CSC TESTING AS A SERVICE
POWERED BY CA SERVICE VIRTUALIZATION

ENABLING BUSINESS TRANSFORMATION
Is It Worth The Risk?

**August 2012:** Knight Capital software bug causes a trading algorithm to lose $10 million a minute for 40 minutes. Resultant loss of $440 million caused shares to drop 75%
Common Challenges…

- It takes too long to run regression tests
- We seem to test everything... *takes lot of time and $$*
- We build everything every time – are there better options?
- We don’t have time and money to **build and manage test environments**
- We typically wait until integration to uncover issues – isn’t it too late?
- There doesn’t seem an easier way to test web services, data integration?
- We don’t have “right” test data to support full QA testing
- I don’t know if we expose sensitive info thru test data?
What If There Is A Better Way To Achieve …

- **30 %**
  - 20-30 % improvement in quality

- **40 %**
  - 40 % increase in productivity

- **20 %**
  - 15-20 % reduced time to market

- **20 %**
  - 15-20 % reduced testing cost
CSC TaaS

Business Drivers
- Pressure to reduce operational spending
- Faster time to market
- Emergence of global workforce
- Meet dynamic resource requirements
- Move towards variable cost structure for testing services and even ASQ tools

Key drivers for testing in cloud

IT Drivers
- Need to support strategic initiatives
- Multi-site delivery and 24x7 operations
- Focus on first-time-right
- Reduce incidence of production issues and higher cost of rework
- Keep pace with technology

On-Demand Resourcing
Service Performance Metrics
Reusable Asset Repository
Global Process Framework
Output Based Pricing

NPS Financial Services Manufacturing Tech/Consumer CENR Health Services

CSC Brokered CLOUD

Test Data Management
Performance Testing
App. Security Testing
Certification Testing
Interoperability Testing

Standardized On-Demand Pricing Options
Virtual Teams using Collaboration tools & platforms – Cloud Solutions
Alliances - VMWare, Citrix, IBM Rational, HP Mercury, CA, Work soft, SAP, Oracle

Pay as you go
Service arbitrage
Ubiquitous Access
Geography independent
Sourced on Demand
Improved utilization
Elastic Use
scale-up / scale-down
Enhanced Quality
Faster time to market

Key drivers for testing in cloud

Transform
Taas Platform
Testing in a Box – customized for Verticals

Shape

Manage
# Cloud Based Testing Service Offerings Under TaaS Ecosystem

<table>
<thead>
<tr>
<th>Custom Application Testing</th>
<th>Mobile Applications Testing</th>
<th>ERP/COTS Testing</th>
<th>Performance Testing</th>
<th>Big Data Testing</th>
</tr>
</thead>
</table>

## On Demand Provisioning

### Apps & Services
- **Web Applications**
- **Client / Server**
- **Enterprise Applications** – SAP, Oracle, Cadence, PTC, Sugar CRM

### Tools & Sandbox
- **HP**, **Worksoft**, **Microsoft**, **IBM Rational**, **Fortify**, **DataMaker**, **Tealeaf**

### Platforms
- **Windows** (Multilingual, Multi CPUs)
- **MS-SQL, Oracle, DB2, Informix, MySQL, Teradata**
- **Linux** (Red hat, Linux, Debian)
- **System Z LPARs on Demand Sun Solaris**
- **Elastic servers** (Tomcat, My SQL combinations)
- **Mobile Platform simulators**
- **Borland ES, Cold fusion, Tomcat, Web logic, Web Sphere, Web Application server (SAP), ATG Dynamo, JBOSS**

## Service Virtualization
CSC – TaaS Delivery Model

Customer requests Testing from CSC Online portal / Telesales

Provisioning / Scheduling of Tests

CSC conducts Testing

CSC publishes Test Results & Reports

CSC TaaS in Cloud

Client
Test Requirements & Application Components

FTP / URL / VPN

CSC
Cloud Orchestration

Test Strategy & Planning

Certify Application

Customer Sign-off

Test Summary Reports

Test Execution

Infrastructure Stabilization

Collaboration

CSC & Client

CSC & Client

Service Virtualization

Mobile Simulators

Cloud lab

AWS

Automated Software Quality Tools

Application Under Test

Web Server

Application Servers

Database servers

CSC & Client

Test Strategy & Planning

Application Under Test

Certify Application

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CSC & Client

CSC & Client
Service Virtualization: How Does It Work?

**CAPTURE**
- Record traffic between existing systems
- Create from engineering specifications
- Create from sources such as log files, sample data, packet captures, or LISA Pathfinder.

**PROCESS**
- Evaluate data
- Convert into live-like model
- “Make it easy” for developers
- Consistent interface across supported protocols

**MODEL**
- Living, breathing “live” model
- Sophisticated, contextual behavior
- Automatic handling for dynamic properties
CA Service Virtualization Virtualizes Almost Any IT Asset

<table>
<thead>
<tr>
<th>Category</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainframe</td>
<td>Sabre</td>
</tr>
<tr>
<td>Risk Solution Providers</td>
<td>ChoicePoint</td>
</tr>
<tr>
<td>Credit Bureau</td>
<td>TransUnion, Equifax, Experian</td>
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<tr>
<td>SMS Gateway Providers</td>
<td>Clickatell, Mobile Messaging, Skype</td>
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<tr>
<td>eBill Services</td>
<td>DIRECT eBill, TEP eBill, PayPal</td>
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<tr>
<td>Card Processing Services</td>
<td>TSYS, PayPal</td>
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<tr>
<td>Motor Vehicle Records (MVR) System</td>
<td>DRIVING RECORDS.NET</td>
</tr>
<tr>
<td>Teleconference Service Provider</td>
<td>webex, interCall, Galileo</td>
</tr>
<tr>
<td>VOIP Phone / Conference Bridges</td>
<td></td>
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<tr>
<td>Global Distribution System (GDS)</td>
<td></td>
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</table>
Integration Testing with CA Service Virtualization
Testing is no Longer an Event

1. Eliminate Constraints
2. Drive Headless API Tests
3. Drive Web UI Tests
4. Drive Mobile Tests
5. Watch for Unintended Consequences
Constraint-Free Development
Solution: “Shift-Left” the SDLC

Without LISA

With LISA

With CA LISA quality effort moved earlier in the lifecycle

Typical composite app today waits for whole assembly to begin

Reduction in SDLC Faster Delivery
CSC – Schematic Of Client Environment In Cloud

- Elastic and Rapid provisioning
- Large Scale collaboration
- Managing non-virtualizable
- Managing availability

Testing as a Service in Cloud

Compute Virtualization

CA Service Virtualization

Testing Environment

Non-Virtualizable Platforms

Virtual Environment

Mobile Simulators

Mobile Apps

Testing Environment

- Assets
- Accelerators
- Dash Board
- Quality Assessment tool

Tools

Non-Virtualizable Platforms
Challenges with Traditional Testing

• Inability to quickly isolate issues across the infrastructure
  – Monitoring application, network and servers
  – Aggregation/correlation technology to analyze and synthesize test data

• High Cost to Simulate Real World Traffic and Users
  – Availability and provisioning of needed hardware
  – Software licenses for high volume of Virtual Users
  – Staff time required to prepare environment and implement testing

Performance Testing in Cloud

• Effective
  – Real Time Monitoring of App-Environment-Platform
  – Sophisticated Analytics
  – Quickly pinpoint issues and fault points

• Affordable
  – Load and Performance Testing
  – Leveraging the Cloud On Pay-Per-Use Model

• Scalable
  – Simulating Real World Users and Web Traffic
  – 10,000+ simultaneous users, from multiple servers
  – Loads generated from one or multiple global regions

• Agile
  – Rapid deployment and execution
  – Speed total time to resolution
Summary

Lower Cost of Ownership:
• Benefit from lowered capital expenditures (tools/environment) by taking advantage of the flexible pay-for-need pricing

Increased Speed to Market:
• Benefit from "on-demand" utilization model through rationalization of license costs based on usage

Improved quality:
• Benefit from our ability to provide Cloud based test environments which enables testing to begin sooner. This was not previously possible due to constraints in physical resources

Innovation on demand:
• Benefit from CSC partnerships that provide technologies such as service virtualization, automation and performance capabilities

Ease of doing Business:
• Simplify supplier agreements by using one partner for wide range of requirements