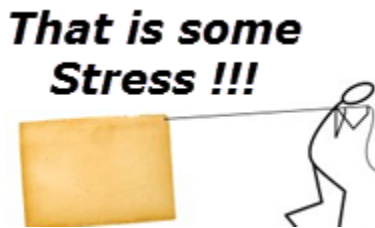


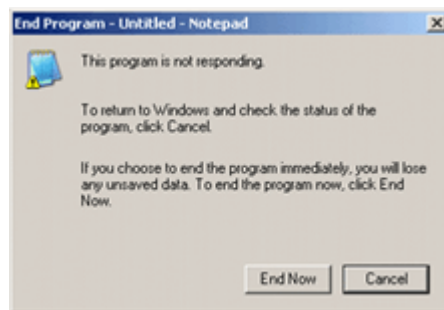
Learn Stress Testing with no stress!!!

Stress testing is used to test the stability & reliability of the system. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions. **It even tests beyond the normal operating point and evaluates how the system works under those extreme conditions. Stress Testing is done to make sure that the system would not crash under crunch situations.**



Stress testing is also known as endurance testing. Under Stress Testing, AUT is be stressed for a short period of time to know its withstanding capacity. Most prominent use of stress testing is to **determine the limit, at which the system or software or hardware breaks**. It also checks whether system demonstrates effective error management under extreme conditions.

The application under testing will be stressed when 5GB data is copied from the website and pasted in notepad. Notepad is under stress and gives 'Not Responded' error message.



Need for Stress Testing

Consider the following scenarios -

- During festival time, an online shopping site may witness a spike in traffic, or when it announces a sale.

- When a blog is mentioned in a leading newspaper, it experiences a sudden surge in traffic.

It is imperative to perform Stress Testing to accommodate such abnormal traffic spikes. Failure to accommodate this sudden traffic may result in loss of revenue and reputation.

Stress testing is also extremely valuable for the following reasons:

- To check whether the system works under abnormal conditions.
- Displaying appropriate error message when the system is under stress.
- System failure under extreme conditions could result in enormous revenue loss
- It is better to be prepared for extreme conditions by executing Stress Testing.

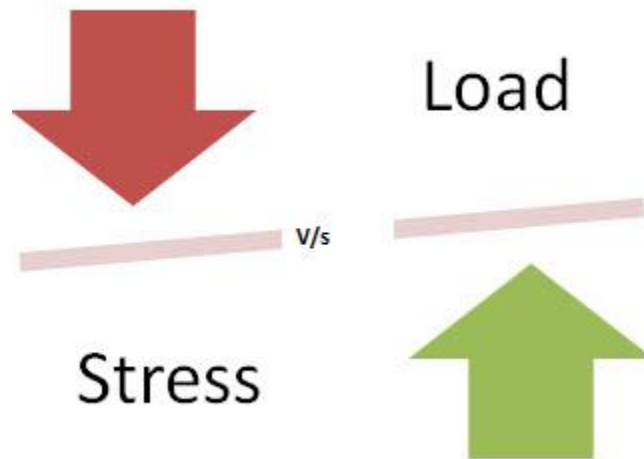
Goals of stress testing:

The goal of stress testing is to analyze the behavior of the system after failure. For stress testing to be successful, system should display appropriate error message while it is under extreme conditions.

To conduct Stress Testing, sometimes, massive data sets may be used which may get lost during Stress Testing. Testers should not lose this [security](#) related data while doing stress testing.

The main purpose of stress testing is to make sure that the system recovers after failure which is called **asrecoverability**.

Load Testing Vs Stress Testing



Load Testing is to test the system behavior under normal workload conditions, and it is just testing or simulating with the actual workload

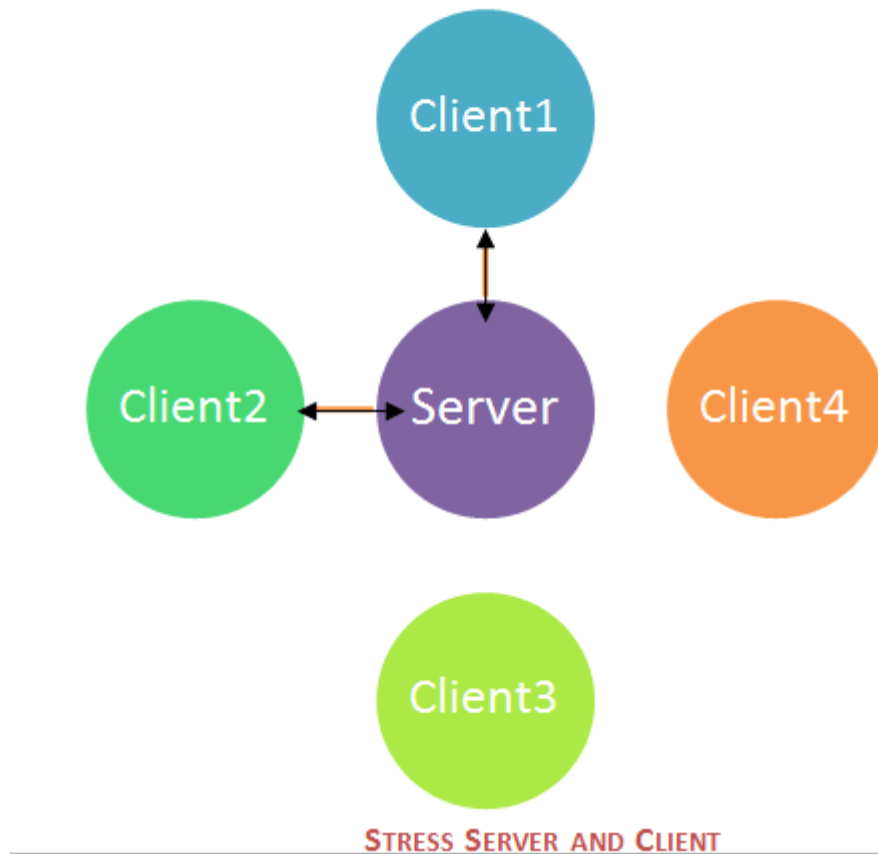
But Stress testing is to test the system behavior under extreme conditions and is carried out till the system failure.

Load testing does not break the system, but stress testing tries to break the system by testing with overwhelming data or resources.

Types of Stress Testing:

Following are the types of stress testing and are explained as follows:

Distributed Stress Testing:



In distributed client-server systems, testing is done across all clients from the server. The role of stress server is to distribute a set of stress tests to all stress clients and track on the status of the client. After the client contacts the server, server adds the name of the client and starts sending data for testing.

Meanwhile, client machines send signal or heart beat that it is connected with the server. If the server does not receive any signals from the client machine, it needs to be investigated further for debugging. From figure, server can connect with the 2 clients (Client1 and Client2), but it cannot send or receive signal from Client 3 & 4.

Night run is the best option to run these stress testing scenarios. Large server farms, need more efficient method for determining which computers have had stress failures that need to be investigated .

Application Stress Testing:

This testing concentrate on finding defects related to data locking and blocking, network issues and performance bottlenecks in an application.

Transactional Stress Testing:

It does stress testing on one or more transactions between two or more applications. It is used for fine-tuning & optimizing the system.

Systemic Stress Testing:

This is integrated stress testing which can be tested across multiple systems running on the same server. It is used to find defects where one application data blocks another application.

Exploratory Stress Testing:

This is one of the types of stress testing which is used to test the system with unusual parameters or conditions that are unlikely to occur in a real scenario. It is used to find defects around unexpected scenarios like

1. Large number of users logged at the same time
2. If a virus scanner started in all machines simultaneously
3. If Database gone offline when it being accessed from a web site,
4. When a large volume of data is inserted to the database simultaneously

Tools recommended for Stress Testing:

Stress Tester

This tool provides extensive analysis of the web application performance, provides results in graphical format, and it is extremely easy to use. No high level scripting is required and gives good return on investment.

Neo load

This is a popular tool available in the market to test the web and [mobile](#) applications. This tool can simulate thousands of users in order to evaluate the application performance

under load and analyze the response times. It also supports Cloud integrated - performance, load and stress testing. It is easy to use, Cost effective, and provides good scalability.

App Perfect

AppPerfect is a tool used for integrated load, stress and performance testing such as response time, hit count ratio, resources utilization, scalability and reliability. It is extremely easy to use with minimal programming knowledge and is cost effective. It gives, user-friendly report with defined output like CSV, XLS, HTML and PDF.

Metrics for stress testing

Metrics help in evaluating a System's performance and generally studied at the end of Stress Test. Commonly used metrics are -

Measuring Scalability & Performance

- Pages per Second :Measures how many pages have been requested / Second
- Throughput :Basic Metric - Response data size/Second
- Rounds :Number of times test scenarios has been planned Versus Number of times client has executed

Application Response

- Hit time:Average time to retrieve an image or a page
- Time to the first byte:Time taken to return the first byte of data or information
- Page Time :Time taken to retrieve all the information in a page

Failures

- Failed Connections :Number of failed connections refused by the client(Weak Signal)
- Failed Rounds :Number of rounds it gets failed
- Failed Hits :Number of failed attempts done by the system(Broken links or unseen images)

Conclusion

Stress testing's objective is to check the system under extreme conditions. It monitors system resources such as Memory, processor, network etc, and checks the ability of the

system to recover back to normal status. It checks whether system displays appropriate error messages while under stress.