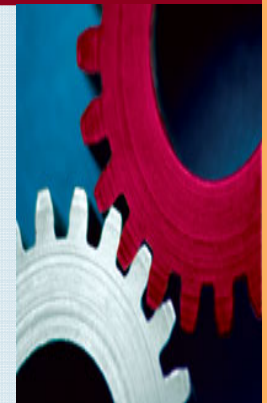


Case Study: Load Testing Web Services using Performance Center



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Agenda

Case Study Background

Web Services Scripting

Test Execution using Performance Center

Q&A



Case Study Background



Case Study Background

Reputable Company with strong brand recognition that needed to accomplish performance Testing of a third party Mapping Engine.

The Mapping Engine was to be used by multiple Lines of Business (LOBs) to render maps and related services on their website providing value-add to customers.



Case Study Background

- Project Goals
 - Test Third-Party Mapping Engine for performance
 - Ensure SLA compliance of sub 3 second Engine overhead over MS MapPoint and Google Virtual Earth
 - Accomplish testing within 2 months of code release



Case Study: Project Specific Challenges

- Challenge 1 – Usage Workflow Definition
 - Client had multiple Lines of Business (LOBs) who were to use Mapping Engine but code was under development
 - Actual usage of Engine Methods by LOB websites was not completely known
 - Load Test Result deadlines were time-bound (within 2 months)
- Impact
 - The actual order in which the Web Services would be invoked was not known to us
- Solution
 - Client PMO agreed to the following
 - LOB Engine Usage Assumptions based on available data



Case Study: Project Specific Challenges

- Challenge 2 – Multiple Parties to Coordinate with
 - LOBs, Mapping Engine Developers, Web hosts, Microsoft, Google
- Impact
 - Difficult to coordinate schedules and get information with dispersed team
- Solution
 - One empowered resource per party required to participate during planning and execution



Case Study: Project Specific Challenges

- Challenge 3 – External System Dependence
 - Mapping Engine relied on Microsoft MapPoint and Google Virtual Earth
 - No controlled test environment for these external systems. Resistance from Microsoft to load testing on MapPoint production systems due to volume
- Impact
 - Simulation of load test was difficult without interfacing with these external systems
- Solution
 - MapPoint calls were stubbed out (with configurable wait time settings)
This meant the variation in data to a call was minimal. However this did not impact our test findings as Project goals were to measure the Engine overhead not measure Microsoft performance.
 - Virtual Earth calls were low volume and retained as is



Web Service Scripting



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Load Test Plan

- Client PMO agreed to the following
 - LOB Engine Usage Assumptions
 - 13 Typical Engine Method calls were selected for the load test by developers
 - 13 Web Services Scripts created to simulate calls.
 - Load Test Scenarios were created by evenly distributing load across these calls
 - A basic test Web site was created that represented LOB website functions
 - HTTP Load Test scripts were created that tested the engine through the website
 - 80% of the load was simulated using Web Services, 20% of the load was simulated using HTTP



Web Services Scripting Process

- No recording solution was possible
- VuGen supports scripting using WSDL files
 - For each Web Service obtain the WSDL files
 - The method calls are embedded in the WSDL file
 - VUGen reads the WSDL file to present you with Method Call options
 - Choose the Method to call, provide input data, execute the call and introduce verification check (text check of XML tags)
- You need to know the sequence in which the Methods are called by the Application
- Results from the call are stored in a pre-defined parameter {response}
- Parameterize the input data and replay script for all data values
- Do a **strcmp** to verify that the response parameter is correct



Web Services Scripting Tips

- Replace local path to WSDL file in recording to file name only
- Add WSDL file to list of files for script (File->Add Files to Script)
 - This is important because with Performance Center you do not have access to a network path or the local file system on the injectors



Web Services Replay

- Replay script in VuGen
- Verify data returned by server (for our case the initial part of the data). Example GetMap()
- There was no caching so we could get away without unique data across users
- Check to see that transactions passed or failed



Test Execution With Performance Center



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Performance Center Challenges & Quirks

- Challenge/Quirk #1 - Script Edits
 - A limitation of Performance Center is that you cannot edit the script in PC
 - Edit locally and transfer the script each time to make an edit
 - Scripts must be zipped up in Vugen and uploaded to Performance Center

Tip

Use a Demo version of the Controller to do a debug run and then transfer the scripts to PC



Performance Center Challenges & Quirks

- Challenge/Quirk #2 – Saving Scenarios
 - Script Performance Center Controller Scenarios can't be saved for future use within a LR Controller

Best Practice

Document the scenario for purposes of archival and load test history



Performance Center Challenges & Quirks

- Challenge/Quirk #3 – WAN Load Distribution
 - Server Farm group limited Internet / WAN load distribution
 - Simulation was limited to geographic location of Server Farm Injectors (originally Hong Kong and then California)
- Other Injector Tips and Facts
 - You do have the configuration for each load injector. No scenario templates available for each injector setting. Max limits per injector specified assuming think times
 - Monitoring of injectors is automatically added
 - The NOC is responsible for re-booting Load injectors in case of non-responsive injectors. Response turnaround times are quick for re-boots. Response times could be high for diagnosis of problems that do not resolve after a reboot



Performance Center Challenges & Quirks

- Challenge/Quirk #4 – Scheduling Tests
 - You must reserve schedule far in advance to do a load test as this is a shared environment. You may only reserve 3 hour windows. Longer windows need to be justified. You may view availability of these server farms
 - Scheduling includes time window for use of Controller, selection of number of injectors needed, and the number of vusers and schedules the injectors to each vuser automatically



Performance Center Challenges/Quirks

- Challenge/Quirk #5 – Injector Failure
 - Mercury Server Farm Injectors failed
 - Server Farm Injectors and Controllers are grouped
 - Injector failure implied migration to a new Controller, re-build of scenarios
- Challenge/Quirk #6 – Server Resource Metrics
 - Hosted Application Server Resource Metrics could not be obtained from Performance Center
 - Solution
 - SiteScope Monitors. SiteScope was installed on Client desktop to relay Server Resource Metrics to Performance Center
 - SiteScope monitors may be additional pricing



Analyzing Results with Performance Center

- Save the results and download them as a zip file
- You use the Analysis tool to review the results
 - No information lost, all graphs and reports available
 - You have the ability to view output.txt for vusers as they are a part of the results folder



Summary

- Creating Web Service Scripts using WSDL files
- Performance Center Challenges
- Tips and Tricks to circumvent these challenges



Q&A

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