Rhino

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**Performance Test Plan**

**Version – Issue 0.1**

**23rd Feb, 2017**

RECORD OF CHANGE

\* A – Added, M – Modified, D - Deleted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Changed Items** | **\*A, M, D** | **Description** | **Version** |
| Feb 23rd, 2017 | Add new document. | A | First design of the Performance Test Plan | 0.1 |
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|  | Name & Role | Date | Signature |
| **Originator** | Khanh Vu, SQC | Feb 23rd, 2017 | Khanh Vu |
| **Reviewer/s** |  |  |  |
| **Approver/s** |  |  |  |

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# Introduction

## Purpose

This document describes the plan to implement and execute Performance testing process for the Rhino system. It will be used by QC Engineers, BA, and PM.

This document contains the outline of the high level performance test plan for the project. It identifies:

* Performance requirements to be tested and not tested of Rhino website.
* Scope, resources and schedules of performance testing activities.
* Performance approach to be used.
* Risk assessment.
* Lists of performance testing deliverables

## Background information

Rhino is the software to help owners of small businesses easily manage their work with:

* Clients’ contacts
* Sales proposals
* Projects
* Tasks
* Invoices
* Payment
* Administrative configurations like user management, project types, expense types, system settings, system appearance, etc.

Supported sectors in this application include:

* Construction
* Professional, Scientific & Technical Services:
* Administration & Support Services

## Scope

The performance tests will be performed to validate that Rhino system meet the maximum performance standards established for this project. The performance testing is based on the fixed software and defined database. The following functions will be measured for performance:

* Home
* Login
* Add contact
* Add sale proposal
* Add invoice for contact
* Add invoice for Sale proposal
* Add invoice for Empty project
* Add invoice for Project with Task
* Add invoice for Project with Timesheet and Expense
* Add reminder
* Add note
* Add Expense
* Add Timesheet
* Approve Timesheet
* Approve Expense

## Exclusions

The performance testing effort outlined in this document will not cover the following:

* Measure the render time on device/browser.
* Any function is out of the Scope.
* Performance testing any changes to Rhino system that are planned.
* Improve performance.

## Risk list

In this project, there are some risks have been identified as below:

* The information is out of the assumption in the proposal; if that we will recognize it is as out of scope.
* A page (URL) is updated by new build. In that case, we will exclude the page from performance test
* Difference time zone, RHINO server may be downed while loading test. In that situation, we will Informs RHINO agent. If RHINO agent can solve the issue immediately, tester will resume the testing, otherwise, the testing will be delayed to next day or till the issue is solved.

## Assumptions

1. The performance testing will be done on real environment; difference environments will return difference test results.
2. For loading 3,000 simultaneous users, it will be generated by Blazemeter service and the RHINO must be published on the internet.
3. Testing team must have permission to monitor the hardware usage of the production servers while testing.
4. This load testing measure performance of the application while 3,000 simultaneous users accessing to the application, it does not measure the render time on device/browser. As the application is designed with a simple UI so render time should not impact.
5. NashTech we will review the results, diagnose the potential root cause and agree with Eugene on the functions needing to be enhanced before we proceed with any changes.
6. Not any function will be updated while a round of the performance test is running. If this happens, the running round must be stopped and restart again, extra cost will be extended.
7. The performance testing is based on the fixed software and defined database. Additional function added while testing will cause to re-plan and re-schedule.
8. During implementing the automated scripts, if a function could not be applied automation because of technical issue, NashTech will discuss with RHINO to replace another solution if any, otherwise then it will be excluded from the test with informing to RHINO
9. While executing the performance testing, NashTech may have question relates to the business or issue that need confirmation from RHINO, if the answer from RHINO lately affect to the testing progress, then NashTech will re-schedule.
10. RHINO will provide related document such as use case, specification, test case before NashTech start planning. And provide the environment before executing test.
11. Offshore staff will work normal Vietnam working hour.
12. The NashTech process for performance and load test is:

RHINO will provide the server’s statistic to NashTech to analyse in order to find root cause of low performance. Improve performance will be out of scope of the testing.

**1. Plan test**

**2. Scripting/ Scenario**

**3. Run test**

**4. Collect statistics**

**5. Analyse result**

**6. Amend system**

# PERFORMANCE TESTING Approach

## Test type - Load Test

A loading test of 2.500 authenticated users (with login function) or 3,000 non-authenticated users (without login function) using the application will be conducted to verify that Rhino website can meet following expectation:

* All response time for user’s click must be less than or equal 3 seconds, except Invoice function it will be 10 seconds because this function take more time to collect data and calculating.

## Test Scenarios

The load testing start with N=100 virtual users then ram up to 2.500 users.

With RHINO system, we need to divide these users to below groups:

|  |  |  |
| --- | --- | --- |
| Groups | Functions | Percentage (%) |
| Most access | Home | 35 |
| Login |
| Most access to add | Add Timesheet | 35 |
| Add Expense |
| Common access to approve | Approve Timesheet | 7 |
| Approve Expense |
| Common access to add | Add contact | 10 |
| Add sale proposal |
| Common access to add invoice | Add invoice for contact | 10 |
| Add invoice for Sale proposal |
| Add invoice for Project with Task |
| Add invoice for Project with Timesheet and Expense |
| Rarely access | Add reminder | 3 |
| Add note |
| Add invoice for Empty project |

So, with this classification, we can simulate a reality working where a large number of users accessing to the system.

With this instant, once we increase or reduce the number of simultaneous users for next attempt, the rate will be applied through the testing round.

|  |  |  |
| --- | --- | --- |
| **Step** | **Action** | **Purpose** |
| 1 | Preparation. | Make sure the testing scripts have been implemented. RHINO websites is accessible. Nobody access to the site.  Testing team must have permission to monitor the hardware usage of the test servers while testing.  Testing team must have Blazemeter license. |
| 2 | Generates and load 2.500 users (ram up from 100) send requests to defined functions within 12 hours. | Simulate 2.500 simultaneous users accessing to defined functions to determine if the system still handle the load with the expected performance. |
| 3 | Complete running the script and return a test result | Returns an approximately loading time for all functions which have been run. Or any error message returned while testing running. Analyse and point out where the bottleneck or root causes of the performance issues. |

## General Testing Activities

* Project knowledge training
* Plan the performance test.
* Setup the test environment (Both sides of RHINO and NashTech).
* Implement performance test script
* Execute performance test
* Report test result.

## Timeline

RHINO agent will provide related document such as use case, specification, test case before NashTech start planning. And provide the environment before executing test.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Task Name** | **Effort (hours)** | **Resource** | **Start Date** | **End Date** | **Note** | |
| 1 | Training/self-study business requirement and practise | 12 | SQC | 23-Feb-17 | 24-Feb-17 |  |
| 2 | Setup environments | 16 | DEV |  |  | Testing side, exclude test server environment |
| 3 | Create plan | 12 | SQC, PQC, BlaineSoftware | 24-Feb-17 | 27-Feb-17 | Init, review, approve |
| 4 | Test data preparation | 26 | DEV |  |  | 30 Tenants, 3000 users, 300000 timesheets, 300000 expenses, 3000 projects, 6000 tasks, 3000 Sale proposals, 6000 lines, 3000 contacts. |
| 5 | Create test case | 4.8 | TBD | 28-Feb-17 | 28-Feb-17 | Test happy case only |
| 6 | Implement performance test script | 60 | SQC | 28-Feb-17 | 10-Mar-17 |  |
| 7 | Execute Load Test | 15 | SQC | 10-Mar-17 | 13-Mar-17 | 6 rounds with each 2 hours (constraint of tool, does not allow to run 1 round 12 hours),  Monitor hardware usage, Collect report between loads. |
| 8 | Analyse, report | 2 | SQC | 13-Mar-17 | 13-Mar-17 |  |
|  | Total (hours) | 147.8 |  |  |  |  |
|  | Total (days) | 18.5 |  |  |  |  |

If hit a bottle neck and need to do enhancements, the recurring effort will be for re-testing is 3.4 days (Testing only, effort to do enhancements from developer team is not included in this estimation).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Task Name** | **Effort (hours)** | **Resource** | **Start Date** | **End Date** | **Note** | |
| 1 | Investigate bottle neck | 8 | DEV, QC | TBD | TBD | Both developer and tester take part in to this task (each takes 4 hours). |
| 2 | Restore DB and run script to create test data | 2 | DEV | TBD |  | Reuse script |
| 3 | Execute Load Test (retest) | 15 | SQC | TBD | TBD | 6 rounds with each 2 hours (constraint of tool, does not allow to run 1 round 12 hours), Monitor hardware usage, Collect report between loads. |
| 4 | Analyse, report | 2 | SQC | TBD |  | 12 |
|  | Total (hours) | 27 |  |  |  |  |
|  | Total (days) | 3.4 |  |  |  |  |

## Load Testing Process, Status Reporting, Final Report

This section details the load testing process that will be followed for all performance tests conducted as described in this test plan.

The tester will execute all created scripts. These scripts will be generated and executed against the system in 6 rounds with each 2 hours.

We will monitor hardware usage, collect report between loads. We will execute these scripts again, after subsequent hardware, software, or other fixes are introduced.

Test team will baseline load as follows:

* We will test Rhino website and report back on the following metrics:
* Response Time each transaction hitting the Web site.
* Any web or database server errors as reported in the data log.
* Failed Web Transactions

There will be Status Reports being sent detailing:

* Performance tests run
* Performance Errors and status
* Number of Bugs Entered
* Status Summary

The Final Report will include summary bug counts, overall performance assessment, and test project summary items.

## Bug Reporting and Regression Instructions

Bug Reporting:

* Run all load tests and the test result log is generated: view the summary and the details of test result in GUI of Jmeter.
* Analyze the test result: which error occurs and the cause of the error
* Export the test result into JTL, CSV file, PDF or print the report

Regression:

* Tester does not need to do regression test for functionality.

# RESOURCES

## Human Resources

This table shows the staffing assumptions for the project.

|  |  |  |
| --- | --- | --- |
| **Role** | **Minimum Resources Recommended**  **(no. of full-time roles allocated)** | **Responsibilities / Comments** |
| SQC | 1 | * Prepare the Test plan * Create Test cases * Implement performance test script * Execute Load Test * Analyze the results * Investigate bottle neck and diagnose the potential root cause * Prepare Test result report. |
| QC Manager | 1 | * Review the Test plan * Review test cases/ test script prepared by QC. * Support QC in technical issues. |

## Environment

This section presents the non-human resources required for the Test Plan.

| **Resource** | **Quantity** | **Name and Type** |
| --- | --- | --- |
| Web server | 2 | TBD |
| DB Server | 1 | TBD |
| Test PCs | 1 | Standard Harvey Nash system |
| **Support Tools** | | |
| **Tool Category or Type** | **Note** | |
| Jmeter 3.1 | Supports implement test script. | |
| Blazemeter service with license | Supports load generator. Popular license limits 5 load engines, each load engines can generate maximum 500 authenticated users or 600 non-authenticated users. | |

\*The Servers setup and the load generation will be at RHINO environment. Test server environment separated from production server.

\*Testing team must have permission to monitor the hardware usage of the test servers while testing.

# DELIVERABLES

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Deliverable** | **Date** | **Responsibility** | **Delivered to** |
| 1 | Test plan | Feb 27th, 2017 | SQC | Client |
| 2 | Test scripts | Mar 10th, 2017 | SQC | Client |
| 3 | Test result report | Mar 10th, 2017, Bi-weekly | SQC | Client |

# REFERENCES AND RELATED DOCUMENTS

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Document** | **Comments** | **Version** |
| 1 | PerformanceTest Proposal For Rhino\_v1.0x |  |  |
|  |  |  |  |