IBM Testing Services - Performance Testing
Agenda

- Application Landscape
- Why Performance Testing
- Performance Failure
- Complex Performance Architecture
- IBM Performance Testing Services
- Performance Engineering Services
- Performance Best Practises
- Demo
Application Landscape

- Business Marketplace is changing and becoming more and more complex in terms of Infrastructure to support those applications which are critical to business.

- Global marketplace needs applications to be developed in different platforms & OS, which can support multiple devices like Smartphone, Television, Kiosks

- Applications marketplace has grown rapidly today, faster response and reliability of the applications is important to the business.
Application Landscape

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- Global marketplace needs applications to be developed in different platforms & OS, which can support multiple devices like Smartphone, Television, Kiosks

- Applications marketplace has grown rapidly today, faster response and reliability of the applications is important to the business.
Performance Failure?

- According to data from Web performance monitoring firm Apica, Amazon's homepage went down almost 50 minutes.

- ITV withdraws Britain's Got Talent voting app after semi-final crash
  - The broadcaster said that the mobile app service failed during Sunday night's first live semi-final, which was watched by 9.5 million viewers, and that it will not offer the service for the remainder of the series.

According to data from Apica, Amazon's homepage went down at 2:32 p.m. and was back within 50 minutes.
Performance Testing is a specialized area of the IBM Testing Services

IBM Testing Services

- Life cycle testing
  - Assess - Planning
    - Unit testing
  - Design
    - Functional testing
  - Execution - Reporting
    - Integration testing
    - System testing

- Test Center of Excellence
- Test consulting
- Test automation
- Specialized testing …
  - Performance Testing
  - SOA testing
- Infrastructure testing

Delivery excellence

- Metrics
- Methods
- Practices
- Domain knowledge
- Tools
- Environment

*Powered by certified testing professionals*

Performance Testing

- Component Performance testing
- End-to-end Performance and Stress testing
- Application Virtualization
- On Demand Performance testing
- Performance monitoring
- Increased Focus

*Web and Legacy performance testing*
Performance Testing

What is it?
- Assesses whether an IT solution satisfies its performance, capacity and scalability requirements
- Performance tests are designed to analyze system attributes such as responsiveness, throughput, peak workload capacity and stability under load

What customer value does it provide?
- Identifies performance defects so that they can be addressed before deployment
- Aids in planning for and potentially reducing the IT capacity required for deployment
- Improves productivity, stability, user / customer satisfaction and ROI related to mission-critical systems

How long does it take to receive the benefits?
- Performance defects resolved during testing are realized once the tested system is deployed in production
- Capital savings in IT infrastructure spending are realized over time with the deployment of more resource-efficient, scalable systems
Performance testing is one component of IBM’s family of methods for achieving high quality and performance in IT solutions.

Software Development Life cycle

- Startup
- Solution outline
- Solution requirements
- Macro design
- Micro design
- Build
- Deployment
- Solution close

Systems engineering life cycle

- Testing project startup
- Test Assess and Planning
- Test Design
- Test Execution and Reporting
- Test Implementation and Close

Systems Engineering Reviews

Performance Engineering and Management Method (PEMM)

- Requirements and early design
- Volumetrics
- Performance estimation and modeling
- Technology research
- Design, development, and tracking
- Performance testing and validation
- Live monitoring and capacity management
- Risk and performance management

Performance Testing utilizes artifacts from early Performance Engineering (PE) work, when engaged, as a starting point for defining testing activities.

Life Cycle Test levels

- Unit test
- Integration test
- System test
- Systems integration test
- User acceptance test
- Operability test

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Performance Engineering Services – Lifecycle Touch Points

Performance Engineering approach is based on IBM’s proven Performance Engineering Management Method (PEMM) which provides a structured approach and discipline to performance engineering. PEMM aims to ensure that performance would be considered wherever appropriate throughout the solution delivery process.

- PEMM includes planning, managing and controlling the performance engineering process, and performance engineering techniques.
- PEMM identifies a number of areas from Initial Requirements Definition through to Live Monitoring/Capacity Management where PE activities should occur.
- PE themes overlay on top of any existing project development method and standards framework and cover the full solution life cycle.
- Performance Testing is a significant component of PE but, PE scope, extends to a lot more activities within the PE themes.
Standard Performance Testing Approach

Define
- Identify stakeholders
- Agree on SLA goals
- Identify Risk Areas
- Determine schedule constraints
- Agree to romotion strategy
- Outline resources available
- Determine staffing plan
- Engage test labs or Cloud strategy

Plan
- Verify basic functionality
- Model user activity workload
- Identify Business Scenarios
- Setup Tools for Load & Performance
- Identify re-usable script components
- Assign resources needed
- Create test environment
- Identity Application Monitoring components

Script
- Design scripts
- Create scripts
- Create Data Set
- Validate scripts
- Build script library
- Troubleshoot bottlenecks
- Tune system
- Re-test
- Log non-performance failures

Test
- Execute tests
- Collect data
- Analyze test results
- Perform possible iterations
- Retest
- Finalize report(s)

Reporting
- Prepare Execution Report
- Analysis Bottleneck
- Provide feedback to stakeholders
- Deliver action items
- Finalize report(s)
Best Practice: Performance Assurance Life Cycle

Planning
- Application Usage
- Simulation / Scalability Modeling
- Business Performance Requirements

Forecasting
- Infrastructure Sizing
- Capacity Sizing

Design
- Analytical Monitoring
- Proof of Concept
  - Performance
- Performance Engineering
- Test Planning
- SLA Review

Development
- Application Profiling
- Logical Performance Model
- Network Readiness Validation
- System Tests
- Unit Perf. Test

Testing
- Integration Tests
- Performance Tests
  - Stress & Vol
  - Benchmark
- User Acceptance Tests
- Operational Tests

Deployment
- Application Deployment Assurance
- Performance Readiness Test

Production
- Infrastructure Components Monitoring
- Application response time Assessments
- Incident detection and resolution

Deliverables
- Performance Validation
- Bottlenecks Identification
- End-to-end Performance Monitoring
- Improvement Recommendations

Deliverables
- Workload Profiles & Trends
- Capacity Planning Reports
- Process Recommendations
- Capacity Impact Studies
- System Test Plans
- Test Environment Plan
- Test Cases
- SIT / UAT Plans
- Performance Test Plans
- Test Summary Reports
- Weekly Status Reports

Performance Management
- Capacity Management
- Testing
- Modeling

Anticipative
- Performance Validation
- Bottlenecks Identification
- End-to-end Performance Monitoring
- Improvement Recommendations

Proactive
- Workload Profiles & Trends
- Capacity Planning Reports
- Process Recommendations
- Capacity Impact Studies
- System Test Plans
- Test Environment Plan
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- SIT / UAT Plans
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- Test Summary Reports
- Weekly Status Reports

Reactive
- Performance Pred.
- Costs vs Objectives
- Certification Testing

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Rational Performance Tester is a performance testing solution that validates the scalability of web and server applications. Rational Performance Tester identifies the presence and cause of system performance bottlenecks and reduces load testing complexity.
Key Features and Benefits

**Code-free testing** enables you to create test scripts without programming.

**Root cause analysis tools** find and diagnose the cause of performance problems.

**Real-time reporting** enables immediate recognition of performance problems and renders a browser-like view of test results in web pages.

**Test data** can be generated from scripts, data pools with automated variation, and the insertion of custom Java® code for flexible test customization.

**Supports** Web, SAP, Siebel, Oracle and Citrix based applications.
Performance Benchmarking

- Benchmarking is the process of comparing one's business processes and performance metrics to industry bests or best practices.
Performance Testing Services evolves performance testing from an end of cycle event to an enabler of continuous improvement. Test workloads are executed repeatedly and issues addressed until performance targets are achieved for the application or system environment under test.

- Establishing test environment
- Driving automated test loads
- Identifying performance bottlenecks
- Automating workflow

Automation drives down cycle time and cost enabling multiple iterations.

This enables more frequent performance testing and true performance regression testing and tuning.
Performance Testing Services can be delivered using one or more delivery models.

**Onsite**
- Customer data center
- Private cloud

**On Demand**
- IBM Data Center
- The IBM Cloud
- Shared cloud services

**IBM Base Services**
- Private cloud or non-cloud solution
- Infrastructure dedicated to a single client (typically long term arrangement)
- May be on demand

**Cloud Services**
- Cloud-based solution
- Infrastructure included
- Single instance or subscription usage
- On demand

**Virtualization Services**
- Application Virtualization

- Cloud On-Demand
Some Representative Clients

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