

# Advanced Web Server Testing Tools

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**Abstract:** Many number of software dependent on web services are being developed it is necessary to check these systems performance. The performance can be checked on number of parameters like their response time under different conditions. However, prevailing performance testing measures and tools for web services applications are difficult to adapt & delve according to the environment. The process to realize mixed ratio of web service interactions is similar to dealing cards and adapts to different commercial application characteristic this project integrates various different features in single tool. Web server testing tool is responsible for providing testing and monitoring of features. The tool provides inter-related graphical result of all features of a website.

**Keywords:** Features testing and monitoring, load testing, tools, virtual servers, Integrated Platform, Database server

## 1. Introduction

The web service technology, which is being adopted world wide by companies institutions, universities and research departments to achieve improved function performance and higher profits, re-usability of components, independent to software architecture. Along with flooding of types of web services and application servers, it is severe and significant to evaluate these servers and related web services' quality consisting with their specific purposes, especially to evaluate the methodologies quality of web services.

Now-a-days various tools are available in the market but most of these tools provide only features monitoring. Also all tools do not provide all the features under single tool. Advanced Web server testing tool provides all the available features in single tool, features can be used to test and monitor. The inter-related result of all features is provided in a graphical format. Web server testing tool requires main server, slave servers and server to be tested for testing. The http requests, read and write requests are sent to main server and depending upon the capacity of web server the various features are tested. It is also responsible for providing disk utilization and also packet loss present. Various features are studied and integrated under single algorithm to provide integrated output. This algorithm includes various formulas and their inter-dependencies tool. Web server testing tool helps to analyze any feature within specific time and thus helps in power management.

## 2. Related work

### 2.1 Literature Survey

Web services have become a day to day necessity of today. Everything today is going online which requires many of facilities one of them is server. Server today hosts number of features like hosting of the numerous websites, processing power, CPU utilization etc. Most previous work on web server testing tool ignored the result provided by various tools. Also each tool available does not provide the result of all features in it. Some performance testing tools have been compared for their usability and effectiveness, but not all

features are tested here. many of the tools only provides the monitoring tools. David mosberger only provides the tool that measures only performance of the system. "web performance analysis of open source server vitalization techniques" give rise to the concept of multiple virtual servers which are needed in our project for testing various features. in our research paper different features are analyzed and tested by using single tool.

### 2.2 Our Approach

Web server testing tool is used to test the features like availability, response time, disk utilization etc. To test various features under single tool it requires main server, slave servers, server to be tested, database.

- **Main server**-the user sends http request, reads, writes information to main server. the main server is responsible for pre-checking. main server collects the user required information and acts accordingly.
- **Slave servers**-Virtual slave servers are created for handling number of requests sent by user. it handles the information sent by main server. slave servers provides formulas and logic for providing result.
- **Database**-database consists of various MB. KB files.
- **Server to be tested**-it is the actual server which needs to be tested. the graphical result of all the features are provided to this server.

## 3. Proposed Work

### 3.1 System introduction

We would be testing the servers upon some parameters to test these servers we would be using our own architecture. Our system would be divided into 3 components these components are as follows:-

- 1) Master server-Testing server
- 2) Slave Server-acts as a client
- 3) Client Server-Server to be tested

### 3.2 System Modules

Master server- It would create virtual server & task would be assigned to these virtual servers which would act as slave server tasks such as testing the server on certain parameters.  
 Slave server- Slave servers act as client & these servers would carry out the testing on behalf of the master server. Slave server would carry out the testing on the stipulated time

Client Server-It exactly is a client server which is a server which has to be tested or on which the testing has to be carried out

#### 3.2.1 System Features

- Integrated testing
- Graphical report generation
- Network monitoring
- Timely E-mail notifications

#### 3.2.2 System Architecture

- 1) Master server creates virtual server
- 2) Virtual server acts as a client server
- 3) Virtual server would carry out testing & it will record the results
- 4) The results would be given to the master server
- 5) These results would be presented to the client
- 6) End of process

#### 3.2.3 Algorithm

**Step1:** Enter the web-address or IP address to be tested

**Step2:** Once request received master server will create virtual servers

**Step3:** These virtual server would act as a slave server & these would be the servers who would be carry out testing on behalf of the Master server on certain parameters.

**Step4:** These slave server would carry out the testing on the stipulated time & record the results .

**Step5:** These results would be acquired from the slave server & would be sent to the client .

#### 3.2.4 Feasibility Analysis

*Web server testing tool using integrated algorithm:* Given a failure case viz. Q, hardware defects or no network available, we devise an algorithm for this problem as follows:

For a Problem P1 to be NP-Hard, Satisfiability problem (SAT) must be reducible to P1;

$SAT \leq P$  ;

Let the propositional formula be:  $G = X1 \wedge X2$

Where

X1: True if network is available

X2: True if hardware defect is invalid

**Algorithm satisfaction()**

```
{
    For i: 1 to 2
    xi = Choice(True,False);
    if G(x1,x2) then
        Success();
    else
        failure();
}
```

Therefore, since the problem becomes a decision problem, it is

NP.

#### 3.2.5 Satisfiability and Reducibility

3 SAT problem is NP Complete. The system can be reduced to 3SAT problem. A 3SAT problem takes a Boolean formula S that is in CNF in which each clause has exactly three literals. 3SAT is a restricted form of CNF-SAT problem.

x<sub>1</sub> – Network Manager

x<sub>2</sub> - Hardware Manager

x<sub>3</sub> – Server Manager

$S = (x_1 \wedge x_2 \wedge x_3)$

Algo sat()

```
{
    For i= 1 to 3
    Xi=Choice(true, false)
    If(S(x1,x2,x3)= true)
        Success()
    Else
        Failure()
}
```

As it is polynomial time. It is NP-Complete.

#### 3.2.6 Mathematical Model

MATHEMATICAL MODEL

1.let S be a system that describes the execution of system

$S = \{ \dots \}$

2. Identify the modules as M

$S = \{M, \dots\}$

$M = \{m.s, s.s, t.s\}$

Where

m.s= main server

s.s=slave server

t.s=testing server

3. Identify the process as P

$S = \{M, P, \dots\}$

$P = \{G, C, Co, R, A, D\}$

Where

G=Get i/p from user

C=Create v.s

Co=Give commands to m.s

R=Send n number of requests

A=Analyze data

D=Display to user

4. Identify the o/p as O

$S = \{M, P, O, \dots\}$

$O = \{Og, Or\}$

Where

Og=Output as graphical representation of features.

Or=Output in report format in detail.

5. Identify the success as Su

$S = \{M, P, O, su, \dots\}$

Where

Su=Success is where all feature's testing is done in successful manner.

6. Identify the failure as F

$S = \{M, P, O, su, F, \dots\}$

Where

F=When feature testing fails due to some technical reason as no internet connection.

The system can be described as

$S = \{M, P, O, su, F\}$

#### 4. System Advantages

**Kaushal Komawar** is a founder & CEO at hostingreciepe.com & is providing us his valuable inputs from market point of view

- 1) Integrated algorithm dependent results.
- 2) Specefic parameter testing.

#### 5. Conclusion and Future Scope

This paper presents a general outlook for testing of servers  
Characteristics of the proposed approach are summarized as follows:

- 1) Integrated testing of a server with minimal resource usage
- 2) Specific parameter testing depending upon the users requirement

In the future, we can implement testing as well as monitoring of servers

#### References

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#### Author Profile

**Mr Varun Kulkarni** is currently a student at RMD SSOE College pursuing her BE Degree in the field of Computer Engineering. He is the team leader & working on coding part as well as on testing part of this software and finding how the test suite can be improved so that it can achieve code coverage and can fine as many bugs as possible with less number of test cases.

**Ms. Priyanka Kotkar** is currently a student at RMD SSOE College pursuing her BE Degree in the field of Computer Engineering. She is working on Graphical user interface of this system. As well as contribute in documentation of this system.

**Ms. Mithila Undale** is currently a student at RMD SSOE College pursuing her BE Degree in the field of Computer Engineering. She is working on algorithm and coding part of the system as well as documentation of this system.

**Ms. Pradnya Mankar** is currently a student at RMD SSOE College pursuing her BE Degree in the field of Computer Engineering. She is working on developing of mathematical model as well as the overall architecture and flow of abandoned object detection.

**Prof Karan Mashal** he is working as a professor in RMD Sinhgad School Of Engineering & is assisting us on our project