

## **ITEM 5: PERFORMANCE REPORT**

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# DELIVERABLE 10 ITEM 5: PERFORMANCE REPORT

The aim of this report is to show the information related to our project performance attained through the performance tests that our group has carried out. These tests have been run in different machines, and therefore, we will indicate the properties of each machine used to run the tests. Our first tests have been made with 30 concurrent users and 100 loops. Afterwards, we have determined which are the use cases that stress our system the most and we tested them again in order to determine which is the maximum system workload.

## 1. TESTS RAN IN MACHINE 1

This computer has the following features:

Processor: Intel(R) Core(TM) i7-7700HQ CPU @2.80GHz 2.81GHz

RAM memory: 12GB

Hard Disk: 765GB HDD

Wireless adapter: Intel (R) Dual Band Wireless-AC 7260.

Test 1: Create a new article

Aggregate Report

Name: Aggregate Report

Comments:

Write results to file / Read from file

Filename

Browse...

LogDisplay Only: ☐ Errors ☐ Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	31	23	44	8	1669	0.00%	3.9/sec	21.3
/scripts/menu.js	3000	8	5	11	2	639	0.00%	1.9/sec	20.5
/styles/menu.css	3000	7	5	10	2	406	0.00%	1.9/sec	3.7
/scripts/query-ui.js	3000	68	51	92	26	2204	0.00%	1.9/sec	878.0
/styles/displaytag.c...	3000	7	5	11	2	307	0.00%	1.9/sec	5.9
/styles/common.css	3000	7	5	10	2	414	0.00%	1.9/sec	1.7
/scripts/query.js	3000	42	33	61	17	909	0.00%	1.9/sec	520.5
/images/logo.jpg	3000	11	8	17	2	267	0.00%	1.9/sec	73.0
/favicon.ico	3000	11	8	17	4	967	0.00%	1.9/sec	62.8
/security/login.do	3000	10	9	16	5	317	0.00%	1.9/sec	9.5
/spring_security_...	3000	53	41	75	9	2737	0.00%	1.9/sec	12.9
/article/user/create...	3000	34	22	47	12	1663	0.00%	1.9/sec	13.4
/article/user/edit.do	3000	113	71	148	27	3311	0.00%	1.9/sec	12.8
/welcome/index.do	3000	45	31	65	16	1296	0.00%	1.9/sec	12.5
TOTAL	45000	32	18	63	2	3311	0.00%	28.7/sec	1631.9

Test 2: Create a new followup

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	Min	Max	Error %	Throughput	KB/sec
/	6000	32	24	52	7	1057	0.00%	3.8/sec	21.2
/scripts/jmenu.js	3000	8	6	13	2	215	0.00%	1.9/sec	20.4
/styles/common.css	3000	7	5	11	2	215	0.00%	1.9/sec	1.7
/styles/jmenu.css	3000	7	5	11	2	179	0.00%	1.9/sec	3.7
/styles/displaytag.c...	3000	8	5	12	2	466	0.00%	1.9/sec	5.8
/scripts/query.js	3000	49	37	78	17	1029	0.00%	1.9/sec	516.7
/scripts/query-ui.js	3000	74	58	124	29	919	0.00%	1.9/sec	871.6
/images/logo.jpg	3000	13	10	22	4	538	0.00%	1.9/sec	72.5
/favicon.ico	3000	12	9	20	3	193	0.00%	1.9/sec	62.4
/images/arrow_do...	3000	8	5	12	2	704	0.00%	1.9/sec	1.0
/security/login.do	3000	11	9	17	5	169	0.00%	1.9/sec	9.4
/j_spring_security_...	3000	55	40	92	7	1120	0.00%	1.9/sec	12.8
/article/user/list-pu...	3000	30	23	47	14	373	0.00%	1.9/sec	11.8
/followUp/user/cre...	3000	50	35	90	14	883	0.00%	1.9/sec	12.3
/followUp/user/edit...	3000	125	89	212	33	2644	0.00%	1.9/sec	12.7
/welcome/index.do	3000	49	34	85	14	746	0.00%	1.9/sec	12.4
TOTAL	51000	34	20	74	2	2644	0.00%	32.3/sec	1631.5

Test 3: Delete an article

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec	
/	6000	54	24	86	8	3341	0.00%	10.3/sec	50.9	
/scripts/query.js	3000	63	40	107	13	2573	0.00%	5.2/sec	1410.7	
/styles/common.c...	3000	12	6	20	2	761	0.00%	5.2/sec	4.7	
/styles/displaytag...	3000	12	6	22	2	554	0.00%	5.2/sec	16.0	
/styles/jmenu.css	3000	14	6	26	2	497	0.00%	5.2/sec	10.2	
/scripts/jmenu.js	3000	13	7	22	2	626	0.00%	5.2/sec	65.7	
/scripts/query-ui.js	3000	94	63	157	18	2278	0.00%	5.2/sec	2381.6	
/images/logo.jpg	3000	18	11	32	4	791	0.00%	5.2/sec	198.2	
/favicon.ico	3000	18	11	31	4	664	0.00%	5.2/sec	170.6	
/security/login.do	3000	19	13	32	3	664	0.00%	5.3/sec	25.8	
/j_spring_security...	3000	88	47	162	18	4637	0.00%	5.3/sec	29.5	
/article/admin/list...	3000	39	16	58	7	2925	0.00%	5.3/sec	27.7	
/article/admin/del...	3000	39	20	58	9	3526	0.00%	5.3/sec	64.6	
/article/admin/list...	3000	82	46	143	20	2778	0.00%	5.3/sec	37.7	
TOTAL	45000	41	19	80	2	4637	0.00%	77.6/sec	4425.6	

Test 4: Delete a followup

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

☐ Errors

☐ Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	33	20	50	7	2413	0.00%	10.8/sec	53.3
/scripts/query.js	3000	51	35	81	11	1510	0.00%	5.5/sec	1473.9
/scripts/query-ui.js	3000	74	55	124	17	1692	0.00%	5.5/sec	2486.5
/styles/displaytag....	3000	8	6	14	2	382	0.00%	5.5/sec	16.7
/scripts/jmenu.js	3000	9	6	14	2	628	0.00%	5.5/sec	58.2
/styles/common.c....	3000	9	5	16	2	315	0.00%	5.5/sec	4.9
/styles/jmenu.css	3000	8	6	13	2	476	0.00%	5.5/sec	10.6
/images/logo.jpg	3000	13	10	22	3	835	0.00%	5.5/sec	206.8
/security/login.do	3000	14	11	22	5	922	0.00%	5.5/sec	26.9
/j_spring_security...	3000	57	39	98	9	1737	0.00%	5.5/sec	29.7
/followUp/admin/li...	3000	32	24	51	12	1373	0.00%	5.5/sec	38.7
/followUp/admin/d...	3000	22	16	38	8	803	0.00%	5.5/sec	66.9
/followUp/admin/li...	3000	27	21	44	10	1568	0.00%	5.5/sec	37.7
TOTAL	42000	28	17	56	2	2413	0.00%	75.9/sec	4467.9

Test 5: Access to articles belonging to a private newspaper as a customer

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	30	18	41	7	1873	0.00%	10.8/sec	48.3
/styles/displaytag...	3000	8	5	11	1	672	0.00%	5.4/sec	16.6
/styles/common.c...	3000	7	5	10	2	426	0.00%	5.4/sec	4.8
/styles/menu.css	3000	7	5	10	2	588	0.00%	5.5/sec	10.6
/scripts/menu.js	3000	8	5	14	2	348	0.00%	5.5/sec	57.9
/scripts/query.js	3000	43	32	69	12	857	0.00%	5.5/sec	1468.3
/scripts/query-ui.js	3000	66	51	109	15	1933	0.00%	5.5/sec	2477.5
/images/logo.jpg	3000	12	9	19	3	676	0.00%	5.5/sec	206.1
/images/arrow_do...	3000	7	5	13	2	460	0.00%	5.5/sec	2.7
/security/login.do	3000	13	10	20	4	235	0.00%	5.5/sec	26.8
/j_spring_security...	3000	50	35	82	10	766	0.00%	5.5/sec	24.8
/newspaper/list.do	3000	28	21	43	10	612	0.00%	5.5/sec	31.3
/newspaper/displ...	3000	57	39	93	17	1024	0.00%	5.5/sec	28.2
/article/customerf...	3000	44	31	67	16	831	0.00%	5.5/sec	25.4
TOTAL	45000	27	16	56	1	1933	0.00%	81.0/sec	4385.6

Test 6: Search an article by keyword

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	3000	194	111	456	9	2362	0.00%	8.4/sec	38.9
/scripts/query.js	3000	231	130	526	11	4263	0.00%	8.4/sec	2268.2
/scripts/query-ui.js	3000	307	175	722	16	4146	0.00%	8.4/sec	3827.2
/scripts/menu.js	3000	61	29	143	3	1239	0.00%	8.4/sec	89.6
/styles/common.c...	3000	56	27	130	3	1351	0.00%	8.4/sec	7.5
/styles/menu.css	3000	52	27	117	2	1328	0.00%	8.5/sec	16.4
/styles/displaytag...	3000	50	25	113	3	1225	0.00%	8.5/sec	25.7
/images/logo.jpg	3000	72	38	152	4	1456	0.00%	8.5/sec	319.5
/article/search.do	3000	65	32	139	5	1934	0.00%	8.5/sec	41.5
/article/list-search...	3000	277	163	623	17	3186	0.00%	8.5/sec	52.6
TOTAL	30000	136	55	338	2	4263	0.00%	83.8/sec	6648.9

Test 7: Display a followup

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/security/login.do	3000	36	10	18	5	2731	0.00%	5.6/sec	27.6
/j_spring_security...	3000	65	34	74	11	2286	0.00%	5.5/sec	25.1
/	3000	35	21	44	10	2884	0.00%	5.6/sec	24.0
/newspaper/list.do	3000	37	20	42	10	2567	0.00%	5.6/sec	31.8
/newspaper/displ...	3000	69	41	87	19	2902	0.00%	5.6/sec	34.1
/article/customerf...	3000	36	22	46	12	1239	0.00%	5.6/sec	27.6
/followUp/custom...	3000	38	23	46	13	1667	0.00%	5.6/sec	32.4
/followUp/custom...	3000	28	18	35	9	1189	0.00%	5.6/sec	26.8
TOTAL	24000	43	23	54	5	2902	0.00%	44.2/sec	228.3

Out of all the tests ran in this machine, searching an article by keyword is the one that takes more time. This will be one of the tests we will analyze more in-depth afterwards.

## 2. TESTS RAN IN MACHINE 2

This computer has the following features:

Processor: Intel(R)Core(TM) i5-7200U 2.5GHz with Turbo Boost up to 3.1GHz

RAM memory: 8GB DDR4

Hard Disk: 1000 GB HDD

Wireless adapter: Intel(R) Dual Band Wireless-AC 3168.

## Test 8: Admin Dashboard

Dashboard.jmx (C:\Documents and Settings\Boss\Desktop\Test suite\Dashboard.jmx) - Apache JMeter (2.9 r1437961)

File Edit Search Run Options Help

44 0/30

Dashboard

- Thread Group
  - /scripts/query.js
  - /scripts/query-u.js
  - /scripts/menu.js
  - /styles/common.css
  - /styles/menu.css
  - /styles/displaytag.css
  - /images/logo\_down.png
  - /images/arrow.jpg
  - /security/login.do
  - HTTP Header Manager
  - Gaussian Random Timer
  - /l\_spring\_security\_check
  - /admin/admin/dashboard.do
  - HTTP Cookie Manager
  - Aggregate Report
  - Graph Results
- WorkBench

### Aggregate Report

Name: Aggregate Report

Comments:

Write results to file / Read from file

Filename   Log/Display Only: ☐ Errors ☐ Successes

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	kB/sec
/	6000	103	58	195	10	4386	0.00%	8.2/sec	40.4
/scripts/query.js	3000	128	84	254	13	3071	0.00%	4.1/sec	1117.8
/scripts/query-u.js	3000	177	127	349	20	2812	0.00%	4.2/sec	1886.7
/scripts/menu.js	3000	25	15	44	3	825	0.00%	4.2/sec	44.2
/styles/common.css	3000	25	14	45	3	1046	0.00%	4.2/sec	3.7
/styles/menu.css	3000	25	13	43	3	1476	0.00%	4.2/sec	8.1
/styles/displaytag.css	3000	24	14	43	3	1475	0.00%	4.2/sec	12.6
/images/logo.jpg	3000	35	23	60	5	1706	0.00%	4.2/sec	156.9
/images/arrow.jpg	3000	23	13	41	3	1673	0.00%	4.2/sec	2.1
/security/login.do	3000	37	23	66	8	1045	0.00%	4.2/sec	20.4
/l_spring_security_check	3000	187	126	348	24	5950	0.00%	4.2/sec	22.5
/admin/admin/dashboard.do	3000	916	645	1828	131	7802	0.00%	4.2/sec	31.1
TOTAL	39000	139	36	313	3	7802	0.00%	53.5/sec	3314.9

☐ Include group name in label?
☒ Save Table Header

## Test 9: List followed users

**Aggregate Report**

Name: Aggregate Report

Comments:

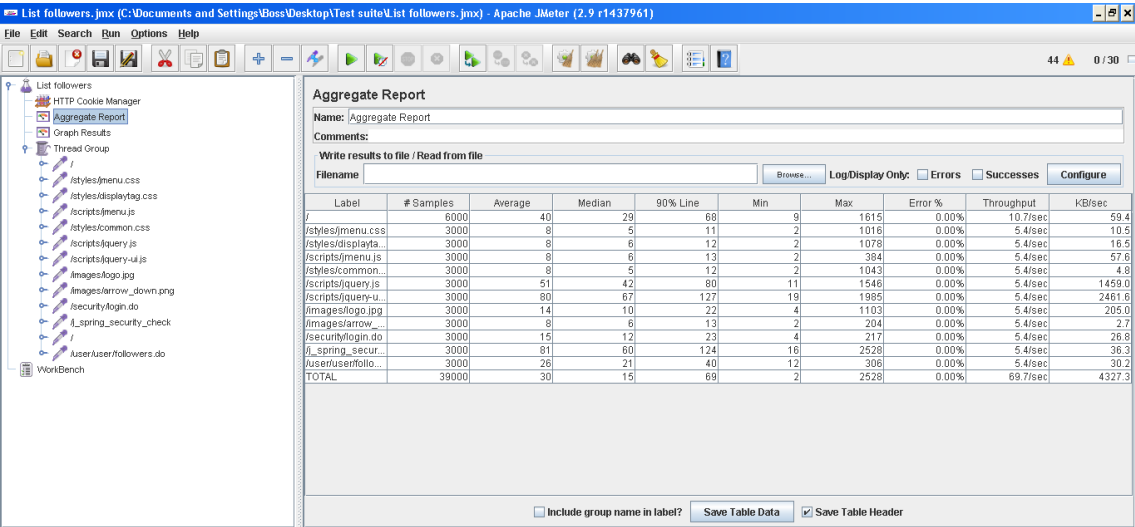
Write results to file / Read from file

Filename:  Browse... LogDisplay Only: ☐ Errors ☐ Successes

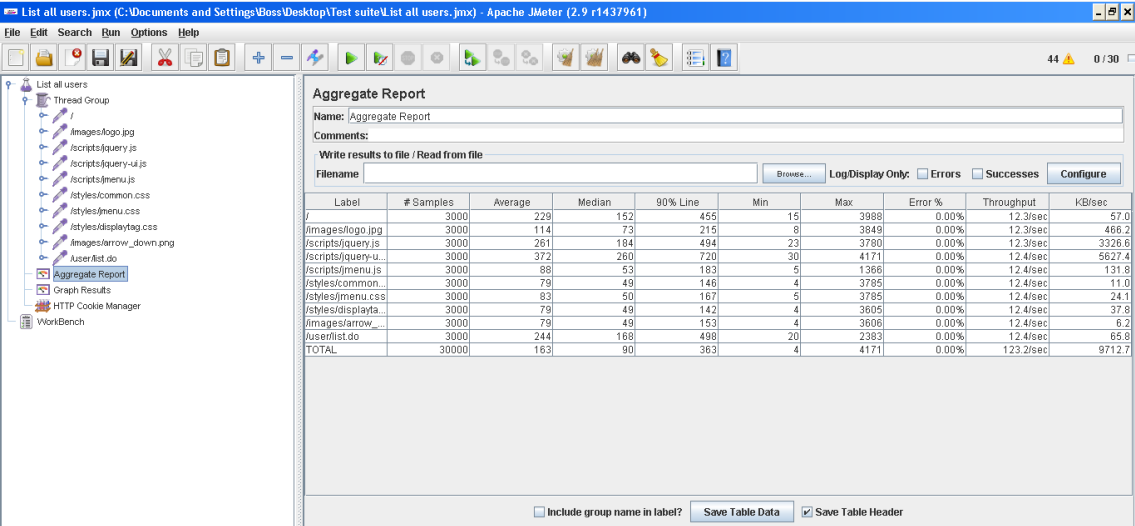
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	kB/sec
/	6000	43	30	74	9	1723	0.00%	10.7/sec	59.5
/scripts/query.js	3000	54	41	87	12	1863	0.00%	5.4/sec	1481.5
/scripts/query-u...	3000	83	65	139	19	2384	0.00%	5.4/sec	2465.5
/scripts/menu.js	3000	9	7	15	2	730	0.00%	5.4/sec	57.7
/styles/common.cs...	3000	8	6	15	2	559	0.00%	5.4/sec	4.8
/styles/menu.css	3000	8	6	13	2	240	0.00%	5.4/sec	10.5
/styles/displayta...	3000	9	6	15	2	729	0.00%	5.4/sec	16.5
/images/logo.jpg	3000	14	11	23	4	339	0.00%	5.4/sec	205.1
/images/arrow_...	3000	8	6	14	2	352	0.00%	5.4/sec	2.7
/security/login.do	3000	16	12	26	4	289	0.00%	5.4/sec	26.7
/j_spring_secur...	3000	92	61	145	11	1424	0.00%	5.4/sec	36.2
User/user/following.do	3000	29	21	47	12	665	0.00%	5.4/sec	29.9
TOTAL	39000	31	16	71	2	2284	0.00%	69.8/sec	4333.9

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

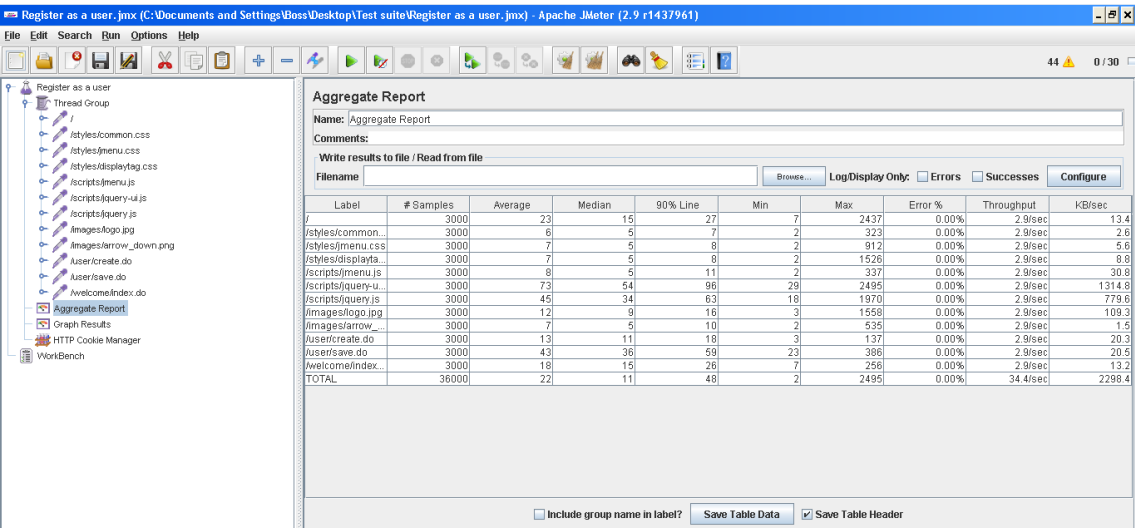
Test 10: List followers



Test 11: List all users



Test 12: Register to the system



## Test 13: Unfollow and follow a user

The screenshot shows the Apache JMeter 2.9 interface with an Aggregate Report for the test 'Unfollow and follow a user'. The report table lists various components and their performance metrics. The components include static resources like /scripts/query.js, /scripts/menu.js, /styles/common.css, /images/logo.jpg, and dynamic actions like /user/list.do, /user/display.do, /user/follow.do, and /user/unfollow.do. The 'TOTAL' row summarizes the overall performance across 60,000 samples.

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	104	69	218	9	2202	0.00%	8.2/sec	45.2
/scripts/query.js	3000	101	78	189	13	1473	0.00%	4.1/sec	1112.8
/scripts/menu.js	3000	142	111	271	19	3052	0.00%	4.1/sec	1877.3
/styles/common.css	3000	21	14	40	3	453	0.00%	4.1/sec	44.0
/images/logo.jpg	3000	19	13	37	2	426	0.00%	4.1/sec	3.7
/user/list.do	3000	18	13	37	3	341	0.00%	4.1/sec	8.0
/user/display.do	3000	20	14	39	3	1583	0.00%	4.1/sec	12.6
/user/follow.do	3000	29	23	63	4	500	0.00%	4.1/sec	156.3
/user/unfollow.do	3000	18	13	35	2	628	0.00%	4.1/sec	2.1
/j_spring_security_check	3000	28	22	52	6	621	0.00%	4.1/sec	20.3
/user/list.do	6000	82	60	161	12	781	0.00%	8.3/sec	47.9
/user/display.do	6000	133	94	277	16	1760	0.00%	8.3/sec	47.6
/user/follow.do	3000	203	158	377	32	1919	0.00%	4.1/sec	22.4
/user/unfollow.do	6000	71	51	138	11	1106	0.00%	8.3/sec	43.9
TOTAL	60000	89	51	210	2	3052	0.00%	82.0/sec	3469.2

We can see that the administrator dashboard and the listing of all users are the ones that stress our system the most. However, because the administrator dashboard use case is only admin related, it does not make much sense to take it into account when trying to analyze the maximum workload of our system, because there will never that many concurrent administrators. We will further analyze the listing of all users.



### 3. TESTS RAN IN MACHINE 3

This computer has the following features:

Processor: Intel Core i7-6500U (2-core,2.50-3.10 GHz, 4MB cache)

RAM memory: 8GB DDR3.

Hard Disk: 1000 GB HDD.

Wireless adapter: Qualcomm Atheros QCA61x4A Wireless Network Adapter.

Test 14: List published newspaper and display their articles.

Aggregate Report

Name: Aggregate Report

Comments:

Write results to file / Read from file

Filename:  Browse... LogDisplay Only: ☐ Errors ☐ Successes ☐ Conf

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughp...
/	3000	27	13	29	8	1300	0.00%	9.4/sec
/newspa...	3000	29	21	40	14	721	0.00%	9.4/sec
/newspa...	3000	36	24	51	17	1067	0.00%	9.4/sec
/articleId...	3000	25	19	38	13	625	0.00%	9.4/sec
TOTAL	12000	29	20	41	8	1300	0.00%	37.3/sec

☐ Include group name in label?  ☒ Save Table Header

Test 15: Search newspapers by keyword

Aggregate Report

Name: Aggregate Report

Comments:

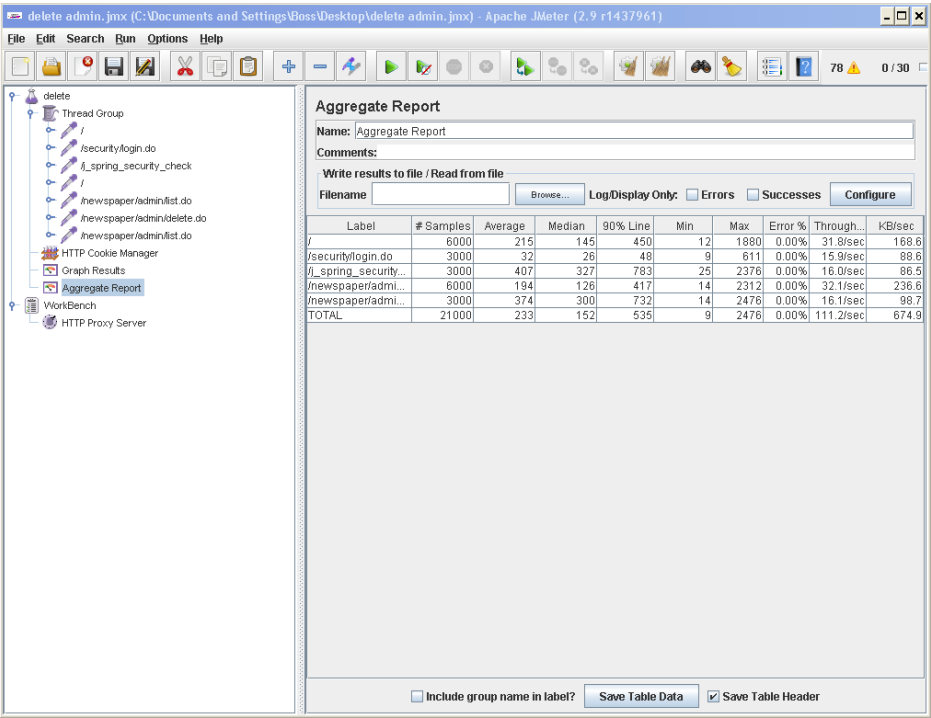
Write results to file / Read from file

Filename:  Browse... LogDisplay Only: ☐ Errors ☐ Successes

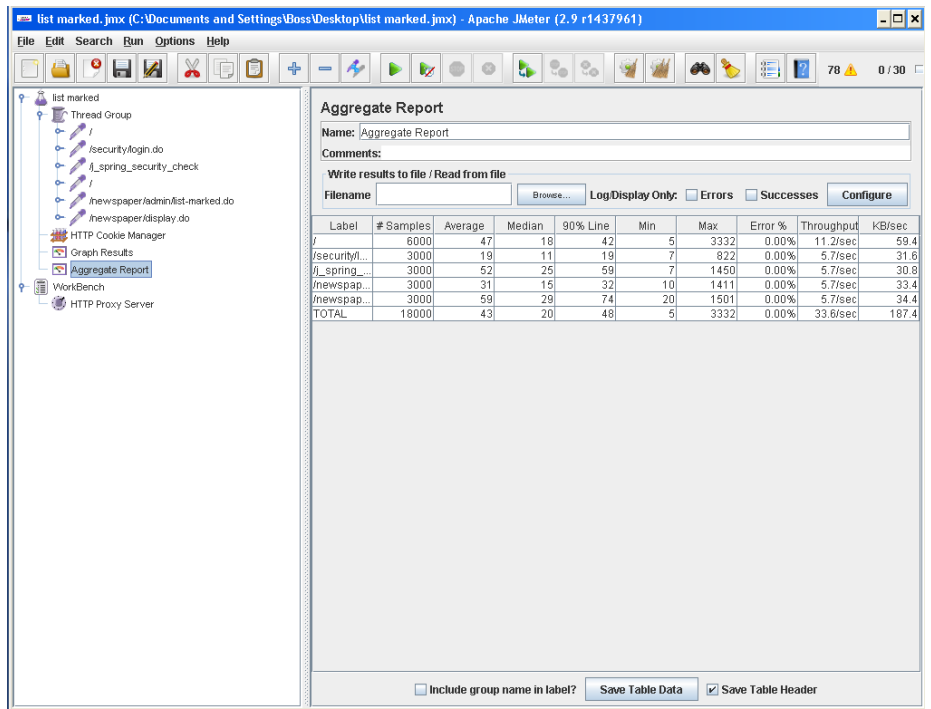
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	3000	26	13	38	8	1881	0.00%	5.7/sec	25.7
/images/f...	3000	11	7	16	5	1051	0.00%	5.7/sec	213.5
/scripts/q...	3000	31	25	43	18	1011	0.00%	5.7/sec	1522.3
/scripts/q...	3000	48	39	67	28	1410	0.00%	5.7/sec	2568.4
/scripts/f...	3000	8	5	16	3	673	0.00%	5.7/sec	60.1
/styles/co...	3000	6	4	12	2	337	0.00%	5.7/sec	5.0
/styles/m...	3000	7	4	12	2	560	0.00%	5.7/sec	11.0
/styles/dis...	3000	6	4	11	2	499	0.00%	5.7/sec	17.2
/images/a...	3000	6	4	13	2	549	0.00%	5.7/sec	2.8
/newspap...	3000	11	9	20	6	112	0.00%	5.7/sec	27.8
/newspap...	3000	31	23	57	13	346	0.00%	5.7/sec	34.5
/newspap...	3000	40	25	74	15	553	0.00%	5.7/sec	30.4
TOTAL	36000	19	11	41	2	1881	0.00%	67.2/sec	4476.3

☐ Include group name in label?  ☒ Save Table Header

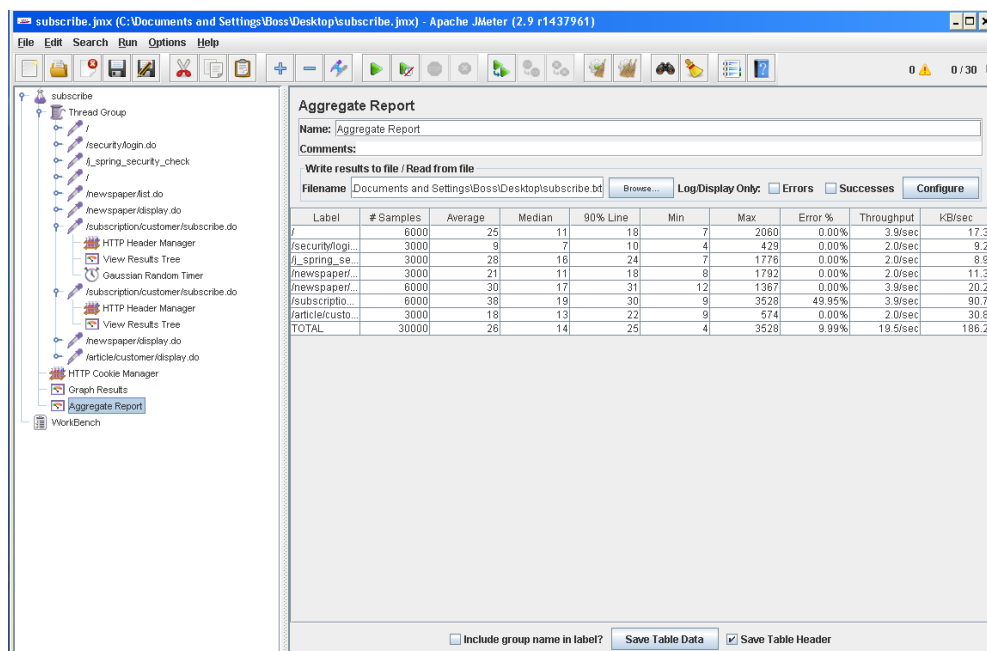
Test 16: Delete a newspaper



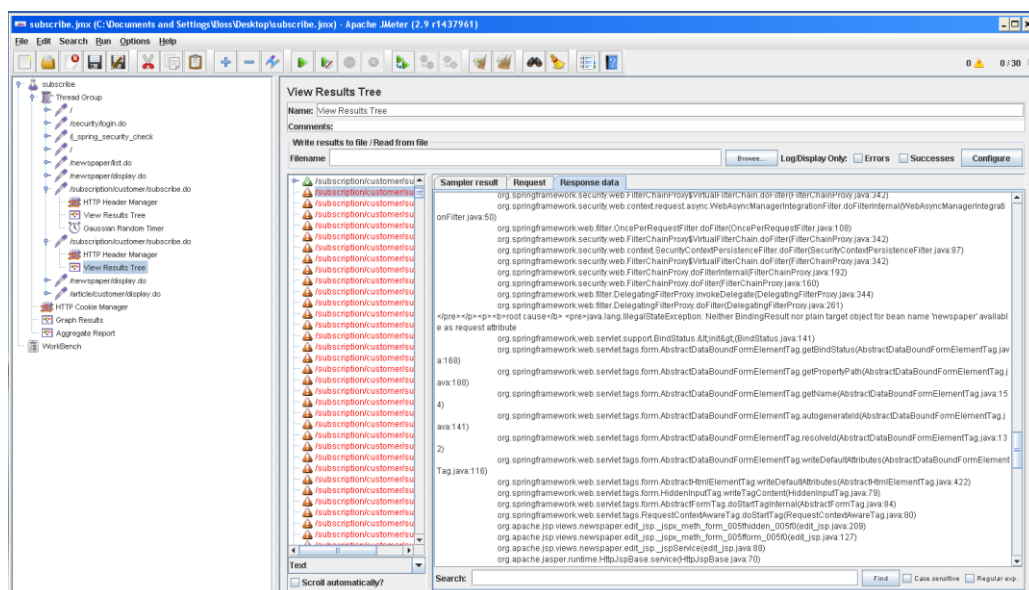
Test 17: List marked newspapers



## Test 18: Subscription to a newspaper

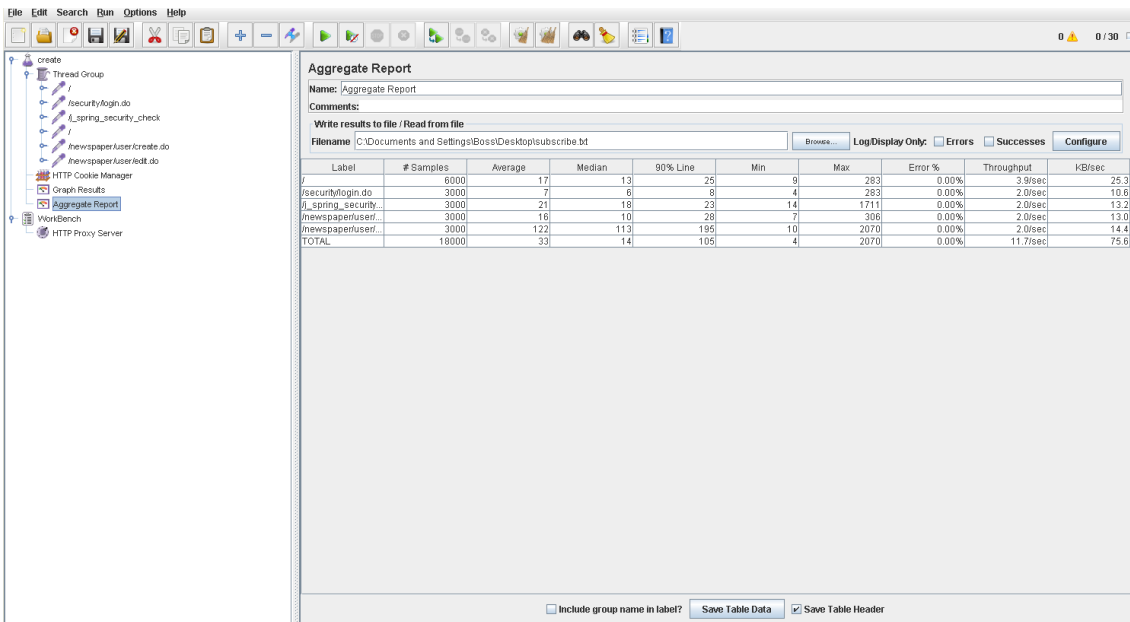


There are errors in this test. The reason why this happens is because we are always using the same customer and the same newspaper, and because a user can't subscribe to a newspaper he is already subscribed to, the following error appears:

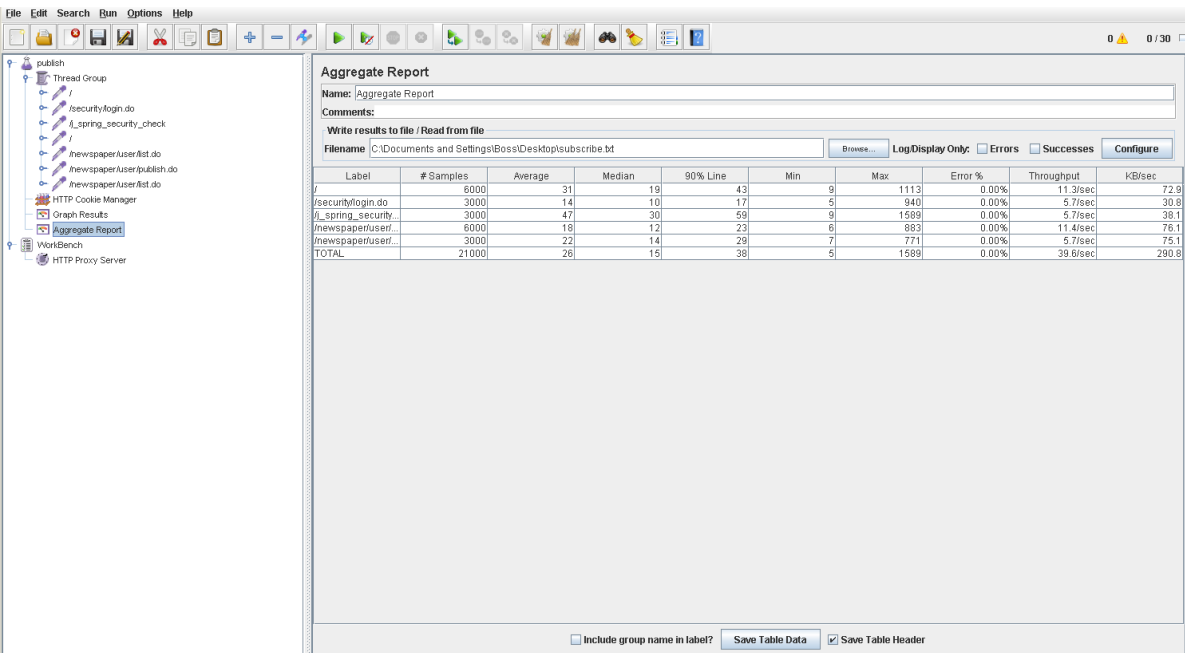


The process of subscribing to a newspaper is divided in a GET request and a POST request. When a customer tries to subscribe to a newspaper he is already subscribed to, an assertion in the controller related to the GET request will fail, and return a panic message. Because this test forces a POST action regardless the outcome of the GET request, this error happens.

Test 19: Creation of a newspaper



Test 20: Publishing a newspaper



Out of all the tests ran in this machine, deleting a newspaper is the one that takes more time. This will be one of the tests we will analyze more in-depth afterwards.

#### 4. TESTS RAN IN MACHINE 4

This computer has the following features:

Processor: Intel Core i5-7300HQ (2,5 GHz-3,5 GHz, 6 MB cache, 4 cores)

RAM memory: SDRAM 8 GB DDR4-2400 (1 x 8 GB)

Hard Disk: SATA 1 TB 7200 rpm

Wireless adapter: Intel(R) Dual Band Wireless-AC 7265

Test 21: Creating a chirp

Aggregate Report										
Name: Chirp Creation										
Comments:										
Write results to file / Read from file										
Filename										
Log/Display Only: <input type="checkbox"/> Errors <input type="checkbox"/> Successes <input type="button" value="Configure"/>										
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec	
/	6000	53	37	89	8	3811	0.00%	3.8/sec	25.9	
/styles/common....	3000	8	5	10	2	434	0.00%	1.9/sec	1.7	
/styles/menu.css	3000	9	5	11	2	842	0.00%	1.9/sec	3.7	
/scripts/menu.js	3000	9	6	12	2	993	0.00%	1.9/sec	20.3	
/styles/displaytag...	3000	7	5	11	2	463	0.00%	1.9/sec	5.8	
/scripts/query.js	3000	42	33	65	16	1211	0.00%	1.9/sec	514.9	
/scripts/query-ui.js	3000	65	51	100	24	1528	0.00%	1.9/sec	868.8	
/images/logo.jpg	3000	12	9	19	3	534	0.00%	1.9/sec	72.2	
/images/arrow_d...	3000	7	5	11	2	397	0.00%	1.9/sec	1.0	
/securitylogin.do	3000	11	9	17	6	205	0.00%	1.9/sec	9.4	
/j_spring_securit...	3000	88	77	131	8	895	0.00%	1.9/sec	17.6	
/chirp/user/create...	6000	74	66	144	9	1847	0.00%	3.8/sec	28.8	
/welcome/index.do	3000	74	63	114	28	736	0.00%	1.9/sec	17.2	
TOTAL	45000	39	16	93	2	3811	0.00%	28.4/sec	1573.3	

Test 22: Deleting a chirp

Aggregate Report										
Name: Chirp Deletion										
Comments:										
Write results to file / Read from file										
Filename										
Log/Display Only: <input type="checkbox"/> Errors <input type="checkbox"/> Successes <input type="button" value="Configure"/>										
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec	
/	6000	23	18	30	9	1643	0.00%	5.8/sec	28.5	
/styles/menu.css	3000	7	5	9	2	667	0.00%	2.9/sec	5.7	
/styles/displaytag...	3000	6	5	9	2	451	0.00%	2.9/sec	8.9	
/styles/common....	3000	6	5	9	3	536	0.00%	2.9/sec	2.6	
/scripts/query.js	3000	42	35	63	16	921	0.00%	2.9/sec	786.3	
/scripts/menu.js	3000	6	6	10	3	207	0.00%	2.9/sec	31.0	
/scripts/query-ui.js	3000	65	53	96	23	1418	0.00%	2.9/sec	1326.6	
/images/logo.jpg	3000	11	9	16	4	652	0.00%	2.9/sec	110.3	
/favicon.ico	3000	11	8	17	3	638	0.00%	2.9/sec	94.9	
/images/arrow_d...	3000	6	5	9	2	192	0.00%	2.9/sec	1.5	
/securitylogin.do	3000	9	8	14	4	194	0.00%	2.9/sec	14.3	
/j_spring_securit...	3000	36	31	47	9	853	0.00%	2.9/sec	15.8	
/chirp/admin/list.do	3000	20	18	27	11	325	0.00%	2.9/sec	20.5	
/chirp/admin/dele...	3000	26	21	44	12	344	0.00%	2.9/sec	15.5	
TOTAL	45000	20	13	43	2	1643	0.00%	43.3/sec	2436.7	

Test 23: Creating a customer

Aggregate Report										
Name: Customer Creation										
Comments:										
Write results to file / Read from file										
Filename										
Log/Display Only: <input type="checkbox"/> Errors <input type="checkbox"/> Successes <input type="button" value="Configure"/>										
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec	
/	3000	25	15	31	9	1550	0.00%	2.5/sec	11.6	
/styles/common.c...	3000	6	5	9	2	942	0.00%	2.5/sec	2.2	
/scripts/query.js	3000	44	33	67	10	1426	0.00%	2.5/sec	673.1	
/styles/menu.css	3000	6	5	9	2	282	0.00%	2.5/sec	4.9	
/scripts/menu.js	3000	7	5	13	2	154	0.00%	2.5/sec	26.6	
/styles/displaytag...	3000	6	5	9	2	245	0.00%	2.5/sec	7.6	
/scripts/query-ui.js	3000	66	52	104	19	1763	0.00%	2.5/sec	1135.7	
/images/logo.jpg	3000	11	8	17	4	346	0.00%	2.5/sec	94.4	
/images/arrow_do...	3000	6	5	11	2	209	0.00%	2.5/sec	1.3	
/customer/create.do	3000	10	9	16	4	292	0.00%	2.5/sec	17.5	
/customer/save.do	3000	69	33	66	22	4032	0.00%	2.5/sec	17.8	
/welcome/index.do	3000	19	15	30	9	435	0.00%	2.5/sec	11.4	
TOTAL	36000	23	10	48	2	4032	0.00%	29.7/sec	1987.5	

Test 24: List chirps of followed users

Aggregate Report

Name:List of Chirps of followed Users

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

☐Errors

☐Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	34	26	55	8	1454	0.00%	10.9/sec	59.0
/styles/common...	3000	6	5	9	2	371	0.00%	5.5/sec	4.9
/styles/jmenu.css	3000	7	5	10	2	267	0.00%	5.5/sec	10.7
/scripts/jquery.js	3000	43	34	67	13	1090	0.00%	5.5/sec	1490.4
/styles/displaytag...	3000	7	5	11	2	610	0.00%	5.5/sec	16.8
/scripts/jmenu.js	3000	7	6	11	2	421	0.00%	5.5/sec	58.8
/scripts/jquery-ui.js	3000	66	55	103	18	1014	0.00%	5.5/sec	2514.4
/images/logo.jpg	3000	12	9	18	4	702	0.00%	5.5/sec	209.0
/favicon.ico	3000	11	9	18	4	416	0.00%	5.5/sec	179.9
/images/arrow_d...	3000	6	5	10	2	136	0.00%	5.5/sec	2.8
/securitylogin.do	3000	12	10	19	4	527	0.00%	5.5/sec	27.2
/j_spring_securit...	3000	68	52	106	11	1674	0.00%	5.5/sec	35.2
TOTAL	39000	24	11	56	2	1674	0.00%	71.2/sec	4559.8

Test 25: List of marked chirps

Aggregate Report

Name:

List of Marked Chirps

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes 

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	21	17	27	8	1222	0.00%	5.8/sec	28.5
/styles/common...	3000	6	5	8	2	334	0.00%	2.9/sec	2.6
/styles/jmenu.css	3000	6	5	9	2	160	0.00%	2.9/sec	5.6
/scripts/jmenu.js	3000	6	5	10	2	254	0.00%	2.9/sec	30.9
/styles/displaytag...	3000	6	5	10	2	160	0.00%	2.9/sec	8.9
/scripts/query.js	3000	38	31	61	10	581	0.00%	2.9/sec	783.7
/scripts/jquery-ui.js	3000	59	48	95	18	974	0.00%	2.9/sec	1322.1
/images/logo.jpg	3000	10	8	16	3	281	0.00%	2.9/sec	109.9
/images/arrow_d...	3000	6	5	9	2	153	0.00%	2.9/sec	1.5
/securitylogin.do	3000	9	8	13	4	211	0.00%	2.9/sec	14.3
/j_spring_securit...	3000	33	31	40	14	1409	0.00%	2.9/sec	15.8
/chirp/admin/list...	3000	17	14	27	8	329	0.00%	2.9/sec	15.3
TOTAL	39000	18	11	39	2	1409	0.00%	37.6/sec	2323.9

Test 26: Taboo word creation

Aggregate Report

Name:Taboo Word Creation

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

☐Errors

☐Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	26	19	45	8	2914	0.00%	8.5/sec	41.6
/images/logo.jpg	3000	11	9	19	4	347	0.00%	4.3/sec	161.0
/scripts/query.js	3000	44	35	73	11	528	0.00%	4.3/sec	1148.3
/scripts/query-ui.js	3000	68	56	113	18	552	0.00%	4.3/sec	1937.3
/scripts/jmenu.js	3000	8	6	14	2	109	0.00%	4.3/sec	45.3
/styles/common....	3000	6	5	10	2	77	0.00%	4.3/sec	3.8
/styles/jmenu.css	3000	6	5	11	1	256	0.00%	4.3/sec	8.3
/styles/displaytag...	3000	6	5	11	2	209	0.00%	4.3/sec	13.0
/images/arrow_d...	3000	7	5	13	2	222	0.00%	4.3/sec	2.1
/security/login.do	3000	12	9	18	4	665	0.00%	4.3/sec	21.0
/j_spring_securit...	3000	47	35	83	10	634	0.00%	4.3/sec	23.1
/tabooword/admi...	3000	18	14	31	8	566	0.00%	4.3/sec	26.0
/tabooword/admi...	6000	50	40	98	9	1188	0.00%	8.5/sec	50.1
TOTAL	45000	26	14	60	1	2914	0.00%	63.4/sec	3450.7

## Test 27: Taboo word deletion

Aggregate Report

Name: Taboo Word Deletion

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

☐ Errors

☐ Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	22	16	26	4	1538	0.00%	5.8/sec	28.4
/scripts/query.js	3000	42	32	57	11	1628	0.00%	2.9/sec	781.3
/scripts/query-ui.js	3000	61	50	87	16	1850	0.00%	2.9/sec	1318.0
/scripts/menu.js	3000	6	5	9	2	185	0.00%	2.9/sec	30.9
/styles/common...	3000	5	4	7	2	196	0.00%	2.9/sec	2.6
/styles/menu.css	3000	6	5	10	2	111	0.00%	2.9/sec	5.6
/styles/displaytag...	3000	5	4	8	1	169	0.00%	2.9/sec	8.8
/images/logo.jpg	3000	9	8	14	4	220	0.00%	2.9/sec	108.8
/images/arrow_d...	3000	5	4	7	2	532	0.00%	2.9/sec	1.5
/security/login.do	3000	9	8	13	5	59	0.00%	2.9/sec	14.3
/j_spring_securit...	3000	32	29	41	10	605	0.00%	2.9/sec	15.8
/tabooword/admi...	3000	13	12	18	8	90	0.00%	2.9/sec	17.4
/tabooword/admi...	3000	26	20	37	11	695	0.00%	2.9/sec	17.6
TOTAL	42000	19	12	39	1	1850	0.00%	40.2/sec	2329.9

## Test 28: Lists of taboo words

Aggregate Report

Name: Taboo Word List

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	22	17	33	6	2056	0.00%	11.2/sec	55.0
/scripts/query.js	3000	38	31	63	11	952	0.00%	5.7/sec	1522.3
/scripts/query-ui.js	3000	61	50	102	20	1084	0.00%	5.7/sec	2568.0
/scripts/menu.js	3000	6	5	11	2	275	0.00%	5.7/sec	60.1
/styles/common....	3000	6	5	9	2	145	0.00%	5.7/sec	5.0
/styles/menu.css	3000	6	5	9	2	213	0.00%	5.7/sec	11.0
/styles/displaytag...	3000	6	5	9	2	335	0.00%	5.7/sec	17.2
/images/logo.jpg	3000	10	8	16	4	148	0.00%	5.7/sec	213.6
/images/arrow_d...	3000	6	5	9	2	125	0.00%	5.7/sec	2.8
/security/login.do	3000	11	9	17	3	192	0.00%	5.7/sec	27.8
/j_spring_securit...	3000	41	33	65	12	601	0.00%	5.7/sec	30.7
/tabooword/admi...	3000	16	13	23	7	226	0.00%	5.7/sec	33.8
TOTAL	39000	19	11	44	2	2056	0.00%	72.7/sec	4502.7

Out of all the tests ran in this machine, creating a chirp is the one that takes more time. This will be one of the tests we will analyze more in-depth afterwards.

## 5. TESTING THE MAXIMUM PERFORMANCE OF THE SYSTEM

We will test again the following tests, this time all of them in the machine 1:

- Search article by keyword
- List all users
- Create a chirp
- Deleting a newspaper

In order to simulate a more realistic scenario, we will run these tests with approximately 100 articles and 100 newspapers already loaded in our database. Firstly, we will run the tests again with 30 concurrent users and see if the increase on the amount of data that our system contains mean that 30 concurrent users is already the maximum our system endure. If the results we get after running these tests are still acceptable, we will run them again increasing the number of concurrent users.

Test 29: Search article by keyword (II)

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

Errors

Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	3000	154	88	362	9	2027	0.00%	9.3/sec	43.0
/scripts/query.js	3000	174	105	377	12	3085	0.00%	9.3/sec	2508.9
/scripts/query-ui.js	3000	235	150	515	18	3301	0.00%	9.3/sec	4237.6
/scripts/menu.js	3000	34	19	79	2	1150	0.00%	9.3/sec	99.2
/styles/common.css	3000	32	18	72	2	810	0.00%	9.3/sec	8.3
/styles/menu.css	3000	31	17	69	2	641	0.00%	9.3/sec	18.1
/styles/displaytag.c...	3000	30	17	67	2	761	0.00%	9.3/sec	28.4
/images/logo.jpg	3000	44	28	93	4	803	0.00%	9.3/sec	352.5
/article/search.do	3000	41	24	85	3	828	0.00%	9.3/sec	45.7
/article/list-search.do	3000	233	146	532	19	2942	0.00%	9.3/sec	57.9
TOTAL	30000	101	40	254	2	3301	0.00%	92.5/sec	7341.9



Test 30: List all users (II)

Write results to file / Read from file

Filename

Browse...

Log/Display Only:

Errors

Successes

Configure

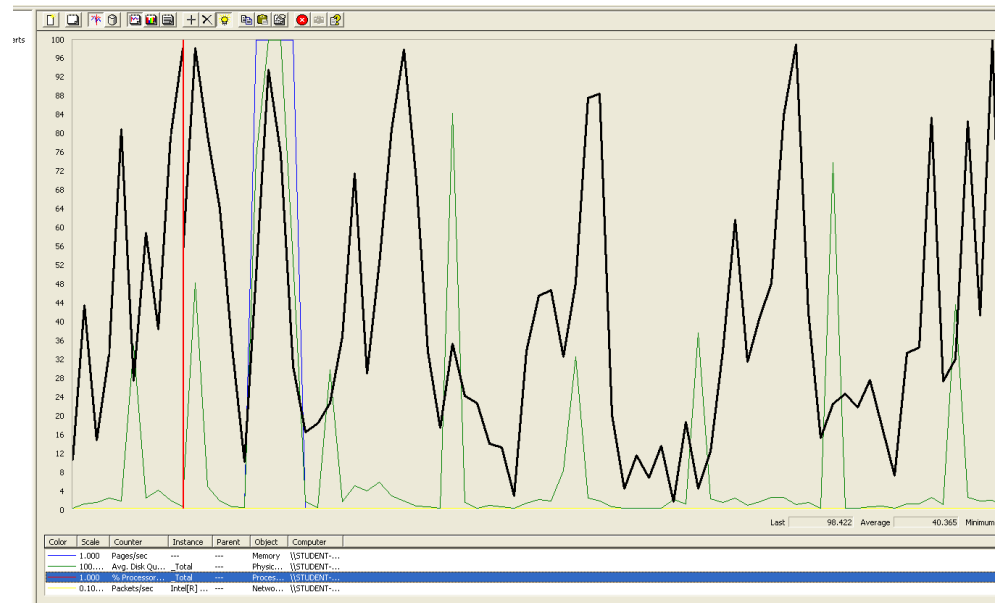
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	3000	320	187	705	12	5273	0.00%	12.4/sec	57.6
/images/logo.jpg	3000	102	54	182	6	4631	0.00%	12.5/sec	470.3
/scripts/query.js	3000	291	171	604	14	5426	0.00%	12.4/sec	3353.7
/scripts/query-ui.js	3000	385	232	817	22	5943	0.00%	12.5/sec	5660.3
/scripts/menu.js	3000	69	39	138	2	1874	0.00%	12.5/sec	132.6
/styles/common.css	3000	59	35	118	2	1593	0.00%	12.5/sec	11.1
/styles/menu.css	3000	57	32	110	2	1593	0.00%	12.5/sec	24.3
/styles/displaytag.c...	3000	57	34	107	3	3223	0.00%	12.5/sec	38.1
/images/arrow_do...	3000	56	34	105	2	1288	0.00%	12.5/sec	6.3
/user/list.do	3000	313	189	671	11	5318	0.00%	12.5/sec	66.4
TOTAL	30000	171	65	421	2	5943	0.00%	124.4/sec	9806.9





Test 31: Create a chirp (II)

Write results to file / Read from file									
Filename		LogDisplay Only: <input type="checkbox"/> Errors <input type="checkbox"/> Successes <input type="button" value="Configure"/>							
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	6000	54	37	98	7	2010	0.00%	3.8/sec	25.9
/styles/common.css	3000	8	5	13	2	332	0.00%	1.9/sec	1.7
/styles/menu.css	3000	8	5	13	2	1175	0.00%	1.9/sec	3.7
/scripts/menu.js	3000	8	6	14	3	963	0.00%	1.9/sec	20.3
/styles/displaytag.c...	3000	7	5	13	2	268	0.00%	1.9/sec	5.8
/scripts/query.js	3000	42	31	72	12	877	0.00%	1.9/sec	514.3
/scripts/query-ui.js	3000	63	49	113	18	937	0.00%	1.9/sec	867.9
/images/logo.jpg	3000	12	9	21	4	306	0.00%	1.9/sec	72.2
/images/arrow_do...	3000	7	5	14	2	419	0.00%	1.9/sec	1.0
/security/login.do	3000	11	9	18	5	314	0.00%	1.9/sec	9.4
/j_spring_security...	3000	91	80	145	11	1410	0.00%	1.9/sec	17.5
/chirp/user/create.do	6000	74	65	154	8	1637	0.00%	3.8/sec	28.8
/welcome/index.do	3000	81	71	129	26	1463	0.00%	1.9/sec	17.2
TOTAL	45000	40	17	100	2	2010	0.00%	28.4/sec	1569.7



Test 32: Deleting a newspaper (II)

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	Min	Max	Error %	Throughput	KB/sec
/	6000	199	165	367	7	1485	0.00%	36.4/sec	190.7
/security/login.do	3000	29	26	49	6	246	0.00%	18.2/sec	100.3
/j_spring_security...	3000	343	299	575	28	1973	0.00%	18.2/sec	97.6
/newspaper/admin...	6000	182	146	340	19	1507	0.00%	36.4/sec	281.9
/newspaper/admin...	3000	307	263	545	20	1928	0.00%	18.2/sec	110.7
TOTAL	21000	206	166	424	6	1973	0.00%	127.2/sec	780.0



### Test 35 Deleting a newspaper (III)

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec
/	12000	408	272	923	15	5164	0.00%	34.7/sec	181.8
/security/login.do	6000	31	25	50	5	1344	0.00%	17.3/sec	95.6
/j_spring_security...	6000	786	629	1560	25	5062	0.00%	17.3/sec	93.1
/newspaper/admin...	12000	381	249	865	19	4378	0.00%	34.7/sec	268.6
/newspaper/admin...	6000	741	600	1467	25	4977	0.00%	17.4/sec	105.5
TOTAL	42000	448	285	1090	5	5164	0.00%	121.3/sec	743.8

At this point, there is a slight delay of 1-2 seconds in some actions. This delay starts to become noticeable but is still manageable. Finally, we will rerun the test associated with the listing of all the users, which is the slowest one, with 100 concurrent users and see how it affects to our system.

## Test 36: List all users (IV)

Aggregate Report										
Name: Aggregate Report										
Comments:										
Write results to file / Read from file										
Filename							Browse...	Log/Display Only:	<input type="checkbox"/> Errors	<input type="checkbox"/> Successes
Configure										
Label	# Samples	Average	Median	90% Line	Min	Max	Error %	Throughput	KB/sec	
/	10000	2124	1219	5418	10	32438	0.00%	12.9/sec	59.5	
/images/logo.jpg	10000	210	101	405	7	16890	0.00%	12.9/sec	488.1	
/scripts/query.js	10000	674	346	1305	21	22411	0.00%	12.9/sec	3466.5	
/scripts/query-ui.js	10000	678	496	1839	25	23671	0.00%	12.9/sec	5849.1	
/scripts/menu.js	10000	156	64	307	2	15110	0.00%	12.9/sec	136.9	
/styles/common.css	10000	124	57	252	3	15102	0.00%	12.9/sec	11.5	
/styles/menu.css	10000	117	54	214	2	15105	0.00%	12.9/sec	25.0	
/styles/displaytag.c...	10000	104	53	194	1	14785	0.00%	12.9/sec	39.2	
/images/arrow_do...	10000	105	52	205	3	4417	0.00%	12.9/sec	6.5	
/user/list.do	10000	1882	895	4909	15	25713	0.00%	12.9/sec	68.2	
TOTAL	100000	637	128	1650	1	32438	0.00%	128.6/sec	10143.1	

## 6. FINAL CONCLUSIONS

We can conclude that our system can deal with 60 concurrent users at an acceptable level. When facing around 100 users, there are usually delays of nearly 5 seconds, which is something noticeable but still acceptable, but we must also take into account that our database only has a small data sample compared to the one our system may end up having in a realistic scenario, so these delays will end up being much bigger. Therefore, 100 concurrent users is the limit that we set for the maximum workload our system can handle. We have also reached the conclusion that should one use case start to suffer from too many stress, the listing of all users is the most likely to suffer it first (excluding administrator related actions). We have also noticed that in this case, the processor will be the physical component that acts as a bottleneck.