

Webserver Stress Tool



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Welcome

Introduction

Most web applications run smoothly and correctly as long as only one user (i.e. the developer) is using it. But what happens when thousands of users access the application simultaneously?!

Webserver stress test tool simulates any number of simultaneous users accessing a web server and helps to streamline your web application.

Using the settings of the performance test software "webserver stress tool", various load patterns can be simulated. Since the stress tool works like a browser any webpage can be tested and stressed, e.g. HTMs, ASPs, CGIs, PHPs, EXEs and more. Webserver stress tool handles proxies, passwords, user agents, cookies and ASP-session IDs.

Webserver Stress Tool: Easy to use, versatile load testing for web servers

Ok, every webmaster hopes to achieve excessive load on his webserver. But...

... is your webserver application prepared for many users?!

... does your application support simultaneous users at all?!

... have you written your CGI or script code to make it as fast as possible?!

... how many users can your server handle?!

... how do different scripted pages interact with each other?!

... how long does it take for a visitor to receive a page?!

... is your hosting service doing a good job?!

... is your expensive hardware too small or too powerful?!

If the visitors to your web site find out the answers to these questions before you, it may cost you a lot of money!

Webserver Stress Tool simulates web users and helps to streamline your web application

Know the answers! With Webserver Stress Tool you can measure how many simultaneous users your server can handle and how long it takes for one request to be processed.

Using the software is very simple:

1. Select one or more URLs on your server
2. Run the server load test and Webserver Stress Tool records request times, number of errors
3. Run the web browser test and Webserver Stress Tool measures the time a surfer needs to receive the complete webpage

Using the settings of Webserver Stress Tool various load patterns can be simulated. Since Webserver Stress Tool works exactly like a web browser any webpage can be tested, e.g. HTMs, ASPs, CGIs, PHPs, Applets, JSPs, EXEs etc. Webserver Stress Tool optionally handles proxies, passwords, user agents, cookies and ASP-session IDs

Installation

What you need to install Webserver Stress Tool

Webserver Stress Tool requires Microsoft ® Windows 95, 98, NT, ME or Windows 2000 to run and an IP-based network to check the servers, which is usually the case for machines connected to the internet.

At least Version 3 of MS Internet Explorer has to be installed.

How to install Webserver Stress Tool on your machine

The software is as a standard zip-file containing the executable (EXE) and some additional files. Simply unzip all the files from the ZIP into a directory of your choice, that you want Webserver Stress Tool to run in. Afterwards drag the Webserver Stress Tool-Icon to a folder in your startmenu or taskbar.

To Deinstall simply delete the files.

Quickstart

Three steps to know your webserver's limits

The usage of Webserver Stress Tool is quite simple and consists of three steps:

1. Select a URL on your server
2. Run the **server load test** and Webserver Stress Tool records request times, number of errors
3. Run the **web browser test** and Webserver Stress Tool measures the time a surfer needs to receive the complete webpage

Note: We **strongly recommend running Webserver Stress Tool under Windows 2000 or NT!** Windows 9x/ME often have problems simulating more than 10 simultaneous users!

Step 1: Select a URL

Enter any URL into the editfield as you are used to from your browser and click on **Go to URL**.



In the lower part of the window a web browser appears, downloads the webpage and displays it. Using your mouse you can surf through the website. Note that the new URLs appear in the editfield as soon as you click on them.

Hint: Pages that make use of frames do not show the correct URLs in the edit field!

Step 2: Server Load Test

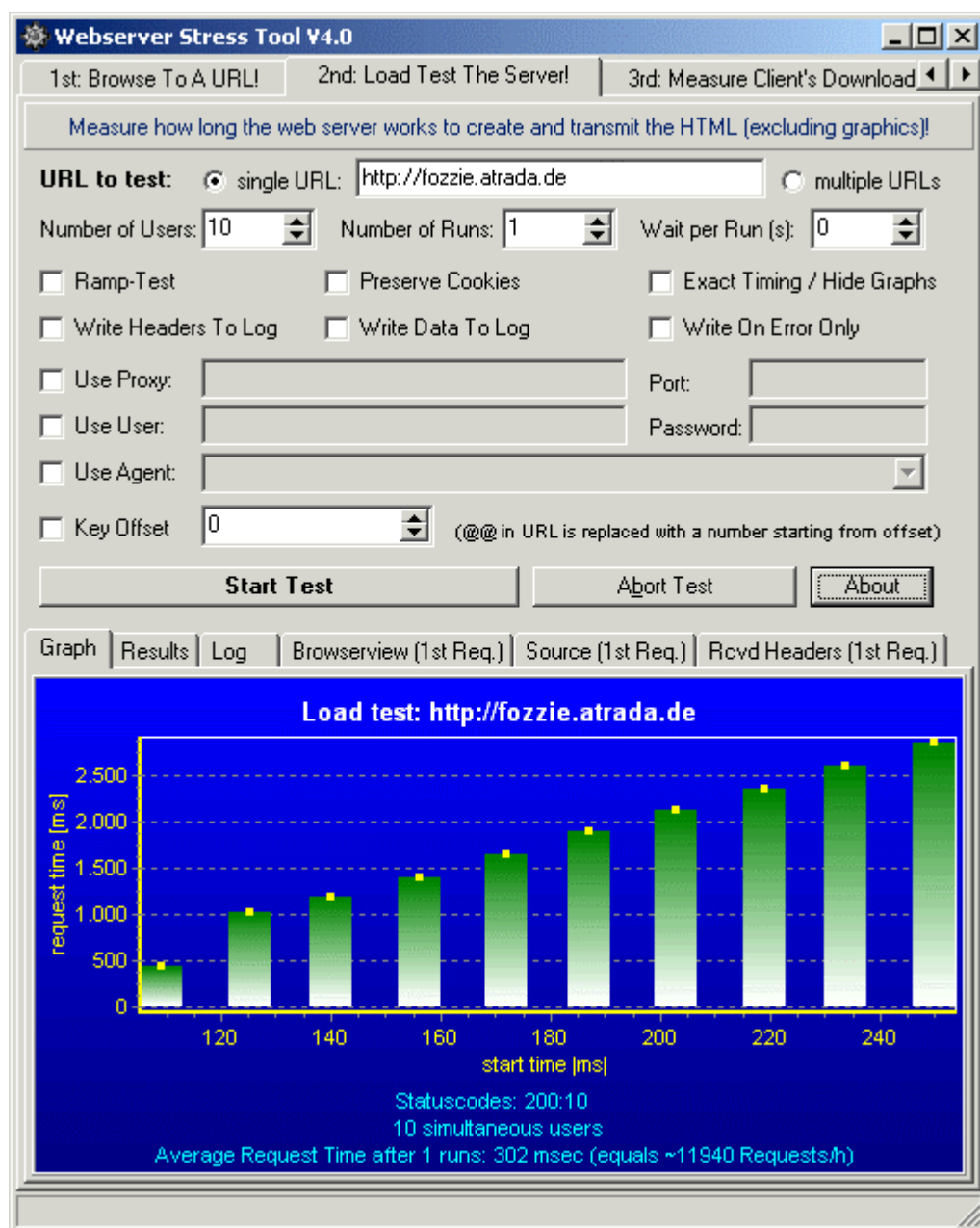
When you have navigated to the webpage that you want to test, click on the tab **Load Test The Server**.

Here you again find the URL that is to be tested, lots of settings and the tab control with the result pages at the bottom.

Part A: Load Test

First select the **number of simultaneous users** you want to simulate (e.g. 10) and set Number of Runs to the value 1. If you use a proxy-server, if the webpage needs user authentication or some special user agent, please enter the appropriate data. Switch off all other settings.

Now hit **Start Test** and watch Webserver Stress Tool stress your server.



After the test is done you can view the results in the lower tab control:

Graph: shows one vertical bar for every request. The height shows how long the request took to complete, the position from the left corner shows when the request was started. The footer of the graph shows: Count of requests by statuscode, the type of the test, the average request time for all tests and the theoretical possible number of requests per hour

Results: shows a summary of the most important numbers gathered during the test

Log: every event and data of the test is recorded in this logfile

Browserview: shows the resulting HTML of the first request using a web browser, which is also written to "temp.htm" in the active directory (usually the directory you have stored the exe in)

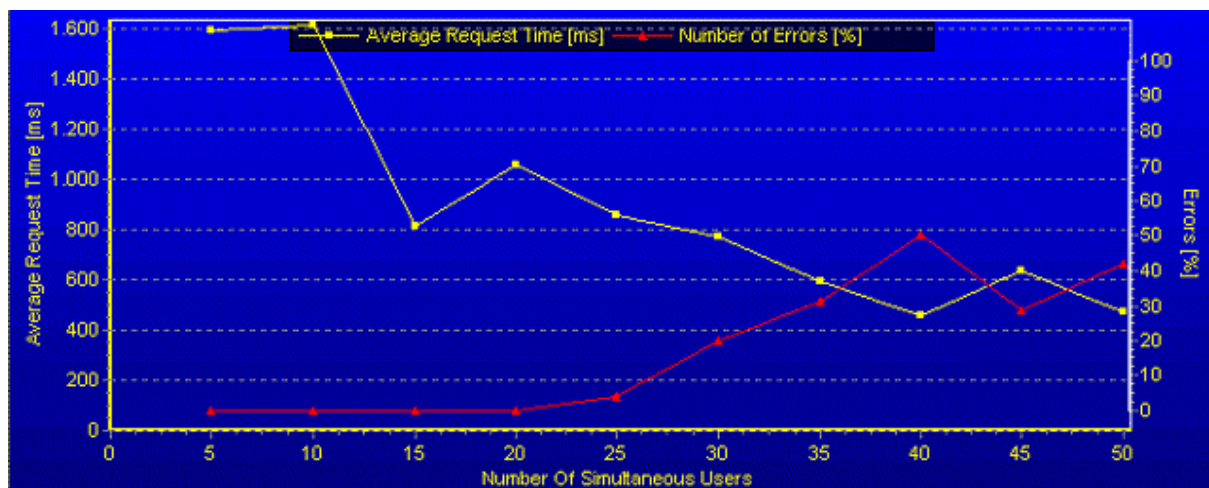
Source: shows the HTML code resulting from the first request

Rcvd. Headers: shows the HTTP-Headers of the first request

Part B: Ramp Test

Now you know if your server can handle 10 simultaneous users. But happens if there are more users?

Switch on **Ramp Test**, set **number of users** to e.g. 50 and **number of runs** to 10. When you click on **Start Test** now, Webserver Stress Tool simulates 5, 10, 15, ... 50 users, increasing the number with every run until the maximum number you have entered.

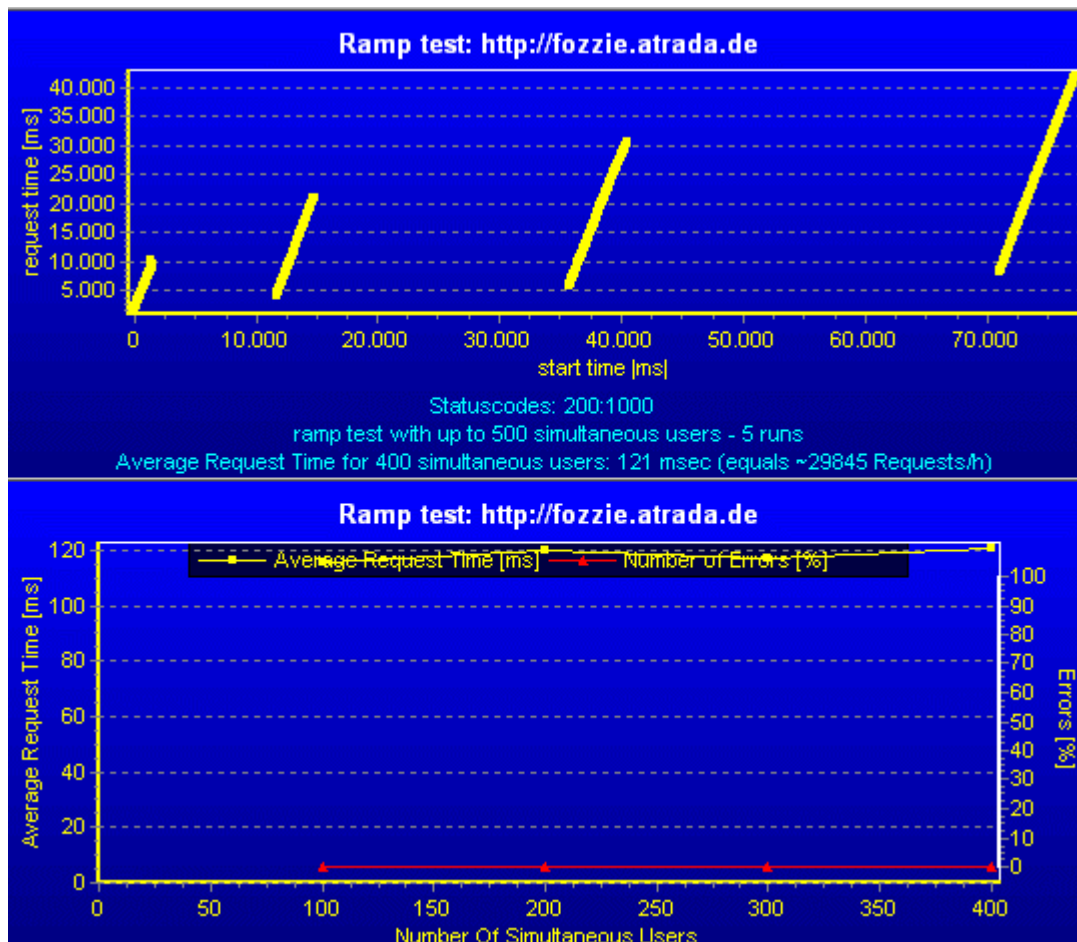


When the test is finished, switch to the **Graph** tab and watch the lower graph. The graph shows the results of the ramp test, i.e. the average request time and the error count in relation to the number of simultaneous users.

This graph shows a server that handles up to simultaneous 20 users without problems. But with more than 20 users accessing the site, the number of failed requests is increasing.

The graph would be perfect, if the yellow line would plot horizontally from left to right which would mean, that the average request time has no relation to the number of users. And of course 0% errors. But I haven't found a server like that yet... :-)

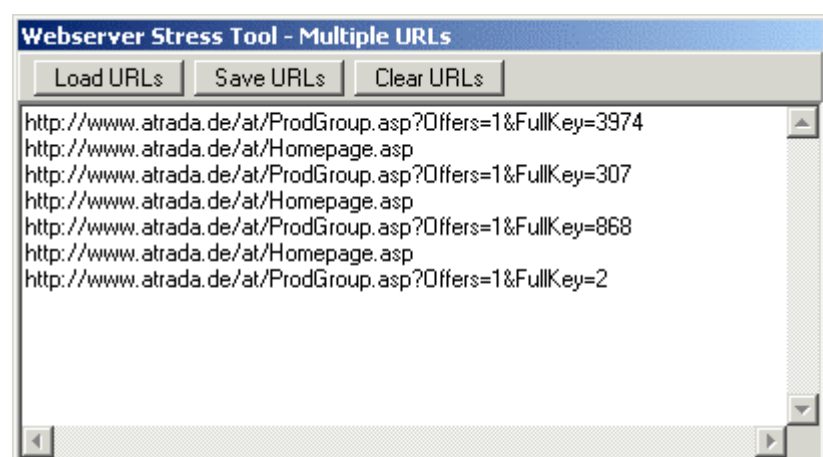
This server comes pretty close:



All other settings are described below.

Part C: Multiple URL Test

With version 4.0 Webserver Stress Tool Stress Tool supports the load testing of multiple URLs. On **Tab 2** switch on **Multiple URLs** and an additional window comes up:



When running the multiple URL-test all URLs from this list are used from top to bottom (and from the top again if more users are simulated than URLs are available).

For example simulating 10 users with 5 URLs creates the following requests:

- User = URL1

- User = URL2
- User = URL3
- User = URL4
- User = URL5
- User = **URL1 (!)**
- User = URL2
- User = URL3
- User = URL4
- User = URL5

Use the Buttons **Load URLs**, **Save URLs** and **Clear URLs** to manage several lists of URLs.

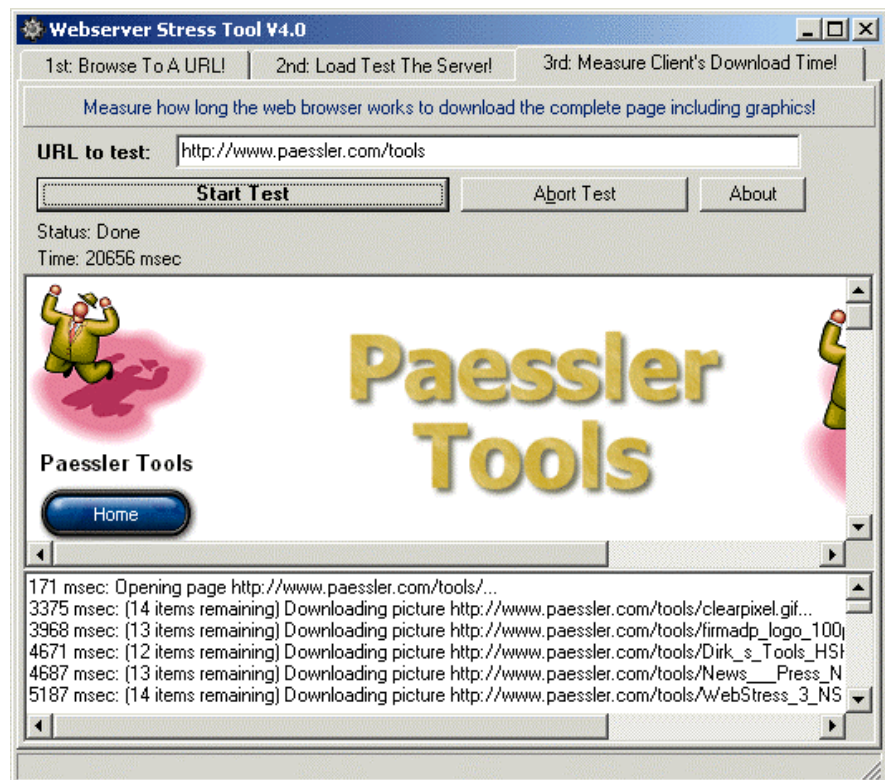
To create URL lists there is a simple usage tracing mechanism built into Webserver Stress Tool. Go to **Tab 1** and switch on **Trace URLs**. Now surf to the URLs that you want to test on your website. All URLs that you surf to are recorded into the URL list. If necessary edit the URL list, then go back to **Tab 2** and start the stress test.

Detailed information about the URLs can be found in the logfile!

Step 3: Web Browser Test

Now you know what your web server can handle for one page, but how long does a browser on the surfers machine need to download and display the complete page.

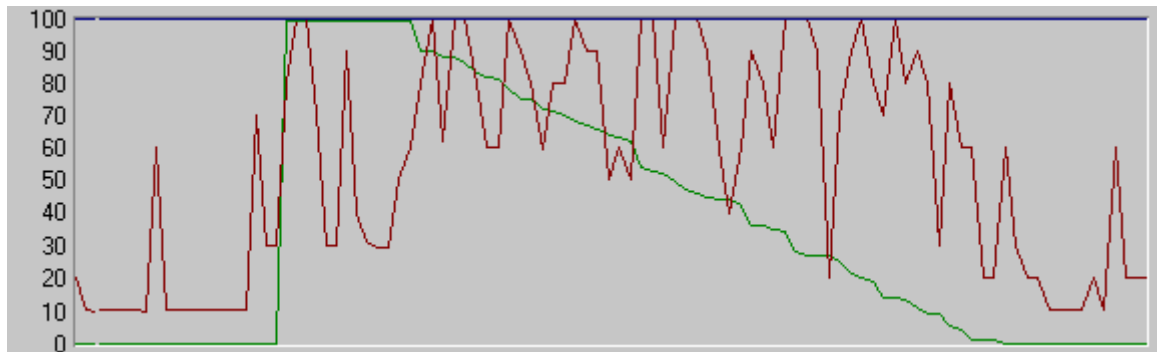
In the main notebook click on the tab **Measure Client's download time** and afterwards click on **Start Test**.



The web browser requests and downloads the complete page two times now, during the second download a clock is running and after successful download Webserver Stress Tool shows the download time just below the **Start Test** button.

Running Webserver Stress Tool - A Webserver's View

The following screenshot shows NT's system monitor (perfmon.exe) on the webserver during a run of Webserver Stress Tool with 100 simultaneous users.



The red line shows the processor usage, the green line the number of current connections. As you can see the number of current connections jumps to 100 and then decreases as the server processes one request after the other.

Two other numbers you might want to check:

Total Number of Get or Post Requests: increases by number of Webserver Stress Tool Users

Maximum number of connections: shows the number of simultaneous users, which is the maximum number of simulated users of Webserver Stress Tool

Tips&Tricks

- It is much better to use **Windows NT or Windows 2000** when running Webserver Stress Tool, some users were not able to create more than 10 concurrent users under Win95/98/ME, assumable because of limitations of the IP stack!
- To simply measure request times for a page 5 runs with 10 users should be sufficient for correct results
- For all the tests the bandwidth between you and the server is critical. Obviously you will not be able to correctly simulate 100 users via a 33k modem connection to the internet. The most accurate results are possible if you have a fast client machine and if you are connected to the same hub as your server, preferably with 100 Mbit.
- The longer it takes for the server to calculate one requests the smaller is the influence of bandwidth and network time for Webserver Stress Tool's calculations.
- Since Webserver Stress Tool needs some time for internal calculations it is not recommended to run Webserver Stress Tool on the same machine as the tested webserver and it is recommended to switch the **Exact Timing** on.
- If you need to send special cookie data to your server during tests, put your cookie data into "cookies.txt" and mark the file as read only. If **Preserve cookies** is enabled Webserver Stress Tool checks the file "cookies.txt" for the readonly-flag and always reads the data from this file for all runs.

Webserver Stress Tool Features

- Simulates any number of simultaneous users and puts 100% load on your server
- uses one or more URLs to test the server/application
- Calculates average request time, time to first byte and throughput of the application
- Includes a complete web browser to navigate to the URL you want to test
- Works on any URL and can test any script, CGI, ASP, PHP etc.
- Measures the time a browser takes to download the complete page
- Includes settings for proxies, passwords and useragent
- Handles Cookies and ASP-Session-IDs
- supports redirected requests that set a cookie
- Shows browser view, html-source, http-headers and http-data.
- Calculates average request times and kb/sec and displays results graphically
- Offers optional proxy, username/password and user-agent selection
- Offers optional preservation of cookies and ASP-session-IDs during runs
- Displays http headers, redirects, HTML-data
- creates one short and one complete logfile for later reference
- creates graphs of the results
- Note: HTTPS/SSL is currently not supported for testing

Strategies to use Webserver Stress Tool

- Simulate simultaneous users to determine if your application handles mutexes correctly
- Simulate simultaneous use of different URLs on the server to check for cross page problems
- Steadily increase the number of simultaneous users to find out the limits of your web application and web server (ramp test)
- Try different approaches to code a script and find out which one is the fastest and solve bottlenecks this way
- Keep 100% load on your server for hours and determine system capacity this way
- Run several instances of Webserver Stress Tool on several machines if you need excessive load

The settings in detail

Users/Runs

Number of Users	The number of simultaneous users to be simulated
Number of Runs	The number of runs
Wait per Run	The time in seconds Webserver Stress Tool should wait until starting the next run

Please
notice
the
difference
between

between "**runs**" and "**users**". You can simulate 100 users in one run, then wait for 10 seconds, start a new run with 100 users, wait for 10 seconds etc.

All other options

Multiple URLs	<p>ON: Uses different URLs for every request from the URL list shown in the additional window</p> <p>OFF: Only the URL in the editfield of the main window is used.</p>
Ramp Test	<p>ON: Increases the number of users with each run up to the given number of users. When ON an additional graph shows the results (see above).</p> <p>OFF: with every run the complete number of users (as set above) is simulated</p>
Preserve Cookies	<p>ON: The cookies (e.g. ASP session IDs) coming from the server in the first run are stored and sent to the server during the following runs. This can simulate a number of users logging in and using the system.</p> <p>OFF: Cookies are not handled</p>
Exact Timing/Hide Graph	<p>ON: The graphs, statistics etc. are hidden during the tests => the time measurement is more exact because no time is needed for screen updates</p> <p>OFF: The graphs are shown during the test, better to see what is happening but timing might not be exact</p>
Write Headers to Log, Write Data to Log	<p>ON: The Headers/Data is written to the Webserver Stress Tool log (see log-tab)</p>
Write On Error Only	<p>ON: The Headers/Data is only written to the log when the http-result is not 200, which means an error occurred</p>
POST-Data	<p>ON: Sends POST-Requests instead of GET-Requests to the server. Please enter the POST data into the edit field</p> <p>OFF: sends GET-Requests to the server</p>
Use Proxy	<p>ON: Webserver Stress Tool uses the given proxy for the http requests</p>
Use User	<p>ON: Webserver Stress Tool sends the given user data (Username/PW) with the http-requests</p>
Use data from "users.txt"	<p>ON: Webserver Stress Tool reads PW/username combinations from the file "users.txt" in the active directory. This plain txt-file contains one user/pw-combination per line, separated by "@@". E.g.:</p> <pre>dirk@@mypassword ben@@otherpassword</pre>
Use Agent	<p>ON: Webserver Stress Tool send the given user agent with the http-requests, e.g. to simulate different browsers to the server. A list of most used browser strings is included</p>
Key Offset	<p>ON: Replaces a @@ in the URL with an ascending number for every user, the number start with the number given in the edit field. Useful if you need to simulate a different URL for every request.</p>

Legal Stuff

Copyright

Webserver Stress Tool is copyrighted and written 1998-2001 by Dirk Paessler.
For the latest version always check <http://www.paessler.com/tools>.

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Support

Support is currently available by email only. Please send your comments and questions to tools@paessler.com.

Shareware Version

Webserver Stress Tool is Shareware. The unregistered version supports only up to 5 users, the registered version has no limitations.

The Shareware fee is \$50 and can be paid at

<http://shareit1.element-5.de/programs.html?nr=102386>

or visit <http://www.paessler.com/tools> for more payment options.

Usage of Registered Version

One registered copy of Webserver Stress Tool may either be used by a single person who uses the software personally on one or more computers, or installed on a single workstation used nonsimultaneously by multiple people, but not both.

Disclaimer of Warranty

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