

Performance Testing: Respect the Difference

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Performance Testing: Respect the Difference

About Me

- Have specialized in performance for the last 16 years
- Currently performance testing and optimization of Hyperion products at Oracle
- Board director at the Computer Measurement Group (CMG) <http://cmg.org>, organization of performance and capacity professionals
 - Next conference November 3-6, 2014 in Atlanta, GA

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Agenda



- Introduction
- Points to ponder

Terminology

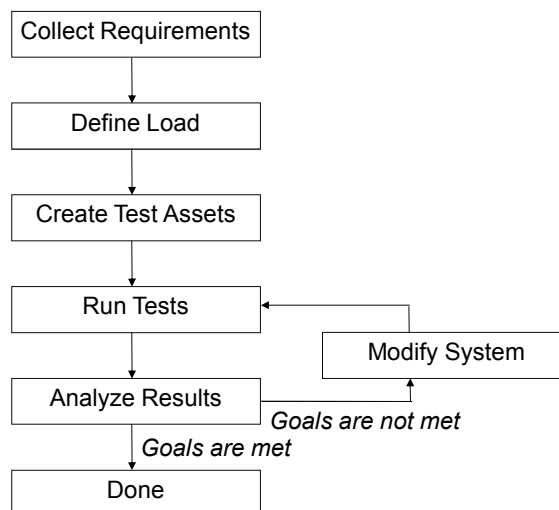
Applying multi-user synthetic load to the system

- Load testing
- Performance testing
- Stress testing
- Scalability testing
- Volume testing
- Reliability testing
- Concurrency testing
- Burst testing
- Endurance testing
- Longevity testing
- Soak testing
- Stability testing

Goal

- To contrast load and functional testing
- To highlight points to ponder in performance testing

Load Testing Process



What Load Testing Adds

- Verification that the system handles the load
- Verification of multi-user performance
- Performance optimization
 - Exactly the same load
- Debugging/verification of multi-user issues
- Testing self-regulation functionality
 - Such as auto-scaling or changing the level of service depending on load

Stereotype

- Load / Performance Testing is:
 - Last moment before deployment
 - Protocol Level Record-and-Playback
 - Large corporations
 - Expensive tools requiring special skills
 - Lab environment
 - Scale-down environment
 - ...

**Only one
option !**

Performance Testing

- In no way limited to pre-production:
 - Technology evaluation
 - Infrastructure evaluation
 - Prototypes / POC
 - Component / unit
 - Continuous testing
 - What/if scenarios
 - Performance optimization
 - Performance troubleshooting
 - Benchmarking
 - Production



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🕒 Agenda



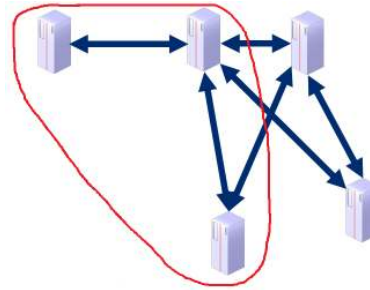
- Introduction
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What to Test

- Can't be comprehensive
- Typical scenarios
- Classes of users
- Risk
- Component coverage



Performance Requirements

- Goals vs. Requirements
- Response times
 - Aggregate values
- Throughput



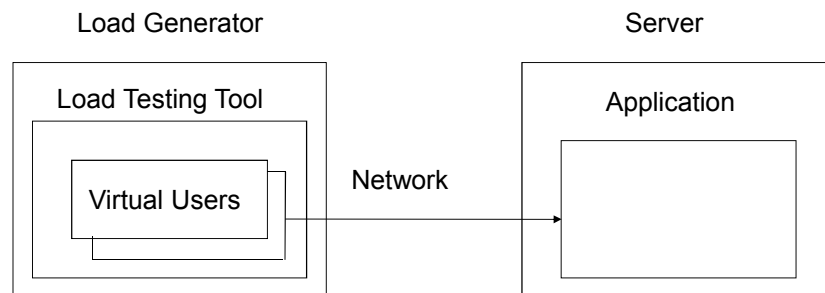
Performance Requirements

- Concurrency
- Number of users and think time
 - Indirect way to define throughput
 - Named, active, concurrent users
- Resource utilization



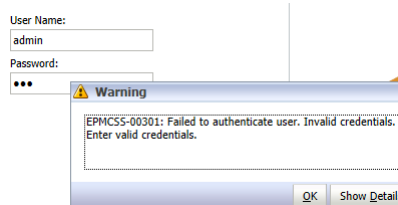
Workload Implementation

- Manual
- Test harness
- Load testing tool
 - Recording/playback, protocol level
 - Recording/playback, GUI level
 - Programming



Workload Verification

- Tools default
 - Minimal (such as timeouts or HTTP error codes)
- Direct
 - Analyzing server response
- Indirect
 - Logs
 - Data
 - Monitoring



The Effect of Data

- Size and structure
- Caching / concurrency
- Adding new data



Test Environment

- Sizing / Configuration
- Lab vs. Cloud vs. Service
 - Scope vs. Variability
- Testing Limits
- Performance Optimization



vs.



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Exploring the System

- Explore a new system
- Run all scenarios manually
- Iterative approach
 - Run scripts as soon as they are ready
- Monitor all components



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Implicit Tasks

- Tuning
- Diagnostics
- Capacity planning



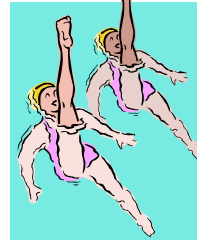
Time Considerations

- Steady mode
- Reliability
- Tuning and diagnostics
- Real / intensive users
- Throughput / connections
 - Different tuning



Process

- Synchronous process may be needed
 - vs. Asynchronous
 - Problem can block further testing
 - Full setup can be required to reproduce
 - Diagnosis is a collaborative process



Systematic Approach to Changes

- Tuning / Diagnostics
- Systematic approach
 - One factor at a time
- Log all changes



Analyzing Results

- Far more than passed/failed
 - Challenge for Continuous Integration (CI)
- Response times, throughput, number of users
- Resource utilization
- Logs / diagnostics
- Variability between runs



Summary

- Performance testing is a complex activity involving testing, performance analysis, administration, development, and business processes
- Skills and processes needed are quite different, don't apply functional testing practices blindly
- A load testing tool is one point on one slide
- Excellence requires time

Questions?

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*To learn more check my collection of
performance-related links and documents at
www.alexanderpodelko.com*