**Report about conducted load test**

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**Application:** BlogEngine.NET version 3.2

**Environment:** Test Environment

**Test Environment configuration(RAM, CPU etc.):**

|  |  |
| --- | --- |
| Processor | Intel(R) Core(TM) i7-10610U CPU 1.80 GHz 2.30 GHz |
| RAM | 3.95 GB |
| System type | 64-bit operating system |
| Operating System | Windows 10 Enterprise 21H1 |

1. **Why such testing was conducted:** To determine degradation point and capacity of the application
2. **Test script description:**

The following script should be run for

1. When probabilities of execution of different flows are equal
2. When probability usage is implemented according to the following table

|  |  |
| --- | --- |
| **Flow** | **Execution percentage %** |
| Home Page | 15 |
| Open Random Date | 10 |
| Open Predefined Date | 30 |
| Search by Name | 30 |
| Open Large Calendar | 10 |
| Open Contacts | 5 |
| Open Random page (yes/no) | 50/50 |
| Open post (yes/no) | 80/20 |
| Random or First | 65/35 |
| Comment (yes/no) | 20/80 |

Diagram

Description automatically generatedDiagram

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1. **Tests:**   
     
   **Test run preconditions:** Tests conducted for two sets of data: 100 and 1000 posts created on different.

**Load Model:** Capacity testing. Test was conducted for 200 users, ramp-up time is 1200 sec, duration 1200 sec, constant delay between requests 2 sec with deviation 0.10 sec.

1. **Short summary on conducted tests:**

According to capacity test results the comfort zone is before 80 users, and the saturation point is around 80 users for the first tests scenario and 100 posts. Test run was conducted 2 times, the results are reproducible. For second scenario and 100 posts the capacity point is around 95-100 users. For the first scenario and 1000 posts the capacity point is around 92-102 users. For the second scenario and 1000 posts the capacity point is around 60-70 users.

1. **Detailed test results:**

According to test run result, application stays in the comfort zone while the users count is less than 80 users.

Chart, line chart

Description automatically generated.

**Table. Saturation points for different probabilities scenario and different prerequisites**:

|  |  |  |
| --- | --- | --- |
|  | **Random Probabilities scenario** | **Specific probabilities scenario** |
| **100 posts** | **80** | **75** |
| **1000 posts** | **100** | **80** |

**A screenshot of a computer

Description automatically generated with medium confidence**

The transaction response time is stabile while users count is less than 80 users.

**A screenshot of a computer

Description automatically generated with medium confidence**

**artGraphical user interface, chart

Description automatically generated**

As it follows from chart, the CPU usage stays less than 50% for comfort zone, after that increases dramatically and reaches 70%.

For the second script with probability usage the results are following

Chart

Description automatically generated

As one can see, the throughput grows linearly up to 23:03, which means, that saturation point is around 75 users.

Chart

Description automatically generated

Chart

Description automatically generated

From transaction response time chart follows, that response time doesn’t grow at that period. After that point, response time starts to grow.

Chart

Description automatically generated

The CPU usage is less than 50% before the saturation point, than it stats to grow as well. But I is less than 70% during all test.

First script run for 1000 posts results:

Chart, histogram

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

Chart

Description automatically generated

Chart

Description automatically generated

From analyze of all charts we can conclude, that the saturation point is about 100 users .

And, finally, results for script with probability usage and 1000 posts:

Chart

Description automatically generated

Graphical user interface, chart

Description automatically generated

Chart

Description automatically generated

Chart, histogram

Description automatically generated

For the run, conducted for 1000 the saturation point is 80 users.

1. **Conclusion:** For both 100 and 1000 posts the saturation point is higher for scripts with equal probabilities of all. The probability usage causes saturation point decrease. For the same script saturation point is higher for 1000 posts.