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Comparison of Various Load Testing Tools

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Abstract. As web is increasing web applications are also increasing and due to that performance of web application is also become an important part for developers. Developer makes the web application and uploads on web so, before uploading they should know the circumstances in which web application can effect like: performance, load, stress etc. so for that there are so many load testing tools are available. In this paper we will study the load testing tool which is useful for web application before uploading them.

Keywords: *Load, Load Testing Tools, Comparative Study.*

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1. Introduction

Web is a place where information is stored in form of documents and other web resources are also available and all are interlinked with hypertext links. Now as web is emerging web sites are also emerging on web and because of that load is also increasing. Load refers to the process when a site takes time in buffering or in lame term we can say as how much stress or weight can carried. Whenever software is developed before launching it we run some test to check whether it satisfy the all requirements or not or it can work on extreme condition or not. Same as work with web sites, whenever a web site is developed we should know the circumstances when it can work or not. For checking the load on web application we have so many load testing tools. In this paper we are studding load testing tool for checking load of web sites. Some load testing tools are: WaptPro, WebLoad, LoadStrom, etc. Testing can be of many types such as: Unit Testing- this testing comes under white box testing. In it we test individual unit of our software. Performance Testing- it is used to check the speed and effectiveness of site and also to check that site works in specified time or not. Functional Testing- it check that all the functions are working properly or not. Stress Testing- it is used to test sites in critical condition.

2. Literature Review

1. **Sandeep Bhatti and Raj Kumara, Comparative Study of Load Testing Tools,** Load Testing is a part of software testing. In this paper author has discussed some load testing tools such as: LOADRUNNER, NEOLOAD, WAPT and many more. These tools are used to test the performance of a **system** under heavy load. Author has selected best tool for load testing on the basis of certain parameters such as: response time, memory utilization etc. In their study, authors found out that Neoload is the best tool for Load Testing. It uses graphs having real time mesasures to analyse the load of the system. [1]

2. **Ms. S. Sharmila , Dr. E. Ramadevi , Analysis of Performance Testing on Web Applications,** In this paper, author has discussed about web testing. Performance testing of web applications is the main focus of author. This paper presents concept, goals and, types of performance testing. Three types of performance testing is explained here: load testing, stress testing, and capacity **testing**. Also, the author has discussed some of the tools that are available for this testing such as: Apache JMeter, NeoLoad, LoadRunner and many more. [2]

3. **Isha Arora and Vikram Bali, A Brief Survey on Web Application Performance Testing Tools Literature Review,** In this paper the authors have explained web testing. This paper presents five type of performance testing which are: load testing, capacity testing, volume/stress testing, spike testing and, endurance testing. Eighteen performance testing tools are also explained here. Some of them are: LoadRunner, NeoLoad, Httperf, QTest, WAPT etc. Authors have also presented some of the main characteristics of these tools in this paper. In future research, authors are going to give a framework for performance automation. This tool will use some new set of features. [3]

4. **Shagun bhardwaj and A.K. Sharma, Performance Testing Tools: A Comparative Analysis,** This paper explains that why web testing is important. Web testing, performance testing, and web application are discussed here. Some performance tesing tools are also discussed here, which are Apache JMeter, HttpRider and,

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Fwptt. Author has done a comparative study on these tools. Technical comparison, and the comparison based on various parameters at various time is also provided in this paper. Author observed that if we compare these tools with respect to the response time, then httpRider is the best tool for performance testing. [4]

5. **Shikha Dhiman and Pratibha Sharma, Performance Testing: A Comparative Study and Analysis of Web Service Testing Tools,** In this paper, web testing, performance testing, and web application are discussed. Some performance tesing tools are also discussed here, which are Apache JMeter, HttpRider and, Grinder. Author has done a comparative study on these tools. Technical comparison and, the comparison based on various parameters at various time is also provided in this paper. Author observed that if we compare these tools with respect to the response time, then httpRider is the best tool for performance testing. [5]

6. **Rizwan Bahrawar Khan, Comparative Study of Performance Testing Tools: Apache JMeter and HP LoadRunner,** In this paper, author has discussed the importance of software testing. Ten software testing methods are discussed in this paper. Author discussed various performance testing tools. He compared two performance testing tools, which are: Apache JMeter and LoadRunner. These tools are compared to check/test their efficiency and usability. Comparison is performed with respect to certain parameters such as: usability test, technical requirements and, performance testing. Author found that Apaxhe JMeter is a better tool than LoadRunner. [6]

7. **Kunhua Zhu Junhui Fu Yancui Li**, **Research the performance testing and performance improvement strategy in web application,** In this paper, author has discussed performance testing of web and its types. Author has presented three types of performance testing: load testing, stress testing and, strength testing. This paper also **presents** some general indicators of performance testing, which are: response time, throughput and, resource utilization. Some performance testing methods of web are explained here, such as: method of virtual users, WUS method and, object-driven method. Some performance optimization strategies are also presented in this paper. [7]

3. Load Testing Tools

1. Wapt-Pro: WAPT-Pro is an environment for load and performance testing tool for website and application with web interface. WAPT perform several kind of load testing like: Performance, Stress, Volume, Regression Testing etc [9]. WAPT also allow us to create many virtual users so we can check load for real website users. WAPT lets us design test by recording them with browser or mobile application. At time of recording it record all the values which we insert on web site and after stop recording it shows all the values. Test results come in form of graphs and report tables. They show performance of our system in different test periods depending on the generated load. It also generated log table so we can check all the pages working properly or not and all the errors with description.

2. WebLoad: It is a load testing tool which tests the performances and stress of web sites. Web-Load can check load for large amount of concurrent users and shows us the data how the web sites are working in traffic condition. Now as web load check load it also uses some components like server, database, load balancer, firewall etc. Web Load is launched by Read view. Web Load has IDE through which it record the test scripts which are HTTP activities then it generated test in JavaScript form. Web Load generate load from on-premises machines and cloud.

3. Apache JMeter: Apache JMeter is a load testing tool which testes load, performance, stress test etc. It is an open source work on any platform like window, Linux, Mac etc. it has a simple GUI and it also stores test plan i.e. what to test and how to go about, in xml format. Whenever we start the jmeter it create the request to target server then that server perform the processing and return the result which is in form of graph, tables etc. [1]

4. Load Storm: it is a cloud based performance testing tool which shows average response time, throughput, error rates, and request per second in their result in graphical form. It is very easy to use. We can create our own test plans and scenarios in it and can check for huge amount of users due to cloud based infrastructure. It works on windows. [1,2]

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5. Load Complete: it is load testing tool which test the load under massive load condition because it stimulates multiple virtual users together. Whenever we run load complete it start by recording a scenario in which it capture all the HTTP request between user and server then after recording it saves the result. Then we run the test in which it stimulates for virtual users and after that we can analyze the test also. It shows all the response, errors and warning if any occurred.

6. Load Runner: it is load testing tool design by HP for testing test on large number of virtual users. When we run load runner it create test plan then create test scripts, scenarios and in last generate the test results. It also has many components like VuGen (Virtual user Generator), controller and analysis where Vugen uses for creating virtual users, controller used for creating test plan for various users and analysis used for analyzing errors. It can run on windows and Linux. [3]

7. NeoLoad: NeoLoad is a load testing tool developed by a French company called Netosys. We can test the load and performance of our web site using it. NeoLoad analysis the load by increasing the traffic so we can check the conditions in which our sites are working properly or not. It is in java and run on Windows and Linux. It can use for both mobile and web application and we can also limit of our sites. NeoLoad has 2 components controller which used for create and run scenarios and also for running and analysis in test while load generator the other component used for sending request for run scenarios. [3]

4. Comparative Study of Load Testing Tools

Table1. Comparative Study of Load Testing Tools

Name Of Tools	platform	Language use	Developer	Language support	Development year	Browser support
Wapt-Pro	Windows	JAVA	Gras Alex	Asp.NET, JAVA, Python	WAPT 3.0/2003	Multi Browser
Web Load	Windows, Linux	JAVA	Rad View	HTML5, AJAX, SOAP, XML, JAVA	-	Multi Browser
Apache JMeter	Windows, Linux, Mac	JAVA	Stefanno Mazzocchi	JAVA, JAVA Script, Dean Shell, Jexl	2.12/November 10, 2014	JVM 1.4
Load Storm	Windows	JAVA	Roger and Scot	JAVA and Ruby on Rails	-	Firefox, IE, Chrome, Safari
Load complete	Windows	JAVA	Smart Bear	.NET, JAVA, Php, Python, Ruby on Rails	-	Multi Browser
Load Runner	Windows, Linux	C	HP	VB, VBScript, JAVA, JAVA Script, C#	11.52/1989	Multi Browser
NeoLoad	Windows, Linux	JAVA	Netosys	AJAX, .NET, SOAP, J2EE, Silverling, FLEX	1.0/2005	Multi Browser

5 Conclusion

As we know for any software development we need to do testing for checking the software requirements is completed or not and also if it works on difficult condition or not same as when we create web sites we need to check its performance, how much load it can take before uploading it. For this load testing is come in scenario. In this paper we studied many load testing tools and did the comparative study for checking which tool is suitable for our scenario.

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