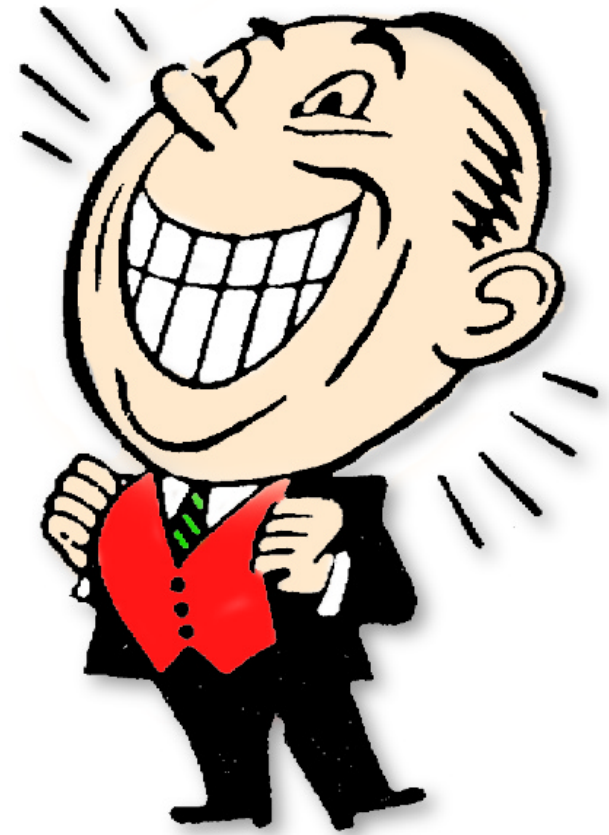


Thank you for attending

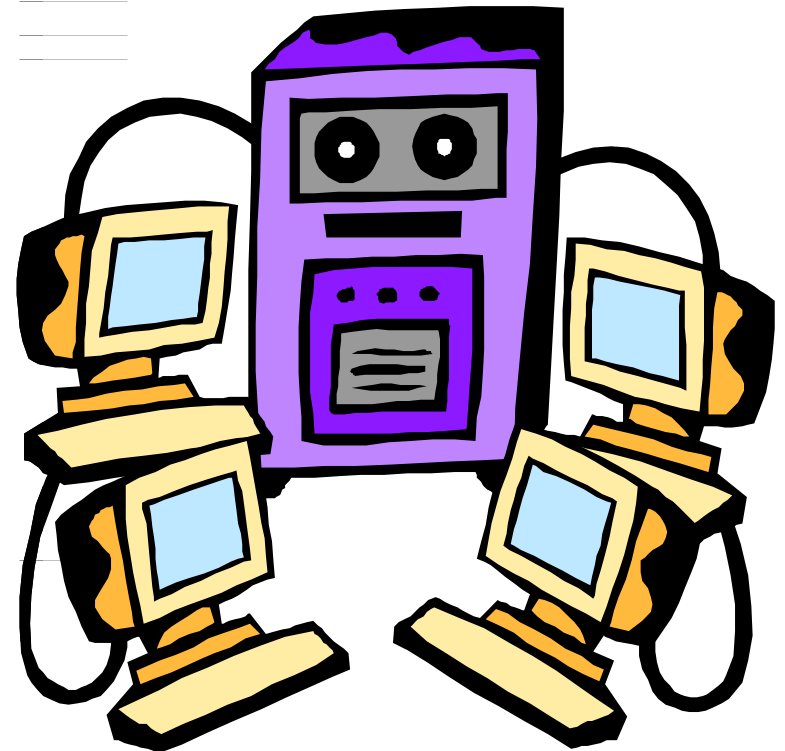
Introduction to Web Server Load Testing



Why Server Load Testing?

Complex systems make increasing demands on web servers

- ¥ Multiple Objects can Interfere
- ¥ High Volumes can Overwhelm Systems
- ¥ Fixes Need to be Identified Early in the Project
- ¥ Clients have scalability concerns and we must warrantee some level of scalability with industry accepted metrics



What are you Testing For?

The right tests for the job:

By Jim Rapoza, EWEEK LABS

¥ What and how you should test if you're a ...

¥ Web site design and HTML author:

- ¥ Test pages containing lots of images and multimedia for reasonable wait times. Heavy loads are less important than knowing which types of content cause slowdowns.

¥ Web application developer:

- ¥ You'll want to run a variety of scripts and scenarios throughout your application. Tax the entire application in every conceivable way. Check results of individual pages and processes, looking for breaking points, unnecessary code and bottlenecks.

¥ Web site administrator:

- ¥ First, make sure hardware and software are up to par. Run heavy loads against sites till reasonable performance levels are reached. Afterward, run scheduled tests or use a service provider to watch performance over time for changes in overall site performance.

What are the Options for Load Test?

There are two broad options and one unacceptable option

¥ Acceptable Options

- ¥ Internal load testing via LAN on dedicated equipment
- ¥ Load test executed externally to simulate real world users

¥ Unacceptable Option

- ¥ Place finished project in production and hope for the best

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A Closer Look: Internal Load Testing

Internal used for evaluation and analysis

¥ What is used?

- ¥ Stand alone analysis tools
- ¥ Performed on our LAN

¥ What is accomplished?

- ¥ Used to test modules/objects for performance
- ¥ Used to test modules/objects? effect on the system as a whole
- ¥ Identify primary failure points or bottlenecks that may effect the final product
- ¥ Used to project scalability requirements

¥ Issues

- ¥ Controlled experiment
- ¥ Easy to setup and execute
- ¥ No direct costs for multiple scenarios (apart from time)
- ¥ Tools inexpensive

A Closer Look: External Load Testing

External used for ? real world? test of assumptions

¥ What is used?

- ¥ External/outsourced services
- ¥ Performed over the web at large from geographically diverse points

¥ What is accomplished?

- ¥ Best ? real world? scenarios tested
- ¥ Confirms or contradicts assumptions
- ¥ Simulates real world effects of latency, mixed networks, etc.

¥ Issues

- ¥ Requires standard research planning
- ¥ Must have flawless coordination with outside vendor
- ¥ Expensive for multiple tests
- ¥ Required committed bandwidth (that is, cannot be run against production bandwidth).

Recommendations: The Tools I

Web Server Stress Tools: Reviews

- ¥ ZDNet has an article that covers the entire issue
- ¥ <http://www.zdnet.com/products/stories/reviews/0,4161,2631377,00.html> [[go](#)]



Three Classes of Tools

- ¥ Freeware/Shareware: \$0 to a few hundred
 - ¥ Products evaluated have typical shareware challenges
- ¥ Mid-range commercial: \$1000-\$5000
 - ¥ Product evaluated works very well
- ¥ High-end commercial: \$10,000-\$100,000 +
 - ¥ Excellent products, too expensive for SA at this time and unnecessary

Recommendations: The Tools IIIa



<http://www.webperformanceinc.com> [go]

- ¥ An affordable tool
- ¥ Cost depends on the test size

Virtual Users	Retail Price	Upgrade Price *	Basic Support	Premium Support
100	\$1,495	\$370	Included	\$370
200	\$2,495	\$620	Included	\$620
500	\$4,995	\$1,245	Included	\$1,245
1000	\$7,995	\$1,995	Included	\$1,995
2000	\$11,995	\$2,995	Included	\$2,995
5000	\$17,995	\$4,995	Included	\$4,995
Unlimited	\$24,995	\$6,245	Included	\$6,245



Recommendations: The Tools IIb



¥ We can...

- ¥ Afford it
- ¥ Use it effectively
- ¥ Use it today

¥ Features

- ¥ Easy to record sessions
- ¥ Can save test scenarios
- ¥ Can point test sets to different hosts
- ¥ Can isolate URL or POST parameters and replace from data sets
- ¥ Scales to simulate thousands of users

A Sample Test

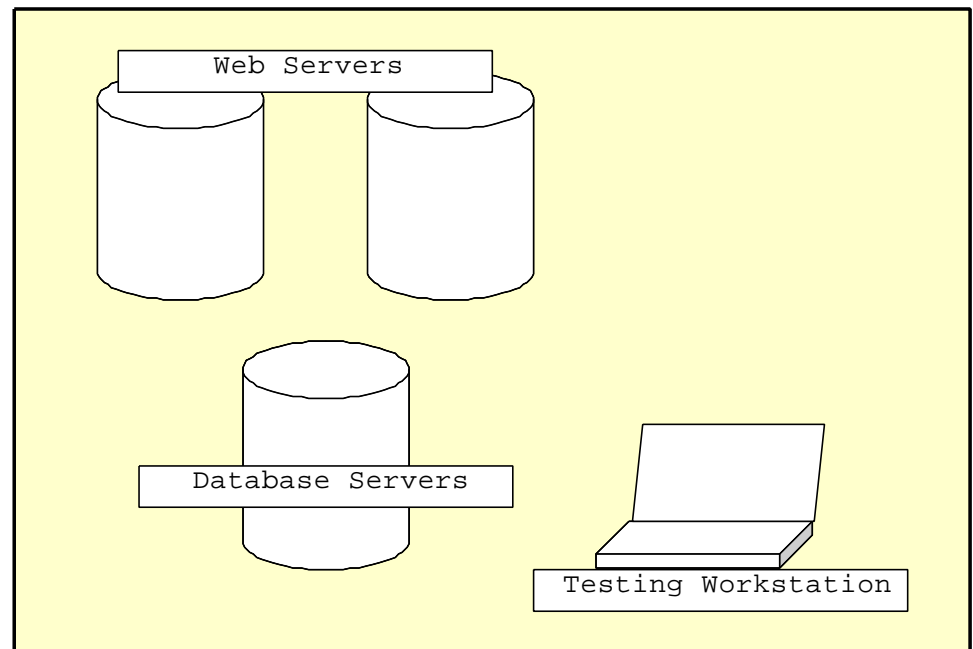
A few steps to a simulation...

- ¥ It becomes a proxy to record simulations
- ¥ Record a few sessions
- ¥ Create a scenario
- ¥ Run the test
- ¥ Evaluate

Recommendations: The Hardware Setup

We need a micro-simulation environment

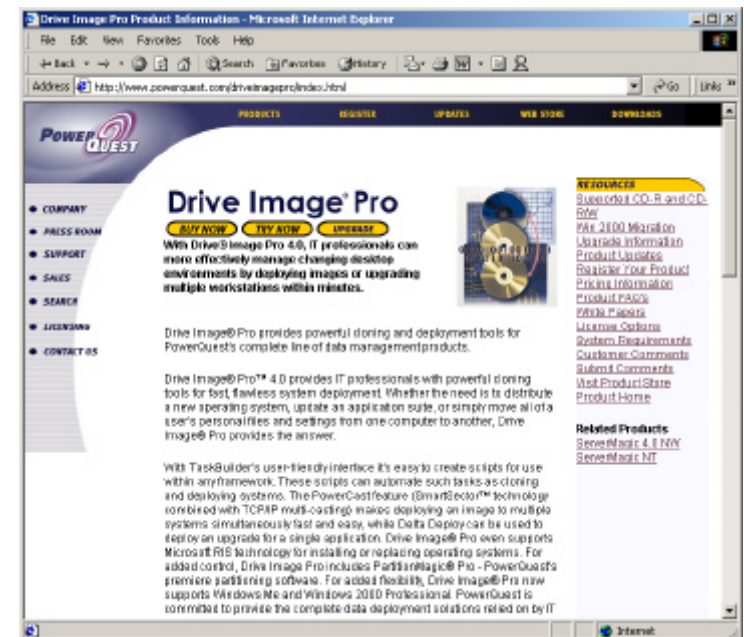
- ¥ One test web servers
- ¥ One database server
- ¥ One or more servers to execute tests
- ¥ 100bt switch
- ¥ Local Director
- ¥ Isolated subnet (optional)



Recommendations: The Software Setup

We need a recycleable software setup

- ¥ Create a generic, clean installation
 - ¥ Win2000 Server
 - ¥ Win NT Server
 - ¥ Oracle 8i, 8x
 - ¥ SQL Server
- ¥ Use Drive Image Pro to ? image? the installations
- ¥ Restore them as necessary to start a testing effort.



Recommendations: The Process

Basic Steps for Testing

¥ Define Test Parameters

- ¥ Single/multi server, database, application server, etc.
- ¥ Specific client requirements
- ¥ Connection speed
- ¥ Test processes: *What modules, sub routines (i.e. proved systems do not require rigorous re-testing).*

¥ Create Results Gathering Forms/Mechanisms

¥ Schedule Testing Time

¥ Setup target systems

¥ Build Use Cases / Scenarios

¥ Run Tests and Evaluate

Recommended Book

¥ Web Performance Tuning: Speeding Up the Web

- ¥ The first part of this book discusses the basic performance challenges for both the browser and server sides of the equation and advises on an overall approach for identifying and attacking performance bottlenecks. The author offers many important questions for you to keep in mind and some useful techniques for measuring Web performance. This section wraps up with a few case studies that exhibit common problems.
- ¥ The meat of the book is an in-depth look at all of the aspects of Web performance. The author begins with the client browser and operating-system software, discusses network hardware and protocols, and finally addresses the complex nature of server configurations. He finishes with a discussion of Common Gateway Interface (CGI) and Java scripts and some quick coverage of tuning Web databases.



Action Steps: We must pursue this

Strategic Steps to Load Testing

- ¥ Purchase Software
- ¥ Start testing immediately with existing resources
- ¥ Order hardware software
- ¥ Setup as recommended
- ¥ Implement standard project event-driven testing sequence
- ¥ Integrate time into existing and future proposals/projects