[Bryant and Stratton – Load Test]

Load/Performance Test Plan

Version [V 1.0]

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Audit Trail:

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1. Objective And Scope

The purpose of this document is to outline the environment and performance test plan for Bryant and Stratton. In general the purpose of this testing are :

- Validate core Quick launch APIs meet minimum performance requirement. Following APIs will be measured for performance :
  - Exchange Quick Launch API (**https://login.bryantstratton.edu/QuickLaunch/api/launch/8**)
  - Angle Prod Quick Launch API (**https://login.bryantstratton.edu/QuickLaunch/api/launch/9**)
  - Web Assist – Angle Dev QL API (**https://login.bryantstratton.edu/QuickLaunch/api/launch/10**)
- Validate configured Quick Launch applications (Exchange, Angle Prod, Angle Dev) meet minimum performance requirement when accessed using Blackboard portal.

2. Approach

Quick launch APIs will be tested by injecting virtual users using load runner V9.1. During load test we will measure CPU utilization on application nodes, JVM behavior and other performance metrics.

3. Load Test Types and Schedules

We will execute load test with expected number of virtual users (number of users that will help us to create 2000 concurrent sessions).

- Smoke Test - We will execute smoke test to validate load runner script created is working properly. We will not report or capture any performance metrics during smoke test.
- Load Test – We will execute load test with expected number of virtual users to measure application performance.

Performance Test cycle for **Bryant and Stratton** will be started from 24th March 2014 and expected end date for project is 28th March 2014.

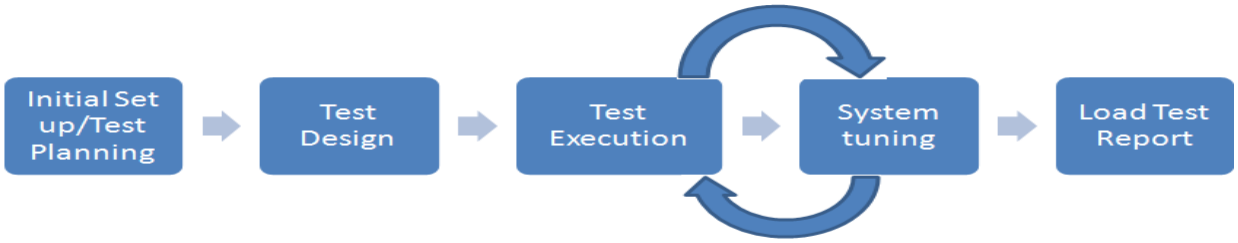
4. Test Measurement, metrics

Following metrics will be captured :

- **Data Base Server**
  - **CPU utilization**
  - **Memory Utilization**
  - **Load Average**
  - **Swap memory behavior**
  - **mySQL INNODB buffers hit ratio**
  - **Number of connection on mySQL**
  - **Table Cache statistics**
- **Application Server**
  - **CPU utilization**
  - **Memory Utilization**
  - **Load Averages**
  - **Swap Memory Behavior**
  - **JVM heap utilization**
  - **Thread contention(if any)**
  - **Number of TCP connections**
  - **Hit Rate on application server**

5. Load Testing Process

Following load testing process will be followed :



6. Tools Used

We will be used following during performance test cycle for Bryant and Stratton :

- Load Runner V 9.1
- Visual VM
- Vmstat/nmon
- mySQL tuner script

7. Load Descriptions

Following load model will be followed during load testing :

- **Ramp up Time :** 1 Virtual user after every 2 seconds
- **Think Time :** 20 seconds
- **Pause between user's Iterations:** 30 seconds (where 1 user iteration means one complete script flow)
- **Ramp Down Time :** 5 Virtual users every 1 second
- **Test Duration :** 1 Hour (excluding Ramp up and Ramp down time)
- **# of virtual users :**

8. System Under Test Environment

Application nodes Details:

mycampus-617-admin.campuseai.org (2vCPUs, 4 GB RAM ,IP 172.16.101.4)
mycampus-618-admin.campuseai.org (2vCPUs, 4 GB RAM , IP 172.16.101.5)
mycampus-619-admin.campuseai.org (2vCPUs ,12 GB RAM ,IP 172.16.101.6)
mycampus-620-admin.campuseai.org (2vCPUs ,12 GB RAM ,IP 172.16.101.7)

9. Test Deliverables

Following Test deliverables are expected as part of this performance testing effort:

- Performance Test Plan
- Final Load Test Report

10. Team Members and Responsibilities

Responsibility	Team Member
Performance Test Plan	Rahul Ahlawat
Load Runner Script Creation	Bhawna Bajaj
Performance monitoring tool set up	Rizwan Saheb
Load Test Execution	Bhawna Bajaj
Report Generation	Bhawna Bajaj
Performance Test Cycle monitoring	Rahul Ahlawat