367c81
Removing intermediate container d8745d367c81
 ---> 91b19cd8e15e
Step 8/20 : ENV JMETER_PLUGINS_DOWNLOAD_URL https://raw.githubusercontent.com/praparn/jmeter-workshop-062019/master/Workshop-2-5-Plugin
 ---> Running in 9247e2fe5b90
Removing intermediate container 9247e2fe5b90
 ---> ec664d390bf8
Step 9/20 : ENV JMETER_PLUGINS_FOLDER ${JMETER_HOME}/lib/ext/
 ---> Running in 8f3a42e60ff1
Removing intermediate container 8f3a42e60ff1
 ---> 88edf5a47e07
Step 10/20 : RUN    apk update  && apk upgrade  && apk add ca-certificates      && update-ca-certificates            && apk add --update openjdk8-jre tzd
ta curl unzip bash        && cp /usr/share/zoneinfo/Europe/Rome /etc/localtime            && echo "Asia/Bangkok" >  /etc/timezone         && rm -rf
var/cache/apk/*         && mkdir -p /tmp/dependencies   && curl -L --silent ${JMETER_DOWNLOAD_URL} >  /tmp/dependencies/apache-jmeter-${JMETER_VERSION}.tg
        && mkdir -p /opt        && tar -xzf /tmp/dependencies/apache-jmeter-${JMETER_VERSION}.tgz -C /opt       && rm -rf /tmp/dependencies && chmod 777 -
 ${JMETER_HOME}
```

WorkShop: 2-5 Cli-DistributedLoad

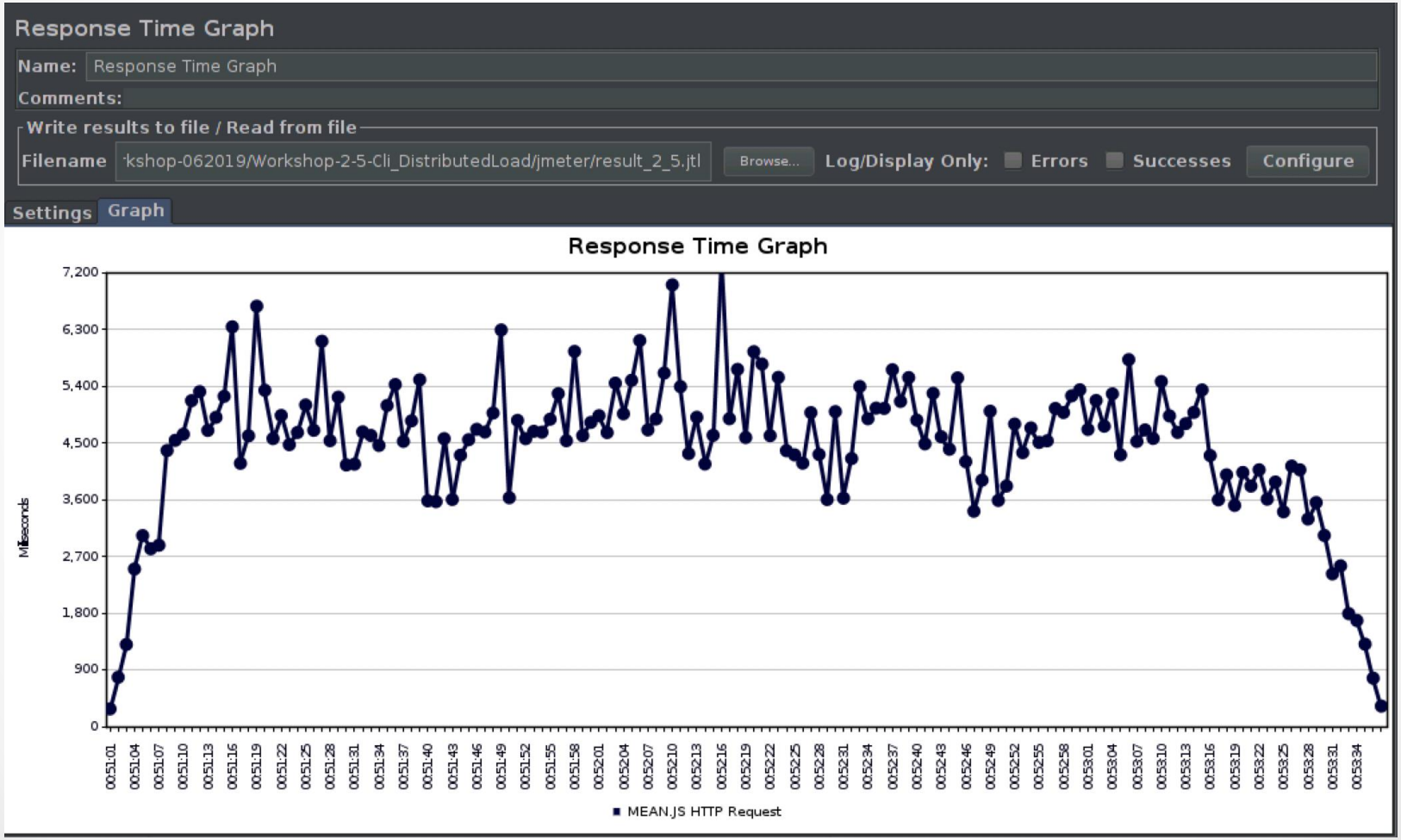
- Step 9: Start load test with monitor

```
ubuntu@ip-10-21-1-152:~$ docker image ls
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
jmeter              latest              8ea8265714f3        27 minutes ago      188MB
alpine              3.9.4               055936d39205        5 weeks ago         5.53MB
ubuntu@ip-10-21-1-152:~$ docker network create --driver bridge \
>     --subnet=192.168.100.0/24 --gateway=192.168.100.5 --opt="com.docker.network.mtu"="1500" jmeternet
2684941e0fadd7b5db3bfe59394463b8f460b1f2df2fa265f0fab25445733e6d
ubuntu@ip-10-21-1-152:~$ cd ~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad/
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$     chmod +x ./init.sh
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$     ./init.sh
Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client
Step 2: Create JMeter server
eba777fc0311bdb5bf5ce1639969f9682939febc96702376f0cbf3c10fed288e
ec191720dff66872d5f7cf56ad4b8d6e8ae64c2930344504a60b759765219c64
d3d0d5b14b28ed89321a43234ac4ea36228aae7922feece7cad889c2bd160def
Step 3: Create JMeter client
START Running Jmeter on Sun Jun 16 20:03:09 CEST 2019
JVM_ARGS=-Xms2g -Xmx2g -XX:MaxMetaspaceSize=512m
jmeter args=-n -X -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true -R 192.168.100.10,192.168.100.11,192.168.100.12 -t /mnt/jmeter/Template_Workshop_
2_5_FirstPage.jmx -l /mnt/result/client/result_20190617_010305.jtl -j /mnt/result/client/jmeter_20190617_010305.log
Jun 17, 2019 1:03:11 AM java.util.prefs.FileSystemPreferences$1 run
INFO: Created user preferences directory.
Creating summariser <summary>
Created the tree successfully using /mnt/jmeter/Template_Workshop_2_5_FirstPage.jmx
Configuring remote engine: 192.168.100.10
Configuring remote engine: 192.168.100.11
Configuring remote engine: 192.168.100.12
Starting remote engines
Starting the test @ Mon Jun 17 01:03:11 ICT 2019 (1560708191976)
Remote engines have been started
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
summary +   1304 in 00:00:16 =   80.3/s Avg:  3393 Min:    19 Max:  7016 Err:    19 (1.46%) Active: 801 Started: 801 Finished: 0
summary +   3600 in 00:00:30 =  120.3/s Avg:  6400 Min:  3772 Max: 13080 Err:   432 (12.00%) Active: 801 Started: 801 Finished: 0
summary =   4904 in 00:00:46 =  106.3/s Avg:  5600 Min:    19 Max: 13080 Err:   451 (9.20%)
summary +   3600 in 00:00:31 =  116.2/s Avg:  6555 Min:  4891 Max: 13086 Err:   399 (11.08%) Active: 801 Started: 801 Finished: 0
summary =   8504 in 00:01:17 =  110.2/s Avg:  6004 Min:    19 Max: 13086 Err:   850 (10.00%)
summary +   3900 in 00:00:29 =  134.7/s Avg:  5939 Min:  4037 Max: 13827 Err:   687 (17.62%) Active: 801 Started: 801 Finished: 0
summary =  12404 in 00:01:46 =  116.9/s Avg:  5984 Min:    19 Max: 13827 Err:  1537 (12.39%)
summary +   3600 in 00:00:30 =  121.8/s Avg:  6321 Min:  4877 Max: 13090 Err:   476 (13.22%) Active: 801 Started: 801 Finished: 0
summary =  16004 in 00:02:16 =  118.0/s Avg:  6059 Min:    19 Max: 13827 Err:  2013 (12.58%)
summary +   3300 in 00:00:30 =  110.3/s Avg:  6768 Min:  5428 Max: 11190 Err:   236 (7.15%) Active: 801 Started: 801 Finished: 0
summary =  19304 in 00:02:46 =  116.6/s Avg:  6181 Min:    19 Max: 13827 Err:  2249 (11.65%)
summary +   3500 in 00:00:31 =  112.7/s Avg:  6811 Min:  5370 Max: 11333 Err:   137 (3.91%) Active: 520 Started: 801 Finished: 281
summary =  22804 in 00:03:17 =  116.0/s Avg:  6277 Min:    19 Max: 13827 Err:  2386 (10.46%)
Tidying up remote @ Mon Jun 17 01:06:39 ICT 2019 (1560708399659)
Exiting remote servers
Tidying up remote @ Mon Jun 17 01:06:39 ICT 2019 (1560708399697)
Exiting remote servers
summary +   1226 in 00:00:09 =  143.5/s Avg:  4486 Min:    11 Max: 10266 Err:     0 (0.00%) Active: 0 Started: 801 Finished: 801
summary =  24030 in 00:03:25 =  117.1/s Avg:  6186 Min:    11 Max: 13827 Err:  2386 (9.93%)
Tidying up remote @ Mon Jun 17 01:06:39 ICT 2019 (1560708399749)
Exiting remote servers
... end of run
... end of run
... end of run
END Running Jmeter on Sun Jun 16 20:06:45 CEST 2019
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$
```

```
ubuntu@ip-10-21-1-152:~$ vmstat 2
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 5  0      0 13712844  64596 950860    0    0    14    12  353  216 27  0 72  0  0
 1  0      0 13715800  64596 950440    0    0     0   490 5300 1803 32  1 66  0  0
 1  0      0 13689464  64596 949724    0    0     0     0 3940 1562 32  1 67  0  0
 1  0      0 13678776  64596 949116    0    0     0     0 3347 1413 29  1 69  0  0
 1  0      0 13685356  64596 948520    0    0     0     0 4223 1631 31  1 68  0  0
 1  0      0 13686656  64596 947980    0    0     0     0 4524 1517 30  2 69  0  0
 1  0      0 13683296  64596 947660    0    0     0     0 3815 1253 30  0 70  0  0
 2  0      0 13672248  64596 947280    0    0     0     0 3217 1398 37  1 62  0  0
 1  0      0 13675612  64596 947068    0    0     0     0 3857 1401 32  1 67  0  0
 2  0      0 13666324  64596 946176    0    0     0     0 4250 1504 44  2 54  0  0
 2  0      0 13651820  64596 945140    0    0     0     0 3773 1447 43  1 56  0  0
 1  0      0 13656360  64596 944432    0    0     0     0 2996 1305 45  1 54  0  0
 1  0      0 13656240  64596 944792    0    0     0     0 6738 6014 35  2 63  0  0
 1  0      0 13663900  64596 944924    0    0     0     0 3807 1343 26  1 73  0  0
 1  0      0 13664956  64604 945192    0    0     0    82 4118 1380 28  1 71  0  0
 2  0      0 13665040  64604 945560    0    0     0     0 4469 1579 28  1 71  0  0
 1  0      0 13659772  64604 945748    0    0     0    32 3268 1252 31  0 68  0  0
 1  0      0 13654256  64604 946124    0    0     0     0 4471 1426 28  1 71  0  0
 1  0      0 13654644  64604 946364    0    0     0     0 3153 1330 26  1 72  0  0
 1  0      0 13654048  64604 946888    0    0     0   296 4738 1605 32  1 67  0  0
 2  0      0 13649920  64604 947224    0    0     0     0 3938 1431 34  1 65  0  0
 8  0      0 13626252  64604 947324    0    0     0     0 3591 1162 56  1 43  0  0
 1  0      0 13623044  64604 947604    0    0     0     0 3294 1338 41  2 58  0  0
 1  0      0 13634860  64604 948000    0    0     0     0 4168 1638 29  2 69  0  0
 1  0      0 13644744  64604 948192    0    0     0     0 3195 1256 28  1 71  0  0
 1  0      0 13641864  64604 948556    0    0     0     0 4349 1458 31  1 68  0  0
 1  0      0 13645224  64604 948968    0    0     0     4 3941 1636 32  1 67  0  0
 1  0      0 13646484  64604 949060    0    0     0     0 3482 1307 27  1 72  0  0
 1  0      0 13648532  64604 949284    0    0     0     0 3252 1115 27  1 73  0  0
 1  0      0 13646520  64612 949500    0    0     0    22 4334 1592 31  1 68  0  0
 1  0      0 13639328  64612 949700    0    0     0     0 3049 1505 30  1 69  0  0
 1  0      0 13642912  64612 950124    0    0     0    88 3524 1438 27  1 72  0  0
 1  0      0 13642608  64612 950464    0    0     0     0 5112 1641 27  1 71  0  0
 1  0      0 13642376  64612 950924    0    0     0     0 3917 1585 27  1 72  0  0
 1  0      0 13642688  64612 951128    0    0     0     0 4309 1557 28  1 71  0  0
 1  0      0 13641852  64612 951424    0    0     0     0 3619 1387 27  1 72  0  0
 1  0      0 13641628  64612 951656    0    0     0   384 3265 1320 27  1 72  0  0
procs -----------memory---------- ---swap-- -----io---- -system-- ------cpu-----
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st
 2  0      0 13640464  64612 951972    0    0     0     0 4455 1599 28  1 71  0  0
 1  0      0 13639988  64612 952360    0    0     0     0 3848 1419 26  1 73  0  0
 1  0      0 13639680  64612 952556    0    0     0     0 4015 1353 26  1 73  0  0
 1  0      0 13621448  64612 952712    0    0     0     2 3724 1567 28  1 71  0  0
 1  0      0 13620604  64612 952940    0    0     0     0 3579 1446 26  1 73  0  0
 1  0      0 13615212  64612 953280    0    0     0     0 3525 1589 28  1 71  0  0
```

WorkShop: 2-5 Cli-DistributedLoad

- Step 10: Check Result from Jmeter GUI



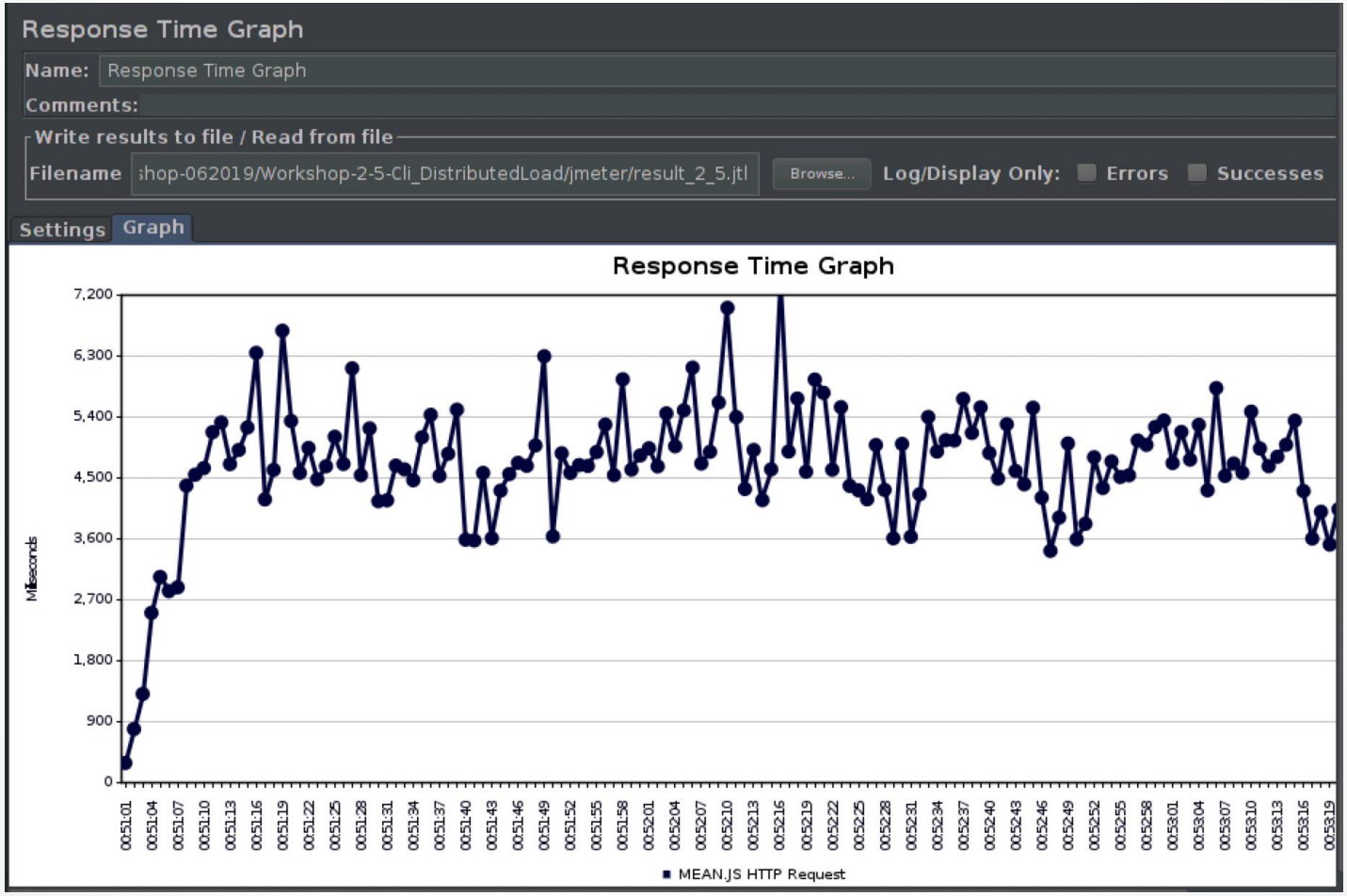
WorkShop: 2-5 Cli-DistributedLoad

- Special for 1200 User (400 x 3)

```
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$ ./init.sh
Step 1: Define IP Address, Timestamp Volume of JMeter Server and JMeter Client
Step 2: Create JMeter server
e65894be6fdf7eff290e22184b289c59090706c1cb7dbb8bedb0033eedef5503
2392e35efbc87d053149f53882ff1df06e39bb7da07230e4d696be6834b29d66
f4ccfd2b811201ff8f42a66b13ed39f78a8c0d6c3b91a0ad3969230d8ec26956
Step 3: Create JMeter client
START Running Jmeter on Sun Jun 16 20:12:07 CEST 2019
JVM_ARGS=-Xms2g -Xmx2g -XX:MaxMetaspaceSize=512m
jmeter args=-n -X -Jclient.rmi.localport=7000 -Jserver.rmi.ssl.disable=true -R 192.168.100.10,192.168.100.11,192.168.100.12 -t /mnt/jmeter/Template_Workshop_
2_5_FirstPage.jmx -l /mnt/result/client/result_20190617_011203.jtl -j /mnt/result/client/jmeter_20190617_011203.log
Jun 17, 2019 1:12:09 AM java.util.prefs.FileSystemPreferences$1 run
INFO: Created user preferences directory.
Creating summariser <summary>
Created the tree successfully using /mnt/jmeter/Template_Workshop_2_5_FirstPage.jmx
Configuring remote engine: 192.168.100.10
Configuring remote engine: 192.168.100.11
Configuring remote engine: 192.168.100.12
Starting remote engines
Starting the test @ Mon Jun 17 01:12:09 ICT 2019 (1560708729710)
Remote engines have been started
Waiting for possible Shutdown/StopTestNow/HeapDump/ThreadDump message on port 4445
summary +   1304 in 00:00:18 =   70.9/s Avg:  4875 Min:   121 Max: 11949 Err:    64 (4.91%) Active: 1200 Started: 1200 Finished: 0
summary +   4100 in 00:00:30 =  136.3/s Avg:  9040 Min:  7005 Max: 13639 Err:   784 (19.12%) Active: 1200 Started: 1200 Finished: 0
summary =   5404 in 00:00:48 =  111.5/s Avg:  8035 Min:   121 Max: 13639 Err:   848 (15.69%)
summary +   4200 in 00:00:29 =  143.0/s Avg:  8062 Min:  6622 Max: 14324 Err:  1139 (27.12%) Active: 1200 Started: 1200 Finished: 0
summary =   9604 in 00:01:18 =  123.4/s Avg:  8047 Min:   121 Max: 14324 Err:  1987 (20.69%)
summary +   4500 in 00:00:30 =  150.5/s Avg:  8114 Min:  6491 Max: 14472 Err:  1174 (26.09%) Active: 1200 Started: 1200 Finished: 0
summary =  14104 in 00:01:48 =  130.9/s Avg:  8068 Min:   121 Max: 14472 Err:  3161 (22.41%)
summary +   4200 in 00:00:31 =  136.0/s Avg:  8020 Min:  6175 Max: 16986 Err:  1169 (27.83%) Active: 1200 Started: 1200 Finished: 0
summary =  18304 in 00:02:19 =  132.1/s Avg:  8057 Min:   121 Max: 16986 Err:  4330 (23.66%)
summary +   4500 in 00:00:31 =  145.5/s Avg:  8233 Min:  6238 Max: 13377 Err:  1186 (26.36%) Active: 1200 Started: 1200 Finished: 0
summary =  22804 in 00:02:50 =  134.5/s Avg:  8092 Min:   121 Max: 16986 Err:  5516 (24.19%)
summary +   4300 in 00:00:28 =  153.3/s Avg:  7817 Min:  6826 Max: 15830 Err:  1244 (28.93%) Active: 1200 Started: 1200 Finished: 0
summary =  27104 in 00:03:18 =  137.2/s Avg:  8048 Min:   121 Max: 16986 Err:  6760 (24.94%)
summary +   4600 in 00:00:31 =  149.9/s Avg:  8105 Min:  4866 Max: 15517 Err:  1364 (29.65%) Active: 1188 Started: 1200 Finished: 12
summary =  31704 in 00:03:48 =  138.9/s Avg:  8057 Min:   121 Max: 16986 Err:  8124 (25.62%)
summary +   4000 in 00:00:30 =  133.4/s Avg:  7240 Min:  4612 Max: 13080 Err:   843 (21.07%) Active: 8 Started: 1200 Finished: 1192
summary =  35704 in 00:04:18 =  138.2/s Avg:  7965 Min:   121 Max: 16986 Err:  8967 (25.11%)
Tidying up remote @ Mon Jun 17 01:16:30 ICT 2019 (1560708990686)
Exiting remote servers
Tidying up remote @ Mon Jun 17 01:16:30 ICT 2019 (1560708990710)
Exiting remote servers
summary +    296 in 00:00:00 = 2619.5/s Avg:  3886 Min:    14 Max:  7686 Err:     0 (0.00%) Active: 0 Started: 1200 Finished: 1200
summary =  36000 in 00:04:18 =  139.3/s Avg:  7932 Min:    14 Max: 16986 Err:  8967 (24.91%)
Tidying up remote @ Mon Jun 17 01:16:30 ICT 2019 (1560708990798)
Exiting remote servers
... end of run
... end of run
... end of run
END Running Jmeter on Sun Jun 16 20:16:36 CEST 2019
ubuntu@ip-10-21-1-152:~/jmeter-workshop-062019/Workshop-2-5-Cli_DistributedLoad$
```

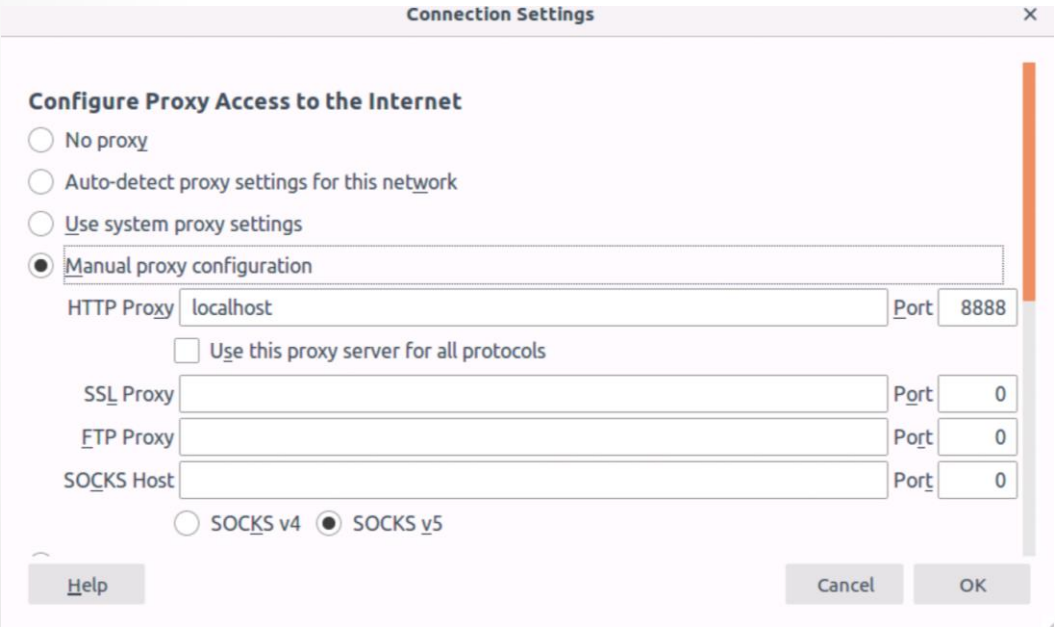
WorkShop: 2-5 Cli-DistributedLoad

- Special for 1200 User (400 x 3)

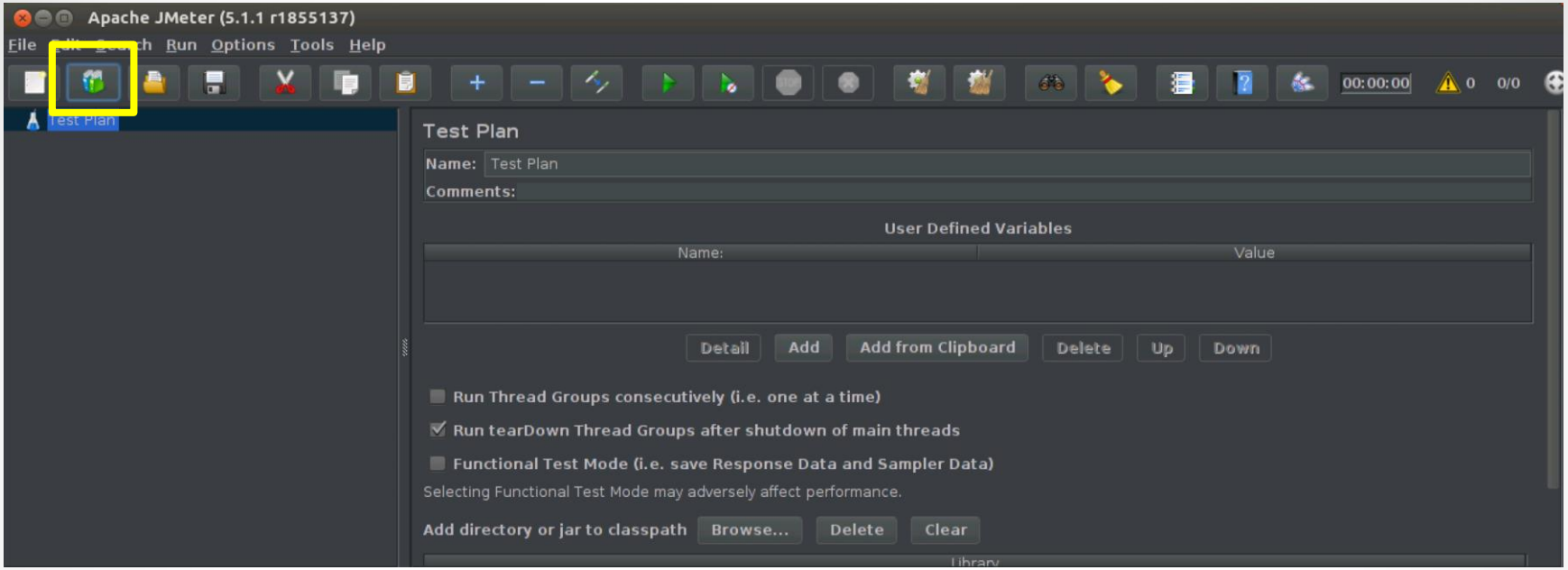


Record Performance Test

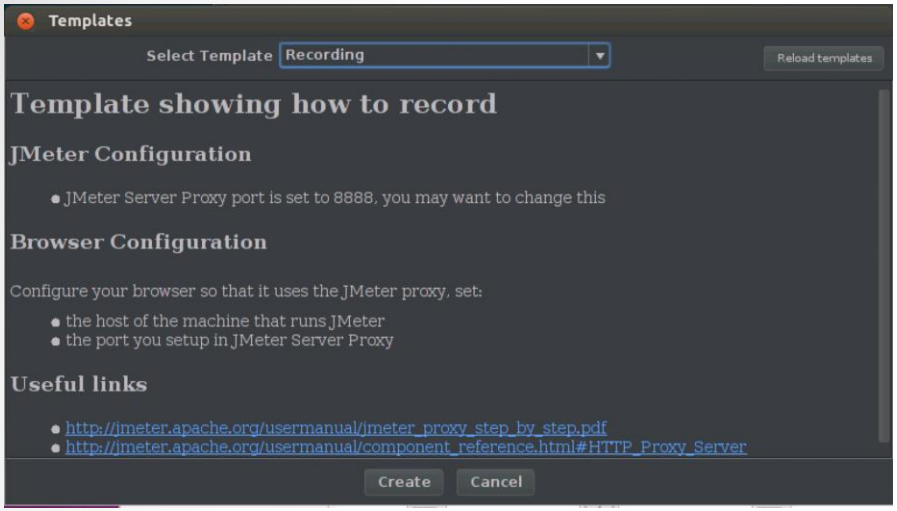
- For complex application. Develop test plan will take more time and a lot of effort for operate.
- Jmeter have feature for record activity from web browser.
- Conceptual: We will setup browser's proxy via Jmeter (localhost 8888). Jmeter will keep all activity and automatic create test plan

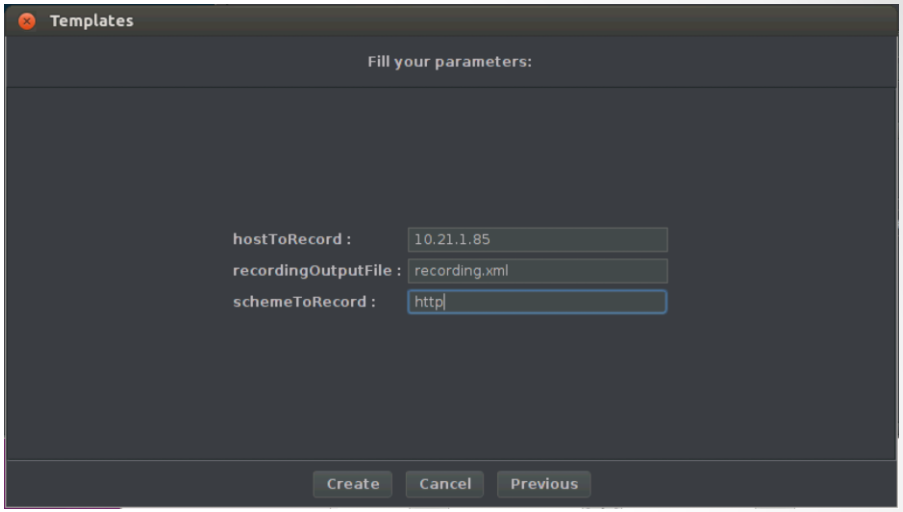


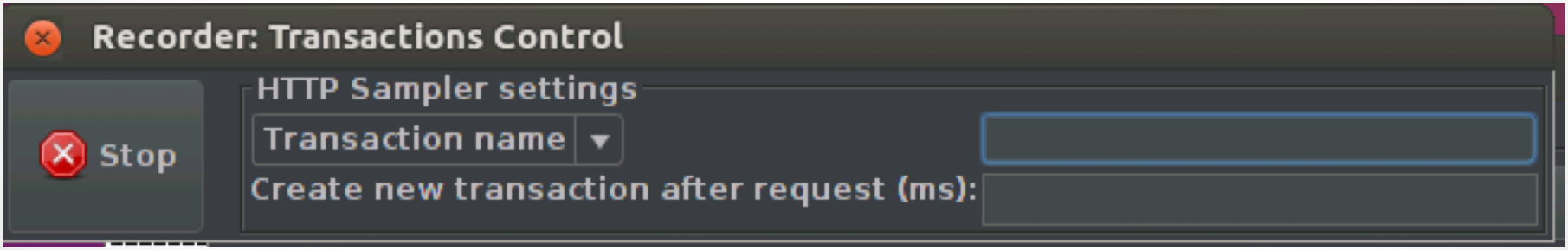
Record Performance Test



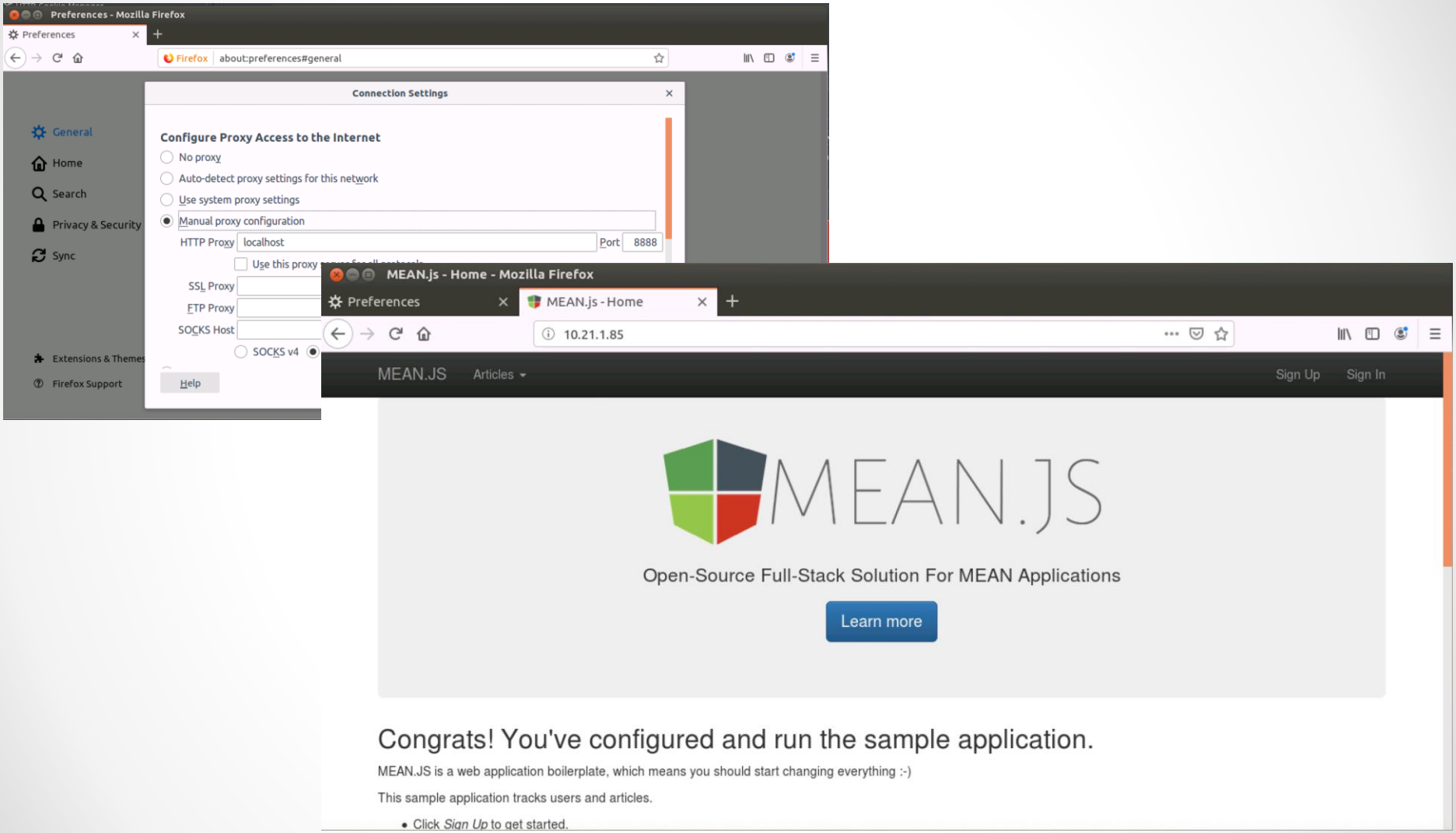
Record Performance Test







Record Performance Test



JMeter Benchmark for Production Scale

APACHE JMeter™

Record Performance Test

Apache JMeter (5.1.1 r1855137)

File Edit Search Run Options Tools Help

00:00:00 0 0/0

- Test Plan
  - User Defined Variables
  - HTTP Request Defaults
  - HTTP Cookie Manager
  - Thread Group
    - Recording Controller
      - 189 /
      - 261 Record
        - 261 Record
          - HTTP Header Manager
        - 317 Record
          - HTTP Header Manager
        - 318 Record
          - HTTP Header Manager
        - 320 Record
          - HTTP Header Manager
        - 389 Record
          - HTTP Header Manager
        - 390 Record
          - HTTP Header Manager
    - View Results Tree
    - HTTP(S) Test Script Recorder
    - View Results Tree

HTTP Request

Name: 320 Record

Comments:

Basic | Advanced

Web Server

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

HTTP Request

Method: GET | Path: / | Content encoding:

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

Parameters | Body Data | Files Upload

Send Parameters With the Request:

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

Detail | Add | Add from Clipboard | Delete | Up | Down

APACHE JMeter™

Jmeter Best Practice

- Non-GUI mode for actual load test
- Distributed load model
- Few listener
- Few assertion
- Disable “Jmeter” Graph
- Input data via CSV instend XML
- Disable ”View result tree” (Consume memory)
- Select simple sample instead complex component that more consume resource

Outline Day 2

- JMeter's elements part 2 (Advance)
  - Config Element and Parameter
  - Logical Controller
  - Pre/Post Processors
  - Timer
- Full Load Test Part 2 (Complex Load Test)
- Jmeter's for production
  - Testing with plugin
  - Non-GUI mode
  - Distributed Load Model
  - Record Performance Test
  - Best Practice for Jmeter

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KhaDev
Opcellent
Q&A