Session 5:

Federal Secure Cloud Testing as a Service - TaaS Center of Excellence (CoE)

Robert L. Linton
Agenda

• HP ALM Solution Review
• HP Cloud Potential
• Cloud Portal
• HP ALM Solutions in a virtual environment
  – Testing Center of Excellence (CoE)
    • Cloud based
    • Provisioning HP Solutions
    • TaaS
    • Subscription Model
    • Benefits

• Lessons Learned
• Summary
• Q & A
### HP Application Lifecycle Management 11.5

**Application Lifecycle Management 11.5**

<table>
<thead>
<tr>
<th>Project Planning &amp; Tracking</th>
<th>Enterprise Release Management</th>
<th>Application Lifecycle Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Requirements Management</strong></td>
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<tr>
<td>Requirements Definition</td>
<td>Requirements Management</td>
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<tr>
<td><strong>Development Management</strong></td>
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<tr>
<td>Agile Project Management</td>
<td>Defect Management</td>
<td>Secure Development</td>
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<tr>
<td><strong>Quality Management</strong></td>
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<tr>
<td>Functional</td>
<td>Performance</td>
<td>Security</td>
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</tbody>
</table>

**Service Virtualization**

- New

**Foundation**

- Traceability
- Process Agnostic (i.e. Waterfall, Agile)
- Reporting
- Extensibility (Open APIs)
- AGILE integrations

- Updated
- Fortify

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CorTechs’ Expertise with HP ALM Solutions

• HP / Mercury Partner 17+ years
  – HP PPM
  – HP BAC, SiteScope, Diagnostics
  – HP Testing Tools
    • Automated
      – QC / ALM
      – UFT (QTP and Service Test)
      – Performance Center
        » LoadRunner
      – Fortify – Security Testing
  • Manual
    » HP Sprinter

• Open Source Testing
  – Can be added to TaaS
  – Agile supported
Changes in software development

Mainframe

Client/Server
(including packaged Apps such as SAP, Siebel, Oracle...)

Composite
(Custom Applications, SOA, Cloud)

Constraints
Complexity
Costs

Traditional Testing Tools and Methodologies

... 1980 ... 1985 ... 1990 ... 1995 ... 2000 ... 2005 ... 2010 ... 2015
Change and Complexity Increasing: *Composite* Application Environments

- **External**: CRM App, Collaboration App, Portal
- **Partners**: Web Interface, Routing Service, Virtual Service
- **Cloud**: Web/WAP Interface, BI Tools, Help Engine
- **Internal**: ESB, Content Database, Business Rules
- **Legacy Infrastructure**: Data Warehouse, ESB, BPMS Products, Financials Mainframe, Messaging Service, File System, RMI Objects

- # of Interconnected Components
- # of Inter-dependent Teams
- # of Heterogeneous Technologies
- Increase Rate of Change
“X as a Service”

- IaaS - Infrastructure as a Service
- PaaS - Platform as a Service
- EaaS - Email as a Service
- DaaS - Desktop as a service
- SaaS – Software as a Service
- RaaS – Recovery as a Service
- **TaaS** - *Testing as a Service*
  - Test Data management
  - Functional
  - Performance
  - Services
  - Security
  - Monitoring
Using traditional methods, government agencies cannot precisely represent real-world operating conditions in their application development and testing environments.

This can introduce risks like:
- Technical problems
  - Servers
  - Networks
- Security vulnerabilities
- Schedule delays
- Budget overruns
Government IT Projects

Budget
Schedules
Staffing
What is a Center of Excellence (CoE)?

A logical or physical “service bureau” providing expertise across projects in a “shared services model” to drive standardization of quality products and processes across the Enterprise.
HP ALM Solutions implemented in the Cloud
Cloud TaaS configuration isn’t a one-time event....

Are all the consumers of Dev and Test cloud expected to know everything?

VLM 1 (AppLogic)
VLM 2 (AutoSuite)
VLM 3 (VMware)

On-Prem
Hybrid
Public/Private (EC2, etc...)

Cloud TaaS configuration isn’t a one-time event....
Volatile Utilization of Lab Resources

Variable demand in allocating Dev and Test computing capacity

Scalability of the Cloud

ELASTICITY of Cloud

Lab Capacity & Cost

Variable consumption over time

Dev Team A, B, C...

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Cloud based TaaS – Test when you need to

1) Pool Lab Resources Together (Leverage the existing capacity - CoE)
2) Implement virtual lab provisioning
   2a) Catalog the VM Images
3) Bring additional teams into the cloud to use centralized resources

Functional Testing
Application Under Test
Performance Testing
Service Virtualization
Central Repository
Catalog

Scalability
Elasticity

Production Infrastructure

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# Testing Tool CLINs

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<tr>
<th>CLIN</th>
<th>Description</th>
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<tr>
<td>xxxx1AA-xxx0</td>
<td>Quality Center Environment</td>
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<tr>
<td>xxxx1AA-xxx1</td>
<td>Quality Center User Licenses</td>
</tr>
<tr>
<td>xxxx1AA-xxx2</td>
<td>Functional Testing</td>
</tr>
<tr>
<td>xxxx1AA-xxx3</td>
<td>Test Data Management (1-500GB Database)</td>
</tr>
<tr>
<td>xxxx1AA-xxx4</td>
<td>Test Data Management (500GB+ Database)</td>
</tr>
<tr>
<td>xxxx1AA-xxx5</td>
<td>Performance Center - Controller</td>
</tr>
<tr>
<td>xxxx1AA-xxx6</td>
<td>PC - Standard Protocols (each) - 1,000 VUs</td>
</tr>
<tr>
<td>xxxx1AA-xxx7</td>
<td>PC - Standard Protocols (each) - 5,000 VUs</td>
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<td>PC - Standard Protocols (each) - 10,000 VUs</td>
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<td>PC - Enhanced Protocols (each) - 1,000 VUs</td>
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<td>PC - Enhanced Protocols (each) - 10,000 VUs</td>
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<td>PC - Enhanced Protocols (each) - 25,000 VUs</td>
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<td>xxxx1AA-yy00</td>
<td>On-Demand Support - Grade 1</td>
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<tr>
<td>xxxx1AA-yy01</td>
<td>On-Demand Support - Grade 2</td>
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<td>xxxx1AA-yy02</td>
<td>On-Demand Support - Grade 3</td>
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<td>On-Demand Support - Grade 4</td>
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<td>xxxx1AA-yy04</td>
<td>On-Demand Support - Grade 5</td>
</tr>
<tr>
<td>xxxx1AA-yy05</td>
<td>On-Demand Support - Grade 6</td>
</tr>
</tbody>
</table>
Real World Government Entity’s dilemma

- **Performance Testing**
  - Owned the software – still in the BOX
    - Authorized a STUDY to calculate - plan and costs
    - Came back with 6 months to one year
    - Costs would be close to $100K before it started
    - RFPs – Award
    - Assign tasks to Gov. and contractors

- Then they could start Performance Testing
  - Possibly, if the environment *is ready*...
Business Case for Massively Parallel Testing

Test Suite 1: **Limit** to 10 Available Test Servers

- 10,000 Regressions
- 10 Servers In Cloud
- CPU/MIPS Costs 100.0 Units
- 100 hours

Test Suite 2: **Provision** **Enough** Servers to Finish Job in 1 hour

- 10,000 Regressions
- 1000 Servers In Cloud
- Results Data Complete
- CPU/MIPS Costs 100.0 Units
- 1 hour
Development and Test as a Service

Service Description

• Fully functioning Dev-Test environment for use across multiple platforms:
  • Open source, .NET, Agile and JAVA
• Development, test and prep/prod environments are aligned and problems are reduced because of differences between the development and production environments including security common controls
• Application lifecycle management; testing and resourcing available (PM’s, developers, engineers, etc.)
• Rapid boarding of user community

Service Benefit

• Fast scale-up or scale-down of resources with usage-based billings, old servers can be decommissioned when project is finished
• High machine utilization, fewer physical servers less capital expense
• Time to market is reduced, services can be provisioned in 24 hours
• 99.9% uptime Service Level Agreement in the contract
  • Operational and maintenance costs included in the service
### Compare - Traditional Costs vs. TaaS

<table>
<thead>
<tr>
<th>Typical</th>
<th>TaaS</th>
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</thead>
<tbody>
<tr>
<td><strong>- separate Costs and Effort</strong></td>
<td><strong>- all included in ONE price</strong></td>
</tr>
<tr>
<td>• TOTAL COST to Test</td>
<td>• TOTAL COST for - TaaS</td>
</tr>
<tr>
<td>• Tool Admin $</td>
<td>• Tool Admin - included</td>
</tr>
<tr>
<td>• Hardware $</td>
<td>• Hardware - included</td>
</tr>
<tr>
<td>• OS, DB License $</td>
<td>• OS, DB - included</td>
</tr>
<tr>
<td>• Lab Space $</td>
<td>• Test Lab Space - included</td>
</tr>
<tr>
<td>• O&amp;M $</td>
<td>• O&amp;M - included</td>
</tr>
<tr>
<td>• C&amp;A $</td>
<td>• C&amp;A - included</td>
</tr>
<tr>
<td>• Outages $</td>
<td>• SLAs- included</td>
</tr>
</tbody>
</table>
Test as a Service
Key Features

• **Chargeback and Metering**
  – Chargebacks help customers control their cost
    • Meter the use of resources consumed during test cycle
    • Assign rates to metered resources
    • Issue usage and charge reports to customers
    • Pay as you go Model
  – Metering
    • Virtual Machines
      – Workstations
      – Servers
      – Databases
      – Storage
  – Services
    • Training
    • Consulting
    • Mentoring
    • Turn Key Delivery
Test as a Service

Key Features

• End-to-end Test Orchestration
• Automated test lab provisioning
  – Application under test – accessible
  – Test Tools provisioned
  – Test Scenarios (test plans, test data, test scripts, test results, defects)
• Central Repository for secure test library – Reuse
  – ALM / QC
• Functional Testing
  – QTP
  – Service Test
• Performance Testing
  – Performance Center
  – LoadRunner
• Security Testing
  – Fortify
Cloud TaaS Benefits = more ROI

**Immediate Benefits:**
- “Ready to Use” Implementation for HP ALM Solutions
  - HP ALM
  - HP Performance Center
  - HP UFT
  - HP Fortify
- Test More, Test Earlier, Utilize gov resources effectively
- Elasticity and Scalability when you need it!

**Reoccurring Benefits:**
- Eliminate ongoing maintenance, administration, upgrades
  - Same Test Resources get more testing done sooner
- Reduce cost – Hardware, Software, Resources, Setup Time
- Constant Improvement of Software deliverables
  - Higher Quality Business Applications
  - Better Continuous Development
  - Increased Stability of Applications in production

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Value proposition of CLOUD – TaaS

Speed-up release cycles
• Allow parallel development and earlier functional testing.
• Reduce wait time for unavailable systems.

Reduce budgets
• Required to setup, manage, and run complex test environments
• Lowering the cost of additional Hardware

Decrease third-party expenses
• Incurred by using 3rd party production systems

Lower the risk of project failure
• Reduce risk by engaging quality teams early.
• Decrease risk with broader test coverage

Improve total user experience
• Achieve desired levels of quality and performance levels
There has never been as much Change… Quality is Being Re-defined

Modernization requires discipline

"The market is shifting as organizations seek greater business value and agility. Agility doesn’t mean run as fast as possible, it requires great discipline”

Gartner Research, “Don't let Short-Term Agile Create Long-Term Pain”

Modernization does not grant IT a “hall pass” for quality
Now is the time to master - QA / Test Automation

Limited Resources
- Tight Budgets
- Reduced Staff
- Business Analysts/Developers as Part-Time Testers

More Headless Testing
- Cloud-Based Apps
- Mobile Apps
- Embedded Systems
- XML/Web-Services...

Agile Test Execution
- Shorter Release Cycles
- Continuous Integration
- Build regression tests – with Unit Test

Complex verification
- Myriad of technologies
- Mobile testing
- Multiple Integration points for comp’ apps

The only way to keep up is to automate
“ environments, AUT, tools, virtualized services “
Summary:

A Few Words to Review

- Make QA more efficient by testing more
  - Less time on support tasks, more focus writing tests and executing them
- Leverage CLOUD / TaaS solutions to our advantage
  - Save time and Money $$$
- Use Virtualization – to “Shift Testing” Left!
  - compresses the implementation schedule
- Testing as a Service can be local, public or private Cloud
  - Increases the Stability and Quality of deployed application
  - Better utilization of Corp. resources across the Enterprise
- Major Government Entities are executing this CoE model
- More Government Agencies are embracing this approach
  - “X” as a Service
  - Center of Excellence
  - Cloud based Dev and Test
Questions and Answers

For More Information
Come see us at our Table # 2

Deliver to the customer their Vision

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Iterative Development

- Business Users
- Development Teams
- Developers
- System Testers
- UAT Testers

Tools and Systems:
- Team Foundation Server
- Visual Studio
- Jenkins
- HP ALM
- HP LoadRunner
- HP Quality Center
- Sonar
- LISA
- Maven
- Hudson
- Apache ANT
- SourceGear

Report Types:
- Unit Test Reports
- VuePoint reports
- GUI reports
- Dashboard reports

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## Benefits of a Center of Excellence

| Reduce cost | Reduce configuration, license, testing and training costs  
|            | Reduce costs related to defects and production downtime  
|            | Increase testing with fewer resources  
| Increase efficiency | Increase staff efficiency and utilization across projects  
|            | Increase operational efficiency with repeatable standardized processes  
|            | Enable globalization, best practice and asset sharing across geographically distributed teams  
|            | Establish cross-project visibility to ensure assets can be effectively re-used  
| Reduce risk | Increase cross-project visibility to quality metrics and ensure KPIs are aligned with business needs  
|            | Increase quality via continuous monitoring of testing status, progress and trends  
|            | Ensure go/no-go decisions are based on quantifiable business risk  

Optimize operational efficiency and staff utilization while reducing production risk at a lower cost