PERFORMANCE TEST REPORT

ICT Job Portal

www.blush-harp-seal-hose.cyclic.app/

Cycle 1

03/03/2023

CONTENTS

OBJECTIVE

What we want to do

Objective

To measure the performance of ICT Job portal under predefined transaction volumes from end-user perspective and test the system for responsiveness and reliability.

SCOPE

Our Agreement

Scope

1) Number of concurrent users on Iteration1, Iteration2, and Iteration3 are 10, 100, and 500 respectively.
2) Response time ranges from 850ms to 1000ms.
3) 6000 business transactions.
4) Run load test.
5) Run stress test for 500 concurrent user.

OBSERVATIONS

What we observe

Load Testing Preparation

1) 6 laptops are used as Load Controller (Master)
2) 6 laptops are used for Load Generator (Slave)
3) Preparation of Load generator (Install Apache JMeter, JDK 8, Disable VM Network, Disable Firewall, and Antivirus)

EVALUATION CRITERIA

What we evaluate

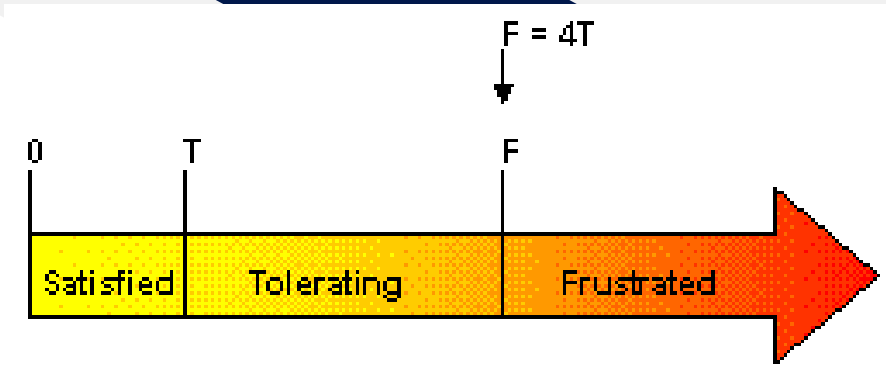
Evaluation Criteria

1) Transaction Response Time using Application Performance Index (APDEX)
2) Failure Rate
3) Systems Performances
4) Errors and Exceptions

Application Performance Index (APDEX)

1) Apdex (Application Performance Index) is an open standard developed by an alliance of companies that defines a standardized method to report, benchmark, and track application performance.
2) Apdex is a numerical measure of user satisfaction with the performance of enterprise applications. It converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied)
3) The index is based on three zones of application responsiveness:
   - **Satisfied:** The user is fully productive. This represents the time value (T seconds) below which users are not impeded by application response time.
   - **Tolerating:** The user notices performance lagging within responses greater than T, but continues the process.
   - **Frustrated:** Performance with a response time greater than F seconds is unacceptable, and users may abandon the process.

Application Performance Index (APDEX)



The Apdex formula is the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples:

$$\text{Apdex}_T = \frac{\text{Satisfied count} + \frac{\text{Tolerating count}}{2}}{\text{Total samples}}$$

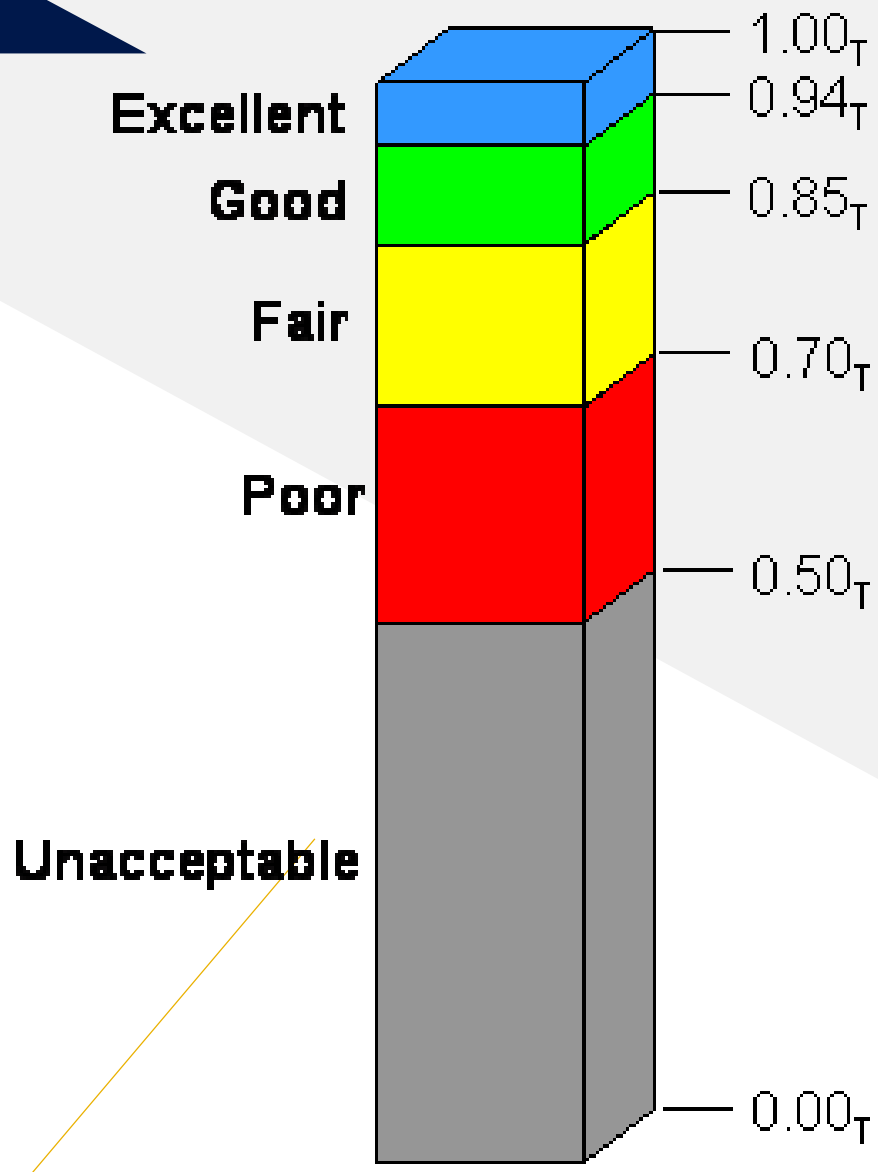
For example, if there are 100 samples with a target time of 3 seconds, where 60 are below 3 seconds, 30 are between 3 and 12 seconds, and the remaining 10 are above 12 seconds, the Apdex is:

$$\frac{60 + \frac{30}{2}}{100} = 0.75$$

Application Performance Index (APDEX)

What is good APDEX value?

Apdex values fall between 0 and 1 where, 0 means that no users are satisfied and 1 indicates that all user samples were in the satisfied zone. Clearly, a higher number is better.



References: http://www.apdex.org/

RESULTS

a) 1st Iteration – 10 concurrent users

b) 2nd Iteration – 100 concurrent users

c) 3rd Iteration – 500 concurrent users

Result - 1st Iteration - 10 concurrent user

APDEX : 0.621

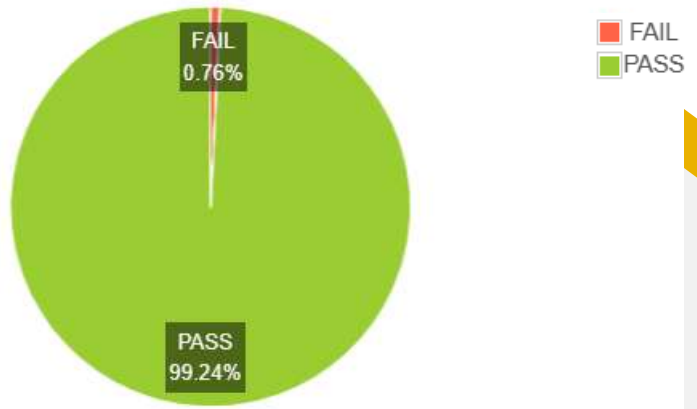
Test and Report informations

	"Thread10.csv"
	"3/4/23, 9:12 AM"
	"3/4/23, 9:12 AM"
	""

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.621	500 ms	1 sec 500 ms	Total

Requests Summary



Requests	Executions			Response Times (ms)							Throughput	Network (KB/sec)	
Label	#Samples	FAIL	Error %	Average	Min	Max	Median	90th pct	95th pct	99th pct	Transactions/s	Received	Sent
Total	132	1	0.76%	1314.37	192	6046	506.50	4423.90	5531.40	6038.41	5.14	286.27	4.21

Type of error	Number of errors	% in errors	% in all samples
429/Too Many Requests	1	100.00%	0.76%

Result - 2nd Iteration - 100 concurrent user

APDEX : 0.220

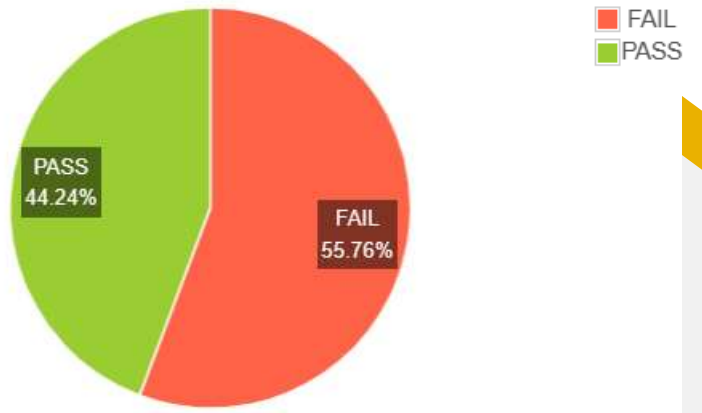
Test and Report informations

	"Thread100.csv"
	"3/4/23, 9:19 AM"
	"3/4/23, 9:19 AM"
	""

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.220	500 ms	1 sec 500 ms	Total

Requests Summary



Requests	Executions			Response Times (ms)							Throughput	Network (KB/sec)	
Label	#Samples	FAIL	Error %	Average	Min	Max	Median	90th pct	95th pct	99th pct	Transactions/s	Received	Sent
Total	1329	741	55.76%	642.54	150	7470	256.00	980.00	3099.00	6605.80	54.46	360.62	44.01

Type of error	Number of errors	% in errors	% in all samples
429/Too Many Requests	741	100.00%	55.76%

Result - 3rd Iteration - 500 concurrent user

APDEX : 0.169

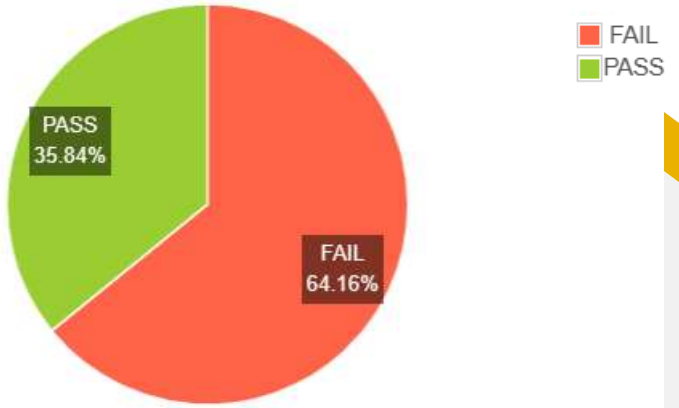
Test and Report informations

"Thread500.csv"
"3/4/23, 9:24 AM"
"3/4/23, 9:24 AM"
""

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.169	500 ms	1 sec 500 ms	Total

Requests Summary



Requests	Executions			Response Times (ms)							Throughput	Network (KB/sec)	
Label	#Samples	FAIL	Error %	Average	Min	Max	Median	90th pct	95th pct	99th pct	Transactions/s	Received	Sent
Total	6649	4266	64.16%	640.57	146	9168	251.00	1921.00	3046.00	5086.50	260.96	150.97	207.56

Type of error	Number of errors	% in errors	% in all samples
429/Too Many Requests	4255	99.74%	63.99%
500/Internal Server Error	11	0.26%	0.17%

FINDINGS AND RECOMMENDATIONS

What happen and How to improve

Findings

1) APDEX value for iteration 1, iterations 2, and iteration 3 are 0.62, 0.22, and 0.16 respectively. Based on the APDEX values, all the iterations failed because the values are below the average APDEX index of 0.85.

2) Average Response Times of Iteration1, Iteration2, and Iteration3 are 1314ms, 642ms, and 640ms respectively.

3) Main processes affected response time are:
   a) Too Many Requests
   b) Internal Server Error

OBSERVATION & RECOMMENDATION

Recommendations

- Review the capacity of the servers.
- Upgrade infra resources
- Perform Cycle 2 performance test and repeat the test for Iteration 1, 2, and 3 after tuning up the application and infra
- Separate the App and DB to easily identify and isolate the issues.

Recommendations

- Identify the root cause of the poor performance.
- Optimize database queries
- Improve server response time
- Optimize code
- Reduce network latency
- Implement caching
- Continuously monitor performance

Summary of Results

Evaluation Criteria	Iteration1 – 10 users	Iteration2 – 100 users	Iteration 3 – 500 users
APDEX	0.621	0.220	0.169
Average Response Time	1.3 second	0.642 second	0.640 second
Error rate	0.76%	55.76%	64.16%
Result	**Passed**	**FAILED**	**FAILED**

Thank You.