4 ways to avoid costs, delays and failed releases

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What to avoid

Do you have fun stories?

Costs
Delays
Failed releases
How to avoid

What is it?

Lifecycle Virtualization
Lifecycle Virtualization

User
- Virtualize users to exercise the system(s) as your users do in production today

Service
- Virtualize infrastructure and service interactions to simulate E2E business processes

Network
- Virtualize network conditions to emulate production architecture and real user conditions

Data
- Virtualize production data and transaction responses to emulate application request and responses
Why Lifecycle Virtualization Now

Build, test and deliver with breakthrough speed and quality

**Cloud Testing**
Maximum performance and scale

**Enhanced Mobile Testing**
Realistic performance mobile testing

**Continuous Testing**
Continuous integration with DevOps

**User Experience & Community**
Ease of use from any platform. Share and connect with users and partners

**Flexible Delivery**
Get started quickly and economically, with community edition

Support a wide range of technologies, methodologies and environments that represent the new style of IT
Areas Where LV Is Essential For You

- Mobile Applications
- Business Systems – SAP, SharePoint, Oracle
- Remote site operations – Oil & Gas, Manufacturing, Pharma
- E-commerce/multi-channel POS – Retail Store Labs
- Performance CoE
- DevOps Release Automation
- Data Center Consolidation
- Performance incident management process
What is Lifecycle Virtualization?

How do you benefit from Lifecycle Virtualization?

- Customers
- Employees
- Browsers & devices
- Mobile carriers & ISPs
- Content delivery networks
- Major ISP
- 3rd party cloud services
- Load balancers
- Web servers
- App servers
- DB servers
- Distributed services
- Web services
- Mobile components
- Storage

= User virtualization
= Service virtualization
= Network virtualization
= Data virtualization
A Real-Life Scenario: Tracking the course of an online purchase

A typical online purchase has predictable landmarks in its process.

But... is the road from beginning to end hardly a direct route?
A Real-Life Scenario: Tracking the course of an online purchase

But… is the road from beginning to end is hardly a direct route?
Value Proposition of SV + NV
Connected Intelligence

Results Delivered To You and Your Customers

Agile Project Management
ALM with Requirements Definition and Management
Development Management and Continuous Integration
Automated Functional and Performance Testing
Network and Service Virtualization
Security Validation
Customizable Social Workflows

United platform, fully integrated with heterogeneous DevTestOps solutions
- Extensible Repository
- 360-degree 7-way traceability
- End-to-end analytics
- Shared data and processes
- Enterprise proven results

Proven customer benefits:
- 80% reduction: defects in production
- 90% of resources focused on innovation
- 100% elimination of resource wait time
Lifecycle Virtualization

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What Is User Virtualization?

Functional, Performance, Security and more…

LoadRunner Components:
1. **Virtual User Generator**: Using minimal hardware and human resources, LoadRunner can simulate thousands of simultaneous users to replicate real-life user loads on any application platform & environment.
2. **Controller**: The purpose of the Controller is to organize, drive, manage, and monitor the load test.
3. **Analysis**: LoadRunner Analysis provides pictorial and graphic representation of performance metrics collected during monitoring of the application being tested.
Do you have Virtual Users?

Functional
Performance
Security
and more…
Service Virtualization
What is SV and Why?

<table>
<thead>
<tr>
<th>Service virtualization overview</th>
<th>[edit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service virtualization emulates the behavior of software components to remove dependency constraints on development and testing teams. Such constraints occur in complex, interdependent environments when a component connected to the application under test is:</td>
<td></td>
</tr>
<tr>
<td>• Not yet completed</td>
<td></td>
</tr>
<tr>
<td>• Still evolving</td>
<td></td>
</tr>
<tr>
<td>• Controlled by a third-party or partner</td>
<td></td>
</tr>
<tr>
<td>• Available for testing only in limited capacity or at inconvenient times</td>
<td></td>
</tr>
<tr>
<td>• Difficult to provision or configure in a test environment</td>
<td></td>
</tr>
<tr>
<td>• Needed for simultaneous access by different teams with varied test data setup and other requirements</td>
<td></td>
</tr>
<tr>
<td>• Restricted or costly to use for load and performance testing</td>
<td></td>
</tr>
</tbody>
</table>

Although the term "service virtualization" reflects the technique's initial focus on virtualizing web services, service virtualization extends across all aspects of composite applications: services, databases, mainframes, ESBs, and other components that communicate using common messaging protocols. [4][5][6]

SV Commercially Available

1. CA Service Virtualization (formerly CA LISA) [2][14][15][16][17]
2. Parasoft Virtualize [2][14][15][16][17]
3. IBM Rational Test Virtualization Server - formerly GH VIE, Green Hat (software company) [2][14][15][16][17]
4. HPE Service Virtualization [2][14][15][16][17]
5. Tricentis Orchestrated Service Virtualization [17]
How does SV work?
Integrated Capabilities: NV with LR or PC + SV

Integrated HP Network Virtualization & HP Service Virtualization with LoadRunner or Performance Center

- Define and Control network parameters with SV Virtual Services
- New Network Model definitions
- Integrated to NV Global Library for quick network parameters import

Demo Video: https://www.youtube.com/watch?v=T1cDdYJUSmM
Network Virtualization
Network Virtualization Capabilities

Discovery and Capture
Identify and record real-world network performance conditions (Mobile, Cloud, Web & WAN).

Virtualization and Test
Virtualize production network conditions to accurately emulate and test application performance.

Analysis and Optimization
Analyze test results and implement optimization strategies to improve performance.
Impact of the Network on Results

Not virtualizing the network slows release cycles and increases production incidents.

WITHOUT accurate network conditions

WITH accurate network conditions

Capacity > 500+ Users VS Capacity < 200 Users
Mobile transaction response time is on the network 70%. How do you incorporate the network in your tests?
Mobile Impacts ALL Users
Some Real Results
Analysis Summary


Scenario Name: C:\Program Files (x86)\HPLoadRunner\scenario\DEMO_LR with NV.irs
Results in Session: C:\Users\decapua\AppData\Local\Temp\web19s.tr
Duration: 4 minutes and 31 seconds.

Maximum Running Vusers: 10
Total Throughput (bytes): 57,226,323
Average Throughput (bytes/second): 195,981
Total Hits: 2,449
Average Hits per Second: 8.387

You can define SLA data using the SLA configuration wizard.
You can analyze transaction behavior using the Analyze Transaction mechanism.

Transaction Summary

Transaction Name | SLA Status | Minimum | Average | Maximum | Std. Deviation | 95 Percent | Pass | Fail | Stop
---|---|---|---|---|---|---|---|---|---|---
Click Buy Button | | 0.345 | 0.55 | 1 | 0.173 | 0.842 | 68 | 0 | 0
Home=1|1|=1|StopOff | | 1.786 | 3.24 | 4.955 | 0.7 | 4.189 | 68 | 0 | 0
Login | | 2.903 | 3.926 | 5.395 | 0.564 | 4.682 | 68 | 0 | 0
Navigate | | 0.261 | 0.614 | 1.266 | 0.23 | 0.901 | 68 | 0 | 0
Search Flights | | 10.776 | 12.276 | 14.289 | 0.91 | 13.720 | 68 | 0 | 0

Service Level Agreement Legend: ✔ Pass ☒ Fail ☐ No Data

HTTP Responses Summary

HTTP Responses | Total | Per second
---|---|---
HTTP 200 | 2,449 | 8.384
**Analysis Summary**

Period: 30/09/2014 15:03:14 - 30/09/2014 15:08:37

Scenario Name: C:\Program Files (x86)\HP\LoadRunner\scenario\DEMO_LR with NV.js

Result File: C:\Users\ideapush\AppData\Local\Temp\myvues.lrn

Duration: 5 minutes and 23 seconds.

**Statistics Summary**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Running Vusers</td>
<td>10</td>
</tr>
<tr>
<td>Total Throughput (bytes)</td>
<td>29,674,465</td>
</tr>
<tr>
<td>Average Throughput (bytes/second)</td>
<td>9,1388</td>
</tr>
<tr>
<td>Total Hits</td>
<td>1,570</td>
</tr>
<tr>
<td>Average Hits per Second</td>
<td>4,846</td>
</tr>
<tr>
<td>Total Errors</td>
<td>2</td>
</tr>
</tbody>
</table>

You can define SLA data using the **SLA configuration wizard**

You can analyze transaction behavior using the **Analyze Transaction mechanism**

**Transaction Summary**

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Total Passed</th>
<th>Total Failed</th>
<th>Total Stopped</th>
<th>Average Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Click-Button</td>
<td>0.342</td>
<td>2.826</td>
<td>8.502</td>
<td>1.879</td>
</tr>
<tr>
<td>Home-Itinerary-SignOff</td>
<td>1.994</td>
<td>9.878</td>
<td>53.832</td>
<td>10.338</td>
</tr>
<tr>
<td>Login</td>
<td>3.262</td>
<td>6.786</td>
<td>12.273</td>
<td>2.014</td>
</tr>
<tr>
<td>Navigate</td>
<td>0.335</td>
<td>3.907</td>
<td>13.348</td>
<td>3.219</td>
</tr>
<tr>
<td>Search Rights</td>
<td>10.996</td>
<td>16.288</td>
<td>44.238</td>
<td>6.627</td>
</tr>
</tbody>
</table>

**Service Level Agreement Legend:**

- **Pass**
- **Fail**
- **No Data**

**HTTP Responses Summary**

<table>
<thead>
<tr>
<th>HTTP Responses</th>
<th>Total</th>
<th>Per second</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP 200</td>
<td>1,570</td>
<td>4.846</td>
</tr>
<tr>
<td>Task</td>
<td>Without NV</td>
<td>With NV</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Navigate</td>
<td>0.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Login</td>
<td>4.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Search Flights</td>
<td>13.1</td>
<td>15.2</td>
</tr>
<tr>
<td>Click Buy Button</td>
<td>0.7</td>
<td>2</td>
</tr>
<tr>
<td>Home-Itinerary-SignOff</td>
<td>3.8</td>
<td>7.3</td>
</tr>
</tbody>
</table>

*Above #’s in seconds TRT*
4. LOCATION CLASSIFICATION FOR RESPONSE TIME COMPARED TO A LOCAL USER BASELINE

Locations Compared to Local User

- Cannot Deploy: London, New York, San Francisco, Tokyo. (100.00%)

<table>
<thead>
<tr>
<th>Locations Vs Local User</th>
<th>Location</th>
<th>Vs Local User</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>Cannot Deploy</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Cannot Deploy</td>
<td></td>
</tr>
<tr>
<td>San Francisco</td>
<td>Cannot Deploy</td>
<td></td>
</tr>
<tr>
<td>Tokyo</td>
<td>Cannot Deploy</td>
<td></td>
</tr>
</tbody>
</table>
San Francisco Virtualization

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Local User [sec]</th>
<th>Tokyo User [sec]</th>
<th>% Increase in Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Click Buy Button</td>
<td>2.254</td>
<td>2.523</td>
<td>11.93%</td>
</tr>
<tr>
<td>Home-Itinerary-SignOff</td>
<td>5.099</td>
<td>9.03</td>
<td>77.09%</td>
</tr>
<tr>
<td>Login</td>
<td>7.019</td>
<td>8.263</td>
<td>17.77%</td>
</tr>
<tr>
<td>Navigate</td>
<td>1.767</td>
<td>3.217</td>
<td>82.05%</td>
</tr>
<tr>
<td>Search Flights</td>
<td>20.577</td>
<td>22</td>
<td>6.92%</td>
</tr>
</tbody>
</table>
Network Virtualization delivers ROI in under 90 days*

TechValidate Survey (February 2013)

- A Global 500 bank **reduced performance incidents** by over 70%
- A large, enterprise financial services company **reduced testing time and accelerated application delivery** by 30-40%
- A computer software company **improved application performance / response time** by 51-70%

On average, NV customers **save over $514,800 annually** in remediation costs alone.*

*Source: 2011 Customer Survey
Data Virtualization
Data Virtualization

4 Aspects To Solve Many Of The Challenges

1. Virtual Table Server (VTS)
The all-new VTS, first introduced in version 11.52, now allows you to create multiple running instances of VTS, run VTS commands and batch files from the command line, and populate data tables with sample data from the main menu.
https://www.youtube.com/watch?v=BhN0Pp4l98M

2. HPE Test Data Management Software
HPE Test Data Management software is a flexible, powerful solution designed to reduce delays and costs associated with data-driven testing. This is accomplished by accelerating test data preparation using automated data extraction and masking.
http://h20621.www2.hp.com/video-gallery/us/en/e859a420c1eeff35d2e2311b1f253be1c039c0a1b/v/video

3. HPE Service Virtualization
By having the ability to create and use a simulated model of unavailable or constrained services, your developers / testers can lower the time required for test case, test data preparation, API, performance, integration, and complete end-to-end testing. Capture and automate test data. Another critical aspect of Service Virtualization was the ability to sit in the transaction stream and capture a realistically robust set of test data. This data could be quickly managed within Service Virtualization, or exported and manipulated quickly in spreadsheets or other tools.

4. Grid-Tools
Grid-Tools was an HPE AllianceOne Partner and Grid-Tools’ Datamaker™ solution integrates with HPE’s Application Lifecycle Management (ALM) integrated suite.
https://www.grid-tools.com/partners/software-technology-partners/
Evolution to Performance Engineering

High performance value delivered
Additional Resources
Book

EffectivePerformanceEngineering.com
@EffPerfEng
Book

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Figure 2-8. Quality gates

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Survey

bit.ly/PE15Report
Survey

bit.ly/PE15Report
Community

Performance Engineering as a Competitive Differentiator
[Webinar on 11 May 2016]

Community
Performance Engineering as a Competitive Differentiator
[Webinar on 11 May 2016]

Research

Hewlett Packard Enterprise

Looking for love in all the wrong places?
Which dating sites are slowest, down most often, or most likely to drop you off the web or your phone?

bit.ly/Look4Love
Research

The losers

Bottom 5 were 586% slower than Top 5

Bottom 5 scores were 20 points worse than Top 5

Bottom 5 pages were 491% bigger (using up bandwidth)

Worst site was 1,467% slower than Top 5

bit.ly/Look4Love
SAVE THE DATE!
CMG imPACt 2017
November 6 – 9, 2017
Loews New Orleans Hotel
Questions

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