



Your *E*-commerce Business Applications



“Can they handle the Load?”

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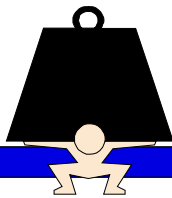
Presentation overview



- Introduction
- What is load testing?
- Why conduct a load test?
- What is Netfile?
- The elements of a successful test
- Conclusions

Introduction

- David Higginbottom, E-Commerce testing group
- Canada Customs and Revenue Agency (CCRA) Production Assurance Division in Information Technology Branch
- I will be using a CCRA E-commerce application called “*Netfile*” throughout the presentation as an example 



What is load testing?

- Uses peak production like volumes of transactions to ensure system stability and data integrity under stress
- Tests the design limits and thresholds for the system
- Also related to Performance, Stress or Volume testing

Why conduct a load test?

- To ensure the system responds within a particular time (industry standard is generally 6-8 seconds)
- To verify that the volume-handling requirements are satisfied
- To ensure customer confidence in the site which can ultimately lead to increased business which = \$\$\$\$\$

Performance index

Overview ▶ Performance Indexes **Keynote Business 40**
Internet Performance Index

	Week of Oct 2 to Oct 6		Previous Week	
	Index 3.61		3.69	
Web Sites with best performance averages	Yippee (77)	.59	Yippee (76)	.63
	RedEx (4)	1.09	RedEx (3)	.93
	Orange (2)	1.22	Orange	1.28
	Mygosh (25)	1.28	Mygosh (24)	1.27
	Run & Nailstreet	1.30	Chuck Swab (6)	1.33
Worst Average	(Anonymous) 10.02		(Anonymous) 10.02	

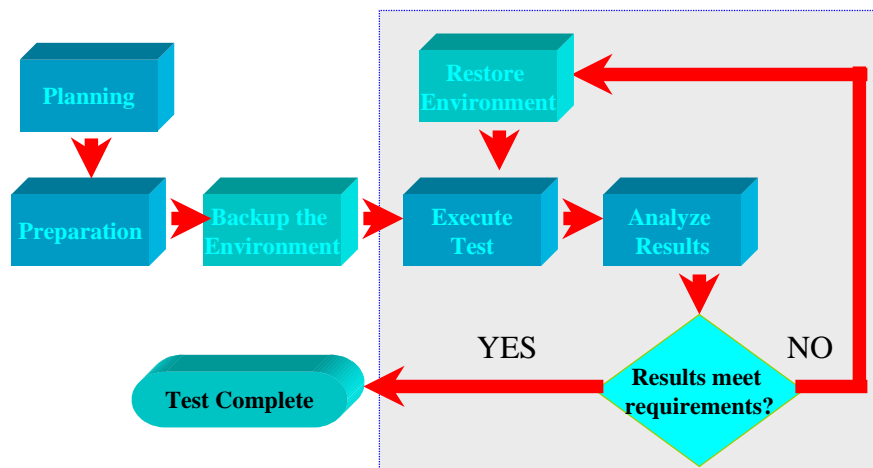
The performance numbers above are in seconds. The number in parentheses after a web-site name is the number of consecutive weeks that the site has appeared in the top 5.



What is Netfile?

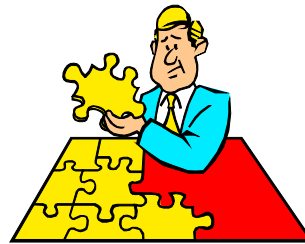
- Government of Canada target is that by 2004 Canadians will be able to access all GOC information and services over the internet
- Netfile is an E-commerce solution for filing Individual tax returns over the internet, aimed at users of home-based tax preparation software
- For the '99 taxation year, 3.8 million invited, this year all taxpayers are invited

The Load Testing process



The elements of a successful test

1. Planning
2. The testing environment
3. Testing tools
4. The testing team
5. Executing the test
6. Results analysis



1. Planning

- Determine the requirements
 - peak load
 - response time
 - most frequently used transactions
- Are all the requirements testable?
- How will results be captured and evaluated?



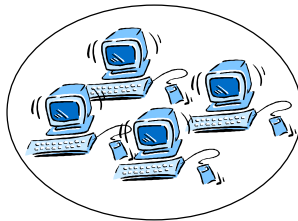


Netfile requirements

- Must accept and acknowledge a tax return in two minutes or less
- Must handle the peak load of April 30th
- System must be available 99% of business hours
- Ensure client receives correct acknowledgement (Thread testing)

2. The Testing environment

- Mirrors the Production environment as closely as possible
- Test data can be generated or copied from the live Production environment





Netfile environment

- The test data used for Netfile had to be generated because of confidentiality
- A test environment (hardware/software) was created that mirrored that of Production

3. Testing tools

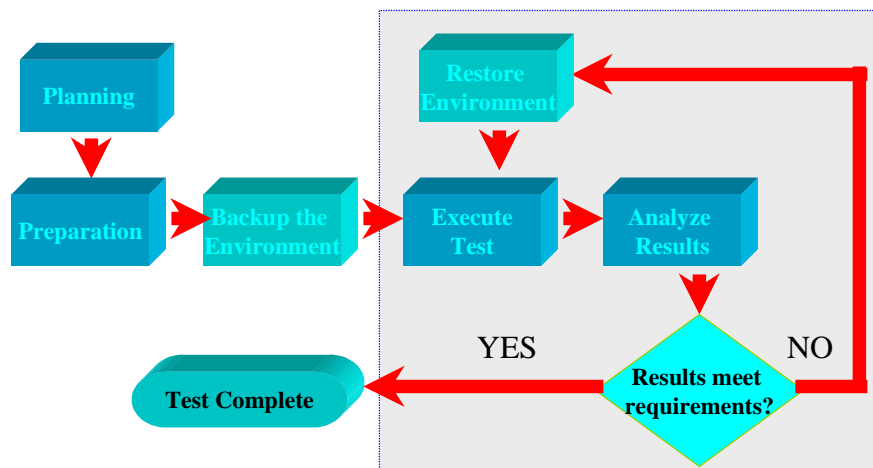
- Ensure that the tool will work in your environment and is user friendly
- Must test the application from “End-to-End”
- Is vendor support and training available?
- Cost must be factored - these tools are not cheap!!
- For Netfile, Mercury Interactive’s LoadRunner was selected

4. The Testing team

- Business analyst(s)
- Test tool expert(s)
- Hardware, software, network and application development support personnel



The Load Testing process



5. Executing the test

- Prior to conducting a load test
 - Check the integration of the system
 - Conduct a system backup
- Start with a light load and increase to a peak load
- Monitor the system for “bottlenecks” during the test execution



6. Results analysis

- After each phase of the test execution, analyze results against the requirements, tune the system and re-run the test, if necessary
- Testing should continue until requirements are satisfied or the results are deemed acceptable by the business client





Netfile results

- Verified that the system could handle the peak load
- The response times were well within the acceptable range
- Gave the Business client a level of confidence in the product's capabilities

Conclusions

- It is critical to load test high volume E-commerce web sites because your competition can be a mouse click away
- Load testing is an involved process and must be included in your testing strategy
- CCRA is committed to testing our E-commerce applications

Questions

